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UNITED STATES PATENT AND TRADEMARK OFFICE
April 23, 1996 Volume 1185 Number 4

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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty (PCT) Information

For information concerning PCT member countries, see the notice appearing in the *Official Gazette* at 1181 O.G. 50, on December 19, 1995.

For use of the European Patent Office as an International Searching Authority for international applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52, on September 28, 1982.

For use of the European Patent Office as an International Preliminary Examining Authority for international applications filed in the United States Receiving Office, see the notices appearing in the *Official Gazette* at 1080 O.G. 2, on July 7, 1987, and at 1091 O.G. 2, on June 7, 1988. There is no longer a limit on the number of such international applications accepted for international preliminary examination by the European Patent Office; see the notice appearing at 1116 O.G. 32, on July 17, 1990.

The search fee of the European Patent Office was changed, effective June 20, 1995, due to a change in the exchange rate of the U.S. dollar with regard to the German mark, and was announced in the *Official Gazette* at 1181 O.G. 49, on December 19, 1995.

International fees were changed, effective on January 1, 1996, due to a change in the exchange rate of the U.S. dollar with regard to the Swiss franc, and were announced in the *Official Gazette* at 1181 O.G. 49, on December 19, 1995.

Certain domestic PCT fees and charges for International Search and Preliminary Examination were changed, effective October 1, 1995, and were announced in the *Official Gazette* at 1177 O.G. 171, on August 29, 1995.

The schedule of PCT fees (in U.S. dollars), effective January 1, 1996, is as follows:

International Application (PCT Chapter I) fees:

Transmittal fee.....	220.00
Search Fee	
U.S. Patent and Trademark Office (USPTO) as International Searching Authority (ISA)	
—No corresponding prior U.S. national application filed.....	660.00
—Corresponding prior U.S. national application filed.....	430.00
—Supplemental search fee, per additional invention (payable only upon invitation).....	190.00
European Patent Office as ISA.....	1700.00

International fees

Basic fee.....	677.00
Basic Supplemental fee (for each page over 30).....	13.00
Designation fee per country or region	
—For the first 11 national or regional offices designated.....	164.00
—For each designation in excess of 11 offices.....	No Charge

Precautionary designation fee and confirmation fee for each precautionary designation confirmed (PCT Rule 15.5)

—Designation fee.....	164.00
—Confirmation fee.....	82.00

International Application (PCT Chapter II) fees associated with filing a Demand for Preliminary Examination:

Handling fee.....	207.00
Preliminary examination fee	

USPTO as International Preliminary Examining Authority (IPEA)

—USPTO was ISA in PCT Chapter I.....	470.00
—Additional examination fee, per additional invention (payable only upon invitation).....	140.00
—USPTO was not ISA in PCT Chapter I.....	710.00
—Additional examination fee, per additional invention (payable only upon invitation).....	250.00

U.S. National Stage Fees	Small Entity	Regular
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Basic National fee

USPTO was IPEA		
—All claims presented satisfied provisions of PCT Article 33(2) to (4).....	47.00	94.00
—All claims presented did not satisfy provisions of PCT Article 33(2) to (4).....	340.00	680.00
USPTO was ISA but not IPEA.....	375.00	750.00
USPTO was neither ISA nor IPEA		
—Search report has not been prepared by the European Patent Office or the Japanese Patent Office.....	505.00	1010.00
—Search report has been prepared by the European Patent Office or the Japanese Patent Office.....	440.00	880.00

Other National fees

—For each independent claim in excess of 3.....	39.00	78.00
—For each claim in excess of 20 ..	11.00	22.00
—For each application containing a multiple dependent claim.....	125.00	250.00
—Surcharge for filing oath or declaration after the time limit applicable under PCT Article 22 or 39(1).....	65.00	130.00
—Processing fee for filing English translation after the time limit applicable under PCT Article 22 or 39(1).....	130.00	130.00

Nov. 27, 1995

BRUCE A. LEHMAN
Assistant Secretary of Commerce and
Commissioner of Patents and Trademarks

Notice of Maintenance Fees Payable

Title 37 Code of Federal Regulations (CFR), Section 1.362(d) provides that maintenance fees may be paid without surcharge for the six-month period beginning 3, 7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(h), as amended effective Dec. 16, 1991. If the maintenance fee is not paid in the patent requiring such payment the patent will expire on the 4th, 8th, or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on April 20, 1993 for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 5,203,033 through 5,204,992
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on April 18, 1989 for which maintenance fees due at 7 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,821,339 through 4,823,403
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on April 16, 1985 for which maintenance fees due at 11 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,510,625 through 4,512,036
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

For patents based on applications filed on or after Dec. 12, 1980, but before Aug. 27, 1982, patent owners must establish small entity status according to 37 CFR 1.27 if they have not done so and if they wish to pay the small entity amount.

The current amounts of the maintenance fees due at 3 years and six months, 7 years and six months, and 11 years and six months are set forth in 37 CFR 1.20(e)-(g), as amended Oct. 1, 1994, which are reproduced below:

37 CFR § 1.20 Post-issuance fees

(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980, in force beyond 4 years; the fee is due by three years and six months after the original grant:

By a small entity (§ 1.9(f))\$495.00
By other than a small entity\$990.00

(f) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 in force beyond 8 years; the fee is due by seven years and six months after the original grant:

By a small entity (§ 1.9(f))\$995.00
By other than a small entity\$1,990.00

(g) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 in force beyond 12 years; the fee is due by eleven years and six months after the original grant:

By a small entity (§ 1.9(f))\$1,495.00
By other than a small entity\$2,990.00

The amount of the surcharge for paying the maintenance fee during the grace period or after expiration of the patent are set forth in 37 CFR 1.20(h), and (i) which are reproduced below:

(h) Surcharge for paying a maintenance fee during the 6 month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980:

By a small entity (§ 1.9(f))\$65.00
By other than a small entity\$130.00

(i) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee

where the delay is shown to the satisfaction of the Commissioner to have been:

(1) unavoidable\$660.00
(2) unintentional\$1,550.00

Notice of Expiration of Patents Due to Failure to Pay Maintenance Fee

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the patent will expire at the end of the 4th, 8th or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENTS WHICH EXPIRED February 14, 1996 DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Serial Number	Issue Date
Re. 32,997	06/829,375	07/25/89
(4,431,160)	(06/364,815)	(02/14/84)
Re. 33,010	07/023,846	08/08/89
(4,431,129)	(06/331,557)	(02/14/84)
Re. 33,326	07/204,364	09/11/90
(4,430,959)	(06/461,231)	(02/14/84)
Re. 33,337	07/287,788	09/18/90
(4,724,285)	(06/942,068)	(02/09/88)
Re. 33,429	07/305,667	11/06/90
(4,724,240)	(06/683,603)	(02/09/88)
Re. 33,735	07/365,951	11/05/91
(4,431,187)	(06/391,988)	(02/14/84)
Re. 34,547	07/978,737	02/15/94
(5,086,598)	(07/438,942)	(02/11/92)
4,430,760	06/332,325	02/14/84
4,430,765	06/253,072	02/14/84
4,430,769	06/321,711	02/14/84
4,430,772	06/377,868	02/14/84
4,430,773	06/392,603	02/14/84
4,430,774	06/332,855	02/14/84
4,430,783	06/410,355	02/14/84
4,430,797	06/358,100	02/14/84
4,430,799	06/408,863	02/14/84
4,430,800	06/321,898	02/14/84
4,430,805	06/410,921	02/14/84
4,430,806	06/319,900	02/14/84
4,430,815	06/317,374	02/14/84
4,430,816	06/377,834	02/14/84
4,430,823	06/357,698	02/14/84
4,430,829	06/341,887	02/14/84
4,430,845	06/220,260	02/14/84
4,430,848	06/305,975	02/14/84
4,430,857	06/329,992	02/14/84
4,430,860	06/481,269	02/14/84
4,430,861	06/384,506	02/14/84
4,430,863	06/385,612	02/14/84
4,430,864	06/336,280	02/14/84
4,430,865	06/451,190	02/14/84
4,430,868	06/394,876	02/14/84
4,430,872	06/233,824	02/14/84
4,430,873	06/335,660	02/14/84
4,430,881	06/334,580	02/14/84
4,430,882	06/268,206	02/14/84
4,430,888	06/440,937	02/14/84
4,430,889	06/326,541	02/14/84
4,430,891	06/332,885	02/14/84
4,430,897	06/263,551	02/14/84
4,430,906	06/387,331	02/14/84
4,430,908	06/299,906	02/14/84
4,430,913	06/360,905	02/14/84
4,430,916	06/275,676	02/14/84
4,430,920	06/217,227	02/14/84

Patent Number	Serial Number	Issue Date	4,431,355	06/298,370	02/14/84
4,430,921	06/324,908	02/14/84	4,431,357	06/276,592	02/14/84
4,430,923	06/267,573	02/14/84	4,431,358	06/294,741	02/14/84
4,430,924	06/297,261	02/14/84	4,431,365	06/228,857	02/14/84
4,430,936	06/268,104	02/14/84	4,431,366	06/307,329	02/14/84
4,430,937	06/248,095	02/14/84	4,431,367	06/399,243	02/14/84
4,430,944	06/232,883	02/14/84	4,431,368	06/272,876	02/14/84
4,430,945	06/290,193	02/14/84	4,431,369	06/313,689	02/14/84
4,430,946	06/313,606	02/14/84	4,431,371	06/387,736	02/14/84
4,430,947	06/249,438	02/14/84	4,431,374	06/236,649	02/14/84
4,430,966	06/356,033	02/14/84	4,431,377	06/240,936	02/14/84
4,430,969	06/387,362	02/14/84	4,431,382	06/330,410	02/14/84
4,430,970	06/387,361	02/14/84	4,431,384	06/383,482	02/14/84
4,430,980	06/495,274	02/14/84	4,431,389	06/275,948	02/14/84
4,430,981	06/348,637	02/14/84	4,431,392	06/392,799	02/14/84
4,430,990	06/382,394	02/14/84	4,431,400	06/289,885	02/14/84
4,430,991	06/318,654	02/14/84	4,431,407	06/334,428	02/14/84
4,430,992	06/259,052	02/14/84	4,431,410	06/337,580	02/14/84
4,431,002	06/271,258	02/14/84	4,431,413	06/331,991	02/14/84
4,431,008	06/391,542	02/14/84	4,431,415	06/366,618	02/14/84
4,431,010	06/272,759	02/14/84	4,431,424	06/369,014	02/14/84
4,431,012	06/364,464	02/14/84	4,431,431	06/380,384	02/14/84
4,431,027	06/255,996	02/14/84	4,431,433	06/417,903	02/14/84
4,431,039	06/352,661	02/14/84	4,431,437	06/223,452	02/14/84
4,431,043	06/311,855	02/14/84	4,431,440	06/333,233	02/14/84
4,431,051	06/323,119	02/14/84	4,431,448	06/314,074	02/14/84
4,431,055	06/276,482	02/14/84	4,431,451	06/341,682	02/14/84
4,431,060	06/278,491	02/14/84	4,431,456	06/387,381	02/14/84
4,431,066	06/235,481	02/14/84	4,431,465	06/404,111	02/14/84
4,431,067	06/246,095	02/14/84	4,431,468	06/465,241	02/14/84
4,431,086	06/344,252	02/14/84	4,431,471	06/370,522	02/14/84
4,431,087	06/268,226	02/14/84	4,431,478	06/445,408	02/14/84
4,431,089	06/350,101	02/14/84	4,431,482	06/317,144	02/14/84
4,431,104	06/292,812	02/14/84	4,431,483	06/361,579	02/14/84
4,431,117	06/328,942	02/14/84	4,431,490	06/392,541	02/14/84
4,431,124	06/384,872	02/14/84	4,431,493	06/423,876	02/14/84
4,431,146	06/327,298	02/14/84	4,431,496	06/415,162	02/14/84
4,431,153	06/263,681	02/14/84	4,431,504	06/373,717	02/14/84
4,431,159	06/280,780	02/14/84	4,431,508	06/432,651	02/14/84
4,431,161	06/325,403	02/14/84	4,431,509	06/386,721	02/14/84
4,431,164	06/217,741	02/14/84	4,431,510	06/364,365	02/14/84
4,431,169	06/278,117	02/14/84	4,431,511	06/453,706	02/14/84
4,431,171	06/354,653	02/14/84	4,431,513	06/363,558	02/14/84
4,431,174	06/329,851	02/14/84	4,431,514	06/344,139	02/14/84
4,431,178	06/301,009	02/14/84	4,431,518	06/425,014	02/14/84
4,431,179	06/349,410	02/14/84	4,431,520	06/407,217	02/14/84
4,431,192	06/232,212	02/14/84	4,431,529	06/429,885	02/14/84
4,431,201	06/244,325	02/14/84	4,431,535	06/389,485	02/14/84
4,431,203	06/338,226	02/14/84	4,431,537	06/452,900	02/14/84
4,431,205	06/347,991	02/14/84	4,431,538	06/437,995	02/14/84
4,431,221	06/352,770	02/14/84	4,431,542	06/384,830	02/14/84
4,431,224	06/283,679	02/14/84	4,431,543	06/366,302	02/14/84
4,431,239	06/243,074	02/14/84	4,431,544	06/372,020	02/14/84
4,431,242	06/310,389	02/14/84	4,431,545	06/376,259	02/14/84
4,431,243	06/402,525	02/14/84	4,431,546	06/372,021	02/14/84
4,431,258	06/330,996	02/14/84	4,431,548	06/482,407	02/14/84
4,431,269	06/318,709	02/14/84	4,431,549	06/420,609	02/14/84
4,431,277	06/318,058	02/14/84	4,431,558	06/397,450	02/14/84
4,431,278	06/240,139	02/14/84	4,431,562	06/377,530	02/14/84
4,431,279	06/299,386	02/14/84	4,431,571	06/378,404	02/14/84
4,431,280	06/324,600	02/14/84	4,431,581	06/324,395	02/14/84
4,431,289	06/272,135	02/14/84	4,431,586	06/279,361	02/14/84
4,431,298	06/336,066	02/14/84	4,431,589	06/327,143	02/14/84
4,431,301	06/240,307	02/14/84	4,431,592	06/371,767	02/14/84
4,431,303	06/318,096	02/14/84	4,431,593	06/303,947	02/14/84
4,431,308	06/292,419	02/14/84	4,431,596	06/288,607	02/14/84
4,431,324	06/329,985	02/14/84	4,431,598	06/333,203	02/14/84
4,431,327	06/341,127	02/14/84	4,431,605	06/375,681	02/14/84
4,431,328	06/263,778	02/14/84	4,431,607	06/274,093	02/14/84
4,431,331	06/466,787	02/14/84	4,431,608	06/448,104	02/14/84
4,431,333	06/368,189	02/14/84	4,431,616	06/452,342	02/14/84
4,431,338	06/238,415	02/14/84	4,431,619	06/433,803	02/14/84
4,431,339	06/336,110	02/14/84	4,431,623	06/385,080	02/14/84
4,431,340	06/292,334	02/14/84	4,431,624	06/427,254	02/14/84
4,431,343	06/454,148	02/14/84	4,431,626	06/268,319	02/14/84
4,431,348	06/288,515	02/14/84	4,431,630	06/373,208	02/14/84
4,431,349	06/368,125	02/14/84	4,431,631	06/455,388	02/14/84
4,431,352	06/306,139	02/14/84	4,431,636	06/380,986	02/14/84
			4,431,637	06/436,207	02/14/84

Patent Number	Serial Number	Issue Date	4,431,913	06/295,284	02/14/84
4,431,638	06/436,751	02/14/84	4,431,914	06/296,721	02/14/84
4,431,639	06/323,609	02/14/84	4,431,921	06/230,047	02/14/84
4,431,646	06/380,181	02/14/84	4,431,928	06/276,318	02/14/84
4,431,649	06/380,207	02/14/84	4,431,934	06/315,359	02/14/84
4,431,655	06/397,631	02/14/84	4,431,940	06/282,126	02/14/84
4,431,656	06/337,168	02/14/84	4,431,942	06/318,230	02/14/84
4,431,663	06/398,702	02/14/84	4,431,944	06/302,569	02/14/84
4,431,664	06/405,332	02/14/84	4,431,948	06/406,410	02/14/84
4,431,666	06/232,298	02/14/84	4,431,955	06/326,783	02/14/84
4,431,672	06/317,226	02/14/84	4,431,960	06/319,065	02/14/84
4,431,673	06/306,054	02/14/84	4,431,962	06/357,235	02/14/84
4,431,682	06/388,767	02/14/84	4,431,969	06/324,885	02/14/84
4,431,687	06/379,296	02/14/84	4,431,972	06/301,863	02/14/84
4,431,692	06/289,429	02/14/84	4,431,973	06/279,596	02/14/84
4,431,696	06/260,814	02/14/84	4,431,975	06/250,621	02/14/84
4,431,699	06/336,732	02/14/84	4,431,978	06/363,703	02/14/84
4,431,702	06/361,245	02/14/84	4,431,979	06/283,399	02/14/84
4,431,709	06/427,057	02/14/84	4,431,981	06/421,220	02/14/84
4,431,713	06/368,535	02/14/84	4,431,983	06/323,011	02/14/84
4,431,716	06/465,722	02/14/84	4,431,990	06/346,721	02/14/84
4,431,717	06/342,234	02/14/84	4,431,992	06/325,062	02/14/84
4,431,718	06/326,271	02/14/84	4,431,993	06/228,529	02/14/84
4,431,723	06/304,371	02/14/84	4,431,999	06/396,200	02/14/84
4,431,725	06/399,583	02/14/84	4,432,000	06/380,681	02/14/84
4,431,729	06/406,323	02/14/84	4,432,003	06/313,226	02/14/84
4,431,733	06/393,590	02/14/84	4,432,005	06/376,758	02/14/84
4,431,735	06/336,593	02/14/84	4,432,014	06/261,854	02/14/84
4,431,736	06/383,456	02/14/84	4,432,021	06/331,778	02/14/84
4,431,737	06/445,844	02/14/84	4,432,030	06/362,788	02/14/84
4,431,746	06/277,495	02/14/84	4,432,040	06/369,361	02/14/84
4,431,747	06/400,004	02/14/84	4,432,041	06/453,603	02/14/84
4,431,750	06/379,804	02/14/84	4,432,054	06/297,405	02/14/84
4,431,752	06/440,047	02/14/84	4,432,055	06/306,839	02/14/84
4,431,758	06/363,799	02/14/84	4,432,062	06/226,353	02/14/84
4,431,759	06/309,693	02/14/84	4,432,067	06/406,650	02/14/84
4,431,761	06/433,598	02/14/84	4,432,068	06/298,620	02/14/84
4,431,762	06/400,383	02/14/84	4,432,069	06/229,345	02/14/84
4,431,768	06/374,828	02/14/84	4,432,071	06/327,067	02/14/84
4,431,773	06/386,458	02/14/84	4,432,076	06/249,684	02/14/84
4,431,777	06/442,337	02/14/84	4,432,079	06/317,357	02/14/84
4,431,780	06/381,854	02/14/84	4,432,085	06/316,659	02/14/84
4,431,781	06/433,984	02/14/84	4,432,093	06/333,165	02/14/84
4,431,782	06/456,225	02/14/84	4,432,095	06/302,231	02/14/84
4,431,789	06/353,508	02/14/84	4,432,097	06/296,411	02/14/84
4,431,791	06/393,469	02/14/84	4,432,322	07/025,912	02/09/88
4,431,795	06/384,566	02/14/84	4,432,328	06/760,451	02/09/88
4,431,797	06/445,434	02/14/84	4,432,330	06/879,018	02/09/88
4,431,798	06/401,234	02/14/84	4,432,331	06/891,303	02/09/88
4,431,801	06/338,542	02/14/84	4,432,340	06/893,608	02/09/88
4,431,805	06/261,927	02/14/84	4,432,341	07/026,570	02/09/88
4,431,806	06/328,638	02/14/84	4,432,345	07/007,269	02/09/88
4,431,807	06/380,176	02/14/84	4,432,352	07/067,308	02/09/88
4,431,810	06/394,185	02/14/84	4,432,354	06/824,926	02/09/88
4,431,812	06/285,168	02/14/84	4,432,365	07/004,549	02/09/88
4,431,821	06/404,788	02/14/84	4,432,367	06/839,502	02/09/88
4,431,823	06/410,113	02/14/84	4,432,370	06/891,303	02/09/88
4,431,826	06/440,657	02/14/84	4,432,371	06/893,608	02/09/88
4,431,828	06/453,633	02/14/84	4,432,372	07/026,570	02/09/88
4,431,833	06/426,016	02/14/84	4,432,373	07/007,269	02/09/88
4,431,836	06/346,834	02/14/84	4,432,374	07/067,308	02/09/88
4,431,838	06/446,076	02/14/84	4,432,376	06/824,926	02/09/88
4,431,842	06/402,931	02/14/84	4,432,378	07/004,549	02/09/88
4,431,847	06/413,203	02/14/84	4,432,381	06/839,502	02/09/88
4,431,855	06/361,154	02/14/84	4,432,386	06/891,303	02/09/88
4,431,856	06/404,317	02/14/84	4,432,387	06/893,608	02/09/88
4,431,859	06/322,665	02/14/84	4,432,390	07/026,570	02/09/88
4,431,865	06/241,068	02/14/84	4,432,391	07/007,269	02/09/88
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4,431,870	06/352,167	02/14/84	4,432,395	06/824,926	02/09/88
4,431,877	06/353,449	02/14/84	4,432,396	07/004,549	02/09/88
4,431,881	06/448,207	02/14/84	4,432,400	06/839,502	02/09/88
4,431,886	06/396,798	02/14/84	4,432,407	06/891,303	02/09/88
4,431,891	06/229,592	02/14/84	4,432,410	06/893,608	02/09/88
4,431,893	06/324,146	02/14/84	4,432,411	07/026,570	02/09/88
4,431,896	06/212,727	02/14/84	4,432,417	07/007,269	02/09/88
4,431,897	06/299,415	02/14/84	4,432,418	07/067,308	02/09/88
			4,432,426	06/824,926	02/09/88
			4,432,433	07/004,549	02/09/88

Patent Number	Serial Number	Issue Date	4,723,687	06/472,764	02/09/88
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4,723,440	06/836,893	02/09/88	4,723,695	06/926,589	02/09/88
4,723,445	06/864,800	02/09/88	4,723,696	06/908,557	02/09/88
4,723,449	06/931,201	02/09/88	4,723,697	06/896,263	02/09/88
4,723,450	06/926,941	02/09/88	4,723,700	06/912,263	02/09/88
4,723,451	06/865,446	02/09/88	4,723,706	06/822,618	02/09/88
4,723,452	06/941,582	02/09/88	4,723,707	06/814,192	02/09/88
4,723,455	06/917,723	02/09/88	4,723,709	06/875,696	02/09/88
4,723,458	06/902,319	02/09/88	4,723,710	06/894,807	02/09/88
4,723,471	06/868,125	02/09/88	4,723,711	06/888,758	02/09/88
4,723,476	06/350,679	02/09/88	4,723,715	06/822,481	02/09/88
4,723,479	07/066,826	02/09/88	4,723,717	06/408,514	02/09/88
4,723,480	06/853,554	02/09/88	4,723,719	06/945,490	02/09/88
4,723,483	06/881,264	02/09/88	4,723,720	06/864,586	02/09/88
4,723,485	06/918,127	02/09/88	4,723,721	06/938,054	02/09/88
4,723,487	06/832,514	02/09/88	4,723,723	07/031,127	02/09/88
4,723,490	06/946,958	02/09/88	4,723,729	06/919,448	02/09/88
4,723,493	06/946,336	02/09/88	4,723,732	06/775,498	02/09/88
4,723,496	07/052,366	02/09/88	4,723,733	06/853,124	02/09/88
4,723,498	06/771,806	02/09/88	4,723,735	06/687,068	02/09/88
4,723,504	06/824,892	02/09/88	4,723,736	06/898,010	02/09/88
4,723,509	06/806,642	02/09/88	4,723,737	06/788,721	02/09/88
4,723,514	06/906,415	02/09/88	4,723,741	06/929,635	02/09/88
4,723,516	06/801,473	02/09/88	4,723,748	06/905,882	02/09/88
4,723,517	07/013,092	02/09/88	4,723,749	06/864,326	02/09/88
4,723,523	06/936,108	02/09/88	4,723,751	06/888,455	02/09/88
4,723,524	06/931,041	02/09/88	4,723,752	06/826,735	02/09/88
4,723,529	06/884,058	02/09/88	4,723,753	06/931,819	02/09/88
4,723,530	06/867,984	02/09/88	4,723,754	06/931,827	02/09/88
4,723,532	06/874,482	02/09/88	4,723,757	06/850,513	02/09/88
4,723,535	06/659,227	02/09/88	4,723,761	06/866,720	02/09/88
4,723,541	06/864,415	02/09/88	4,723,764	06/834,727	02/09/88
4,723,542	06/838,700	02/09/88	4,723,766	06/913,980	02/09/88
4,723,545	06/825,412	02/09/88	4,723,767	06/894,963	02/09/88
4,723,546	06/875,181	02/09/88	4,723,769	06/908,451	02/09/88
4,723,549	06/908,988	02/09/88	4,723,771	06/796,027	02/09/88
4,723,554	06/898,740	02/09/88	4,723,773	06/920,286	02/09/88
4,723,557	06/873,823	02/09/88	4,723,777	06/865,928	02/09/88
4,723,562	06/785,409	02/09/88	4,723,778	06/926,624	02/09/88
4,723,565	06/828,501	02/09/88	4,723,780	06/919,714	02/09/88
4,723,568	06/914,584	02/09/88	4,723,781	07/052,706	02/09/88
4,723,575	07/014,519	02/09/88	4,723,785	06/893,001	02/09/88
4,723,576	06/747,940	02/09/88	4,723,786	07/015,440	02/09/88
4,723,577	06/921,747	02/09/88	4,723,787	06/834,671	02/09/88
4,723,578	06/748,318	02/09/88	4,723,790	06/836,056	02/09/88
4,723,579	06/902,455	02/09/88	4,723,793	06/899,816	02/09/88
4,723,580	06/922,944	02/09/88	4,723,797	06/865,501	02/09/88
4,723,583	06/904,366	02/09/88	4,723,800	07/056,930	02/09/88
4,723,585	07/061,350	02/09/88	4,723,805	06/915,519	02/09/88
4,723,586	06/797,577	02/09/88	4,723,808	06/626,689	02/09/88
4,723,587	06/839,190	02/09/88	4,723,810	06/744,275	02/09/88
4,723,593	06/826,919	02/09/88	4,723,811	06/855,637	02/09/88
4,723,594	06/779,056	02/09/88	4,723,814	07/001,020	02/09/88
4,723,598	06/846,490	02/09/88	4,723,819	06/873,699	02/09/88
4,723,611	06/920,644	02/09/88	4,723,822	06/905,961	02/09/88
4,723,612	06/925,311	02/09/88	4,723,823	06/899,894	02/09/88
4,723,614	06/877,987	02/09/88	4,723,825	06/829,077	02/09/88
4,723,616	06/909,932	02/09/88	4,723,828	06/670,233	02/09/88
4,723,620	06/890,349	02/09/88	4,723,829	06/758,588	02/09/88
4,723,621	06/924,293	02/09/88	4,723,837	06/671,782	02/09/88
4,723,624	06/900,526	02/09/88	4,723,841	06/694,505	02/09/88
4,723,627	06/826,871	02/09/88	4,723,847	07/015,665	02/09/88
4,723,630	07/095,041	02/09/88	4,723,849	06/767,329	02/09/88
4,723,632	06/906,522	02/09/88	4,723,854	06/856,751	02/09/88
4,723,633	07/054,752	02/09/88	4,723,856	06/824,311	02/09/88
4,723,634	06/919,980	02/09/88	4,723,865	06/890,527	02/09/88
4,723,643	06/929,055	02/09/88	4,723,869	06/854,091	02/09/88
4,723,644	06/774,253	02/09/88	4,723,872	06/642,444	02/09/88
4,723,645	06/888,886	02/09/88	4,723,873	06/888,859	02/09/88
4,723,646	06/929,269	02/09/88	4,723,875	07/014,709	02/09/88
4,723,653	06/833,903	02/09/88	4,723,878	07/025,852	02/09/88
4,723,657	07/037,389	02/09/88	4,723,879	06/850,297	02/09/88
4,723,665	07/002,301	02/09/88	4,723,885	06/808,050	02/09/88
4,723,667	07/005,158	02/09/88	4,723,890	06/859,371	02/09/88
4,723,673	07/035,100	02/09/88	4,723,894	06/937,217	02/09/88
4,723,676	06/872,848	02/09/88	4,723,897	06/934,346	02/09/88
4,723,682	06/780,568	02/09/88	4,723,898	07/009,193	02/09/88
			4,723,904	06/825,799	02/09/88

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Patent Number	Serial Number	Issue Date	4,724,173	06/823,603	02/09/88
4,723,906	06/869,499	02/09/88	4,724,176	06/585,601	02/09/88
4,723,907	06/819,984	02/09/88	4,724,178	06/932,740	02/09/88
4,723,909	07/044,035	02/09/88	4,724,181	06/866,769	02/09/88
4,723,911	06/796,913	02/09/88	4,724,189	06/739,515	02/09/88
4,723,917	06/758,987	02/09/88	4,724,197	06/868,947	02/09/88
4,723,920	06/937,773	02/09/88	4,724,203	06/784,351	02/09/88
4,723,922	07/011,943	02/09/88	4,724,204	06/523,400	02/09/88
4,723,925	07/020,398	02/09/88	4,724,205	06/630,576	02/09/88
4,723,940	06/709,320	02/09/88	4,724,214	06/455,692	02/09/88
4,723,941	06/773,404	02/09/88	4,724,217	06/842,764	02/09/88
4,723,949	06/906,957	02/09/88	4,724,220	06/817,916	02/09/88
4,723,956	06/905,738	02/09/88	4,724,221	06/883,008	02/09/88
4,723,959	06/795,541	02/09/88	4,724,227	07/052,529	02/09/88
4,723,965	06/822,032	02/09/88	4,724,236	06/944,146	02/09/88
4,723,974	06/900,675	02/09/88	4,724,238	06/850,242	02/09/88
4,723,975	06/861,951	02/09/88	4,724,244	06/042,525	02/09/88
4,723,980	07/077,966	02/09/88	4,724,247	06/886,881	02/09/88
4,723,981	07/018,120	02/09/88	4,724,252	06/895,629	02/09/88
4,723,983	06/887,788	02/09/88	4,724,253	06/874,325	02/09/88
4,723,986	06/864,238	02/09/88	4,724,254	07/023,977	02/09/88
4,723,987	06/853,094	02/09/88	4,724,255	06/945,309	02/09/88
4,723,990	07/006,412	02/09/88	4,724,259	06/673,984	02/09/88
4,723,991	06/770,257	02/09/88	4,724,261	06/933,833	02/09/88
4,723,992	06/701,971	02/09/88	4,724,266	07/076,240	02/09/88
4,723,993	07/028,824	02/09/88	4,724,267	06/866,853	02/09/88
4,723,994	06/919,931	02/09/88	4,724,272	06/601,242	02/09/88
4,724,003	07/017,642	02/09/88	4,724,275	06/750,457	02/09/88
4,724,004	06/897,684	02/09/88	4,724,279	06/881,733	02/09/88
4,724,006	06/652,780	02/09/88	4,724,280	06/894,149	02/09/88
4,724,007	06/858,859	02/09/88	4,724,281	06/874,656	02/09/88
4,724,008	06/735,484	02/09/88	4,724,284	06/787,783	02/09/88
4,724,019	07/028,632	02/09/88	4,724,294	06/834,406	02/09/88
4,724,021	06/888,567	02/09/88	4,724,296	07/068,709	02/09/88
4,724,025	06/798,404	02/09/88	4,724,300	06/837,178	02/09/88
4,724,026	06/918,365	02/09/88	4,724,305	06/821,391	02/09/88
4,724,027	06/798,127	02/09/88	4,724,312	06/898,582	02/09/88
4,724,031	06/870,607	02/09/88	4,724,314	06/754,648	02/09/88
4,724,032	06/793,464	02/09/88	4,724,316	06/824,237	02/09/88
4,724,035	07/024,250	02/09/88	4,724,328	06/721,729	02/09/88
4,724,039	06/826,682	02/09/88	4,724,333	07/027,907	02/09/88
4,724,040	06/940,733	02/09/88	4,724,334	06/755,416	02/09/88
4,724,046	06/846,255	02/09/88	4,724,338	06/781,509	02/09/88
4,724,049	06/878,787	02/09/88	4,724,347	06/677,448	02/09/88
4,724,062	06/899,605	02/09/88	4,724,348	06/809,296	02/09/88
4,724,063	06/819,461	02/09/88	4,724,352	06/859,423	02/09/88
4,724,065	06/831,904	02/09/88	4,724,354	06/877,901	02/09/88
4,724,068	06/886,482	02/09/88	4,724,355	06/920,005	02/09/88
4,724,072	06/856,994	02/09/88	4,724,359	06/910,223	02/09/88
4,724,076	06/893,190	02/09/88	4,724,371	06/929,815	02/09/88
4,724,077	06/871,921	02/09/88	4,724,375	06/804,567	02/09/88
4,724,082	06/868,166	02/09/88	4,724,380	06/863,244	02/09/88
4,724,088	06/914,827	02/09/88	4,724,407	06/891,100	02/09/88
4,724,090	07/059,176	02/09/88	4,724,409	06/911,447	02/09/88
4,724,093	06/717,678	02/09/88	4,724,410	06/882,673	02/09/88
4,724,095	06/737,044	02/09/88	4,724,411	06/926,577	02/09/88
4,724,096	06/856,892	02/09/88	4,724,414	06/842,959	02/09/88
4,724,101	06/319,826	02/09/88	4,724,418	06/756,475	02/09/88
4,724,102	06/844,834	02/09/88	4,724,425	06/796,052	02/09/88
4,724,110	07/017,860	02/09/88	4,724,435	06/658,411	02/09/88
4,724,115	06/854,235	02/09/88	4,724,438	06/868,497	02/09/88
4,724,117	06/662,655	02/09/88	4,724,440	06/867,848	02/09/88
4,724,121	06/727,377	02/09/88	4,724,441	06/868,074	02/09/88
4,724,123	07/012,789	02/09/88	4,724,447	07/015,595	02/09/88
4,724,130	06/889,728	02/09/88	4,724,448	06/843,991	02/09/88
4,724,131	06/921,808	02/09/88	4,724,449	07/009,797	02/09/88
4,724,134	06/789,437	02/09/88	4,724,454	06/947,078	02/09/88
4,724,138	06/935,058	02/09/88	4,724,459	06/940,146	02/09/88
4,724,139	06/731,871	02/09/88	4,724,464	06/945,696	02/09/88
4,724,142	07/075,905	02/09/88	4,724,465	06/912,925	02/09/88
4,724,143	07/075,906	02/09/88	4,724,468	06/938,216	02/09/88
4,724,148	06/931,924	02/09/88	4,724,474	06/717,309	02/09/88
4,724,150	06/874,246	02/09/88	4,724,479	06/700,940	02/09/88
4,724,151	06/922,590	02/09/88	4,724,482	06/922,618	02/09/88
4,724,154	06/917,081	02/09/88	4,724,489	06/599,670	02/09/88
4,724,157	06/873,881	02/09/88	4,724,494	06/784,674	02/09/88
4,724,163	06/803,571	02/09/88	4,724,495	06/836,958	02/09/88
4,724,164	06/792,442	02/09/88	4,724,498	06/896,762	02/09/88
			4,724,500	06/715,470	02/09/88
			4,724,501		

Patent Number	Serial Number	Issue Date	5,086,799	07/549,809	02/11/92
4,724,502	06/680,090	02/09/88	5,086,805	07/640,619	02/11/92
4,724,505	06/910,492	02/09/88	5,086,811	07/558,230	02/11/92
4,724,509	06/889,553	02/09/88	5,086,814	07/627,938	02/11/92
4,724,511	06/921,162	02/09/88	5,086,815	07/533,025	02/11/92
4,724,514	06/888,026	02/09/88	5,086,816	07/563,665	02/11/92
4,724,515	06/853,985	02/09/88	5,086,817	07/591,150	02/11/92
4,724,519	06/750,117	02/09/88	5,086,818	07/574,463	02/11/92
4,724,526	06/649,790	02/09/88	5,086,826	07/698,716	02/11/92
4,724,538	06/773,351	02/09/88	5,086,828	07/765,273	02/11/92
4,724,543	06/774,286	02/09/88	5,086,831	07/693,699	02/11/92
5,086,515	07/622,629	02/11/92	5,086,837	07/520,038	02/11/92
5,086,519	07/651,944	02/11/92	5,086,846	07/518,026	02/11/92
5,086,522	07/541,325	02/11/92	5,086,849	07/699,367	02/11/92
5,086,523	07/564,355	02/11/92	5,086,861	07/505,715	02/11/92
5,086,524	07/674,595	02/11/92	5,086,865	07/424,727	02/11/92
5,086,529	07/557,097	02/11/92	5,086,869	07/567,439	02/11/92
5,086,531	07/702,308	02/11/92	5,086,871	07/414,924	02/11/92
5,086,534	07/475,313	02/11/92	5,086,872	07/705,434	02/11/92
5,086,543	07/512,303	02/11/92	5,086,873	07/646,403	02/11/92
5,086,547	07/529,331	02/11/92	5,086,875	07/606,434	02/11/92
5,086,549	07/591,317	02/11/92	5,086,876	07/691,467	02/11/92
5,086,553	07/606,473	02/11/92	5,086,888	07/579,078	02/11/92
5,086,560	07/469,400	02/11/92	5,086,896	07/587,865	02/11/92
5,086,564	07/506,344	02/11/92	5,086,898	07/605,676	02/11/92
5,086,565	07/492,676	02/11/92	5,086,916	07/633,656	02/11/92
5,086,566	07/611,927	02/11/92	5,086,918	07/733,877	02/11/92
5,086,567	07/679,645	02/11/92	5,086,920	07/645,216	02/11/92
5,086,570	07/589,976	02/11/92	5,086,925	07/668,129	02/11/92
5,086,577	07/304,204	02/11/92	5,086,932	07/617,384	02/11/92
5,086,578	07/628,345	02/11/92	5,086,933	07/544,424	02/11/92
5,086,580	07/640,614	02/11/92	5,086,934	07/624,573	02/11/92
5,086,582	07/626,697	02/11/92	5,086,935	07/603,893	02/11/92
5,086,583	07/555,090	02/11/92	5,086,936	07/506,207	02/11/92
5,086,587	07/647,987	02/11/92	5,086,940	07/740,112	02/11/92
5,086,589	07/627,721	02/11/92	5,086,941	07/470,346	02/11/92
5,086,590	07/367,421	02/11/92	5,086,948	07/621,982	02/11/92
5,086,594	07/619,115	02/11/92	5,086,952	07/242,914	02/11/92
5,086,596	07/553,595	02/11/92	5,086,955	07/663,682	02/11/92
5,086,612	07/654,286	02/11/92	5,086,959	07/569,352	02/11/92
5,086,614	07/630,528	02/11/92	5,086,961	07/607,121	02/11/92
5,086,616	07/557,215	02/11/92	5,086,962	07/529,626	02/11/92
5,086,625	07/584,738	02/11/92	5,086,976	07/617,666	02/11/92
5,086,628	07/598,410	02/11/92	5,086,978	07/635,976	02/11/92
5,086,638	07/682,724	02/11/92	5,086,984	07/570,307	02/11/92
5,086,640	07/620,005	02/11/92	5,086,988	07/486,956	02/11/92
5,086,642	07/452,415	02/11/92	5,086,990	07/615,385	02/11/92
5,086,643	07/584,222	02/11/92	5,086,992	07/151,920	02/11/92
5,086,644	07/607,820	02/11/92	5,086,998	07/484,420	02/11/92
5,086,645	07/507,285	02/11/92	5,087,002	07/640,686	02/11/92
5,086,657	07/688,211	02/11/92	5,087,006	07/505,136	02/11/92
5,086,665	07/722,756	02/11/92	5,087,010	07/603,927	02/11/92
5,086,667	07/506,611	02/11/92	5,087,014	07/557,687	02/11/92
5,086,677	07/342,886	02/11/92	5,087,019	07/636,206	02/11/92
5,086,686	07/634,712	02/11/92	5,087,021	07/567,619	02/11/92
5,086,700	07/579,471	02/11/92	5,087,022	07/332,296	02/11/92
5,086,702	07/657,997	02/11/92	5,087,030	07/539,690	02/11/92
5,086,709	07/469,990	02/11/92	5,087,032	07/515,579	02/11/92

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5,087,111	07/346,553	02/11/92	5,087,492	07/527,517	02/11/92
5,087,117	07/466,323	02/11/92	5,087,495	07/334,924	02/11/92
5,087,123	07/526,779	02/11/92	5,087,496	07/655,800	02/11/92
5,087,124	07/349,231	02/11/92	5,087,499	07/520,815	02/11/92
5,087,127	07/547,078	02/11/92	5,087,506	07/494,355	02/11/92
5,087,129	07/614,204	02/11/92	5,087,510	07/497,960	02/11/92
5,087,133	07/647,840	02/11/92	5,087,513	07/624,171	02/11/92
5,087,138	07/431,433	02/11/92	5,087,514	07/400,669	02/11/92
5,087,140	07/450,537	02/11/92	5,087,528	07/367,884	02/11/92
5,087,143	07/551,895	02/11/92	5,087,533	07/638,222	02/11/92
5,087,158	07/610,476	02/11/92	5,087,547	07/487,657	02/11/92
5,087,161	07/704,735	02/11/92	5,087,563	07/494,004	02/11/92
5,087,165	07/533,927	02/11/92	5,087,570	07/192,378	02/11/92
5,087,168	07/578,260	02/11/92	5,087,574	07/536,166	02/11/92
5,087,175	07/623,882	02/11/92	5,087,575	07/520,072	02/11/92
5,087,201	07/571,831	02/11/92	5,087,592	07/528,856	02/11/92
5,087,203	07/509,712	02/11/92	5,087,599	07/287,226	02/11/92
5,087,208	07/699,132	02/11/92	5,087,606	07/529,814	02/11/92
5,087,211	07/603,306	02/11/92	5,087,607	07/556,520	02/11/92
5,087,212	07/598,370	02/11/92	5,087,609	07/586,656	02/11/92
5,087,215	07/563,072	02/11/92	5,087,610	07/314,427	02/11/92
5,087,216	07/663,573	02/11/92	5,087,616	07/082,244	02/11/92
5,087,220	07/618,916	02/11/92	5,087,620	07/524,417	02/11/92
5,087,224	07/155,930	02/11/92	5,087,626	07/404,090	02/11/92
5,087,247	07/574,370	02/11/92	5,087,638	07/372,501	02/11/92
5,087,249	07/570,504	02/11/92	5,087,639	07/266,437	02/11/92
5,087,251	07/639,328	02/11/92	5,087,643	07/415,303	02/11/92
5,087,252	07/553,613	02/11/92	5,087,647	07/372,324	02/11/92
5,087,253	06/876,767	02/11/92	5,087,649	07/625,771	02/11/92
5,087,256	07/593,790	02/11/92	5,087,659	07/416,324	02/11/92
5,087,268	07/686,819	02/11/92	5,087,662	07/271,247	02/11/92
5,087,284	07/428,489	02/11/92	5,087,674	07/595,915	02/11/92
5,087,287	07/234,951	02/11/92	5,087,676	07/413,589	02/11/92
5,087,290	07/555,572	02/11/92	5,087,681	07/391,667	02/11/92
5,087,294	07/679,445	02/11/92	5,087,684	07/661,296	02/11/92
5,087,304	07/696,372	02/11/92	5,087,690	07/301,208	02/11/92
5,087,309	07/594,280	02/11/92	5,087,692	07/534,566	02/11/92
5,087,315	07/284,632	02/11/92	5,087,700	07/498,855	02/11/92
5,087,317	07/550,321	02/11/92	5,087,702	07/647,945	02/11/92
5,087,321	07/460,581	02/11/92	5,087,703	07/508,153	02/11/92
5,087,326	07/658,284	02/11/92	5,087,712	07/582,921	02/11/92
5,087,331	07/629,615	02/11/92	5,087,713	07/469,579	02/11/92
5,087,335	07/409,211	02/11/92	5,087,718	07/460,689	02/11/92
5,087,338	07/435,837	02/11/92	5,087,719	07/589,704	02/11/92
5,087,351	07/561,566	02/11/92	5,087,725	07/513,661	02/11/92
5,087,356	07/524,110	02/11/92	5,087,731	07/593,397	02/11/92
5,087,357	07/578,684	02/11/92	5,087,761	07/550,334	02/11/92
5,087,365	07/538,125	02/11/92	5,087,768	07/593,268	02/11/92
5,087,377	07/478,668	02/11/92	5,087,773	07/512,863	02/11/92
5,087,388	07/484,533	02/11/92	5,087,774	07/550,419	02/11/92
5,087,391	07/535,212	02/11/92	5,087,779	07/514,172	02/11/92
5,087,393	07/431,593	02/11/92	5,087,781	07/710,843	02/11/92
5,087,394	07/434,031	02/11/92	5,087,783	07/610,950	02/11/92
5,087,397	07/696,082	02/11/92	5,087,784	07/606,329	02/11/92
5,087,398	07/421,956	02/11/92	5,087,785	07/621,688	02/11/92
5,087,407	07/395,090	02/11/92	5,087,787	07/700,092	02/11/92
5,087,409	07/444,174	02/11/92	5,087,789	07/571,684	02/11/92
5,087,411	07/409,490	02/11/92	5,087,791	07/615,193	02/11/92
5,087,412	07/407,515	02/11/92	5,087,796	07/511,089	02/11/92
5,087,417	07/322,479	02/11/92	5,087,797	07/646,643	02/11/92
5,087,421	07/353,942	02/11/92	5,087,799	07/652,556	02/11/92
5,087,422	07/171,136	02/11/92	5,087,807	07/492,564	02/11/92
5,087,425	07/391,585	02/11/92	5,087,811	07/571,123	02/11/92
5,087,429	07/343,833	02/11/92	5,087,819	07/701,306	02/11/92
5,087,431	07/585,886	02/11/92	5,087,822	07/506,169	02/11/92
5,087,434	07/341,650	02/11/92	5,087,824	07/642,762	02/11/92
5,087,443	07/417,791	02/11/92	5,087,828	07/561,499	02/11/92
5,087,445	07/404,751	02/11/92	5,087,836	07/590,111	02/11/92
5,087,450	07/504,616	02/11/92	5,087,848	07/393,639	02/11/92
5,087,456	07/486,798	02/11/92	5,087,858	07/704,280	02/11/92
5,087,458	07/492,851	02/11/92	5,087,866	07/585,337	02/11/92
5,087,463	07/477,403	02/11/92	5,087,879	07/579,941	02/11/92
5,087,467	07/502,428	02/11/92	5,087,883	07/589,770	02/11/92
5,087,469	07/529,000	02/11/92	5,087,886	07/490,446	02/11/92
5,087,479	07/533,387	02/11/92	5,087,901	07/530,325	02/11/92
5,087,483	07/497,781	02/11/92	5,087,903	07/464,451	02/11/92
5,087,486	07/340,282	02/11/92	5,087,908	07/209,338	02/11/92
			5,087,912	07/472,746	02/11/92

Patent Number	Serial Number	Issue Date	5,095,613, Re. S.N. 08/346,821, Nov. 16, 1994, Cl. 29/603, THIN FILM HEAD SLIDER FABRICATION PROCESS, Keith R. Hussinger, et. al., Owner of Record: <i>Quantum Corp., Milpitas, Calif.</i> , Attorney or Agent: Steve J. Frank, Ex. Gp.: 3206
5,087,947	07/564,086	02/11/92	
5,087,968	07/588,200	02/11/92	
5,087,970	07/542,461	02/11/92	
5,087,985	07/465,196	02/11/92	
5,087,986	07/450,685	02/11/92	
5,088,024	07/304,491	02/11/92	
5,088,041	07/424,825	02/11/92	
5,088,051	07/478,821	02/11/92	
5,088,054	07/192,009	02/11/92	
5,088,056	07/587,044	02/11/92	
5,088,059	07/496,941	02/11/92	
5,088,073	07/615,163	02/11/92	
5,088,096	07/547,146	02/11/92	
5,088,102	07/659,072	02/11/92	
5,088,103	07/516,943	02/11/92	

Reissue Applications Filed

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.12(b)).

D. 345,437, Re. S.N. 08/049,017, Nov. 1, 1995, Cl. D27/105, ASHTRAY, Robert Bruno, Owner of Record: *Pollenex Corp., Kansas City, Mo.*, Attorney or Agent: Michael P. Chu, Ex. Gp.: 2900

4,679,929, Re. S.N. 08/523,757, Sept. 5, 1995, Cl. 430/54, MULTIPLEX IMAGE REPRODUCING APPARATUS, Satoshi Hanedaa, et. al., Owner of Record: *Konica Corp., Tokyo, Japan*, Attorney or Agent: Jordan B. Bierman, Ex. Gp.: 1500

4,738,451, Re. S.N. 08/254,482, June 6, 1994, Cl. 273/153, MULTI-PLAYER, MULTI-CHARACTER COOPERATIVE PLAY VIDEO GAME WITH INDEPENDENT PLAYER ENTRY AND DEPARTURE, George E. Logg, Owner of Record: *Atari Games Corp., Milpitas, Calif.*, Attorney or Agent: John M. Carson, Ex. Gp.: 3304

4,887,133, Re. S.N. 08/595,524, Feb. 17, 1996, Cl. 355, PRINTER WITH SHEET INVERSION APPARATUS, Kunj-hiko Ikeda, et. al., Owner of Record: *Ricoh Co., LTD, Tokyo, Japan*, Attorney or Agent: Ivan S. Kavrukov, Ex. Gp.: 2103

4,934,329, Re. S.N. 08/431,464, May 1, 1995, Cl. 123/531, FUEL INJECTION SYSTEM FOR A MULTI-CYLINDER ENGINE, Mark Lear, et. al., Owner of Record: *Orbital Engines Co. Property LTD, Western Australia*, Attorney or Agent: John R. Fuisz, Ex. Gp.: 3402

4,938,611, Re. S.N. 08/528,059, Sept. 14, 1995, Cl. 384/133, BEARING APPARATUS, Katsutoshi Nii, et. al., Owner of Record: *Hitachi LTD, Tokyo, Japan*, Attorney or Agent: James N. Dresser, Ex. Gp.: 3503

5,031,403, Re. S.N. 08/587,524, Jan. 17, 1996, Cl. 60/464, AXLE DRIVING APPARATUS, Hideaki Okada, Owner of Record: *Kanzaki Kogyokai MFG Co. LTD, Amagasaki, Japan*, Attorney or Agent: Tracy-Gene G. Durkin, Ex. Gp.: 3401

5,038,198, Re. S.N. 08/184,783, Jan. 21, 1994, Cl. 257/717, MODULAR SEMICONDUCTOR POWER DEVICE, Antonio P. Spatrisano, Owner of Record: *SGS Thomson Microelectronics, Catania, Italy*, Attorney or Agent: Richard K. Robinson, Ex. Gp.: 2508

5,039,803, Re. S.N. 08/535,910, Sept. 28, 1995, Cl. 546/185, PROCESS FOR PREPARING ARYL-SUBSTITUTE PIPERIDINES, Paul Smith, et. al., Owner of Record: *Beecham Group P.L.C., Brentford, England*, Attorney or Agent: Robert D. Bajefsky, Ex. Gp.: 1208

5,095,613, Re. S.N. 08/346,821, Nov. 16, 1994, Cl. 29/603, THIN FILM HEAD SLIDER FABRICATION PROCESS, Keith R. Hussinger, et. al., Owner of Record: *Quantum Corp., Milpitas, Calif.*, Attorney or Agent: Steve J. Frank, Ex. Gp.: 3206

5,097,682, Re. S.N. 08/405,380, Mar. 15, 1996, Cl. 63/14.100, ACCESSORY FOR EARRING, Azuko Nakamura, et. al., Owner of Record: *Inventor*, Attorney or Agent: Barry R. Lipsitz, Ex. Gp.: 3509

5,168,339, Re. S.N. 08/330,565, Oct. 28, 1994, Cl. 257/64, THERMOELECTRIC SEMICONDUCTOR HAVING A POROUS STRUCTURE DEGENERATED IN A VACUUM AND THERMOELECTRIC PANEL USING P-TYPE AND N-TYPE THERMOELECTRIC SEMICONDUCTORS, Youichirou Yokotani, et. al., Owner of Record: *Matsushita Electrical Industries Co., Osaka, Japan*, Attorney or Agent: John T. Fedigan, Ex. Gp.: 2508

5,207,836, Re. S.N. 08/433,107, May 3, 1995, Cl. 134/001, CLEANING PROCESS FOR REMOVAL OF DEPOSITS FROM THE SUSCEPTOR OF A CHEMICAL VAPOR DEPOSITION APPARATUS, Mei Chang, Owner of Record: *Applied Materials, Inc., Santa Clara, Calif.*, Attorney or Agent: Brigit E. Morris, Ex. Gp.: 1311

5,230,457, Re. S.N. 08/506,957, July 27, 1995, Cl. 227/2, SHEET STAPLER, Masa Kazu Hiroi, et. al., Owner of Record: *Canon Kabushiki Kaisha, Tokyo, Japan*, Attorney or Agent: Scott D. Malpede, Ex. Gp.: 3204

5,233,211, Re. S.N. 08/510,422, Aug. 2, 1995, Cl. 257/347, SEMICONDUCTOR DEVICE FOR DRIVING LIGHT VALVE, Yutaka Hayashi, et. al., Owner of Record: *Seiko Instruments Inc., Tokyo, Japan*, Attorney or Agent: Bruce L. Adams, Ex. Gp.: 2508

5,241,835, Re. S.N. 08/390,512, Feb. 17, 1995, Cl. 62/372, MILK AND CEREAL CONTAINER, David Ascone, Owner of Record: *Inventor*, Attorney or Agent: Harold J. Fassnacht, Ex. Gp.: 3404

5,242,468, Re. S.N. 08/524,691, Sept. 7, 1995, Cl. 29/25.1, MANUFACTURE OF HIGH PRECISION ELECTRONIC COMPONENTS WITH ULTRA-HIGH PURITY, R. Scot Clark, et. al., Owner of Record: *Startec Ventures, Inc., Fallbrook, Calif.*, Attorney or Agent: Robert Grooven, Ex. Gp.: 1107

5,243,195, Re. S.N. 08/524,465, Sept. 7, 1995, Cl. 250/548, PROJECTION EXPOSURE APPARATUS HAVING AN OFF-AXIS ALIGNMENT SYSTEM AND METHOD OF ALIGNMENT THEREFOR, Kenji Nishi, Owner of Record: *Nikon Corp., Tokyo, Japan*, Attorney or Agent: Nelson H. Shapiro, Ex. Gp.: 2509

5,243,242, Re. S.N. 08/525,360, Sept. 7, 1995, Cl. 310/67R, IN-HUB MOTOR, Heinrich Cap, et. al., Owner of Record: *Papst Licensing GmbH, Spaichingen, Federal Republic of Germany*, Attorney or Agent: Jon P. Christensen, Ex. Gp.: 2102

5,256,144, Re. S.N. 08/548,187, Oct. 25, 1995, Cl. 604/96, LOW PROFILE HIGH PERFORMANCE INTERVENTIONAL CATHETERS, Jeff L. Kraus, et. al., Owner of Record: *Danforth Biomedical, Inc., Menlo Park, Calif.*, Attorney or Agent: M. Henry Heines, Ex. Gp.: 3306

5,261,152, Re. S.N. 08/558,480, Nov. 16, 1995, Cl. 29/609, METHOD FOR MANUFACTURING AMORPHOUS MAGNETIC CORE, Tsuneo Simozaki, et. al., Owner of Record: *Hitachi LTD and The Tokyo Electric Power Co. Inc., Tokyo, Japan*, Attorney or Agent: John R. Mattingly, Ex. Gp.: 3206

5,264,405, Re. S.N. 08/562,076, Nov. 22, 1995, Cl. 502/103, MONOCYCLOPENTADIENYL TITANIUM METAL COMPOUNDS FOR ETHYLENE-A-OLEFIN COPOLYMER PRODUCTION CATALYSTS, Jo Ann M. Canich, Owner of

Record: *Exxon Chemical Patents Inc., Baytown, Tex.*, Attorney or Agent: Glenn A. Ousterhout, Ex. Gp.: 1106

5,265,120, Re. S.N. 08/560,304, Nov. 17, 1995, Cl. 375/1, BINARY PHASE SHIFT KEYING MODULATION SYSTEM AND/OR FREQUENCY MULTIPLIER, Hugh B. Sanderford, Jr., Owner of Record: *Axon Corp., New Orleans, La.*, Attorney or Agent: Patrick C. Keane, Ex. Gp.: 2502

5,305,406, Re. S.N. 08/333,258, Dec. 14, 1995, Cl. 385/20, FIBEROPTIC CONNECTOR ASSEMBLY AND METHOD AND DEVICE FOR THE MANUFACTURE THEREOF, Michel Y. Rondeau, Owner of Record: *Fibotech, Inc., San Jose, Calif.*, Attorney or Agent: Eric B. Meyertons, Ex. Gp.: 2501

5,342,774, Re. S.N. 08/590,097, Jan. 24, 1996, Cl. 435/240.2, NUCLEOTIDE SEQUENCE ENCODING THE TUMOR REJECTION ANTIGEN PRECURSOR, MAGE-1, Thierry Boon, et. al., Owner of Record: *Ludwig Institute for Cancer Research, New York, N.Y.*, Attorney or Agent: Norman D. Hanson, Ex. Gp.: 1808

5,345,131, Re. S.N. 08/576,463, Dec. 21, 1996, Cl. 310/181, ELECTRIC MOTOR WITH COMBINED PERMANENT AND ELECTROMAGNETS, Vilmos Torok, Owner of Record: *Inventor*, Attorney or Agent: Norman J. Latker, Ex. Gp.: 2107

5,360,427, Re. S.N. 08/582,811, Jan. 4, 1996, Cl. 606/41, RETRACTABLE ELECTRO-SUCTION DEVICE, Heshmat Majlessi, Owner of Record: *Arthur D. Little Enterprises, Inc., Cambridge, Mass.*, Attorney or Agent: Jennifer McCabe Taggart, Ex. Gp.: 3309

5,366,523, Re. S.N. 08/513,219, Aug. 10, 1995, ABRASIVE ARTICLE CONTAINING SHAPED ABRASIVE PARTICLES, Donley R. Rowenhurst, et. al., Owner of Record: *Minnesota Mining and Manufacturing Co., St. Paul, Minn.*, Attorney or Agent: Doreen S.L. Gwin, Ex. Gp.: 1108

5,375,297, Re. S.N. 08/565,068, Nov. 30, 1995, Cl. 16/249, FURNITURE HINGE FOR FACE-FRAME CABINETS, Horst Lautenschlager, et. al., Owner of Record: *Mepla-Werke Lautenschlager GmbH & Co., Reinheim, Germany*, Attorney or Agent: Bruce S. Londa, Ex. Gp.: 3209

5,385,380, Re. S.N. 08/551,309, Nov. 1, 1995, Cl. 296/84.1, SPLIT WINDSHIELD ASSEMBLY FOR RECREATION, Edward J. Heavner, Owner of Record: *Plastics Manufacturing, Inc., Harrisburg, N.C.*, Attorney or Agent: Jeffrey J. Schwartz, Ex. Gp.: 3102

5,386,111, Re. S.N. 08/556,041, Nov. 13, 1995, Cl. 250/227.250, OPTICAL DETECTION OF WATER DROPLETS USING LIGHT REFRACTION WITH A MASK TO PREVENT DETECTION OF UNREFRACTED LIGHT, H. Allen Zimmerman, Owner of Record: *Inventor*, Attorney or Agent: James Campbell, Ex. Gp.: 2509

5,401,305, Re. S.N. 08/544,212, Oct. 17, 1995, Cl. 106/287.1 COATING COMPOSITIONS FOR GLASS, David A. Russo, et. al., Owner of Record: *Elm Atochem North America Inc., Philadelphia, Pa.*, Attorney or Agent: Luke A. Kilyk, Ex. Gp.: 1108

5,401,599, Re. S.N. 08/539,825, Oct. 6, 1995, Cl. 429/218, NON-AQUEOUS ELECTROLYTE SECONDARY BATTERY AND METHOD OF PRODUCING THE SAME, Kensuke Tahara, et. al., Owner of Record: *Seiko Electronic Components LTD., Taihaku-Ku, Japan*, Attorney or Agent: Bruce Adams, Ex. Gp.: 1111

5,424,870, Re. S.N. 08/554,523, Nov. 7, 1995, Cl. 359/689, COMPACT ZOOM LENS SYSTEM, Junji Hashimura, et. al., Owner of Record: *Minolta Camera Kabushiki Kaisha, Osaka, Japan*, Attorney or Agent: Joseph W. Price, Ex. Gp.: 2507

Requests for Reexaminations Filed

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

4,197,278, Reexam. No. 90/004,183, Mar. 14, 1996, Cl. 423/243.08, SEQUENTIAL REMOVAL OF SULFUR OXIDES FROM HOT GASES, Dennis C. Gehri, et. al., Owner of Record: *ABB Flakt, Inc., Knoxville, Tenn.*, Attorney or Agent: St. Onge Steward Johnston & Reens, Stamford, Conn., Ex. Gp.: 1103, Requester: Oblon Spivak McClelland Maier & Neustadt, Arlington, Va.

4,535,907, Reexam. No. 90/004,181, Mar. 13, 1996, Cl. 220/2.1A, CATHODE-RAY TUBE, Kiyoshi Tokita, et. al., Owner of Record: *Tokyo Shibaura Denki Kabushiki Kaisha, Tokyo, Japan*, Attorney or Agent: Banner Birch McKie & Beckett, Washington, D.C., Ex. Gp.: 3207, Requester: Owner

4,537,322, Reexam. No. 90/004,182, Mar. 13, 1996, Cl. 220/2.1A, GLASS ENVELOPE FOR A CATHODE-RAY TUBE, Hisafumi Okada, et. al., Owner of Record: *Tokyo Shibaura Denki Kabushiki Kaisha, Tokyo, Japan*, Attorney or Agent: Banner Birch McKie & Beckett, Washington, D.C., Ex. Gp.: 3207, Requester: Owner

4,671,490, Reexam. No. 90/004,180, Mar. 13, 1996, Cl. 251/335.2, DIAPHRAGM VALVE, Terrence J. Kolenc, et. al., Owner of Record: *Nupra Co., Willoughby, Ohio*, Attorney or Agent: Christopher B. Fagan, Fay Sharpe Beall Fagan Minnich & McKee, Cleveland, Ohio, Ex. Gp.: 3407, Requester: Owner

4,714,339, Reexam. No. 90/004,178, Mar. 12, 1996, Cl. 356/4.09, THREE AND FIVE AXIS LASER TRACKING SYSTEMS, Kam C. Lau, et. al., Owner of Record: *United States of America as represented by the Sec. of Commerce, Washington, D.C.*, Attorney or Agent: John H. Raubitschek, Dept. of Commerce, Washington, D.C., Ex. Gp.: 2505, Requester: Owner

5,398,193, Reexam. No. 90/004,179, Mar. 12, 1996, Cl. 364/468, METHOD OF THREE-DIMENSIONAL RAPID PROTOTYPING THROUGH CONTROLLED LAYERWISE DEPOSITION EXTRACTION AND APPARATUS THEREFOR, Alfredo O de Angelis, Owner of Record: *Inventor*, Attorney or Agent: Robert H. Rines, Rines and Rines, Concord, N.H., Ex. Gp.: 2306, Requester: Lynn J. Alstadt, Buchanan Ingersoll Professional Corp., Pittsburgh, Pa.

5,445,638, Reexam. No. 90/004,184, Mar. 14, 1996, Cl. 606/051, BIPOLAR COAGULATION AND CUTTING FORCEPS, Mark A. Rydell, Owner of Record: *Everest Medical Corp., Minneapolis, Minn.*, Attorney or Agent: Thomas J. Nikolai, Haugen & Nikolai, Minneapolis, Minn., Ex. Gp.: 3309, Requester: Owner

Notice of Expiration of Trademark Registrations Due To Failure to Renew

15 U.S.C. 1059 provides that each trademark registration may be renewed for periods of ten years from the end of the expiring period upon payment of the prescribed fee and the filing of an acceptable application for renewal. This may be done at any time within six months before the expiration of the period for which the registration was issued or renewed, or it may be done within three months after such expiration on payment of an additional fee.

According to the records of the Office, the trademark registrations listed below are expired due to failure to renew in accordance with 15 U.S.C. 1059.

TRADEMARK REGISTRATIONS WHICH EXPIRED DECEMBER 26, 1995 DUE TO FAILURE TO RENEW

Reg. Number	Serial Number	Reg. Date			
103,200	71/082,536	03/23/1915	1,006,833	73/013,932	03/18/1975
103,233	71/082,617	03/23/1915	1,006,834	73/013,954	03/18/1975
322,672	71/345,963	03/19/1935	1,006,838	73/020,711	03/18/1975
322,673	71/345,958	03/19/1935	1,006,848	73/025,572	03/18/1975
322,711	71/358,377	03/19/1935	1,006,849	73/025,574	03/18/1975
322,712	71/358,365	03/19/1935	1,006,850	73/025,575	03/18/1975
322,731	71/357,355	03/19/1935	1,006,851	73/025,576	03/18/1975
322,732	71/357,470	03/19/1935	1,006,852	73/001,354	03/18/1975
322,734	71/358,205	03/19/1935	1,006,855	73/027,442	03/18/1975
322,754	71/357,709	03/19/1935	1,006,862	73/021,605	03/18/1975
322,777	71/358,414	03/19/1935	1,006,863	73/025,145	03/18/1975
322,779	71/358,000	03/19/1935	1,006,868	73/004,028	03/18/1975
322,793	71/356,289	03/19/1935	1,006,869	73/006,380	03/18/1975
322,844	71/337,980	03/19/1935	1,006,877	73/018,707	03/18/1975
322,845	71/333,215	03/19/1935	1,006,879	73/022,634	03/18/1975
603,462	71/656,968	03/22/1955	1,006,880	73/025,200	03/18/1975
603,465	71/632,591	03/22/1955	1,006,881	73/000,421	03/18/1975
603,468	71/645,715	03/22/1955	1,006,888	73/000,389	03/18/1975
603,480	71/670,102	03/22/1955	1,006,892	73/024,143	03/18/1975
603,490	71/665,932	03/22/1955	1,006,897	73/016,524	03/18/1975
603,491	71/666,534	03/22/1955	1,006,903	73/004,626	03/18/1975
603,492	71/666,861	03/22/1955	1,006,904	73/004,636	03/18/1975
603,498	71/638,323	03/22/1955	1,006,912	73/004,157	03/18/1975
603,510	71/667,478	03/22/1955	1,006,913	73/006,727	03/18/1975
603,519	71/658,218	03/22/1955	1,006,914	73/008,397	03/18/1975
603,520	71/659,512	03/22/1955	1,006,931	73/021,783	03/18/1975
603,527	71/668,880	03/22/1955	1,006,936	73/004,706	03/18/1975
603,536	71/651,838	03/22/1955	1,006,937	73/004,710	03/18/1975
603,563	71/630,631	03/22/1955	1,006,939	73/006,427	03/18/1975
603,572	71/642,891	03/22/1955	1,006,941	73/004,708	03/18/1975
603,573	71/646,754	03/22/1955	1,006,944	73/017,593	03/18/1975
603,575	71/649,085	03/22/1955	1,006,946	73/017,709	03/18/1975
603,578	71/650,670	03/22/1955	1,006,947	73/020,000	03/18/1975
603,581	71/656,536	03/22/1955	1,006,954	73/014,362	03/18/1975
603,583	71/661,075	03/22/1955	1,006,955	73/017,866	03/18/1975
603,593	71/656,773	03/22/1955	1,006,964	73/012,045	03/18/1975
603,603	71/653,107	03/22/1955	1,006,965	73/015,027	03/18/1975
603,626	71/669,269	03/22/1955	1,006,966	73/016,820	03/18/1975
603,627	71/609,898	03/22/1955	1,006,969	73/004,675	03/18/1975
603,637	71/659,138	03/22/1955	1,006,970	73/009,455	03/18/1975
603,638	71/659,139	03/22/1955	1,006,972	73/019,764	03/18/1975
603,648	71/667,778	03/22/1955	1,006,975	73/005,494	03/18/1975
603,653	71/668,038	03/22/1955	1,006,976	73/000,582	03/18/1975
603,657	71/668,490	03/22/1955	1,006,978	73/000,899	03/18/1975
603,659	71/668,504	03/22/1955	1,006,982	73/010,034	03/18/1975
603,675	71/670,517	03/22/1955	1,006,983	73/011,403	03/18/1975
603,705	71/664,850	03/22/1955	1,006,984	73/012,369	03/18/1975
603,711	71/662,111	03/22/1955	1,006,986	73/013,830	03/18/1975
603,716	71/665,051	03/22/1955	1,006,987	73/004,707	03/18/1975
603,721	71/664,861	03/22/1955	1,006,988	73/004,709	03/18/1975
603,755	71/670,412	03/22/1955	1,006,989	73/019,026	03/18/1975
603,757	71/658,818	03/22/1955	1,006,990	73/019,027	03/18/1975
603,758	71/670,302	03/22/1955	1,006,991	73/021,294	03/18/1975
603,759	71/653,533	03/22/1955	1,007,005	73/006,504	03/18/1975
1,006,786	73/006,143	03/18/1975	1,007,009	72/442,419	03/18/1975
1,006,796	73/027,790	03/18/1975	1,007,010	72/458,866	03/18/1975
1,006,800	73/000,229	03/18/1975	1,007,013	72/466,946	03/18/1975
1,006,801	73/003,353	03/18/1975	1,007,015	72/436,872	03/18/1975
1,006,802	73/004,542	03/18/1975	1,007,016	72/440,793	03/18/1975
1,006,803	73/004,625	03/18/1975	1,007,019	72/460,352	03/18/1975
1,006,804	73/012,549	03/18/1975	1,007,020	72/458,303	03/18/1975
1,006,807	73/013,859	03/18/1975	1,007,021	72/460,557	03/18/1975
1,006,809	73/014,690	03/18/1975	1,007,022	72/462,000	03/18/1975
1,006,813	73/015,092	03/18/1975	1,007,023	72/463,567	03/18/1975
1,006,814	73/017,748	03/18/1975	1,007,024	72/463,569	03/18/1975
1,006,817	73/018,425	03/18/1975	1,007,025	72/463,586	03/18/1975
1,006,818	73/020,434	03/18/1975	1,007,026	72/463,758	03/18/1975
1,006,819	73/020,436	03/18/1975	1,007,027	72/429,860	03/18/1975
1,006,822	73/000,125	03/18/1975	1,007,028	72/433,828	03/18/1975
1,006,823	73/008,832	03/18/1975	1,007,029	72/464,202	03/18/1975
1,006,824	73/009,547	03/18/1975	1,007,033	72/460,042	03/18/1975
1,006,831	73/007,579	03/18/1975	1,007,036	72/441,440	03/18/1975
1,006,832	73/010,037	03/18/1975	1,007,037	72/462,062	03/18/1975
			1,007,039	72/466,782	03/18/1975
			1,007,042	72/451,570	03/18/1975
			1,007,054	72/357,399	03/18/1975
			1,007,056	72/434,515	03/18/1975
			1,007,057	72/434,536	03/18/1975
			1,007,065	72/463,757	03/18/1975

Reg. Number	Serial Number	Reg. Date	1,007,289	73/012,682	03/25/1975
1,007,068	72/466,793	03/18/1975	1,007,291	73/014,782	03/25/1975
1,007,069	72/321,087	03/18/1975	1,007,292	73/017,135	03/25/1975
1,007,070	72/422,761	03/18/1975	1,007,293	73/017,746	03/25/1975
1,007,071	72/443,625	03/18/1975	1,007,294	73/021,659	03/25/1975
1,007,072	72/444,728	03/18/1975	1,007,295	73/024,120	03/25/1975
1,007,076	72/457,966	03/18/1975	1,007,296	73/026,761	03/25/1975
1,007,080	72/422,748	03/18/1975	1,007,297	73/001,008	03/25/1975
1,007,087	72/454,279	03/18/1975	1,007,299	73/005,901	03/25/1975
1,007,089	72/457,689	03/18/1975	1,007,302	73/006,922	03/25/1975
1,007,090	72/460,803	03/18/1975	1,007,303	73/007,875	03/25/1975
1,007,094	72/459,349	03/18/1975	1,007,304	73/009,326	03/25/1975
1,007,095	72/461,630	03/18/1975	1,007,307	73/012,569	03/25/1975
1,007,097	72/451,575	03/18/1975	1,007,311	73/013,057	03/25/1975
1,007,101	72/457,160	03/18/1975	1,007,314	73/014,446	03/25/1975
1,007,103	72/451,187	03/18/1975	1,007,315	73/015,506	03/25/1975
1,007,104	72/452,984	03/18/1975	1,007,319	73/021,694	03/25/1975
1,007,106	72/455,196	03/18/1975	1,007,320	73/025,543	03/25/1975
1,007,111	72/447,937	03/18/1975	1,007,323	73/026,183	03/25/1975
1,007,112	72/452,314	03/18/1975	1,007,325	73/010,346	03/25/1975
1,007,113	72/455,363	03/18/1975	1,007,329	73/015,608	03/25/1975
1,007,117	72/462,194	03/18/1975	1,007,331	73/018,786	03/25/1975
1,007,118	72/462,718	03/18/1975	1,007,332	73/009,893	03/25/1975
1,007,121	72/465,245	03/18/1975	1,007,333	73/013,584	03/25/1975
1,007,125	72/447,205	03/18/1975	1,007,334	73/015,183	03/25/1975
1,007,133	72/447,295	03/18/1975	1,007,335	73/015,338	03/25/1975
1,007,134	72/454,777	03/18/1975	1,007,337	73/016,639	03/25/1975
1,007,136	72/465,502	03/18/1975	1,007,339	73/005,741	03/25/1975
1,007,138	72/377,871	03/18/1975	1,007,341	73/013,098	03/25/1975
1,007,144	72/459,355	03/18/1975	1,007,342	73/016,640	03/25/1975
1,007,147	72/335,013	03/18/1975	1,007,346	73/024,636	03/25/1975
1,007,149	72/421,180	03/18/1975	1,007,349	73/026,307	03/25/1975
1,007,160	72/438,026	03/18/1975	1,007,352	73/004,507	03/25/1975
1,007,162	72/417,419	03/18/1975	1,007,358	73/000,718	03/25/1975
1,007,168	72/422,621	03/18/1975	1,007,359	73/003,102	03/25/1975
1,007,172	72/457,631	03/18/1975	1,007,364	73/006,924	03/25/1975
1,007,180	72/430,633	03/18/1975	1,007,368	73/009,740	03/25/1975
1,007,181	72/453,870	03/18/1975	1,007,369	73/009,821	03/25/1975
1,007,183	73/006,781	03/18/1975	1,007,370	73/010,676	03/25/1975
1,007,184	73/006,782	03/18/1975	1,007,373	73/012,913	03/25/1975
1,007,187	73/011,474	03/18/1975	1,007,378	73/019,043	03/25/1975
1,007,189	73/007,664	03/18/1975	1,007,380	73/019,219	03/25/1975
1,007,191	73/004,922	03/18/1975	1,007,383	73/021,933	03/25/1975
1,007,194	73/027,183	03/18/1975	1,007,385	73/023,126	03/25/1975
1,007,210	72/412,886	03/18/1975	1,007,386	73/023,603	03/25/1975
1,007,214	72/463,528	03/18/1975	1,007,394	73/024,652	03/25/1975
1,007,216	72/462,312	03/18/1975	1,007,408	73/014,239	03/25/1975
1,007,218	72/450,326	03/18/1975	1,007,414	73/032,086	03/25/1975
1,007,219	72/460,652	03/18/1975	1,007,417	73/016,564	03/25/1975
1,007,220	72/438,127	03/18/1975	1,007,418	73/019,956	03/25/1975
1,007,223	73/009,388	03/25/1975	1,007,419	73/019,957	03/25/1975
1,007,224	73/014,430	03/25/1975	1,007,422	73/003,094	03/25/1975
1,007,226	73/000,700	03/25/1975	1,007,423	73/005,863	03/25/1975
1,007,228	73/017,287	03/25/1975	1,007,429	73/015,521	03/25/1975
1,007,229	73/024,335	03/25/1975	1,007,432	73/016,211	03/25/1975
1,007,232	73/033,512	03/25/1975	1,007,433	73/018,284	03/25/1975
1,007,233	73/000,630	03/25/1975	1,007,435	73/019,501	03/25/1975
1,007,235	73/001,813	03/25/1975	1,007,436	73/020,459	03/25/1975
1,007,237	73/003,948	03/25/1975	1,007,443	73/003,118	03/25/1975
1,007,238	73/007,454	03/25/1975	1,007,445	73/006,752	03/25/1975
1,007,239	73/008,466	03/25/1975	1,007,453	73/019,914	03/25/1975
1,007,240	73/013,723	03/25/1975	1,007,454	73/022,013	03/25/1975
1,007,243	73/018,465	03/25/1975	1,007,456	73/002,505	03/25/1975
1,007,244	73/018,596	03/25/1975	1,007,457	73/002,685	03/25/1975
1,007,245	73/019,242	03/25/1975	1,007,459	73/012,103	03/25/1975
1,007,246	73/019,964	03/25/1975	1,007,465	73/017,935	03/25/1975
1,007,248	73/020,581	03/25/1975	1,007,467	73/020,839	03/25/1975
1,007,249	73/020,721	03/25/1975	1,007,469	73/008,351	03/25/1975
1,007,250	73/020,730	03/25/1975	1,007,472	73/024,047	03/25/1975
1,007,253	73/020,989	03/25/1975	1,007,474	73/013,971	03/25/1975
1,007,264	73/013,931	03/25/1975	1,007,475	73/026,617	03/25/1975
1,007,271	73/023,877	03/25/1975	1,007,477	73/002,598	03/25/1975
1,007,273	73/005,088	03/25/1975	1,007,480	73/012,719	03/25/1975
1,007,276	73/013,666	03/25/1975	1,007,486	73/006,185	03/25/1975
1,007,277	73/015,019	03/25/1975	1,007,497	73/005,958	03/25/1975
1,007,281	73/032,155	03/25/1975	1,007,499	73/011,958	03/25/1975
1,007,284	73/008,104	03/25/1975	1,007,503	73/024,905	03/25/1975
1,007,285	73/008,574	03/25/1975	1,007,509	73/012,734	03/25/1975
			1,007,511	73/012,997	03/25/1975

Reg. Number	Serial Number	Reg. Date	1,007,702	72/450,258	03/25/1975
1,007,512	73/013,176	03/25/1975	1,007,708	72/459,624	03/25/1975
1,007,513	73/014,666	03/25/1975	1,007,709	72/440,626	03/25/1975
1,007,514	73/014,738	03/25/1975	1,007,710	72/449,714	03/25/1975
1,007,515	73/017,291	03/25/1975	1,007,713	72/460,183	03/25/1975
1,007,516	73/019,220	03/25/1975	1,007,715	72/448,713	03/25/1975
1,007,517	73/019,221	03/25/1975	1,007,718	72/444,492	03/25/1975
1,007,518	73/019,668	03/25/1975	1,007,727	73/009,317	03/25/1975
1,007,523	73/031,633	03/25/1975	1,007,728	73/002,945	03/25/1975
1,007,528	72/454,147	03/25/1975	1,007,729	73/001,292	03/25/1975
1,007,531	72/463,385	03/25/1975	1,007,732	73/009,538	03/25/1975
1,007,534	72/450,931	03/25/1975	1,007,734	73/016,002	03/25/1975
1,007,535	72/438,869	03/25/1975	1,007,735	73/016,003	03/25/1975
1,007,536	72/449,126	03/25/1975	1,007,736	73/016,014	03/25/1975
1,007,540	72/446,863	03/25/1975	1,007,737	73/022,432	03/25/1975
1,007,541	72/393,897	03/25/1975	1,007,741	72/452,221	03/25/1975
1,007,549	72/461,987	03/25/1975	1,007,745	72/464,542	03/25/1975
1,007,550	72/429,899	03/25/1975			
1,007,552	72/408,285	03/25/1975			
1,007,554	72/445,161	03/25/1975			
1,007,556	72/463,076	03/25/1975			
1,007,559	72/442,977	03/25/1975			
1,007,568	72/457,756	03/25/1975			
1,007,569	72/458,802	03/25/1975			
1,007,570	72/459,657	03/25/1975			
1,007,578	72/429,268	03/25/1975			
1,007,585	72/453,073	03/25/1975			
1,007,590	72/461,752	03/25/1975			
1,007,591	72/464,802	03/25/1975			
1,007,595	72/453,211	03/25/1975			
1,007,597	72/437,376	03/25/1975			
1,007,598	72/440,554	03/25/1975			
1,007,599	72/444,569	03/25/1975			
1,007,600	72/445,378	03/25/1975			
1,007,601	72/456,087	03/25/1975			
1,007,602	72/457,282	03/25/1975			
1,007,603	72/459,017	03/25/1975			
1,007,606	72/465,646	03/25/1975			
1,007,609	72/420,140	03/25/1975			
1,007,610	72/464,840	03/25/1975			
1,007,611	72/457,898	03/25/1975			
1,007,612	72/437,997	03/25/1975			
1,007,613	72/433,452	03/25/1975			
1,007,614	72/457,892	03/25/1975			
1,007,620	72/456,218	03/25/1975			
1,007,622	72/464,982	03/25/1975			
1,007,627	72/452,997	03/25/1975			
1,007,633	72/447,876	03/25/1975			
1,007,635	72/451,967	03/25/1975			
1,007,637	72/458,422	03/25/1975			
1,007,642	72/431,134	03/25/1975			
1,007,644	72/453,323	03/25/1975			
1,007,646	72/456,234	03/25/1975			
1,007,650	72/461,897	03/25/1975			
1,007,651	72/462,290	03/25/1975			
1,007,653	72/463,313	03/25/1975			
1,007,654	72/463,890	03/25/1975			
1,007,657	72/431,685	03/25/1975			
1,007,658	72/454,095	03/25/1975			
1,007,659	72/458,308	03/25/1975			
1,007,661	72/463,002	03/25/1975			
1,007,662	72/464,912	03/25/1975			
1,007,663	72/465,503	03/25/1975			
1,007,664	72/465,562	03/25/1975			
1,007,665	72/465,830	03/25/1975			
1,007,666	72/447,693	03/25/1975			
1,007,667	72/447,694	03/25/1975			
1,007,670	72/457,671	03/25/1975			
1,007,671	72/459,444	03/25/1975			
1,007,677	72/454,011	03/25/1975			
1,007,684	72/464,697	03/25/1975			
1,007,685	72/466,801	03/25/1975			
1,007,687	72/418,554	03/25/1975			
1,007,688	72/431,326	03/25/1975			
1,007,689	72/431,327	03/25/1975			
1,007,690	72/448,170	03/25/1975			
1,007,695	72/465,258	03/25/1975			
1,007,701	72/449,715	03/25/1975			

Registration To Practice

The following person successfully passed the registration examination that was held April 13, 1994, and has been given provisional recognition pursuant to 37 CFR 10.9(a) to prepare and prosecute patent applications before the Office until applicant's registration certificate is mailed to applicant. Final approval for registration is subject to establishing to the satisfaction of the Director of the Office of Enrollment and Discipline that the person seeking registration is of good moral character and repute. [37 CFR 10.7(a)]. Accordingly, any information tending to affect the eligibility of the following applicant on moral, ethical, or other grounds should be furnished to the Director, Office of Enrollment and Discipline on or before June 7, 1996.

Cohen, Cheryl, 304 Berkshire Ave., Cherry Hill, N.J. 08002

March 26, 1996

KAREN L. BOVARD, *Director*
Office of Enrollment and Discipline

Registration To Practice

The following list contains the names of persons applying for registration to practice before the United States Patent and Trademark Office who have been given provisional recognition pursuant to 37 CFR 10.9(a) to prepare and prosecute patent applications before the Office until their registration certificates are mailed to them. Final approval for registration is subject to establishing to the satisfaction of the Director of the Office of Enrollment and Discipline that the person seeking registration is of good moral character and repute. [37 CFR 10.7(a)]. Accordingly, any information tending to affect the eligibility of any of the following applicants on moral, ethical, or other grounds should be furnished to the Director, Office of Enrollment and Discipline on or before June 7, 1996.

Langlois, Martin, 1550 Dr. Penfield, #403, Montreal, Que., H3G 1C2, Canada

Parsons, Nancy J., 5610 Huntington Ave., Richmond, Calif. 94804

Rand, Scott C., 6309 South 108th Ave., Omaha, Neb. 68137

Townsend, Keith J., 9602 Lindebrook St., Fairfax, Va. 22031

March 26, 1996

KAREN L. BOVARD, *Director*
Office of Enrollment and Discipline

Registration To Practice

The following person successfully passed the registration examination that was held November 2, 1994, and has been given provisional recognition pursuant to 37 CFR 10.9(a) to prepare and prosecute patent applications before the Office

until applicant's registration certificate is mailed to applicant. Final approval for registration is subject to establishing to the satisfaction of the Director of the Office of Enrollment and Discipline that the person seeking registration is of good moral character and repute. [37 CFR 10.7(a)]. Accordingly, any information tending to affect the eligibility of the following applicant on moral, ethical, or other grounds should be furnished to the Director, Office of Enrollment and Discipline on or before June 7, 1994.

Greaves, John N., 3174 South 1765 East, Salt Lake City, Utah 84106

March 26, 1996

KAREN L. BOVARD, *Director*
Office of Enrollment and Discipline

Service by Publication

A petition to cancel the registrations identified below having been filed, and the notice of such proceeding sent by certified mail to registrant at the last known address having been returned by the Postal Service as undeliverable, notice is hereby given that unless the registrant listed herein, their assigns or legal representatives, shall enter an appearance within thirty days of this publication, the cancellation will proceed as in the case of default.

Washington Manufacturing Company, Nashville, Tenn., Reg. No. 759,725 for the mark GOLD STAR, Canc. No. 24,093.

John One Ten Partnership, Santa Ana, Calif., Reg. No. 1,151,782 for the mark DESIGN OF DESCENDING DOVE, Canc. No. 24,152.

Golfstix USA, Inc., Dallas, Tex., Reg. No. 1,663,505 for the mark GOLF STIX, Canc. No. 24,218.

Yuppie Gourmet, Inc., Racine, Wis., Reg. No. 1,616,906 for the mark THE ELITE TREAT! AND DESIGN, Canc. No. 24,231.

Ava Enterprises, Inc., Los Angeles, Calif., Reg. No. 1,730,794 for the mark BOSS AUDIO SYSTEMS (STYLIZED), Canc. No. 24,248.

Mr. Parts, Inc., Oklahoma City, Okla., Reg. No. 1,044,782 for the mark MR. PARTS, Canc. No. 24,304.

Bini Imports Corp., Jackson Heights, N.Y., Reg. No. 1,764,742 for the mark ALEN AND DESIGN, Canc. No. 24,421.

The VCM Group, Inc., Prescott, Ariz., Reg. No. 693,472 for the mark SILENT GIANT, Canc. No. 23,106

JEAN BROWN
Technical Support Manager,
Trademark Trial
and Appeal Board, for
ROBERT M. ANDERSON
Deputy Assistant Commissioner
for Trademarks

Certificate of Correction For Week of April 23, 1996

B1 5,117,623	D. 366,421	5,288,708	5,369,001
Re. 34,004	D. 366,479	5,312,738	5,375,703
Re. 35,074	4,726,609	5,327,852	5,378,350
D. 358,171	4,962,048	5,328,740	5,381,042
D. 359,284	5,021,180	5,339,093	5,383,854
D. 362,698	5,098,870	5,355,096	5,387,747
D. 364,121	5,117,623	5,361,010	5,388,870
D. 364,583	5,126,264	5,361,313	5,389,957
D. 365,418	5,166,890	5,362,167	5,391,564
D. 365,994	5,280,309	5,365,591	5,391,690

5,392,051	5,450,536	5,466,282	5,474,921
5,397,827	5,450,722	5,466,308	5,475,110
5,398,107	5,450,823	5,466,605	5,475,194
5,398,972	5,451,406	5,466,702	5,475,259
5,400,110	5,451,446	5,466,912	5,475,612
5,400,826	5,451,759	5,467,161	5,475,675
5,403,194	5,451,860	5,467,200	5,475,861
5,405,205	5,452,392	5,467,464	5,476,587
5,407,644	5,452,399	5,467,757	5,476,592
5,407,687	5,452,756	5,467,960	5,476,642
5,412,488	5,453,003	5,468,257	5,477,063
5,414,131	5,453,784	5,468,318	5,477,387
5,414,735	5,453,963	5,468,483	5,477,554
5,414,787	5,454,070	5,468,486	5,477,981
5,415,971	5,455,001	5,468,553	5,478,402
5,418,134	5,455,005	5,468,881	5,478,706
5,418,864	5,455,101	5,468,998	5,479,033
5,419,360	5,455,135	5,469,129	5,479,078
5,420,015	5,455,614	5,469,281	5,479,432
5,420,271	5,455,851	5,469,329	5,479,608
5,421,422	5,456,692	5,469,489	5,481,029
5,421,588	5,456,948	5,469,501	5,481,144
5,423,303	5,457,194	5,469,514	5,481,332
5,424,448	5,457,239	5,469,560	5,481,337
5,425,998	5,458,528	5,469,569	5,481,365
5,426,101	5,458,902	5,469,867	5,481,436
5,428,332	5,459,136	5,469,963	5,481,683
5,430,656	5,459,580	5,470,397	5,481,849
5,431,071	5,459,793	5,470,620	5,482,294
5,431,716	5,459,856	5,470,702	5,483,174
5,433,282	5,460,349	5,470,808	5,483,315
5,433,966	5,460,681	5,471,309	5,483,546
5,434,535	5,460,889	5,471,362	5,483,848
5,434,913	5,461,134	5,471,391	5,484,754
5,435,399	5,461,633	5,471,428	5,484,844
5,438,301	5,461,667	5,471,495	5,484,853
5,439,021	5,462,206	5,471,540	5,485,360
5,439,616	5,462,458	5,471,606	5,485,561
5,441,127	5,462,538	5,471,631	5,485,688
5,441,777	5,462,724	5,471,676	5,485,891
5,441,979	5,463,042	5,471,722	5,485,976
5,442,484	5,463,837	5,472,509	5,486,500
5,443,297	5,463,900	5,472,658	5,486,733
5,444,338	5,464,020	5,472,856	5,486,860
5,444,684	5,464,207	5,473,046	5,486,957
5,446,161	5,464,332	5,473,133	5,487,130
5,447,381	5,464,525	5,473,210	5,487,206
5,447,813	5,464,668	5,473,248	5,487,342
5,448,637	5,464,701	5,473,304	5,487,794
5,448,670	5,464,720	5,473,343	5,487,883
5,449,960	5,464,730	5,473,511	5,488,084
5,449,999	5,464,871	5,473,991	5,488,095
5,450,250	5,465,149	5,474,070	5,489,374
5,450,471	5,465,219	5,474,418	5,490,523

Summary of Final Decisions

Issued by the

Trademark Trial and Appeal Board

January 22-26, 1996

Date Issued	Type of Case ⁽¹⁾	Proceeding or App'n No.	Party/Parties	Issue	TTAB Decision	Opposer's/ Petitioner's Mark and Goods/Services	Applicant's/ Respondent's Mark and Goods/Services	Mark and Goods Cited by Examining Attorney	Recommended for Publication
1-22	CANC	19,157	X-Isle Corp. v. Allegra, Inc. and U.S. Optical Merchants, Inc.	counterclaim for cancellation on 2(d) grounds	Counterclaim for cancellation granted	"X-ISLE" [retail store services featuring the sale of skateboards, surfboards, and beachwear]	Counterclaimant's mark: "X-ISLE" [optical goods, namely, eyeglasses, eyeglass cases, sunglasses frames, sunglasses and shields]		No
1-25	EX	74/396,628	U.S. Tennis Corp.	2(e)(2)	Refusal Affirmed		"UNITED STATES TENNIS CORPORATION" [novelty item, namely, a tennis ball carrier]		No
1-25	OPP	92,796	Mirror Lite Co. v. Eagle Eyes Traffic Industrial Co., Ltd.	2(d)	Opposition Sustained	"EAGLE" [vehicle mirrors]	"EAGLE EYES" [and eagle's head design] [lights for vehicles, namely, headlights, directional lights, corner lamps, fog lights, and rear lamps]		No
1-25	EX (R)	74/325,613	American Needle, Inc.	whether the matter asserted for registration functions as a trademark for applicant's goods or is, instead, mere ornamentation	Request for Reconsideration Denied [Refusal Affirmed]		a design within one of the curved triangular panels on a cap, the design consisting of tapered lettering (of, for example, a sports team name) declining in size from the base to the crown of the cap [caps]		No

(1) EX = EX PARTE APPEAL; OPP = OPPOSITION; CANC = CANCELLATION; CU = CONCURRENT USE; (R) = REQ. FOR RECONSIDERATION

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Box Reconstruction	Correspondence pertaining to the reconstruction of lost patent files.
Box Reexam	Requests for Reexamination for <i>original</i> request papers <i>only</i> .
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Box SN	For fee and petitions under 37 CFR 1.182 to obtain date received and/or serial number for patent applications <i>prior</i> to the Office's standard notification (return postcard or the official "Filing Receipt," "Notice to File Missing Parts," or "Notice of Incomplete Application").

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Box TTAB FEE	Oppositions, cancellation petitions, and ex parte appeals.
Box TTAB NO FEE	Interferences, motions, and extension requests.
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Box 6	Mail for the Office of Procurement.
Box 8	All papers for the Office of the Solicitor <i>except</i> communications relating to <i>pending litigation and disciplinary proceedings</i> ; papers relating to pending litigation in court cases shall be mailed only to Office of the Solicitor, P.O. Box 15667, Arlington, Virginia 22215 and papers relating to pending disciplinary proceedings before the Administrative Law Judge or the Commissioner shall be mailed only to the Office of the Solicitor, P.O. Box 16116, Arlington, Virginia 22215.
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Box 10	Orders for certified copies of PTO documents.
Box 11	Electronic Ordering Service (EOS).
Box 13	Mail for the Employee and Labor Relations Division.
Box 14	Mail directed to the APS Contracts Office.
Box 16	Deposit Account Replenishment Checks.
Box 17	Invoices directed to the Office of Finance.
Box 171	Vacancy Announcement Applications.
Box Assignment	All assignment documents except those filed with new applications.
Box EEO	Mail for the Office of Civil Rights.
Box OED	Mail for the Office of Enrollment and Discipline.

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In addition, each PTDL offers reference publications which outline and provide access to the patent and trademark classification systems, as well as other documents and publications which supplement the basic search tools. PTDLs provide technical staff assistance in using all materials. Facilities for making paper copies of patent and trademark information are generally provided for a fee.

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	San Diego Public Library	(619) 236-5813
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	Orlando: University of Central Florida Libraries	(407) 823-2562
	Tampa Campus Library, University of South Florida	(813) 974-2726
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Illinois	Chicago Public Library	(312) 747-4450
	Springfield: Illinois State Library	(217) 782-5659
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	West Lafayette Siegesmund Engineering Library, Purdue University	(317) 494-2872
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Nevada	Reno: University of Nevada, Reno Library	(702) 784-6579
New Hampshire	Concord: New Hampshire State Library	Not Yet Operational
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	Piscataway: Library of Science and Medicine, Rutgers University	(908) 445-2895
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State	Name of Library	Telephone Contact
North Carolina	New York Public Library (The Research Libraries)	(212) 930-0917
	Raleigh: D.H. Hill Library, North Carolina State University	(919) 515-3280
North Dakota	Grand Forks: Chester Fritz Library, University of North Dakota	(701) 777-4888
Ohio	Akron - Summit County Public Library	Not Yet Operational
	Cincinnati and Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 292-6175
	Toledo/Lucas County Public Library	(419) 259-5212
Oklahoma	Stillwater: Oklahoma State University Center for International Trade Development	(405) 744-7086
Oregon	Portland: Paul L. Boley Law Library, Lewis & Clark College	(503) 768-6786
Pennsylvania	Philadelphia: The Free Library of	(215) 686-5331
	Pittsburgh: Carnegie Library of	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Puerto Rico	Mayaguez General Library, University of Puerto Rico	Not Yet Operational
Rhode Island	Providence Public Library	(401) 455-8027
South Carolina	Clemson University Libraries	(803) 656-3024
South Dakota	Rapid City: Devereaux Library, South Dakota School of Mines and Technology	(605) 394-6822
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 725-8877
	Nashville: Stevenson Science Library, Vanderbilt University	(615) 322-2775
Texas	Austin: McKinney Engineering Library, University of Texas at Austin	(512) 495-4500
	College Station: Sterling C. Evans Library, Texas A & M University	(409) 845-3826
	Dallas Public Library	(214) 670-1468
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Utah	Salt Lake City: Marriott Library, University of Utah	(801) 581-8394
Virginia	Richmond: James Branch Cabell Library, Virginia Commonwealth University	(804) 828-1104
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
West Virginia	Morgantown: Evansdale Library, West Virginia University	(304) 293-2510
Wisconsin	Madison: Kurt F. Wendt Library, University of Wisconsin	(608) 262-6845
	Madison: Milwaukee Public Library	(414) 286-3051
Wyoming	Casper: Natrona County Public Library	(307) 237-4935

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PATENT EXAMINING CORPS

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J.O. THOMAS, JR., Deputy Assistant Commissioner for Patent Process Services

PATENT EXAMINING GROUPS	Phone number Area Code 703	New Case Date*
CHEMICAL EXAMINING GROUPS		
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, ENGINEERING AND DESIGNS, GROUP 1100— JOHN E. KITTLE, Director	308-0661	08/11/94
ORGANIC CHEMISTRY, DRUG, BIO-AFFECTING AND BODY TREATING COMPOSITION, GROUP 1200—RICHARD V. FISHER, Director	308-1235	07/06/94
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 1300—BARRY S. RICHMAN, Director	308-0651	09/02/94
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY STOCK MATERIALS AND COMPOSITIONS, GROUP 1500—THEODORE MORRIS, Director	308-2351	11/03/94
BIOTECHNOLOGY, GROUP 1800—JOHN J. DOLL, Director	308-0196	05/20/94
ELECTRICAL EXAMINING GROUPS		
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 2100—STEWART LEVY, Director	308-1782	04/25/94
SPECIAL LAWS AND ADMINISTRATION, GROUP 2200—ROBERT E. GARRETT, Director	308-0511	09/06/94
COMPUTER SYSTEMS AND COMPUTER APPLICATION, GROUP 2300— BOBBY R. GRAY, Director	305-9600	08/12/93
SPECIAL COMPUTER APPLICATIONS: COMPUTER GRAPHICS, BUSINESS PRACTICES, & DIAGNOSTIC TESTING, GROUP 2400—GERALD GOLDBERG, Director	305-3800	04/08/94
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 2500— JANICE A. HOWELL, Director	308-0956	08/30/94
TELECOMMUNICATIONS, GROUP 2600—NICHOLAS P. GODDARD, Director	305-4700	07/26/94
DESIGN, GROUP 2900—JOHN E. KITTLE, Director	308-0661	09/06/94
MECHANICAL EXAMINING GROUPS		
HANDLING AND TRANSPORTATION MEDIA, GROUP 3100—F.R. SCHMIDT, Director	308-1113	05/20/94
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 3200—CARLTON R. CROYLE, Director	308-1148	05/19/94
MEDICAL INSTRUMENTS, DIAGNOSTIC EQUIPMENT AND TREATMENT DEVICES; SURGERY AND SURGICAL SUPPLIES; AMUSEMENT AND EXERCISING DEVICES; ANIMAL HUSBANDRY; SPORTING GOODS; TOBACCO PRODUCTS AND MANUFACTURING EQUIPMENT; AND PRINTING, GROUP 3300—J.J. LOVE, Director	308-0858	01/02/95
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 3400—DONALD G. KELLY, Director	308-0861	12/01/94
GENERAL CONSTRUCTION, PETROLEUM AND MINING ENGINEERING, GROUP 3500—A.L. SMITH, Director	308-1021	08/09/94

*A communication from the examiner should have been received in most applications filed prior to this date.

Patents will Expire as Follows:

- (1) The term of any utility or plant patent that is in force on or results from an application filed before June 8, 1995 is the greater of the 20 year term provided in 35 U.S.C. 154(a)(2) or 17 years from grant subject to any terminal disclaimers. 35 U.S.C. 154(c)(1).
- (2) All utility and plant patents granted on applications having an actual United States filing date on or after June 8, 1995 are granted for a term which begins on the date on which the patent is granted and ends 20 years from the date on which the application was filed in the United States. If the application contains a specific reference to an earlier application under 35 U.S.C. 120, 121 or 365(c), the patent term ends twenty years from that date on which the earliest application was filed. 35 U.S.C. 154(a)(2).
- (3) All design patents are granted for a term of 14 years from the date of the grant. However, the term of any patent may have been curtailed by disclaimer under the provisions of 35 U.S.C. 153, have lapsed due to failure to pay maintenance fees, or have been extended under the provisions of 35 U.S.C. 154, 155, or 156. Thus, if more reliable information is needed with respect to a particular patent, then the specific patent file should be reviewed to determine the actual date of patent expiration.

TRADEMARK OPERATION

Bruce A. Lehman, Commissioner
Philip G. Hampton, II, Assistant Commissioner
Robert M. Anderson, Deputy Assistant Commissioner
David E. Bucher, Director, Trademark Examining Office
Condition of Trademark Applications as of March 1, 1996

Law Office	Oldest Date	
	New *	Amendment Filed
Law Office 101—Ron Williams, Acting Managing Attorney, (703) 308-9101—4th Floor Foods, Beverages, Wines & Spirits—Int. Classes 29, 30, 31, 32, 33 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	07/27/95	12/05/95
Law Office 102—Myra Kurzbard, Managing Attorney, (703) 308-9102—5th Floor Scientific Equipment & Furniture—Int. Classes 9, 20 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	09/11/95	10/11/95
Law Office 103—Kathryn Erskine, Managing Attorney, (703) 308-9103—5th Floor Scientific Equipment & Furniture—Int. Classes 9, 20 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	08/24/95	02/12/96
Law Office 104—Sidney Moskowitz, Managing Attorney, (703) 308-9104—6th Floor Unwrought metals, Industrial Equipment, Tools, Installation, Vehicles, Firearms, Musical Instruments, Building Materials & Floor Coverings—Int. Classes 6, 7, 8, 11, 12, 13, 15, 19, 27 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	08/10/95	11/30/95
Law Office 105—Thomas Howell, Managing Attorney, (703) 308-9105—6th Floor Chemicals, Paints, Lubricants, Pharmaceuticals, Medical Apparatus & Tobacco—Int. Classes 1, 2, 4, 5, 10, 34 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	09/13/95	09/09/95
Law Office 106—Mary Sparrow, Managing Attorney, (703) 308-9106—7th Floor Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	09/15/95	10/04/95
Law Office 107—Thomas Lamone, Managing Attorney, (703) 308-9107—7th Floor Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	09/28/95	09/26/95
Law Office 108—David Shallant, Managing Attorney, (703) 308-9108—8th Floor Precious metals, Fibers, Leather goods, Housewares, Cordage, Yarns, Fabrics, Clothing & Notions— Int. Classes 14, 17, 18, 21, 22, 23, 24, 25, 26 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	09/25/95	12/04/95
Law Office 109—Deborah Cohn, Managing Attorney, (703) 308-9109—8th Floor Precious metals, Fibers, Leather goods, Housewares, Cordage, Yarns, Fabrics, Clothing & Notions—Int. Classes 14, 17, 18, 21, 22, 23, 24, 25, 26 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	09/22/95	01/02/96
**Collective Marks—Class 200 **Certification Marks—Classes A & B		
Office of Trademark Services—John Walker, Director, (703) 308-9100 Trademark Assistance Center—(703) 308-9000 Pre-Examination—Alan Lambert, Supervisor, (703) 308-9401 ext. 188 Intent-To-Use (ITU)—(703) 308-9500 Post Registration Section—Mary Bowman, Supervisor, (703) 308-9500 ext. 126 Affidavits Under Sections 8 & 15 (All Classes)	06/26/95 12/21/95 09/01/95	—0— —0— —0—
Section 12(c) Publications (All Classes)		

1. ** Assigned to all Law Office

2. Applicants with inquiries concerning the status of their applications and a touch telephone should call (703) 305-8747 from 6:30 a.m. to Midnight EST, Monday through Friday. This automated voice system will provide the current status of your application. Applicants are urged not to file unnecessary inquiries concerning the status of their applications. See SECTION 411 of the TRADEMARK MANUAL OF EXAMINING PROCEDURE.

3. * These dates identify the oldest unassigned new case in each Law Office. All cases with earlier dates have either been examined and made the subject of an action or are currently being worked on by the assigned examining attorney.

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REEXAMINATIONS

APRIL 23, 1996

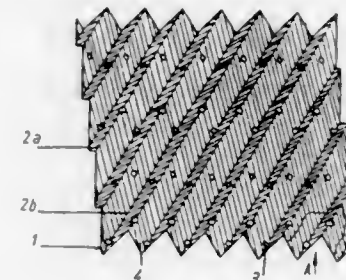
Matter enclosed in heavy brackets [] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 4,296,050 (2849th)

PACKING ELEMENT FOR AN EXCHANGE COLUMN
Werner Meier, Elgg, Switzerland, assignor to Sulzer Bros., Winterthur, Switzerland
Reexamination Request Nos. 90/002,880, Nov. 10, 1992 and 90/003,693, Jan. 18, 1995 and 90/003,733, Feb. 17, 1995.
Reexamination Certificate for Patent 4,296,050, issued Oct. 20, 1981, Ser. No. 845,784, Oct. 26, 1977.
Claims priority, application Switzerland, May 12, 1977, 5948/77

Int. Cl.⁶ B01F 3/04

U.S. Cl. 261—112.2



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims 1–11 is confirmed.

1. A packing element for an exchange column comprising a plurality of corrugated plates of foil-like material disposed in parallel relation, each said plate having corrugations disposed at an angle and in criss-crossing relation to the corrugations of an adjacent plate, each said plate having a plurality of apertures distributed therein, and each said corrugation of each plate having a laterally extending fine fluting effect a uniform distribution of a downwardly flowing liquid under capillary action.

B1 4,929,964 (2850th)

METHOD FOR PREPARING LIQUID JET RECORDING HEAD, LIQUID JET RECORDING HEAD PREPARED BY SAID METHOD AND LIQUID JET RECORDING DEVICE HAVING SAID LIQUID JET RECORDING HEAD MOUNTED THEREON

Koichi Sato, Yokohama, and Masami Ikeda, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Reexamination Request No. 90/003,589, Oct. 4, 1994.
Reexamination Certificate for Patent 4,929,964, issued May 29, 1990, Ser. No. 363,524, Jun. 7, 1989.

Claims priority, application Japan, Jun. 7, 1988, 63-138418
Int. Cl.⁶ B41J 2/05

U.S. Cl. 347—62

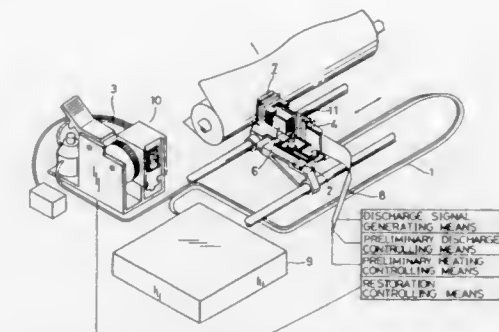
AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims 1, 11, 14, 23, 26, 29 and 33 are determined to be patentable as amended.

Claims 2–10, 12, 13, 15–22, 24, 25, 27, 28 and 30–32, dependent on an amended claim, are determined to be patentable.

1. A method for preparing a liquid jet recording head, comprising the steps of:

providing a liquid jet recording head having an electro-thermal energy convertor for generating heat energy for discharging ink by applying electrical signals to said electro-thermal convertor, said electro-thermal energy convertor comprising a heat-generating resistor in a liquid channel and a pair of electrodes for applying electrical signals to said heat-generating resistor;



filling said liquid channel with ink; and
aging said heat-generating resistor by applying to said electrodes electrical signals sufficient to stabilize the resistance value of said heat-generating resistor by heat treating said heat-generating resistor through heat generation therein while said liquid channel is filled with ink to further improve ink discharging properties of said recording head.

B1 5,032,774 (2851st)

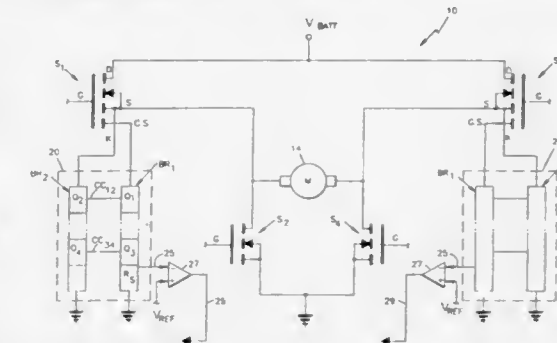
CIRCUIT SENSING CIRCUIT FOR USE WITH A CURRENT CONTROLLING DEVICE IN A POWER DELIVERY CIRCUIT

David J. Juzwik, Dearborn Heights, Mich., assignor to United Technologies Automotive, Inc., Dearborn, Mich.
Reexamination Request No. 90/003,784, Apr. 10, 1995.
Reexamination Certificate for Patent 5,032,774, issued Jul. 16, 1991, Ser. No. 577,823, Sep. 4, 1990.

Continuation of Ser. No. 430,916, Oct. 30, 1989, abandoned, which is a continuation of Ser. No. 349,022, May 9, 1989, abandoned.

Int. Cl.⁶ H02P 1/22

U.S. Cl. 318—293



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims 1–28 is confirmed.

1. An improved current sensing circuit for use in combination with a current controlling device in a power delivery circuit for supplying load current to a load, the current controlling device being multi-cellular, with a major current-carrying cellular portion and a minor current-carrying cellular portion, a first main current terminal, a gate terminal for receiving a control signal, a second main current terminal connecting the major current-carrying cellular portion, a first auxiliary terminal connected at one end to the minor current-carrying cellular portion so as to provide a current generally proportional to the current of the major current-carrying cellular portion, and a second auxiliary terminal connected at one end to the major current-carrying cellular portion, the improvement in the current sensing circuit comprising:

said current sensing circuit including first and second branches each for connection at one end to a respective one of said first and said second auxiliary terminals and having means for connection in common at the other end to a reference potential in the power delivery circuit;

said first branch including first and third series-connected semiconductor devices;

said second branch including second and fourth series-connected semiconductor devices;

said first and said fourth semiconductor devices operating in a transimpedance mode and each being controlled by bias signals;

said second and said third semiconductor devices being cross-connected with said first and said fourth semiconductor devices respectively to provide the respective said bias signals thereto; and

impedance means connected to said first branch for providing a voltage at a node at one end of said impedance means approximately proportional to the current of the major current-carrying cellular portion, said node being connectable to a detection circuit.

B1 5,160,146 (2852nd)

MULTIPLE BINGO GAME APPARATUS

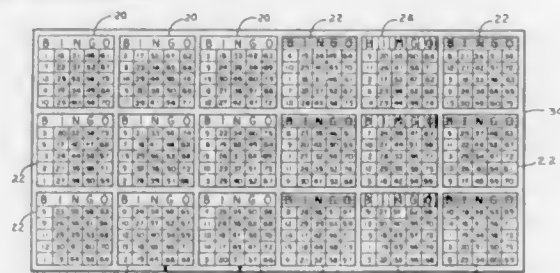
Thomas W. Greer, Muskegon, Mich., assignor to The Reliable Corporation of America, Muskegon, Mich.

Reexamination Request No. 90/003,126, Jul. 14, 1993.

Reexamination Certificate for Patent 5,160,146, issued Nov. 3, 1992, Ser. No. 788,039, Nov. 5, 1991.

Int. Cl.⁶ A63F 3/06

U.S. Cl. 273-269



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims 2 and 3 is confirmed.

Claims 1, 5 and 9 having been finally determined to be unpatentable, are cancelled.

Claims 4, 6, 8 and 10 are determined to be patentable as amended. Claims 7 and 11-14, dependent on an amended claim, are determined to be patentable.

New claims 15-29 are added and determined to be patentable.

8. An improved bingo game apparatus comprising:
 - a plurality of bingo game matrices mounted on a paper sheet having at least [one] two first bingo game [matrix] matrices identified by a first common color indicia [and], at least [one] two second bingo game [matrix] matrices identified by a second common color indicia and at least one third bingo game matrix, but less than the number of said at least two first and said at least two second bingo game matrices, the at least one third matrix being mounted on said paper sheet and identified by a third common color indicia;
 - a first prize identified by said first common color indicia which is awarded for a winning combination in said at least one first bingo game matrix; [and]
 - a second prize identified by said second common color indicia which is awarded for a winning combination in said at least one second bingo game matrix; [and]
 - a third prize identified by said third common color indicia which is awarded for a winning combination in said at least one third bingo game matrix.

B1 5,210,475 (2853rd)
CIRCUIT SENSING CIRCUIT FOR USE WITH A
CURRENT CONTROLLING DEVICE IN A POWER
DELIVERY CIRCUIT

David L. Juzwik, Dearborn Heights, and Bruce R. Wrenbeck, Dearborn, both of Mich., assignors to United Technologies Automotive, Inc., Dearborn, Mich.

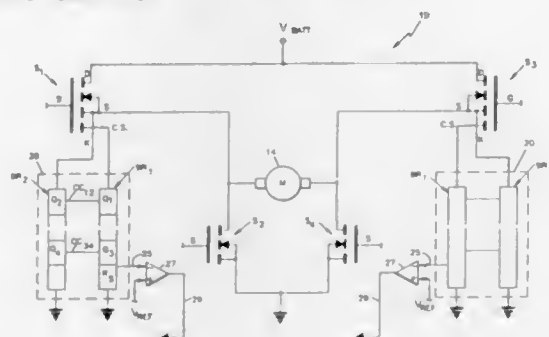
Reexamination Request No. 90/003,785, Apr. 10, 1995.

Reexamination Certificate for Patent 5,210,475, issued May 11, 1993, Ser. No. 723,143, Jun. 28, 1991.

Division of Ser. No. 577,823, Sep. 4, 1990, Pat. No. 5,032,774, which is a continuation of Ser. No. 430,916, Oct. 30, 1989, abandoned, which is a continuation-in-part of Ser. No. 349,022, May 9, 1989, abandoned.

Int. Cl.⁶ H02P 1/22

U.S. Cl. 318-293



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims 1-24 is confirmed.

1. A power delivery circuit for supplying load current to a load, comprising:

- a power node for connection to a source of electrical power;
- a load node for connection to a load;
- a high potential current path for supplying electrical current from the power node to the load node and including a current switch whose switching state is controlled by a control signal on an associated control terminal; said current switch having first and second main terminals, a first auxiliary terminal which produces a current which is a predetermined fraction of the total current in the high potential current path, and a second auxiliary terminal connected to one of the main terminals of the current switch; and
- a current detection circuit for detecting the current level in the high potential current path; the current detection circuit comprising:
 - a first branch connected between one of said first and second auxiliary terminals and a reference potential and a second branch connected between the other of said first and second auxiliary terminals and the reference potential;
 - said first branch having a first semiconductor device and said second branch having a second semiconductor device,
 - said first and second semiconductor devices being configured to provide a predetermined current ratio in said first and second branches,
 - impedance matching buffer circuit connected to said first and second semiconductor devices for controlling voltage at said first and second auxiliary terminals, and
 - an output node for providing a signal approximately proportional to the load current.

B1 5,312,550 (2854th)
METHOD FOR DETECTING UNDESIRABLE DIALYSIS
RECIRCULATION

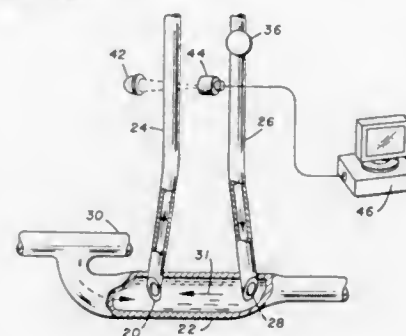
Robert L. Hester, 1426 Tracewood Dr., Jackson, Miss. 39211

Reexamination Request No. 90/003,794, Apr. 14, 1995.

Reexamination Certificate for Patent 5,312,550, issued May 17, 1994, Ser. No. 873,781, Apr. 27, 1992.

Int. Cl.⁶ B01D 61/32

U.S. Cl. 210-646



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims 1-5 are cancelled.

[1. In a dialysis process wherein blood is removed from a patient's vascular system and passed through a dialyzer system comprising an inlet arterial line, a dialyzer, and an outlet venous line, said blood being fed via said inlet arterial line to said dialyzer and returned to the patient via said outlet venous line, the improvement comprising:

- (a) injecting a material at an injection point in said dialyzer system, said material having a physical property differing from that of blood; and
- (b) monitoring the fluid in said dialyzer system at a point in said dialyzer system upstream from said injection point for the presence of said differing physical property, to thereby detect undesired recirculation of freshly dialyzed blood from said venous line directly to said arterial line.]

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REISSUES

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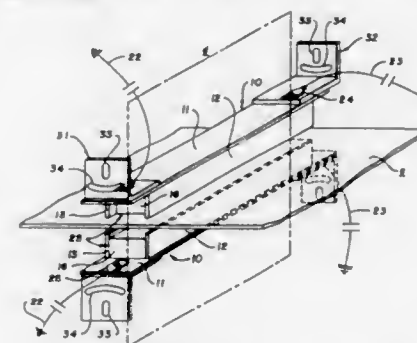
Matter enclosed in heavy brackets [] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 35,214
**GROUNDING MAGNETIC DEVICE FOR REMOVING
 STATIC CHARGES**

Kevin M. McGarry, Kirkwood, Mo., and Arnold A. Downs, Mt. Vernon, Ill., assignors to M. Eileen McGarry, Los Angeles, Calif.
 Original No. 5,331,503, dated Jul. 19, 1994, Ser. No. 822,853, Jan. 21, 1992. Application for reissue Feb. 7, 1995, Ser. No. 385,038

Int. Cl.⁶ H05F 3/00
 U.S. Cl. 361—214

37 Claims



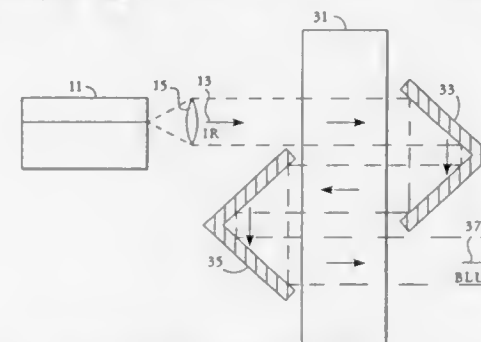
2. A process for removing a static electrical charge on a material as the material moves in response to a material moving apparatus, the process comprising the steps of:
 positioning a magnet adjacent to the material moving apparatus; wherein the magnet produces a magnetic field having first and second polarities;
 grounding the magnet to provide a grounded magnetic field having said first and second polarities; and
 moving the material and the magnet relative to each other so that the material passes through the first polarity of the grounded magnetic field and thereafter passes through the second polarity of the grounded magnetic field.

Re. 35,215
**FREQUENCY CONVERTED LASER DIODE AND LENS
 SYSTEM THEREFOR**

Robert G. Waarts, Palo Alto; David F. Welch, Menlo Park; Donald R. Scifres, San Jose; Robert J. Lang, Pleasanton, and Derek W. Nam, Sunnyvale, all of Calif., assignors to SDL, Inc., San Jose, Calif.
 Original No. 5,321,718, dated Jun. 14, 1994, Ser. No. 10,279, Jan. 28, 1993. Application for reissue Sep. 16, 1994, Ser. No. 307,174

Int. Cl.⁶ H01S 3/08; 3/10
 U.S. Cl. 372—108

141 Claims



120. A coherent light source comprising a semiconductor optical source generating and emitting a high power coherent light beam, said light beam characterized by

being astigmatic with lateral and transverse beam waists spaced apart in different locations, where 'lateral' and 'transverse' refer to directions respectively parallel and perpendicular to a plane of an active gain region of said semiconductor optical source, said light beam also characterized by being highly asymmetric, with a lateral beam width dimension that varies along a length of a light path within said semiconductor optical source, and with different lateral and transverse beam width dimensions at an output surface of said semiconductor optical source, wherein a lateral-to-transverse dimension ratio for said light beam is at least 10 to 1 at said output surface, and

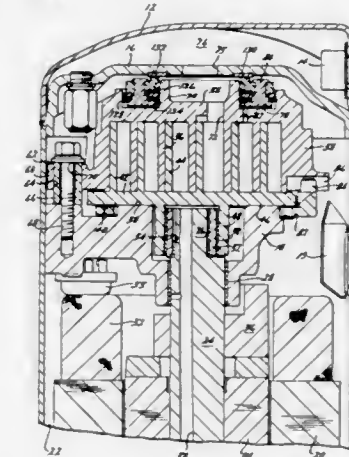
an astigmatism-correcting lens system positioned in the path of said light beam emitted from said semiconductor optical source, said lens system adapted to provide a modified astigmatism-free light beam.

Re. 35,216
SCROLL MACHINE WITH FLOATING SEAL

Gary J. Anderson, Sidney, Ohio, and James W. Bush, Skaneateles, N.Y., assignors to Copeland Corporation, Sidney, Ohio
 Original No. 5,156,539, dated Oct. 20, 1992, Ser. No. 841,251, Feb. 24, 1992. Continuation of Ser. No. 591,454, Oct. 1, 1990, abandoned. Application for reissue May 4, 1994, Ser. No. 237,857

Int. Cl.⁶ F01C 1/04; 19/00; F16J 15/12; F04B 49/02
 U.S. Cl. 417—310

66 Claims



26. A scroll compressor comprising:

- (a) a hermetic shell;
- (b) an orbiting scroll member disposed in said shell and having a first spiral wrap on one face thereof;
- (c) a non-orbiting scroll member disposed in said shell and having a second spiral wrap on one face thereof, said wraps being intermeshed with one another;
- (d) means for causing said orbiting scroll member to orbit about an axis with respect to said non-orbiting scroll member whereby said wraps will create pockets of progressively decreasing volume to compress a fluid from a suction pressure to a discharge pressure;
- (e) means for mounting one of said scroll members for limited axial movement with respect to the other scroll member;
- (f) means defining a cavity exposed to a surface of one of said scroll members which will cause pressurized fluid in said cavity to bias said one scroll member toward the other scroll member;
- (d) means defining a first fluid leakage path between said cavity and a zone in said shell at suction pressure;

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- (h) means defining a second fluid leakage path between said cavity and a zone in said shell at discharge pressure;
- (i) means for supplying fluid to said cavity at a pressure intermediate said suction and discharge pressures for biasing said scroll members axially together; and
- (j) seal means disposed in said cavity, said seal means having [three seals, said] a first seal isolating said pressurized fluid in said cavity from said first leakage path, [said] a second seal isolating said cavity from said second leakage path, and [said] a third seal [isolating] engaging a different component of said compressor to isolate fluid at suction pressure from fluid at discharge pressure across a face of said seal means.

Re. 35,217

AQUEOUS DEVELOPER SOLUTION HAVING HYDROXY-ALKYL PIPERIDINE FOR POSITIVE- WORKING PHOTORESISTS

Reinhold Schwalm, Wachenheim, and Horst Blüder, Lampertheim, both of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Original No. 5,039,595, dated Aug. 13, 1991, Ser. No. 391,253, Aug. 9, 1989. Application for reissue May 9, 1994, Ser. No. 240,166

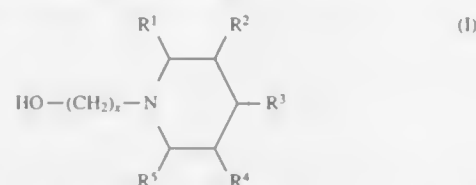
Claims priority, application Germany, Aug. 13, 1988, 38 27 567.8

Int. Cl.⁶ G03C 5/30

U.S. Cl. 430—326

5 Claims

1. A method for developing a positive-working photoresist based on novolak/o-quinonediazide, the resist being applied to a substrate, exposed imagewise and brought into contact with developer solution to form the positive resist image, wherein the developer solution used is an aqueous developer solution, which contains one or more water-soluble basic compounds, wherein the said compound is a compound of the formula (I)



where R¹ to R⁵ are identical or different and are each H, OH, hydroxyalkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms or alkyl of 1 to 4 carbon atoms and x is from 1 to 5.

2. A method according to claim 1 for developing a positive-working photoresist based on novolak/o-quinonediazide, the resist being applied to a substrate, exposed imagewise and brought into contact with developer solution to form the positive resist image, wherein the developer solution used is an aqueous developer solution [as set forth in claim 1] wherein a hydroxyalkylpiperidine selected from the group consisting of N-hydroxymethylpiperidine, N-hydroxyethylpiperidine and N-hydroxypropylpiperidine is used as the compound of the formula (I).

Re. 35,218

AZATETRACYCLE COMPOUNDS

Daniel P. Becker, Glenview; Daniel L. Flynn, Mundelein; Roger Nosal, Buffalo Grove; Dale P. Spangler, Deerfield, all of Ill., and Daniel L. Zabrowski, Pleasanton, Calif., assignors to G. D. Searle & Co., Chicago, Ill.

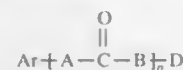
Original No. 5,140,023, dated Aug. 18, 1992, Ser. No. 682,993, Apr. 12, 1991. Continuation-in-part of Ser. No. 515,391, Apr. 27, 1990, abandoned. Application for reissue Aug. 18, 1994, Ser. No. 292,894

Int. Cl.⁶ A61K 31/395; C07D 451/00; 451/02; 451/14

U.S. Cl. 514—214

52 Claims

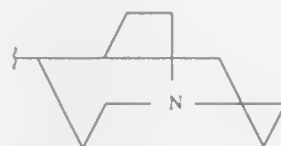
1. A compound of the formula



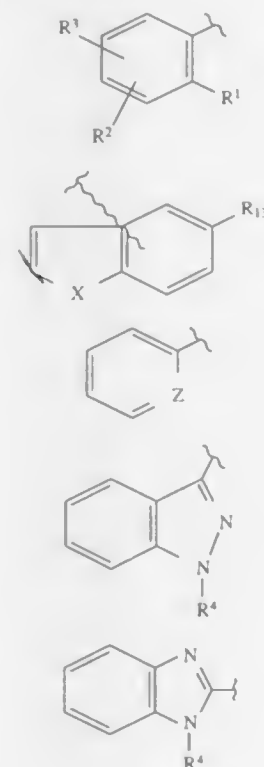
wherein D is



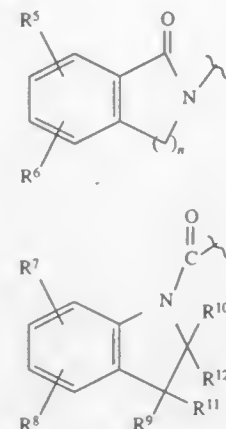
or



wherein B is NH or O;
wherein A is NH or a bond;
wherein p is 1 or 0; and
when p is 1, Ar is



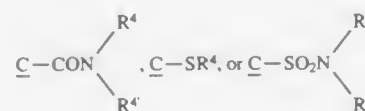
and when p is 0, Ar is

wherein X is O,S,N(R⁴) or CH₂;

wherein Y is N or CH;

wherein n is 1 or 2;

wherein Z is

wherein R¹ is alkoxy of 1 to 6 carbon atoms;

wherein R² and R³ are the same or different and is hydrogen, halogen, CF₃, hydroxyl, C₁₋₂ alkoxy, C₂₋₇ acyl, amino, amino substituted by one or two C₁₋₆ alkyl groups, C₂₋₇ acyl amino, amino carbonyl, or amino sulfone optionally substituted by one or two C₁₋₆ alkyl groups, C₁₋₆ alkyl sulfone or nitro groups;

wherein R⁴ and R⁴ can be the same or different and is hydrogen, alkyl or arylalkyl; wherein R⁵ and R⁶ is the same or different and is hydrogen, halogen, CF₃, C₁₋₆ alkyl, C₁₋₇ acyl, C₁₋₇ acylamino, or amino, amino carbonyl or amino sulfonyl, optionally substituted by one or two C₁₋₆ alkyl or C₃₋₈ cycloalkyl groups, or by C₄₋₅ polymethylene or biphenyl, C₁₋₆ alkylsulfonyl, C₁₋₆ alkylsulfinyl, C₁₋₆ alkoxy, C₁₋₆ alkylthio, hydroxy or nitro or when R⁵ and R⁶ are taken together are methylenedioxy or ethylenedioxy;

wherein R⁹ and R¹⁰ can be the same or different and is hydrogen, C₁₋₆ alkyl, C₂₋₆ alkenyl, C₁₋₄ alkynyl, or together are C₂₋₄ polymethylene;

wherein R⁷ and R⁸ are the same or different and is hydrogen, halogen, CF₃, C₁₋₆ alkyl, C₁₋₆ alkoxy, C₁₋₆ alkylthio, C₁₋₇ acyl, C₁₋₇ acylamino, C₁₋₆ alkylsulfonylamino, N-(C₁₋₆ alkylsulfonyl)-N-C₁₋₄ alkylamino, C₁₋₆ alkylsulfinyl, hydroxy, nitro or amino, aminocarbonyl, aminosulfonyl, aminosulfonylamino or N-(aminosulfonyl)-C₁₋₄ alkylamino optionally N⁺-substituted by one or two groups selected from C₁₋₆ alkyl, C₃₋₈ cycloalkyl, phenyl, or phenyl C₁₋₄ alkyl groups or optionally N⁺-disubstituted by C₄₋₅ polymethylene; and wherein R¹¹ and R¹² can be the same or different and is hydrogen or C₁₋₄ alkyl or taken together are a covalent bond; and wherein R¹³ is H, halogen or OR⁴.

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PLANT PATENTS

GRANTED APRIL 23, 1996

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

9,512

FLORIBUNDA ROSE PLANT NAMED 'OLYSKO'
Huibert W. Olij, De Kwakel, Netherlands, assignor to The
Conard-Pyle Company, West Grove, Pa.
Filed Mar. 7, 1996, Ser. No. 399,927
Int. Cl.⁶ A01H 5/00

U.S. Cl. Plt.—24

1 Claim

1. A new and distinct variety of Floribunda rose plant characterized by the following combination of characteristics:
(a) forms in abundance attractive long-lasting double blossoms having an intense yellow coloration,
(b) forms attractive vigorous dark green foliage having a glossy upper surface,
(c) exhibits an erect growth habit, and
(d) is well suited for cut flower production in a greenhouse; substantially as herein shown and described.

9,513

'SEPTEMBER KING' PLUM TREE
Thomas O. Chamberlin, Sr., Visalia, Calif., assignor to Allan A. Corrin, Reedley, Calif.
Filed Mar. 24, 1995, Ser. No. 410,073
Int. Cl.⁶ A01H 5/00

U.S. Cl. Plt.—38.1

1 Claim

1. A new and distinct variety of plum tree substantially as illustrated and described which is distinguished by producing large, fully rounded fruit having a bright red skin coloration and which are mature for commercial harvesting and shipment approximately September 15 to September 20 in the San Joaquin Valley of central California.

9,514

NECTARINE TREE 'PRINCE JIM'
James W. Taylor, Dinuba, Calif., assignor to Ito Packing Company, Reedley, Calif.
Filed Apr. 3, 1995, Ser. No. 415,480
Int. Cl.⁶ A01H 5/00

U.S. Cl. Plt.—41.1

1 Claim

1. A new and distinct variety of nectarine tree, substantially as herein shown and described, with fruit of yellow flesh around the base in early stages of maturity, being cling stone type, with tree ripe fruit having an under color of deep orange and increasing to deeper red orange with increasing maturity, having a maturity period in the early part of the season with good eating quality, bearing fruit of much larger size than other varieties at this season and being much firmer than fruit of other varieties so it can be harvested at a very mature stage.

9,515

PEACH TREE 'WHITE PRINCESS'
Lowell G. Bradford, 12439 E. Savana Rd., and Norman G. Bradford, 11875 E. Savana Rd., both of Le Grand, Calif. 95333
Filed Mar. 23, 1995, Ser. No. 409,144
Int. Cl.⁶ A01H 5/00

U.S. Cl. Plt.—42.1

1 Claim

1. A new and distinct variety of peach tree, substantially as illustrated and described, which produces fruit that exhibits the desirable characteristics common to its pollen parent. 'August Snow' (U.S. Plant Pat. No. 8,947) white flesh nectarine, by producing freestone fruit that is white in flesh color, sweet sub-acid in

flavor, firm in texture, and mostly red in skin color, but is distinguished therefrom and an improvement thereon by producing fruit that is larger in size, rounder in shape, and peach instead of nectarine.

9,516

CAESALPINIA PLANT NAMED 'DESCAP'
John R. Augustine, Phoenix, Ariz., assignor to Desert Tree Farm, Phoenix, Ariz.
Filed Feb. 14, 1995, Ser. No. 388,611
Int. Cl.⁶ A01H 5/00

U.S. Cl. Plt.—54.1

1 Claim

1. The new distinct variety of *Caesalpinia pulcherrima* plant herein described and illustrated and identified by the characteristics enumerated above.

9,517

CARNATION PLANT NAMED FRANS HALS
Ronald Schrama, Vinkeveen, Netherlands, assignor to M. Lek & Zonen B.V., Nieuweveen, Netherlands
Filed Feb. 23, 1995, Ser. No. 393,372
Int. Cl.⁶ A01H 5/00

U.S. Cl. Plt.—70.7

1 Claim

1. A new and distinct cultivar of carnation plant named Frans Hals, as illustrated and described.

9,518

CHRYSANTHEMUM PLANT NAMED 'APRICOT BLUSH'
Susan M. Polys, Salinas, Calif., assignor to Yoder Brothers, Inc., Barberton, Ohio
Filed Nov. 1, 1994, Ser. No. 331,860
Int. Cl.⁶ A01H 5/00

U.S. Cl. Plt.—82.3

1 Claim

1. A new and distinct Chrysanthemum plant named Apricot Blush, as described and illustrated.

9,519

ASIATIC HYBRID LILY PLANT NAMED 'CEB FUZZY'
Donald L. Egger, 7115 SW. Frog Pond La., Wilsonville, Oreg. 97070, and Teresa Pankiewicz-Leap, 5854 SE. Flavel Dr., Portland, Oreg. 97206
Filed Mar. 3, 1995, Ser. No. 398,341
Int. Cl.⁶ A01H 5/00

U.S. Cl. Plt.—87.4

1 Claim

1. A new and distinct cultivar of Asiatic hybrid lily plant substantially as herein shown and described.

9,520

NEW GUINEA IMPATIENS NAMED 'BFP-467 CHERRY RED'
Scott C. Trees, Arroyo Grande, Calif., assignor to Geo. J. Ball, Inc., West Chicago, Ill.
Filed Apr. 14, 1995, Ser. No. 422,228
Int. Cl.⁶ A01H 5/00

U.S. Cl. Plt.—87.6

1 Claim

1. A new and distinct cultivar of New Guinea Impatiens plant named 'BFP-467 Cherry Red' substantially as herein shown and described, which:

- (a) exhibits attractive large cherry red flowers,
(b) forms moderately dark green foliage,
(c) exhibits a good basal branching character, and
(d) exhibits a medium-vigorous upright growth habit.

9,521

NEW GUINEA IMPATIENS NAMED 'BFP-523 DEEP RED'
Scott C. Trees, Arroyo Grande, Calif., assignor to Geo. J. Ball,
Inc., West Chicago, Ill.

Filed Apr. 14, 1995, Ser. No. 422,231
Int. Cl.⁶ A01H 5/00

U.S. Cl. Plt.—87.6

1 Claim

1. A new and distinct cultivar of New Guinea Impatiens plant
named 'BFP-523 Deep Red' substantially as herein shown and
described, which:

- (a) exhibits attractive large deep red flowers,
(b) forms shiny dark green foliage,
(c) exhibits a good basal branching character, and
(d) exhibits a medium upright mounded growth habit.

9,522

GERANIUM PLANT NAMED 'FISUNA'

Ingeborg Schumann, Albstadt, and Angelika Utecht, Mont-
abaur, both of, Germany, assignors to Floris AG, Binningen,
Switzerland

Filed Dec. 21, 1994, Ser. No. 360,645
Int. Cl.⁶ A01H 5/00

U.S. Cl. Plt.—87.12

1 Claim

1. A new and distinct cultivar of geranium plant named Fisuna,
as illustrated and described.

9,523

BEGONIA PLANT NAMED 'BARKOS'

Lubbertus H. Koppe, AM Ermelo, Netherlands, assignor to M.
Koppe B.V., Ermelo, Netherlands

Filed Dec. 21, 1994, Ser. No. 361,319
Int. Cl.⁶ A01H 5/00

U.S. Cl. Plt.—87.18

1 Claim

1. A new and distinct begonia plant named Barkos, as described
and illustrated.

PATENTS

GRANTED APR. 23, 1996

ERRATA

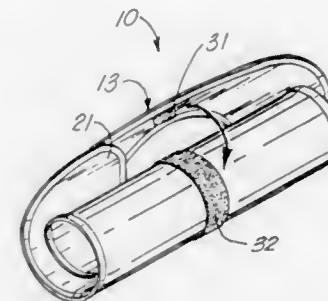
For CLASS	See PATENT NO.
001-100	5,509,271
114-315	5,509,372
119-280	5,509,373
081-300	5,509,380
001-100	5,509,659
001-100	5,509,660
280-220	5,509,665
285-409	5,509,702
296-770	5,509,717
494-700	5,509,881
494-290	5,509,882
205-549	5,510,007
205-384	5,510,008
205-746	5,510,009
536-260	5,510,479
536-120	5,510,481
536-127	5,510,482
562-519	5,510,554
250-207	5,510,588
346-141	5,510,823
395-446	5,510,934
363-134	5,510,974
331-440	5,511,126

PATENTS

GRANTED APRIL 23, 1996

GENERAL AND MECHANICAL

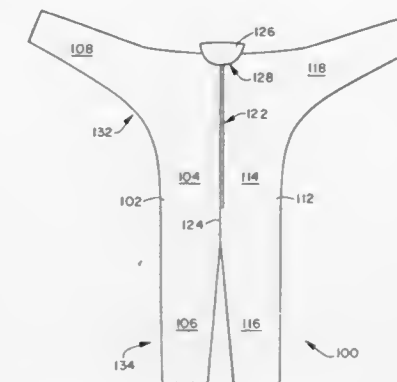
5,509,141
INSULATED BIB APPARATUS
Lita Saltzman, Denver, Colo., assignor to Baby Biz Products, Inc., Denver, Colo.
Filed Nov. 7, 1994, Ser. No. 335,126
Int. Cl.⁶ A41B 13/10; A41D 11/00
U.S. Cl. 2—49.2 14 Claims



1. A baby bib apparatus for holding an article to be maintained at a desired temperature range such as warm or cold comprising:
- a bib member having front and rear panels with respective front and rear surfaces, a top portion, a bottom portion, and side edge portions;
 - a layer of foam insulation sandwiched between the front and rear panels forming a lamination therewith;
 - a peripheral welt for sealing the lamination of the front and rear panels and layer of foam;
 - a recess at the upper end of the bib for fitment about an infant's neck;
 - means positioned adjacent the recess for supporting the bib on the infant's frontal torso;
 - a pocket that provides a void space extending transversely from one side edge portion of the bib member to the other side edge portion and being adjacent the bottom portion of the bib member, the pocket having an open top that extends transversely across the bib front panel so that the article to be maintained at a desired temperature can be placed in the pocket via the open top;
 - a pocket welt for peripherally sealing the pocket to the bottom portion and to the side portions of the bib member;
 - the lamination being sufficiently sized from top to bottom so that an article fitting inside the pocket can be enveloped by the front panel by rolling the front panel about the contained articles and pocket; and
 - a pair of cooperating closure members for holding the peripheral edge of the bib member adjacent the neck opening against the bib member after the front panel is rolled tightly about the pocket and contained articles for closely conforming the bib to the article to surround and insulate same;
 - said pair of members being on opposite sides of the bib, one of the closure members being positioned at the neck of the bib.

5,509,142
RAISED ARM COVERALLS
Cynthia A. Connell, Roswell, Ga.; Kimberly S. Houchens, Raleigh, N.C., and Leslie H. Van Hout, Roswell, Ga., assignors to Kimberly-Clark Corporation, Neenah, Wis.
Filed Jun. 30, 1993, Ser. No. 84,935
Int. Cl.⁶ A41D 13/00 20 Claims

20. A disposable protective coverall formed from a high strength barrier laminate of at least one nonwoven web and at least one film layer, the coverall comprising:
- a body portion having a neck opening in a shoulder line at its top;

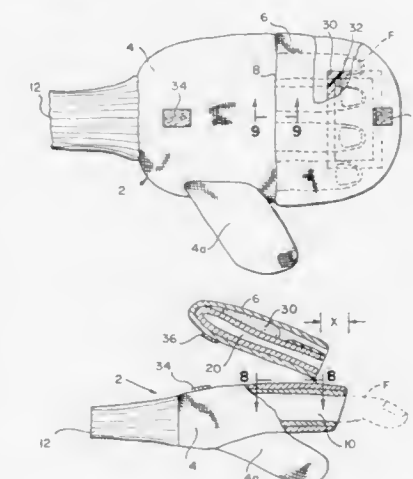


two sleeve portions extending from the body portion, each sleeve portion having an inner edge and an outer edge; and two leg portions extending from the body portion, the fully extended sleeve portions extending from the body portion when the coverall is laid flat, prior to donning, such that the outer edge of each sleeve portion extends upward from the shoulder line at an angle ranging from about 10° to about 90° and the inner edge of each sleeve extending upward from the body portion below the shoulder line so that arm movement is permitted without significant pulling or stressing of other portions of the coverall.

the film component of the high strength barrier laminate having a thickness of at least about 1.25 mil and a peak energy of at least 6 inch-pounds force per square inch in both the machine and cross-machine directions, and

the breathable barrier laminate providing a water vapor transmission rate greater than about 100 gm/m²/24 hours.

5,509,143
THERMAL GLOVE WITH POCKET FOR FINGER HEATER
James W. Yates, Rte. 1, Box 585, and Ronnie L. Yates, Box 3441, both of Wise, Va. 24293
Filed Jan. 5, 1995, Ser. No. 369,112
Int. Cl.⁶ A41D 19/00 9 Claims
U.S. Cl. 2—160



said hand portion containing at least one second opening at its other end through which the user's fingers outwardly project, said hand portion having oppositely facing palm and rear sides;

- (b) a hollow cap portion formed of flexible fabric material and containing a chamber having an opening at one end, said cap portion having oppositely facing palm and rear sides;
- (c) stitching means connecting said cap portion with the rear surface of said hand portion for alternate pivotal movement through an angle of about 180° between an operative position in which the user's fingers extend through said cap opening into said cap chamber via said cap opening, and an inoperative position in which the cap portion is removed from the user's fingers and the rear side of said cap portion is seated on said hand portion rear side, said stitching means extending generally orthogonally relative to the longitudinal axis of said hand portion, said stitching means being spaced a given distance (x) from said hand portion one end and having such a configuration as to bias said cap portion toward said inoperative position upon manipulation of the associated fingers of the user; and
- (d) means defining in one of said cap portion palm and rear sides a pocket for receiving an oxygen-activated chemical heating packet.

5,509,144

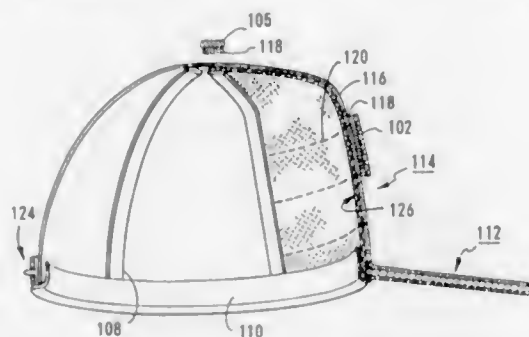
BASEBALL CAP WITH INTERCHANGEABLE LOGOS
Richard C. Soergel, 8825 Tommy Ct., San Diego, Calif. 92119, and S. T. Yang, Taipei, Taiwan, assignors to Richard C. Soergel, San Diego, Calif.

Filed Jan. 25, 1994, Ser. No. 186,665

Int. Cl.⁶ A42B 1/24

U.S. Cl. 2—195.1

15 Claims



1. A baseball cap having interchangeable logos comprising:
 - a crown portion which includes a hat band and a plurality of interconnected panels of material attached to said hat band to form said crown portion, wherein at least one of said plurality of panels of said crown portion, includes a first material and defines a front face, having a central portion and a width, of said baseball cap;
 - a visor attached to said crown portion adjacent said front face;
 - a logo having a surface covered by a second material, where said second material engages with said first material to provide releasable attachment therebetween, so that when said logo is positioned on said front face with said second material engaging with said first material, said logo is securely mounted on said front face; and
 - a piece of stiffening material attached to said crown portion on an inside surface of said crown portion of said baseball cap adjacent said front face which maintains said front face in a first shape, wherein said first material of said front face is connected to said stiffening material by a plurality of lines of stitching which extend substantially across said width of said front face so that when said logo is removed from said front face, the force on said crown portion of said baseball cap resulting from removal of said logo is distributed to, and absorbed by, a substantial portion of the surface area of said

stiffening material to thereby substantially maintain said first shape of said front face and to minimize the tendency of said first material to pull away from said stiffening material in response to repeated removals of said logo.

5,509,145

CAP WITH OPENING HAVING A REMOVABLE CLOSURE

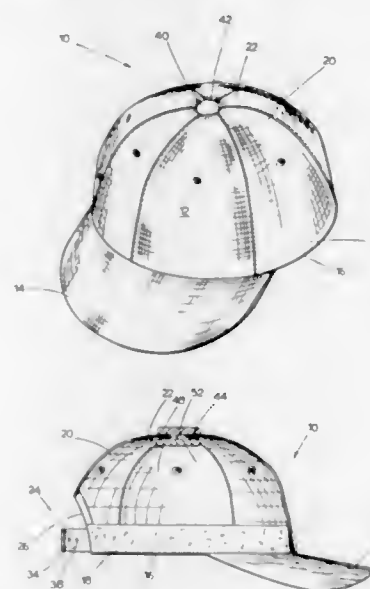
Karen L. Stevenson, 724 McKinstry Ave., Chicopee, Mass. 01020; Debra M. Laramée, 11 Columbus Ave., and Cynthia L. Demers, 39 O'Connor Ave., both of Holyoke, Mass. 01040

Filed Oct. 18, 1994, Ser. No. 323,689

Int. Cl.⁶ A42B 1/04

U.S. Cl. 2—195.1

14 Claims



13. A headwear item comprising:

- a cap portion having a rim and a crown portion, said crown portion having an apex portion, said cap portion defining a cavity dimensioned and configured to accommodate a wearer's head, and said rim defining an opening to said cavity to allow said cavity to receive the wearer's head;
- a visor attached to said cap portion along a portion of said rim;
- a second opening provided in said crown portion;
- an elastic gather provided about the perimeter of said second opening; and
- a closure removably engaging said second opening.

5,509,146

EAR MUFFS

Donald Bryerton, Sr., 207 13th Ave., Box 297, Sylvan Beach, N.Y. 13157

Filed Dec. 9, 1993, Ser. No. 163,714

Int. Cl.⁶ A42B 1/06

U.S. Cl. 2—209

20 Claims

1. Noise-suppressing ear muffs comprising:
 - a) a headband having first and second, laterally spaced ear piece attachment bands;
 - b) first and second ear pieces in the shape of automotive tires, each having inner and outer opposite circular sides and a cylindrical outer surface extending therebetween about the circumferences of said inner and outer circular sides, said outer side of each ear piece having a radially outer annular tire portion and a central hub portion;
 - c) means removably attaching said first and second ear pieces to said first and second ear piece attachment bands, respectively.

5,509,148

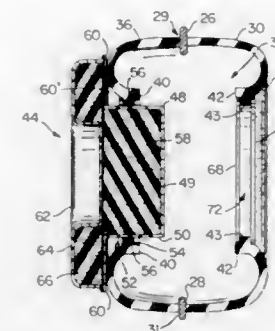
THREE-WAY TRAP ELBOW AND CLEANOUT SYSTEM
David S. Steele, 611 Ridge Rd., Monmouth Jct., N.J. 08852, and Robert R. Taylor, 42 Harrison St., Morristown, N.J. 07960

Filed May 25, 1994, Ser. No. 248,755

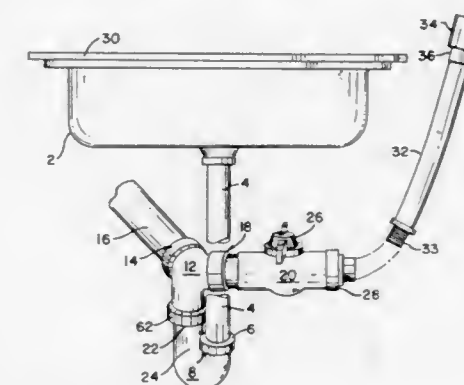
Int. Cl.⁶ E03C 1/30

U.S. Cl. 4—255.01

10 Claims



- with said inner sides of said ear pieces facing inwardly toward each other and said outer sides of said ear pieces facing outwardly away from each other;
- d) first and second circular discs each in the shape of a hubcap of an automotive tire; and
- e) means removably attaching said first and second discs into the central hub portion of said outer sides of said first and second ear pieces, respectively, with said discs lying in planes perpendicular to a respective said cylindrical surface.



1. A fitting comprising:

- means defining first and second passageways in a plane that meet at a junction at a first angle that is greater than 90° and less than 180°;
- means defining a third passageway that meets said first and second passageways at said junction, said third passageway intersecting said plane at a second angle that is greater than 0°;
- a valve mounted in said second passageway having a first side adjacent said junction and a second side remote from said junction; and
- a removable plug in said second passageway at a point on the side of said valve remote from said junction.

5,509,147

MULTI-POCKET SYSTEM FOR A GARMENT

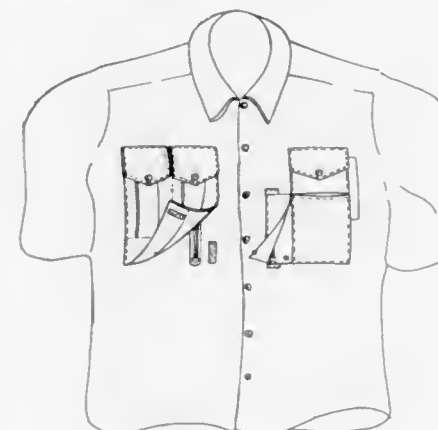
Agustin A. Busquets, 23300 Providence Dr., Apartment 210, Southfield, Mich. 48075

Filed Mar. 7, 1994, Ser. No. 206,958

Int. Cl.⁶ A41D 27/20

U.S. Cl. 2—253

10 Claims



1. A method of manufacturing a garment comprising:
 - providing a garment having a front panel including inside and outside surfaces;
 - providing a pair of panels;
 - sewing said pair of panels to said outside surface of said front panel on a first side thereof forming a plurality of longitudinal pockets on said garment;
 - sewing a panel to one panel of said pair of panels to form at least one lateral pocket;
 - cutting a slit in said front panel;
 - securing a closure fastener in said slit;
 - sewing a panel on the inside surface of said garment front panel to form an interior pocket;
 - providing at least three panels overlaid on one another and on said outside surface of said one panel on a second side of said garment front panel;
 - sewing a common hem on an edge of said three panels;
 - cutting a slit in said front panel;
 - securing a closure fastener in said slit; and
 - sewing a panel on the inside of said garment front panel to form an interior pocket.

5,509,149

COMBINED CHILD COMMODE AND AMUSEMENT DEVICE

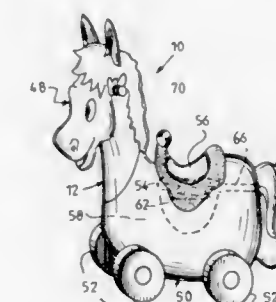
Virginia Lynch, 2288 Risco Dr., Laughlin, Nev. 89029

Filed Jan. 20, 1995, Ser. No. 375,998

Int. Cl.⁶ A47K 11/04

U.S. Cl. 4—476

5 Claims



1. A children's toilet training device comprising:

- a seat support for supporting a toy structure and an open commode seat;
- said seat support having an upper surface with an open area to be in communication with said seat;
- a seat cover hinged to said seat support for selectively covering said commode seat;
- a vertically oriented rearwardly facing aperture located in a rear portion of said seat support;
- a waste receptacle supported in an inner cavity in said seat support, said receptacle comprising:
 - a pot for collecting excrement from the child;

an elongated arm connecting said pot to a vertically oriented handle so that said pot may be removed with a single hand from said inner cavity through said rearwardly facing aperture without coming in close proximity with said excrement;

closure means on said elongated arm, proximate said handle, for covering said rearwardly facing aperture when said waste receptacle is fully inserted into said cavity with said pot in vertical alignment with said open area and with said handle being conveniently accessible outside said cavity; wherein when said cover is in an up position the child can sit on said seat to toilet train and when said cover is in a down position the child can sit on said cover to be amused by said toy structure.

5,509,150

DRAINAGE FIXTURE

Konrad Bergmann, Wittlich, and Klaus J. Lätter, Meckenheim-Merl, both of, Germany, assignors to Ideal-Standard GmbH, Bonn, Germany

Continuation of Ser. No. 30,327, Mar. 12, 1993, abandoned.

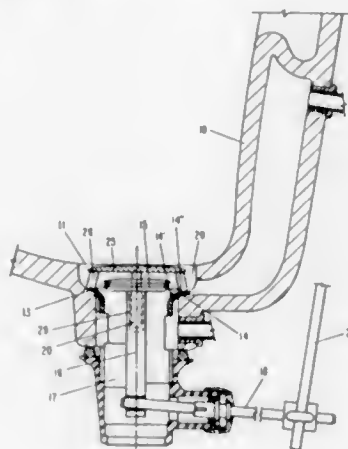
This application Sep. 2, 1994, Ser. No. 300,595

Claims priority, application Germany, Sep. 14, 1990, 40 29 164.2

Int. Cl. E03C 1/23

U.S. Cl. 4-691

9 Claims



1. A drainage fixture for a sanitary device having a drainage socket with a drain hole, said fixture comprising:

- a drainage funnel;
- a stationary disk for insertion into the drain hole of the drainage socket, said stationary disk having supports distributed over a periphery of said stationary disk;
- a plunger, comprised of a plunger head and a guide element, for closing the drain hole, said plunger positioned under said stationary disk so as to be movable between a closed position and an open position, wherein an underside of said disk has a guide rod and wherein said plunger has a channel for receiving said guide rod;
- said drainage funnel having an upper rim portion comprising a sealing collar for said plunger head in the closed position, said upper rim portion being positioned in a recessed manner in the drain hole;
- said drainage funnel further comprising a seat arranged substantially radially outwardly of said sealing collar, wherein said supports of said stationary disk are seated on said seat such that said supports of said stationary disk provide space for a longitudinal movement of said plunger head between said closed and said open positions;
- said stationary disk comprised of a ceramic material of a color matching a color of a ceramic material of the sanitary device;
- said stationary disk having a diameter that is smaller than a diameter of the drain hole and at least as great as a greatest

diameter of said upper rim portion of said drainage funnel, thereby forming an annular gap between said stationary disk and a rim of the drain hole; and

said stationary disk having a convex upper surface, with a top portion of said convex upper surface of said stationary disk positioned in a same plane as said rim of said drain hole.

5,509,151

LOCKABLE TWO FRAME CONVERTIBLE SOFA BED

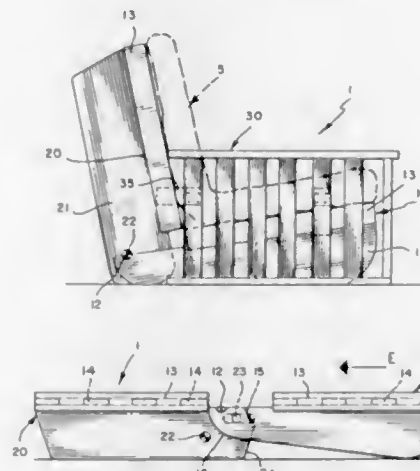
Robert Fireman, 785 W. End Ave., New York, N.Y. 10025, and Ralph Rosenow, Corinth, Miss., assignors to Robert Fireman, New York, N.Y.

Filed Dec. 9, 1993, Ser. No. 164,443

Int. Cl. A47C 17/16

U.S. Cl. 5-37.1

11 Claims



1. A sofa bed recliner (1) having a sofa bed position and a recliner position comprising a seat frame (10); and a back frame (20), each said frame (10, 20) having a frame portion and at least two supports (11, 21), at least two said supports (11, 21) of each frame (10, 20) including a portion extending beyond said frame portion on the same side, at least two said extending portions of each frame (10, 20) overlapping and including interactive engagement means, said interactive engagement means including a first detent (22) and a second detent (23) on at least two said back frame extending portions; and retaining means including a groove (15); at least one interactive guide surface (16); and a declivity (12) all on at least two said seat frame extending portions.

5,509,152

TRANSFER AID

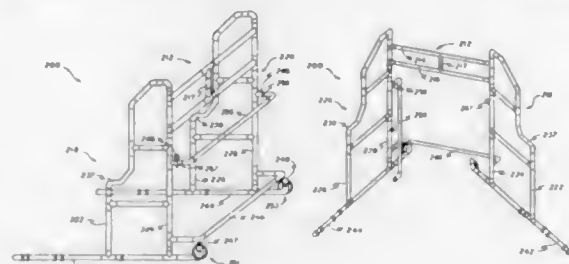
Arlin J. Kippes, 2800 Maupin La., Topeka, Kans. 66614

Continuation-in-part of Ser. No. 191,488, Feb. 4, 1994, Pat. No. 5,347,666. This application Jul. 27, 1994, Ser. No. 281,180

Int. Cl. A61G 7/10

U.S. Cl. 5-81.1

15 Claims



1. A transfer aid comprising:

an elongated base;

a pair of supports extending from said elongated base;

a grasping portion having at least one shaft extending between said pair of supports and serving as a hand hold, said grasping portion being pivotable with respect to one of said pair of supports, said base extending forwardly and rearwardly of said pair of supports; and

a rotation inhibitor for selectively rigidly interengaging said grasping portion and said pair of supports, said rotation inhibitor extending between said pair of supports, said rotation inhibitor including a break away portion and a hingeable portion spaced from said break away portion.

5,509,153

ANATOMICAL AIR MATTRESS

Eugen Roschacher, Weinbergstrasse 95, CH-8006 Zürich, Switzerland

PCT No. PCT/EP93/00106, § 371 Date Aug. 17, 1994, § 102(e)

Date Aug. 17, 1994, PCT Pub. No. WO93/14676, PCT Pub.

Date Aug. 5, 1993

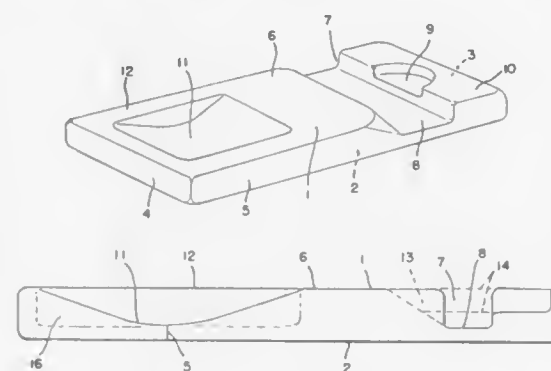
PCT Filed Jan. 18, 1993, Ser. No. 256,626

Claims priority, application Switzerland, Jan. 28, 1992, 00232/92; Germany, Jul. 23, 1992, 9209937 U

Int. Cl. A47C 27/08

U.S. Cl. 5-449

7 Claims



1. An anatomically shaped air mattress with a top surface, a substantially planar bottom surface, a face end, a foot end, and two opposing lateral sides connecting the face end to the foot end, said air mattress comprising:

- a substantially planar central section which is parallel to the bottom surface for receiving a chest and stomach of a person in a reclined position;
- a recess transversely formed between the two lateral sides and adjoining the central section adjacent the face end;
- a rest area adjoining the recess on a face end side thereof arranged for receiving the forehead of the reclined person, a spacing from the bottom surface being greater than the spacing of the base of the recess from the bottom surface but less than the spacing of the central section from the bottom surface;
- an end section adjoining the rest area and formed adjacent a face end, a spacing from the bottom surface at least corresponding to that of the central section from the bottom surface; and
- a hollow portion adjoining the central section adjacent the foot end extends partially over the width of the air mattress for the accommodation of the legs of the reclined person, whereby the foot end of the hollow has a spacing from the bottom surface which substantially corresponds to that of the central section.

5,509,154

AIR CONTROL SYSTEM FOR AN AIR BED

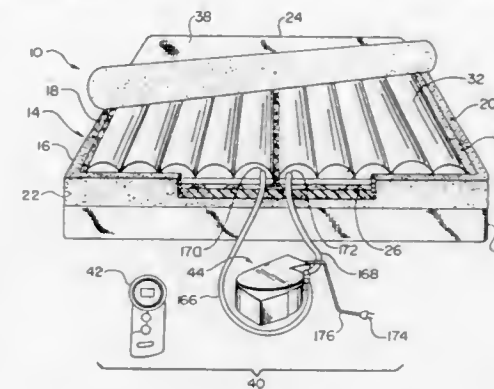
David C. Shafer, and Eugene F. Duval, both of Menlo Park, Calif., assignors to Select Comfort Corporation, Minneapolis, Minn.

Filed Nov. 1, 1994, Ser. No. 332,833

Int. Cl. A47C 27/10; H04Q 7/06

U.S. Cl. 5-453

4 Claims



1. A control system for controlling the firmness of a fluid supported mattress adapted for use with a bed assembly, comprising:

- a fluid pump;
- fluid conduit operably coupling said fluid pump to said fluid supported mattress in fluid communication therewith;
- control means operably coupled to said fluid pump and said fluid conduit for controlling the operation of said pump to adjust the firmness of said mattress;
- a hand held, remotely operated actuation means for actuating said control means; and
- transceiver means for communicating information signals between said actuation means and said control means, whereby said firmness of said mattress can be remotely adjusted through the use of said hand held actuation means.

5,509,155

ALTERNATING LOW AIR LOSS PRESSURE OVERLAY FOR PATIENT BEDSIDE CHAIR

Kevin Zigarac, Plantation, and Lydia B. Biggie, Lighthouse Point, both of Fla., assignors to Creative Medical, Inc., Ft. Lauderdale, Fla.

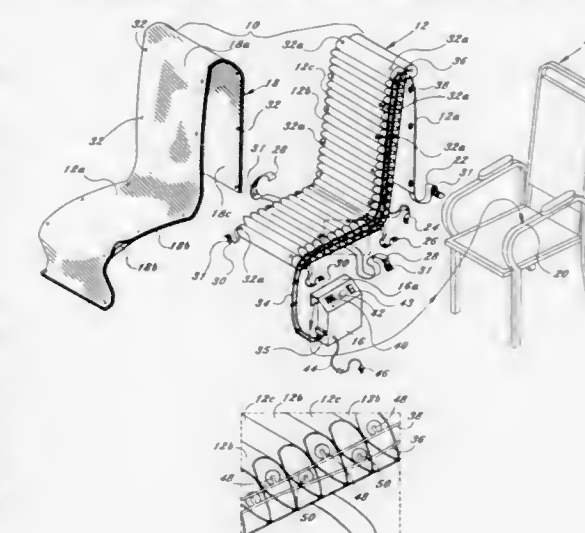
Filed Aug. 4, 1994, Ser. No. 286,008

Int. Cl. A61G 7/04

U.S. Cl. 5-453

5 Claims

1. An alternating pressure air sac overlay for therapeutic treat-



ment of an immobile patient's skin while seated in a chair having legs, comprising:

an array of elongated independently sealed air sacs constructed of an airtight material, sized in length to fit across a standard chair, said individual air sacs being tubular in shape, mounted in a fixed side-by-side array, the overall longitudinal length of the air sac array being sized to fit at least on the chair seat of a chair, a first group of independent air sacs being separated by a second group of air sacs in a side-by-side array, so that every other one of said air sacs in said first group and every other alternating one of said air sacs is contiguous with said first group to form said second group of air sacs;

first conduit manifold connected to said first group of air sacs;

second conduit manifold connected to said second group of air sacs;

an air pump having an inlet and an outlet for providing pressurized air in fluid communication and connected to said first conduit manifold and said second conduit manifold;

controllable air inlet valve means connected to said air pump and said first conduit manifold and said second conduit manifold, whereby in a first position, said air inlet valve means provides air pressure only to said first conduit manifold from said air pump, and in a second position, provides air under pressure only to said second conduit manifold from said air pump;

means including timing circuits for controlling air in a timed sequence into said first conduit manifold and said second conduit manifold from said air pump connected to said air pump;

electrical power supply connected to said air pump; and said timing circuits connected to said electrical power supply and said means for controlling air in a timed sequence;

at least two straps, said first strap and said second strap connected to an edge portion of said air sac array overlay for connecting said air sac array overlay to said chair legs for attaching and stabilizing the air sac array overlay to a chair; and

a coverlet comprising a liquid impervious barrier means removably connectable to said air sac array, covering said air sac array to provide a protective shield against liquids reaching said air sac array.

5,509,156

FOOT BLANKET

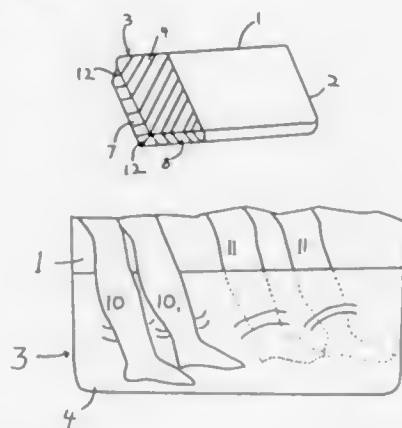
Billy W. Smith, 40 Bullards Rest. Hwy 76 E., Fair Bluff, N.C. 28439

Filed Apr. 11, 1995, Ser. No. 420,015

Int. Cl.⁶ A47G 9/02

U.S. Cl. 5—482

7 Claims



1. A foot blanket for encasing a foot end of a mattress comprising:
top and bottom, matching rectangular sheets each comprising a foot end, a first side and a second side;

a first elastic side sheet attached to said first side of each said matching rectangular sheet;

a second elastic side sheet attached to said second side of each said matching rectangular sheet;

an elastic foot sheet attached to said foot end of each said matching rectangular sheet,

said blanket having a width of at least 30 inches and no more than 85 inches,

said blanket having a length of at least 8 inches and no more than 30 inches, said foot blanket having a stretch potential of at least 6 inches and no more than 15 inches, whereby the top sheet is adapted to cover the feet of a user resting on a mattress on an end of which the foot blanket is installed.

5,509,157

PILLOW CASE WITH ANIMAL OR OTHER CHARACTER APPENDAGES

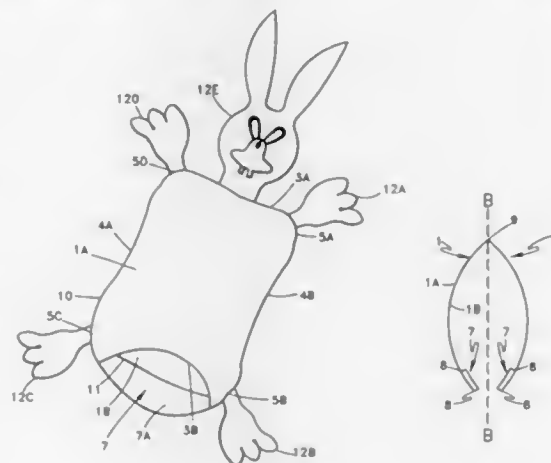
Lana Story, 7890 Mill Creek Rd., Surfside, S.C. 29575

Filed Nov. 29, 1993, Ser. No. 158,963

Int. Cl.⁶ A47G 9/00

U.S. Cl. 5—490

4 Claims



1. A pillow case including animal or other character caricature appendages comprising:

A. a pair of pillow case panels (1) each having a 1st and a 2nd surface (1A, 1B), a top and a bottom end (3A, 3B), a 1st and a 2nd side (4A, 4B), rounded corners (5A, 5B, 5C, 5D) and outer perimeters (10); a pair of bottom pillow case facings (7) each having a 1st and a 2nd surface (7A, 7B), corners (8A, 8B) and outer perimeters (11);

B. the bottom end (3B) of one pillow case panel (1) overlaid by a bottom pillow case facing (7) aligned so that the bottom pillow case facing corners (8A, 8B) are aligned with said rounded corners (5B, 5C) of the pillow case panel (1); said bottom pillow case facing (7) affixed by means to said pillow case panel (1) at the outer perimeter of said bottom pillow case facing (11) so as to accommodate caricature animal or character appendages (12B, 12C); appendages (12B, 12C) located at a plurality of rounded corners (5A, 5B, 5C, 5D),

C. the bottom end (3B) of a second pillow case panel (1) overlaid by a bottom pillow case facing (7) aligned so that the bottom pillow case facing corners (8A, 8B) correspond to said rounded corners (5B, 5C) of the pillow case panel (1); said bottom pillow case facing (7) affixed by means to said pillow case panel (1) at the outer perimeter (11) of said bottom pillow case facing (7);

D. the said pillow case panel (1) with affixed caricature animal or character appendages (12A, 12B, 12C, 12D, 12E) overlays the second pillow case panel (1) such that the respective pillow case panel rounded corners (5A, 5B, 5C, 5D), 1st and 2nd sides (4A, 4B) and top and bottom ends (3A, 3B) are aligned and the bottom pillow case facings (7) are directed

toward each other; the outer perimeters (10) of the respective pillow case panels (1) are affixed by means at the sides (4A, 4B) and top (3A).

5,509,158

BED SUPPORTED STORAGE PLATFORM

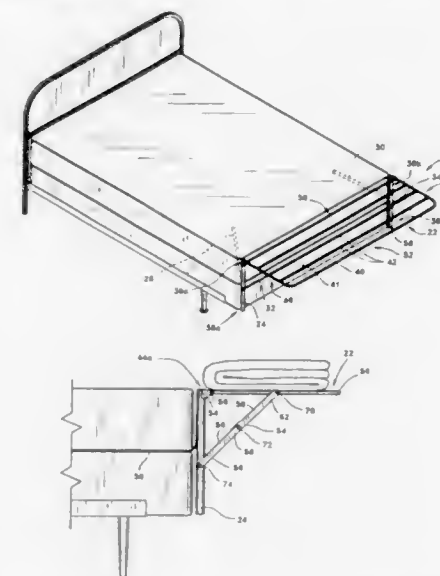
William L. Morrison, 273 Calliope Dr., Henderson, Nev. 89014

Filed May 12, 1995, Ser. No. 440,243

Int. Cl.⁶ A47C 21/02

U.S. Cl. 5—504.1

9 Claims



1. A bed supported storage device for storing items at the end of a bed comprising:

a support structure including at least two spaced-apart upright posts;

a platform having a first side and a second side, said first side hingedly connected to said support structure;

at least one folding arm connecting said platform and said support structure, whereby said platform is movable between a first raised position in which said arm is extended and retains said platform in a position in which it extends outwardly from the end of said bed; and a second stored position in which said arm is folded and said platform extends downwardly along the end of said bed; and

means for removably connecting said support structure to said bed at an end thereof, said means for removably connecting comprising a pair of struts connected to said support structure and extending outwardly therefrom.

5,509,159

UNDERCARRIAGE

Robert L. Du-Bois, Goulburn, Australia, assignor to Ferno Washington, Inc., Wilmington, Ohio

Filed Sep. 2, 1994, Ser. No. 296,813

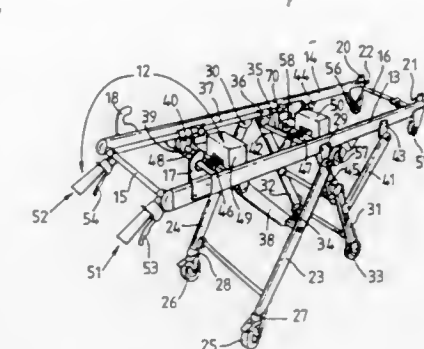
Claims priority, application Australia, Jan. 4, 1993, PL6644

Int. Cl.⁶ A47B 1/00

U.S. Cl. 5—627

9 Claims

1. An undercarriage comprising a support structure fitted to a height adjustable framework consisting of first and second pairs of collapsible legs, and an actuating means for adjusting the height of the support structure, wherein the actuating means comprises first and second flexible ties respectively connected to the first and second pairs of collapsible legs and to the support structure through the intermediary of first and second spools onto which said first and second flexible ties are respectively retractable, which first and second flexible ties are retractable or extendable so as to



extend or collapse the first and second pairs of legs to thereby adjust the height of the support structure, and wherein each said spool is under spring tension so that the associated flexible tie is biased to wind onto that spool, each said spool having an associated ratchet mechanism to enable its associated flexible tie to be unwound from its spool when the associated ratchet mechanism is disengaged so that the support structure can be lowered.

5,509,160

PATIENT POSITIONERS FOR USE ON AIR SUPPORT SURFACES

Paul E. Schubert, Raleigh, N.C., assignor to Kinetic Concepts, Inc., San Antonio, Tex.

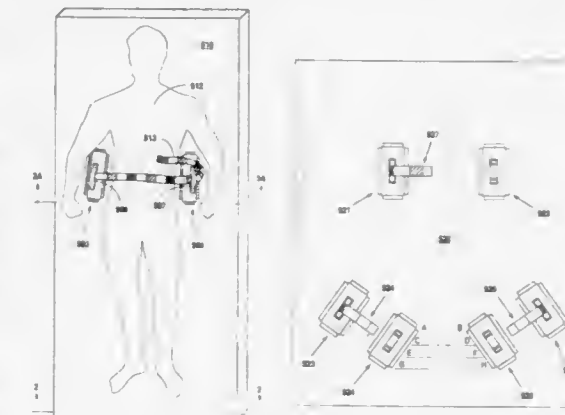
Division of Ser. No. 823,281, Jan. 21, 1992, Pat. No. 5,357,641.

This application Oct. 25, 1994, Ser. No. 328,472

Int. Cl.⁶ A61G 7/057; 7/07; 7/075

U.S. Cl. 5—630

11 Claims



1. An apparatus to aid positioning of a patient on a patient support system such as a bed, comprising:

a patient support base;

first and second flexible elements oriented and adapted to be positioned on opposite sides of a patient reclined on said patient support base;

said first and second elements being pivotally secured to a region of an upper surface of the patient support base, along generally linear edges of said elements, in a manner to help prevent side-to-side sliding of the patient relative to the upper surface of the patient support system;

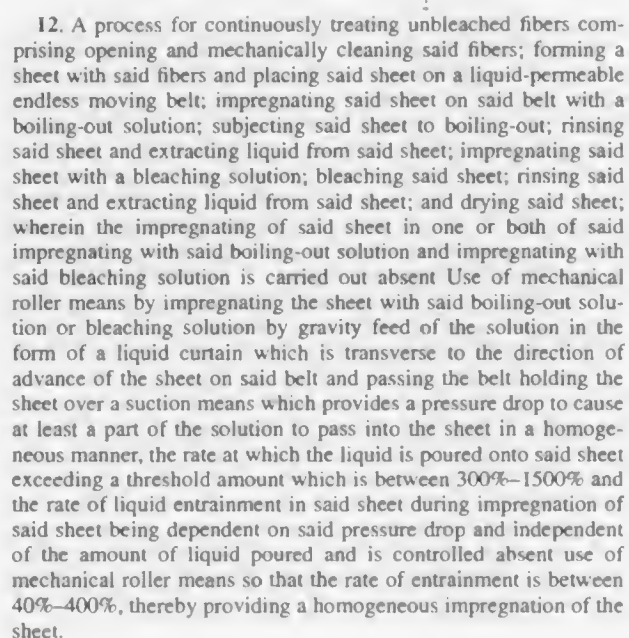
the pivotal securing of said first and second elements being such that said first and second elements pivot about a first and a second axis, respectively;

each of said axes being substantially coplanar with said region of said upper surface;

said first axis being substantially parallel with said second axis; and

said first and second axes being spaced such that said first and second elements are positionable between the patient's torso and the patient's arms.

12 Claims

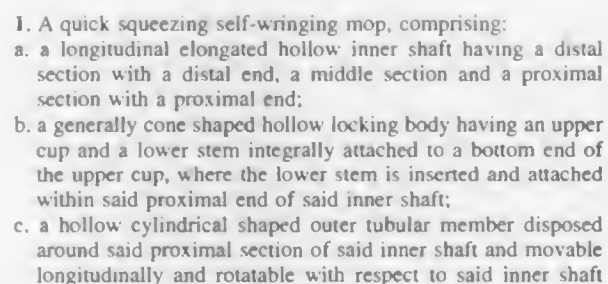


6 Claims



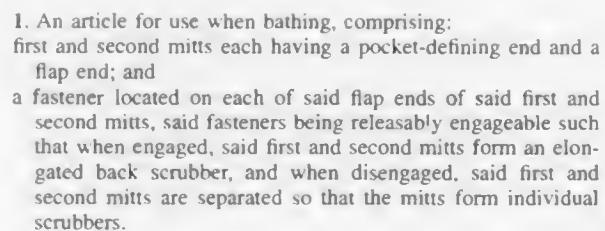
a retainer for retaining said second brush arm in said operative position.

18 Claims

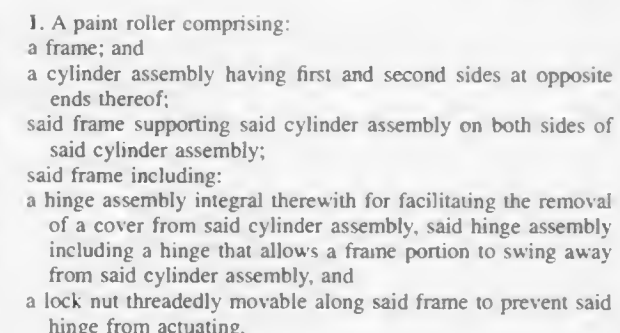


j. whereby when a user stops applying a rotational force on said outer tubular member and releases said outer tubular member at any given time, the mop will not automatically unwind, and when said pawl is pressed against said spring means, said outer tubular member rotates back to its initial position, thereby allowing said mop to unwind for mopping use.

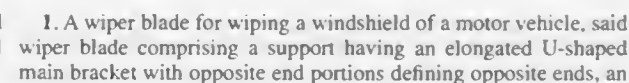
17 Claims



12 Claims



U.S. Cl. 15—250,44



elongated lower bracket pivotally connected with each end of said main bracket, said lower brackets having opposite ends with claw pairs thereon, said main bracket and lower brackets having a central longitudinal plane passing therethrough; an elongated rubber elastic wiper strip adapted to abut against a windshield, said wiper strip having longitudinal sides engaged by said claw pairs and held thereby, said main bracket having substantially parallel first and second legs and a flat base wall connecting said legs with one another, said base wall being perpendicular to said plane; a spoiler extending from said first leg at an angle thereto, said main bracket being provided with a plurality of throughgoing openings in each end portion, each opening lying partly in said base wall and partly in said second leg, each of said throughgoing openings having at least one side edge in said base wall which forms an acute angle with the central longitudinal plane of said main bracket, said side edges of said openings being substantially parallel with one another.

5,509,167

CLEAT CLEANING TOOL

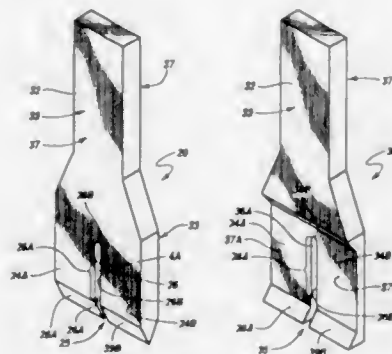
Dylan Wilson, 800 Ambassador, Corsicana, Tex. 75110

Filed Jun. 21, 1994, Ser. No. 263,097

Int. Cl.⁶ A47L 23/04

U.S. Cl. 15—237

21 Claims



1. A tool for cleaning a cleat extending from a sole of a shoe, said tool comprising:

- (a) an elongated handle having a handle end; and
- (b) a first elongated prong and a second elongated prong, each of said first elongated prong and of said second elongated prong having a first prong end and a free prong end, said free prong end and said first prong end of each of said first elongated prong and of said second elongated prong positioned opposite of one another, each said first prong end connected to and extending from said handle end of said elongated handle, said first elongated prong and said second elongated prong substantially straight and substantially parallel to one another and defining therebetween an elongated groove having an open end and a closed end, said open end and said closed end opposite from one another, said open end of said elongated groove adjacent to said free prong ends of said first elongated prong and of said second elongated prong, said closed end spaced from said open end, said elongated groove also formed by a first side portion of said first elongated prong and a second side portion of said second elongated prong, said first side portion and said second side portion extending from said open end to said closed end, said elongated groove also having a substantially constant width between said first side portion and said second side portion from said open end of said elongated groove to said closed end of said elongated groove, said free ends of each of said first elongated prong and of said second elongated prong having a front face and a back face, said front face and said back face of each of said first elongated prong and of said second elongated prong having beveled surfaces which cooperate to define a pointed edge at said free end of each of said first elongated prong and of said second elongated prong; and

(c) whereby said elongated groove is adapted to receive said cleat and to scrape off any debris located thereon as well as said sole adjacent to said cleat.

5,509,168

DEVICE FOR EXTENDING THE EFFECTIVENESS AND LIFE OF A TOOTHBRUSH

C. P. Butler, P.O. Box 870927, Stone Mountain, Ga. 30087, and

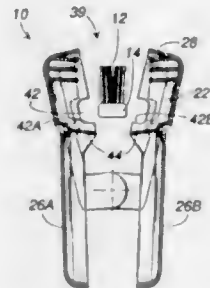
E. M. Butler, 3118 SW 20th Ter., Del Ray Beach, Fla. 33445

Filed Nov. 17, 1994, Ser. No. 341,359

Int. Cl.⁶ A46B 17/04

U.S. Cl. 15—257.01

3 Claims



1. A dental oral hygiene device for extending the useful lifetime of a toothbrush having a handle and an elongated plurality of longitudinal bristles each having a defined length attached generally normal to the longitudinal axis of the handle and forming a generally rectilinear bristle array, each of the bristles having a proximal end attached to the handle and a distal end forming a tip, said device comprising:

- a. means for applying pressure to opposite sides of the bristle array at at least two points along the bristle length, said at least two points including a point approximately at the bristle tip and at a point between the bristle tip and the proximal end of the bristle;

b. a receptacle structure supporting said means for applying pressure and for containing at least a portion of the toothbrush including the bristles;

wherein said means for applying pressure comprises a pair of clamping members each including a plurality of clamping surfaces, wherein each clamping surface on one of said members has a corresponding cooperating clamping surface on the other said member said clamping surfaces being substantially parallel to the toothbrush handle when in use, each of said cooperating clamping surfaces interacting with the bristles and the distance separating said cooperating clamping surfaces at said point between the bristle tip and proximal end of the bristle is greater than the distance separating said cooperating clamping surfaces at said point at approximately the bristle tip.

5,509,169

PAINT TRAY WITH PAINT BRUSH HOLDER

Mel Drucker, 64-34 99th St., Rego Park, N.Y. 11374

Filed May 24, 1995, Ser. No. 448,677

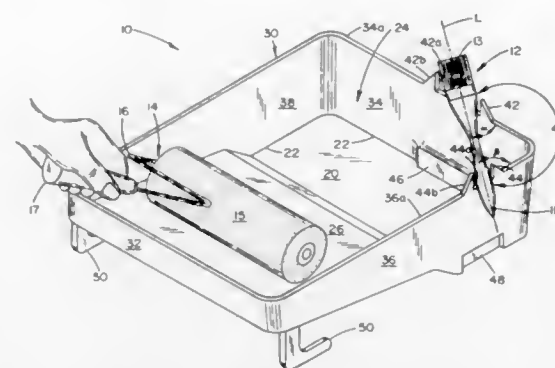
Int. Cl.⁶ B44D 3/12

U.S. Cl. 15—257.06

16 Claims

1. A paint tray with paint brush holder for use with a paint roller and paint brush, the paint tray comprising:

- a bottom member having an outer edge;
- a vertically extending surrounding wall connected to said outer edge of said bottom member, said vertically extending surrounding wall having a front wall, and opposite end wall, and a pair of opposite side walls;
- said bottom member adjacent said end wall of said surrounding wall forming a paint well for storing a supply of paint;



said bottom member having an inclined surface tapering upwardly from said paint well for rolling excess paint from a paint roller; and retaining means for releasably retaining a paint brush across an upper edge of said end wall and an upper edge of an adjacent side wall.

5,509,170

SHOE MAINTENANCE AND STORAGE BOX

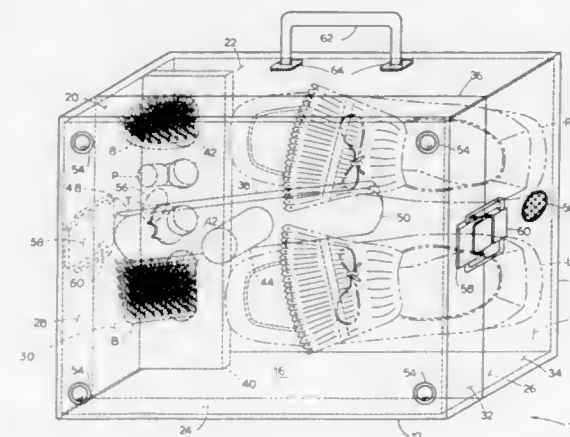
Domenic LoFaro, 617 Clermont Ave., Frank Porzio, 217 Sprague Ave., both of Staten Island, N.Y. 10307, and Peter Bal-lack, 20 Grand Blvd., Spotswood, N.J. 08884

Filed Mar. 14, 1995, Ser. No. 404,063

Int. Cl.⁶ A47L 23/16; 23/14; B65D 85/18

U.S. Cl. 15—265

14 Claims



1. A shoe maintenance and storage box comprising: a separable maintenance portion and a storage portion, with said maintenance portion and said storage portion securable together to form a closed box;

said maintenance portion and said storage portion each having a base wall with four corners and first through fourth peripheral walls, with said maintenance portion base wall and said storage portion base wall being oppositely disposed, and said first through fourth peripheral walls of said maintenance portion and said base portion being respectively coplanar when said maintenance portion and said base portion are secured together, and wherein said peripheral walls of said maintenance portion are shorter than said peripheral walls of said storage portion;

a shoe holder mounted on said maintenance portion base wall comprising a laterally symmetrical shoe plate mounted on a non-hinged column extending therefrom and between said maintenance portion's first through fourth peripheral walls, with said maintenance portion's first through fourth peripheral walls having an edge defining a plane, and said shoe holder extending beyond said plane of said edge of said maintenance portion's peripheral walls, whereby either a left or a right

shoe can be placed on said laterally symmetrical shoe plate and a shoe can be installed either inverted or upright over said shoe plate;

storage space for footwear on either side of said shoe holder within said shoe maintenance and storage box;

a shelf disposed within said storage portion of said box having a plurality of holes therein with each of said holes providing for the retention of a shoe maintenance and cleaning article therein; and

four friction pads extending from the exterior of said maintenance portion base wall and each said friction pad situated proximate to one said corner of said maintenance portion base wall to preclude slippage of the maintenance portion when a shoe is being worked on.

5,509,171

VACUUM CLEANER BUMPER SYSTEM

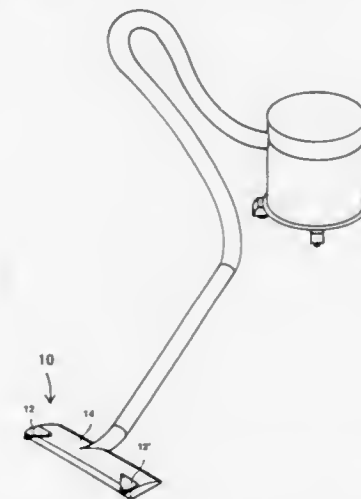
Frantisek Zejda, 4767 N. Waterfront Way, Boise, Id. 83703

Filed Dec. 7, 1994, Ser. No. 350,903

Int. Cl.⁶ A47L 9/00

U.S. Cl. 15—325

11 Claims



1. A floor maintenance equipment bumper system for making smoother and easier the movement of the floor maintenance equipment around and along an obstacle, the bumper system comprising: a floor maintenance equipment head,

a bumper member connected to the equipment head and extending horizontally out from the equipment head for impacting the obstacle,

a retraction means for allowing the bumper member to resiliently retract into the equipment head, upon head-on impact of the bumper member with the obstacle, and

a pivot means for pivoting the bumper member, upon a side impact of the bumper member on the obstacle, to urge the equipment head away from and around the obstacle.

5,509,172

SUPPORT ASSEMBLY FOR MOUNTING CASTERS TO A FRAME OF A STROLLER

Charles W. Lauro, Southern Pines, N.C., assignor to Kolcraft Enterprises, Inc., Chicago, Ill.

Filed Apr. 12, 1994, Ser. No. 225,832

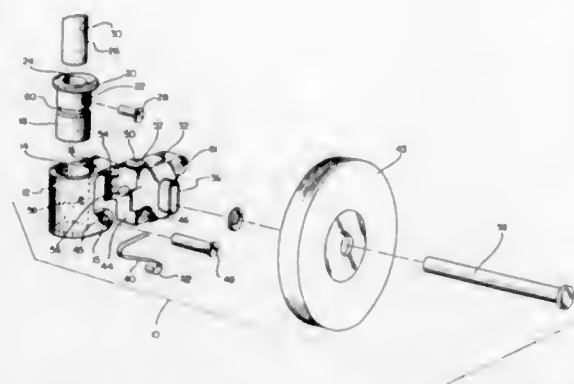
Int. Cl.⁶ B60B 33/02

U.S. Cl. 16—30

14 Claims

1. A support assembly for mounting a wheel to a tubular frame member comprising:

a sleeve having a recess located in a periphery thereof, said sleeve being adapted to telescopically receive a tubular frame member;



a collar having an opening therein and adapted to telescoping receive said sleeve, said opening and said recess being substantially aligned when said sleeve is received in said collar;
a housing separably connected to said collar, said housing including means for mounting said assembly to a wheel axle;
a locking member integral with and extending out from said housing, said locking member being adapted to be removably inserted through said collar opening and engageable with said sleeve recess to releasably couple said housing to said sleeve; and
latch means extending from one of said collar and said housing for releasably latching said housing to said collar, whereby upon disconnecting said latch means, said locking member disengages from said sleeve recess and said collar opening.

5,509,173

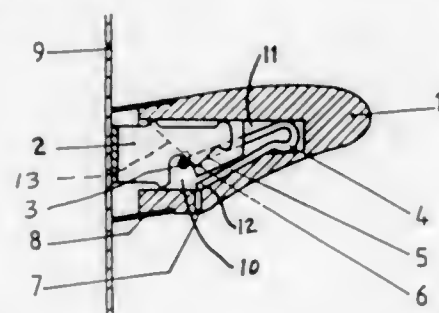
FASTENING SYSTEM FOR HANDGRIPS

Jose L. A. LaSaosa, Saragossa, Spain, assignor to Vitrex, S.A., Zaragosa, Spain

Filed Oct. 21, 1993, Ser. No. 140,246

Claims priority, application Spain, Apr. 22, 1993, 9301093
Int. Cl.⁶ A47J 45/06

U.S. Cl. 16—114 A



1. A fastening system for cookware comprising a brace rigidly extending from and carried by a piece of cookware, a handgrip, and connecting spring means for releasably connecting said handgrip to said brace, said handgrip having an attachment recess in one end for receiving said spring means and said brace, said spring means having two arms joined by a latch bar, said brace having at least one tooth for engaging said latch bar, each of said arms having two spring segments joined at one end, the opposite end of a first of said spring segments of each of said arms being joined to said latch bar, and the opposite end of the second of said two spring segments comprising a free end of said spring means, said free ends of said spring means being adjacent to apertures in said handgrip, said apertures comprising retention means for receiving and engaging said free ends and preventing removal of said spring means from said handgrip unless said free ends are deflected, said apertures providing access to said free ends from outside said attachment recess, said latch bar being positioned adjacent to said brace so as to engage said at least one tooth on said brace, whereby after said tooth and said latch bar are engaged, removal of said

handgrip from said cookware is only possible when both of said free ends are deflected away from said retention means, said attachment recess including means for allowing an assembler to removably pre-assemble said spring means to said handgrips prior to assembling said handgrip to said brace, said means for allowing an assembler to removably pre-assemble said spring means comprising a sloped surface in said attachment recess for causing deflection of said latch bar such that at least one of said free ends of said spring means engages one of said apertures.

5,509,174

APPLIANCE KNOB AND BEZEL ASSEMBLY

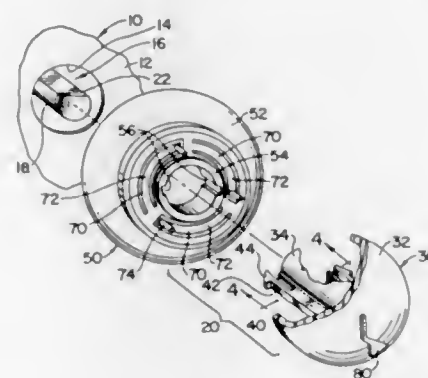
James L. Worrell, DeKalb, Ill., assignor to K I Industries, Inc., Berkeley, Ill.

Filed Dec. 6, 1994, Ser. No. 349,911

Int. Cl.⁶ A47J 45/06; E05B 1/00

U.S. Cl. 16—121

10 Claims



2 Claims

1. A knob and bezel assembly for an appliance having a wall provided with an aperture and having a control equipped with a shaft, which defines an axis, which is movable inwardly and outwardly over a limited range of axial movement, which is rotatable about the axis at least when moved inwardly to an inward limit of the limited range of axial movement, which is biased outwardly to an outward limit of the limited range of axial movement, which is aligned axially with the aperture in the appliance wall, and which has a keying formation adapted to coact with a keying formation on a knob so as to enable conjoint rotation of the knob and the shaft at least when the shaft is moved inwardly to an inward limit of the limited range of axial movement, the knob and bezel assembly comprising

- (a) a knob having a handle and a hub, which is integral with the handle, which is adapted to be axially fitted over the shaft with a frictional fit so as to be axially movable with the shaft, and which has a keying formation adapted to coact with the keying formation of the shaft so as to enable conjoint rotation of the knob and the shaft,
- (b) a bezel having a skirt and a hub, which is integral with the skirt, which fits slidably over the hub of the knob so that the skirt is disposed between the knob and the appliance wall when the hub of the knob is fitted axially over the shaft,
- (c) means formed integrally on the knob or on the bezel for biasing the bezel so that the skirt engages the appliance wall when the hub of the knob is fitted axially over the shaft, and
- (d) means formed integrally on the knob or on the bezel for enabling conjoint rotation of the knob and the bezel, wherein the means for enabling conjoint rotation of the knob and the bezel comprises an axially extending rib formed integrally on the hub of the knob and fitted slidably into an axially extending groove formed in the hub of the bezel.

5,509,175

VEHICLE DOOR HINGE WITH COMPOUND ROLLER STRUCTURE HAVING ONE PIECE SPOOL, SYNTHETIC BEARING SLEEVE AND PLIABLE ANNULAR RING

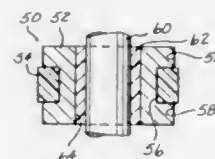
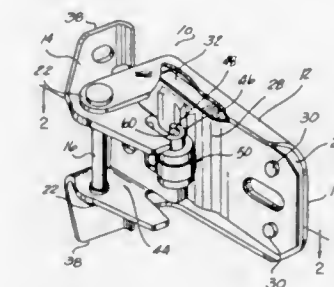
Steven M. Baughan, Grand Blanc, and Eric T. Hartman, Sterling Heights, both of Mich., assignors to ITT Corporation, New York, N.Y.

Filed Dec. 22, 1993, Ser. No. 173,771

Int. Cl.⁶ E05D 5/14

U.S. Cl. 16—332

18 Claims



1. In a hinge assembly for a vehicle having a body and a door including a first plate adapted to be secured to the body of the vehicle, a second plate adapted to be secured to the door of the vehicle, pin means for pivotally connecting the first plate to the second plate about a first axis, third plate means secured to one of said first and second plates at one end and having a free end positioned intermediate between said one of said first and second plates and the other of said first and second plates proximate the pin means, spring means positioned between said third plate means and said one of said first and second plates for biasing said third plate means outwardly from said one of said first and second plates and a roller member mounted on a pin for rotation about a second axis and movable with said other of said first and second plates between a door-closed position and a door-opened position, wherein said roller member is spaced from said third plate means when in said door-closed position, said roller member engageable with said third plate means when moving between said door-opened position and said door-closed position causing deflection of said third plate means against said spring means, the improvement comprising:

said roller member having a hard, rigid spool portion and a flexible, resilient silencer portion, said silencer portion adapted to engage said spool portion such that the spool portion and the silencer portion engage said third plate means when moving between said door-opened and door-closed positions, said spool portion of said roller member formed of a single piece having a first, reduced diameter, annular shoulder interposed between two, longitudinally spaced, enlarged diameter, annular shoulders, said first annular shoulder of said spool having a knurled surface engageable with said silencer portion.

5,509,176

TORQUE HINGE

Rex A. Karl, Temple, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 20,915, Feb. 22, 1993, abandoned.

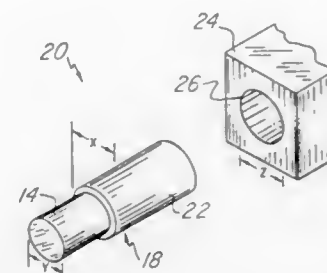
This application May 12, 1994, Ser. No. 241,939

Int. Cl.⁶ E05D 11/08

U.S. Cl. 16—342

20 Claims

1. A computer system having a torque hinge, comprising:



a computer housing having a cavity, the cavity having a transverse cross-sectional area;
a shaft positioned in the cavity, the shaft having a transverse cross-sectional area smaller than that of the cavity; and
an annular, resiliently compressible coating covering the shaft, wherein the outer diameter of the annular coating covering the shaft has a larger transverse cross-sectional area than the transverse cross-sectional area of the cavity thereby creating an interference frictional fit between the shaft, coating and cavity and causing sufficient friction to provide resistance throughout the hinge's entire range of motion.

5,509,177

WINDOW STAYS

Philip J. Hindin, Seatoun, and Albert G. Bucher, Masterton, both of, New Zealand, assignors to Interlock Industries Limited, Wellington, New Zealand

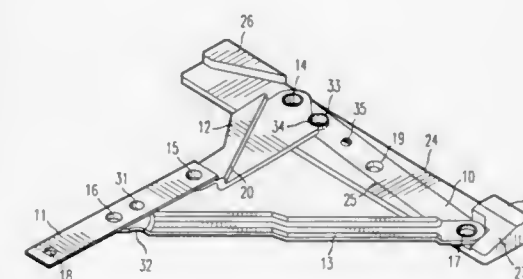
Filed Dec. 3, 1993, Ser. No. 161,269

Claims priority, application New Zealand, Dec. 3, 1992, 245359

Int. Cl.⁶ E05D 3/06

U.S. Cl. 16—370

14 Claims



1. A window stay, which comprises:
a frame plate;
a sash plate;
an elongate short arm coupled respectively by a pivot at each end thereof to the frame plate and sash plate; and
an elongate long arm coupled respectively by a pivot at each end thereof to the frame plate and sash plate, the geometry of the stay being such that, in a closed position of the stay, the pivot coupling the long arm to the sash plate is situated between the pivot coupling the frame plate to the short arm and the pivot coupling the sash plate to the short arm wherein the short arm is provided with a step located in the length of the short arm between the pivot coupling the short arm to the frame plate and the pivot coupling the short arm to the sash plate, said step extending across the width of the short arm and being disposed substantially diagonally relative to an imaginary line extending between said pivot coupling the short arm to the frame plate and the pivot coupling the short arm to the sash plate.

5,509,178

FEED COMB ARRANGEMENT

Josef Egerer, Schwabach, Germany, assignor to Staedtler & Uhl, Schwabach, Germany

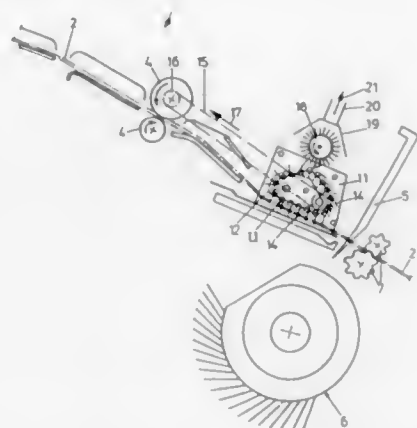
Filed Dec. 2, 1994, Ser. No. 352,700

Claims priority, application Germany, Dec. 14, 1993, 43 42 561.5

Int. Cl.⁶ D01G 19/02; 19/10

U.S. Cl. 19—215

6 Claims



1. A feed comb arrangement for a combing machine comprising an intermittently driven pair of feed rollers preceding said feed comb arrangement in the transport direction of a fiber web to be combed and a take-down arrangement in the form of take-down rollers, following said feed comb arrangement, wherein said feed comb arrangement comprises a plurality of fallers (13), which are intermittently driven in synchronization with the combing operation and which are respectively provided with needles or saw-toothed stamped elements (14), each of said plurality of fallers (13) respectively extending on two outer ends into a pair of closed guideways (12) allowing during part of a route of rotation said needles or saw-toothed points (14) around said guideway to respectively engage said fiber web (2) and thereafter, respectively, upwardly leave said fiber web (2) after having incrementally transported said fiber web.

5,509,179

AUTOLEVELLER DRAW FRAME HAVING PROCESS FEED BACK CONTROL SYSTEM

Glancarlo Mondini, Theodor Reuter Weg 6, Winterthur, CH-8400; Urs Meyer, Hohfurrstrasse 1, Niederglatt, CH-8172; Robert Moser, Wingertstrasse 41, Winterthur, CH-8405; Jurg Bischofberger, Carl Spittelerstrasse 7, Raterschen, CH-8352; Urs Keller, Heimensteinstrasse 21, Seuzach, CH-8472, and Erich Jarnot, Leherenstrasse 25, Seuzach, CH-8472, all of, Switzerland

Division of Ser. No. 855,015, Apr. 27, 1992, abandoned. This application Oct. 20, 1994, Ser. No. 327,782

Claims priority, application Switzerland, Jun. 25, 1990, 02112/90

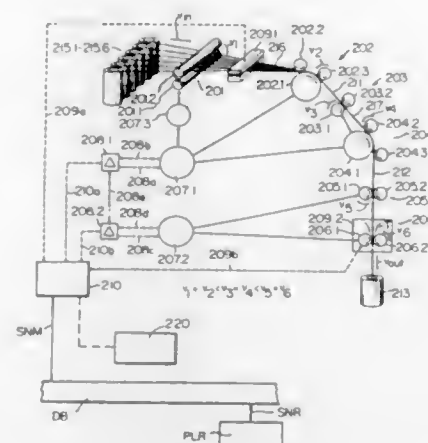
Int. Cl.⁶ D01G 21/00; D01H 5/32

U.S. Cl. 19—239

7 Claims

1. An autoleveller draw frame for fibre structures, said draw frame being arranged after a plurality of successive textile machines in a fibre processing plant, for processing said fibre structures, said draw frame comprising:

- at least one draw zone;
- a controllable drive system for defining draft height of the fibre structures in said draw zone;
- a programmable control unit for controlling the drive system;
- at least one sensor for determining mass per unit of length of the fibre structures passing a measuring position;
- means for storing a signal defining the drafted fibre structures for a predetermined period of time, said signal being repre-



sentative of information for affecting a quality parameter of the fibre structures; said means for storing said signal including a memory unit for storing said signal; and

a process control computer, said process control computer also being utilized for recalling said signal stored in said memory unit for use in controlling a quality parameter of the fibre structures in said plurality of successive textile machines of said fibre processing plant.

5,509,180

BUCKLE FOR SKI BOOT

Cristiano Benetti, Paese, and Denis Gallon, Belluno, both of, Italy, assignors to Lange International S.A., Fribourg, Switzerland

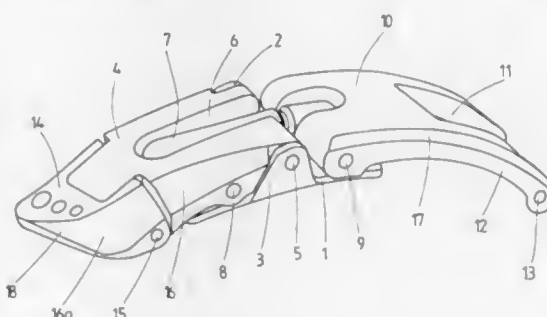
Filed Nov. 1, 1994, Ser. No. 332,701

Claims priority, application Switzerland, Dec. 8, 1993, 3653/93

Int. Cl.⁶ A43C 11/00

U.S. Cl. 24—68 SK

3 Claims



1. A buckle for a ski boot, comprising a tensioning lever (4) which is articulated onto a base (1) and has a longitudinal notch (6) in which a link rod (7), which is also connected to a fastening member (10), is articulated, wherein the notch (6) of the tensioning lever, and consequently also the link rod (7), are laterally offset relative to the longitudinal mid-axis of the tensioning lever (4), toward the side of the buckle which is intended to be arranged toward the rear of the boot, and wherein the part of the tensioning lever located on the side opposite the notch has, over at least a part of its width, a height which decreases toward the side intended to be arranged toward the front of the boot.

5,509,181

FITTING FOR BALL CHAINS

Kenji Yuuki, Toyama; Kiyoshi Oda, Namerikawa, and Hideyuki Matsushima, Toyama, all of, Japan, assignors to Yoshida Kogyo K.K., Tokyo, Japan

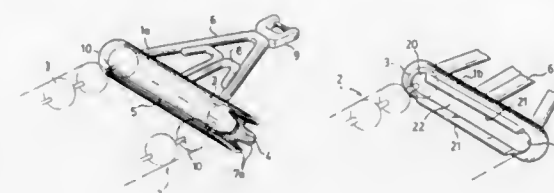
Filed Sep. 21, 1993, Ser. No. 124,214

Claims priority, application Japan, Sep. 21, 1992, 4-072238 U

Int. Cl.⁶ F16G 15/00

U.S. Cl. 24—116 A

11 Claims



1. A ball chain fitting comprising an elongated hollow ball containing part closed at least at one end thereof and a connecting member fixed to said ball containing part, said ball containing part having inside dimensions fit for terminal balls of a plurality of ball chains to be inserted therein and, at the same time, being provided with a slit formed in said ball containing part as extended substantially throughout the entire length thereof on the side opposite to the side used for fixation of said connecting member and further with an insertion mouth communicating with said slit, said slit having a width enough for insertion therethrough of a string of each ball chain, and said insertion mouth having a size enough for insertion therethrough of said ball and being so adapted as to be closed after the terminal balls of said plurality of ball chains having been inserted into said ball containing part;

wherein said ball containing part is formed of a cylindrical member having one end closed and the other end opened whose opening forms said insertion mouth;

and further comprising a sealing member serving to seal said other end; and

wherein said cylindrical member is provided with a rim part of increased wall thickness formed on said other end, and said sealing member is composed of a hemispherical head part of a size enough to cover said opening of the cylindrical member and a leg part projected from said head part, said leg part being provided at the leading end thereof with an outwardly expanded flange part such that when the other end of said cylindrical member having the sealing member inserted therein is squeezed by pressing, said rim part will be plastically deformed and pressed into a gap between the head part of said sealing member and said flange part.

5,509,182

CLIP FOR ATTACHING SHEET MATERIAL TO A BODY PANEL

Hideaki Nakanishi, Toyohashi, Japan, assignor to Emhart Inc., Newark, Del.

Filed Aug. 2, 1994, Ser. No. 284,319

Claims priority, application Japan, Aug. 2, 1993, 5-042324 U

Int. Cl.⁶ A44B 17/00; F16B 21/00

U.S. Cl. 24—297

2 Claims

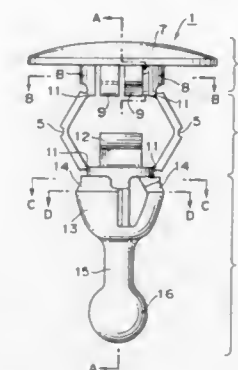
1. A clip for attaching carpet to a vehicle body panel comprising a head comprising a flange for retaining the carpet, said head having a continuous upper surface;

a shank portion extending from said head;

an engagement member;

a pair of hinged arms connecting said engagement member to said head and arranged to flex outwardly when said engagement member is moved toward said head;

said engagement member comprising interlocking means including an engagement pawl for engaging said head when said member is moved toward said head, and panel attachment means for attaching said clip to the vehicle body panel, said



panel attachment means comprising a panel-engagement shank extending through the panel, said panel-engagement shank having a pulling guide extending further, so that the panel engagement shank is fastened in a panel hole by pulling said pulling guide through the panel hole.

5,509,183

METHOD FOR MANUFACTURING A SUPERCONDUCTING DEVICE HAVING AN EXTREMELY THIN SUPERCONDUCTING CHANNEL FORMED OF OXIDE SUPERCONDUCTOR MATERIAL

Takao Nakamura, Hiroshi Inada, and Michitomo Iiyama, all of, Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

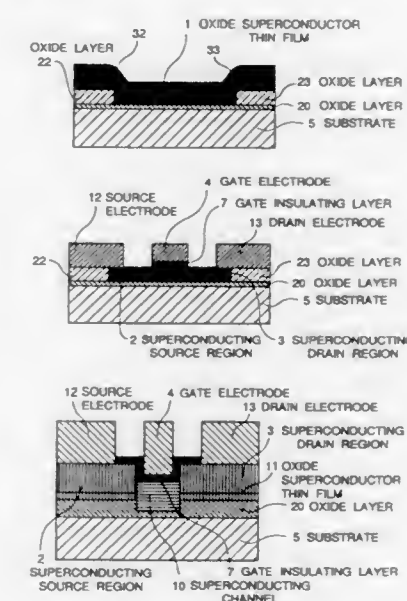
Division of Ser. No. 989,787, Dec. 10, 1992, Pat. No. 5,447,907. This application May 12, 1995, Ser. No. 439,784

Claims priority, application Japan, Dec. 10, 1991, 3-350186; Dec. 12, 1991, 3-351669; Dec. 8, 1992, 4-351723

Int. Cl.⁶ H01B 12/00

U.S. Cl. 29—25.01

21 Claims



1. A method of manufacturing a superconducting device, comprising the steps of forming on a principal surface of a substrate a non-superconducting oxide layer having a similar crystal structure to that of an a-axis oriented oxide superconductor thin film, selectively etching a center portion of the non-superconducting oxide layer so that the portion is completely removed and the surface of the substrate is exposed and the non-superconducting oxide layer is divided into two portions separated each other, forming an oxide superconductor thin film over the exposed surface of the substrate and the two separated portions of the non-superconducting oxide

layer so that the portion of the oxide superconductor thin film on the exposed surface of the substrate become c-axis oriented and the portions of the oxide superconductor thin film on and near the separated portions of the non-superconducting oxide layer are a-axis oriented etching back the oxide superconductor thin film so that the portions of the oxide superconductor thin film on the separated portions of the non-superconducting oxide layer are completely removed and a superconducting channel, a superconducting source region and a superconducting drain region having the same thickness as that of the separated portions of the non-superconducting oxide layer, and forming a gate insulator and a gate electrode stacked on the gate insulator on a center portion of the superconducting channel.

5,509,184

APPARATUS FOR CRIMPING A TUBE IN A THICK PANEL

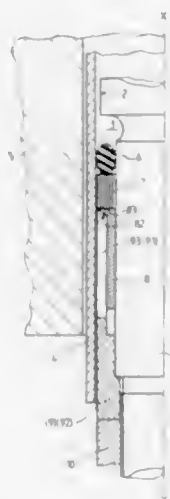
Martial Herrero, Lillebonne, France, assignor to Trouvay & Cauvin S.A., Le Havre, France

Filed Feb. 18, 1994, Ser. No. 198,827

Claims priority, application France, Feb. 19, 1993, 93 01928
Int. Cl.⁶ B21D 39/00

U.S. Cl. 29—252

2 Claims



1. An apparatus for expanding a tube and securing said tube to a panel, said apparatus comprising:

an elongated mandrel adapted to be inserted into a tube; said mandrel and tube defining an expansion chamber and adapted to receive a pressurized fluid;

a plurality of deformable annular seals arranged between said mandrel and tube for axially sealing one side of said expansion chamber, said plurality of seals axially arranged with respect to each other and to said mandrel;

a supporting means for supporting said seals while said expandable chamber is pressurized, said supporting means comprising an annular ring and an annular array of fingers having first ends and free ends, a plurality of slots for separating adjacent said fingers, said first ends connected to said annular ring, said free ends defining camming surfaces, said free ends radially outwardly moveable;

camming means operatively disposed with respect to said camming surfaces for moving said free ends of said fingers radially outwardly, whereby said tube is expanded by said free ends and is secured to said panel.

5,509,185

NEEDLE BOARD STRIPPING PRESS APPARATUS

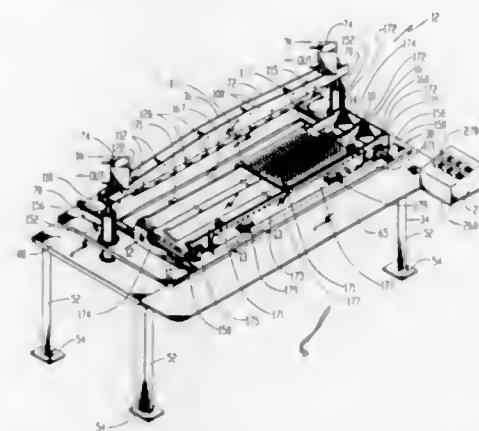
Illa D. Petkov, 735 Royal Crown La., Colorado Springs, Colo. 80906

Filed Jun. 15, 1994, Ser. No. 259,882

Int. Cl.⁶ B23P 19/04

U.S. Cl. 29—252

21 Claims



1. A needle board stripping press apparatus operable to remove a plurality of needle members simultaneously from a needle board assembly, comprising:

- a main support table frame assembly;
- a top plate press assembly connected to said main support table frame assembly;
- a needle board support assembly adapted to receive the needle board assembly mounted thereon and operably connected to said top plate press assembly;
- means to move said top plate press assembly relative to said needle board support assembly to remove said needle members from the needle board assembly;
- said top plate press assembly includes a support plate member selectively engageable with the needle members in the needle board assembly;
- said needle board support assembly selectively movable laterally of said main support table frame assembly and vertically relative to said support plate member to place the needle members in contact with said support plate member to eject same from the needle board assembly; and
- said means to move includes a cam actuator and power drive assembly mounted on said main support table frame assembly and operably connected to said needle board support assembly to cause selective vertical movement thereof for removing the needle members from the needle board assembly.

5,509,186

BEARING PUSHER

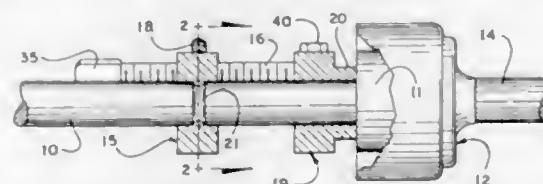
Nelson F. Straut, 515 N. Halston Rd., Stone Mountain, Ga. 30083

Filed Dec. 2, 1994, Ser. No. 348,449

Int. Cl.⁶ B23P 19/04

U.S. Cl. 29—256

4 Claims



1. A bearing pusher for urging a bearing off a shaft, said bearing pusher comprising an anchor block defining an opening therein for receiving said shaft therethrough, locking means for temporarily fixing said anchor block to said shaft adjacent to said bearing, a

pusher block defining an opening therein for receiving said shaft therethrough, said pusher block being positioned between said anchor block and said bearing, and pushing means threadably engaging said anchor block and in contact with said pusher block for urging said pusher block towards said bearing, said anchor block further including an upper member and a lower member defining a parting line therebetween, said parting line being along a diameter of said opening in said anchor block, and means for securing said upper member and said lower member together, and, wherein said shaft defines a circumferential groove, said anchor block being positioned at said groove, and said locking means comprising at least one screw, a tip on said screw being receivable within said groove.

5,509,187

METHOD OF REPLACING A WINDSHIELD UTILIZING A KNIFE FOR REMOVING SCALANT

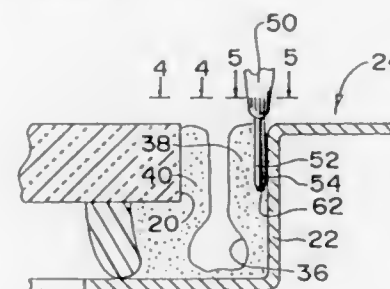
Peter Gold, 389 Peninsula Blvd., Hempstead, N.Y. 11550

Filed Mar. 31, 1995, Ser. No. 414,380

Int. Cl.⁶ B23P 19/04; B26B 3/00

U.S. Cl. 29—402.08

1 Claim



1. A method of preparing an auto windshield opening for receiving in seated relation therein a replacement windshield for a defective windshield, said defective windshield being of a type of a generally rectangular shape having a peripheral edge in a clearance position inwardly of a wall bounding said windshield opening defining a gap therebetween and having cured urethane bonding said defective windshield peripheral edge to said gap-bounding windshield opening wall, said auto windshield preparation method comprising a first step of inserting two blades in adjacent position to extend in cutting relation from a blade holder, a second step of inserting said blades incident to a cutting stroke into said cured urethane with a first blade adjacent said wall bounding said opening and a second adjacent blade located inwardly thereof so as to define an opening into said clearance of said blades in facing relation to a directional cutting stroke of said blades, a third step of urging said blades through a cutting stroke causing said first blade to move along a straight path due to the effect of said adjacent position of said opening-bounding wall and simultaneously causing said second blade to move along a wavy path alternately away from and towards said first blade due to the effect of varying resistance to cutting of said cured urethane, a fourth step of engaging urethane severed by said blades entering into said clearance between said blades incident to transverse closing movement of said second blade towards said first blade so that a continued cutting stroke movement pulls free said engaged urethane, and repeating the second, third and fourth steps adjacent said defective windshield peripheral edge, whereby said urethane is removed from said gap freeing said defective windshield and facilitating the seating in said auto windshield opening of said replacement windshield.

5,509,188

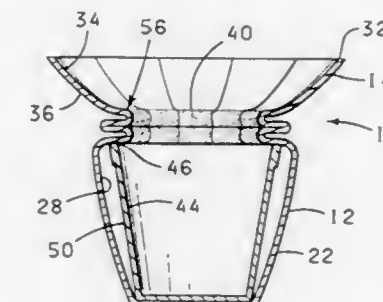
METHOD OF FORMING A FLOWER POT COVER WITH CRIMPED PORTION

Donald E. Weder, Highland, and William F. Straeter, Breese, both of Ill., assignors to Highland Supply Corporation, Highland, Ill.

Continuation of Ser. No. 940,930, Sep. 4, 1992, Pat. No. 5,361,482, and a continuation-in-part of Ser. No. 687,701, Apr. 18, 1991, abandoned, which is a continuation-in-part of Ser. No. 649,263, Jan. 30, 1991, abandoned, which is a continuation of Ser. No. 248,960, Sep. 26, 1988, abandoned, which is a continuation-in-part of Ser. No. 219,083, Jul. 13, 1988, Pat. No. 4,897,031, said Ser. No. 940,930 is a continuation-in-part of Ser. No. 926,098, Aug. 5, 1992, which is a continuation-in-part of Ser. No. 803,318, Dec. 4, 1991, Pat. No. 5,344,016, which is a continuation-in-part of Ser. No. 707,417, May 28, 1991, abandoned, which is a continuation of Ser. No. 502,358, Mar. 29, 1990, abandoned, which is a continuation-in-part of Ser. No. 391,463, Aug. 9, 1989, abandoned, which is a continuation-in-part of Ser. No. 249,761, Sep. 26, 1988, abandoned. This application Sep. 15, 1994, Ser. No. 306,558
Int. Cl.⁶ B65B 25/14; B32B 3/30

U.S. Cl. 29—469.5

15 Claims



1. A method for covering a flower pot comprising: providing a preformed flower pot cover, the flower pot cover having a base having an upper end, a lower end, an outer peripheral surface and a pot opening formed through the upper end of the base providing access to a pot receiving space, the pot receiving space forming an inner peripheral surface in the base, a bonding material being disposed on the base;

providing a flower pot having an upper end, a lower end and an outer peripheral surface;

disposing the flower pot in the pot receiving space of the base; forming a crimped portion in the base by crimping together portions of the base with the bonding material thereon wherein the bonding material causes the portions of the base which are crimped together to be bonded together, the crimped portion cooperating to hold the base on the flower pot thereby forming a decorative cover about the flower pot.

5,509,189

METHOD FOR MAKING AN ELECTROCHEMICAL CELL

Harry L. Tuller, Wellesley; Steve A. Kramer, Somerville; Marlene A. Spears, Woburn, and Uday B. Pal, Needham, all of Mass., assignors to Massachusetts Institute of Technology, a MA corp., Cambridge, Mass.

Division of Ser. No. 29,159, Mar. 10, 1993, Pat. No. 5,403,461.

This application Dec. 15, 1994, Ser. No. 356,888

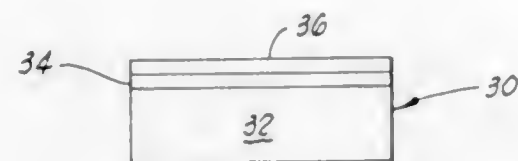
Int. Cl.⁶ H01M 6/00

U.S. Cl. 29—623.1

24 Claims

24. A method for fabricating an electrochemical device comprising:

- selecting a solid solution including a first solid solution chemical composition characterized by predominantly ionic conductivity and a second solid solution chemical composition different from said first solid solution chemical composition



tion and characterized by predominantly electronic conductivity and a third solid solution chemical composition intermediate between said first solid solution chemical composition and said second solid solution chemical composition and wherein said first, second, and third solid solution chemical compositions are characterized by a same solid solution crystalline phase;

- (2) preparing an electrolyte ceramic powder having said first solid solution chemical composition;
- (3) preparing an electrode ceramic powder having said second solid solution chemical composition;
- (4) preparing an intermediate ceramic powder having said third solid solution chemical composition;
- (5) forming an electrolyte layer from said electrolyte ceramic powder;
- (6) forming an electrode layer from said electrode ceramic powder;
- (7) forming an intermediate layer from said intermediate ceramic powder;
- (8) assembling said electrolyte layer, said electrode layer and said intermediate layer so that said intermediate layer intervenes between said electrolyte layer and said electrode layer to form a green composite body; and
- (9) sintering said green composite body to form said electrochemical device.

5,509,190

SYSTEM FOR AND METHOD OF ASSEMBLING WHEELS

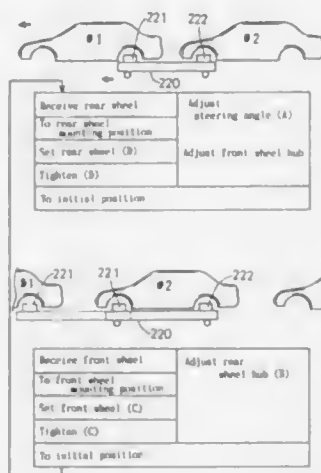
Ryohta Nakagawa, Toyota; Teruo Kawamura, Okazaki, and Kazutoshi Maeda, Toyota, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Aug. 24, 1994, Ser. No. 293,965

Claims priority, application Japan, Aug. 30, 1993, 5-214202 Int. Cl.⁶ B23P 21/00

U.S. Cl. 29—712

9 Claims



1. A system for assembling wheels comprising:
 - a steering angle correcting and phase matching unit for correcting the steering angle of and matching the phase of a hub of a car body suspended and conveyed by a conveyor to a phase of

a wheel to be mounted to the hub while being moved in synchronism with the car body; and
 a wheel setting and hub nut tightening unit for setting the wheel onto the phase-matched hub and tightening a hub nut thereon while being moved in synchronism with the car body;
 the horizontal distance between said steering angle correcting and phase matching unit and said wheel setting and hub nut tightening unit being set to a distance such that when said wheel setting and hub nut tightening unit assembles a wheel onto the hub, said steering angle correcting and phase matching unit can correct the steering angle of and match the phase of the hub onto which the next wheel is to be set.

5,509,191

APPARATUS FOR ASSEMBLING AND PROCESSING SMALL PARTS USING A ROBOT

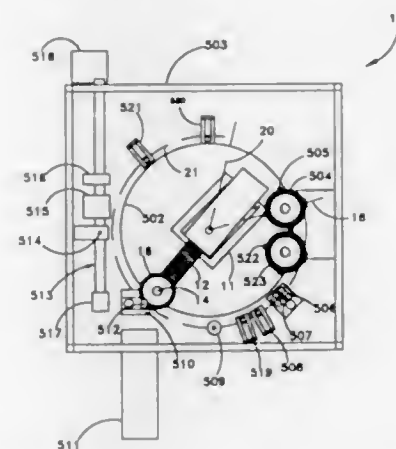
Norman D. Best, 63 Glenflow Ct., Glendale, Calif. 91206

Filed Jan. 26, 1994, Ser. No. 189,118

Int. Cl.⁶ B23P 21/00

U.S. Cl. 29—722

20 Claims



1. An apparatus for assembling and processing work-pieces comprising:
 - a. a robot having a head and capable of controlled X, Y, and Z movements, the robot head further having a wrist joint capable of rotation in the horizontal plane;
 - b. a rotatable pallet having a plurality of work-piece nests for retaining said work-pieces;
 - c. means for attaching said pallet to said robot head; and
 - d. a plurality of work-stations located within a work envelope of said robot for performing a plurality of different operations on said work-pieces which are transported by said robot, where said robot is adapted to grasp said rotatable pallet, to transport the grasped pallet to one of the plurality of work-stations, and to index each work-piece on said rotatable pallet to the one work-station through rotation of its wrist joint.

5,509,192

APPARATUS FOR PRESS-FITTING CONNECTORS INTO PRINTED BOARDS

Yasunori Ota; Nobuhide Fujita, and Kelji Yamamoto, all of Tokyo, Japan, assignors to Ando Electric Co., Ltd., Tokyo, Japan

Filed Mar. 29, 1994, Ser. No. 219,455

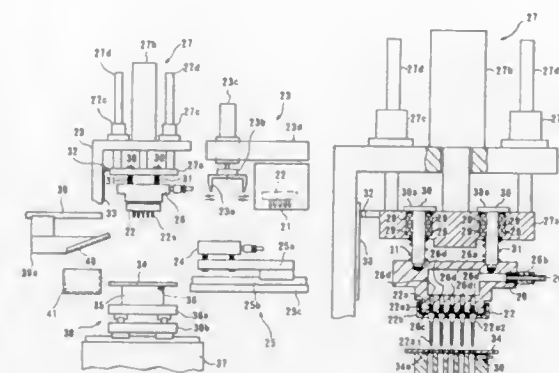
Claims priority, application Japan, Mar. 30, 1993, 5-072506; Mar. 30, 1993, 5-072508; Mar. 30, 1993, 5-095290

Int. Cl.⁶ H05K 3/32; H01R 9/09; B23P 19/02; 21/00

U.S. Cl. 29—741

6 Claims

1. An apparatus for press-fitting press-fit connectors into printed boards, comprising:



press-fitting head for making contact with a press-fit connector, and for attaching to and detaching from said connector;
 support means for elastically supporting said press-fitting head;
 press-fitting means for freely moving said support means in the vertical direction, and for moving said support means downward and for press-fitting pins of said connector into a printed board disposed at a press-fitting position;
 first detecting means for detecting displacement of said press-fitting head, and for detecting an amount of distance said press-fitting means descends in an insertion operation to insert pin lead end parts of said connector into said printed board;
 second detecting means for detecting at least one said pin lead end part projecting below said printed board in accordance with said insertion operation; and
 control means for press-fitting the pins of said connector by performing the two, steps of:
 determining whether a least one said pin lead end part projects below the printed board in response to the detection of said second detecting means, and
 causing said press-fitting means to press-fit pin base end parts of said connector into said printed board, when it is determined that the at least one said pin lead end part projects below the printed board.

5,509,193

APPARATUS FOR LOADING AND UNLOADING BURN-IN BOARDS

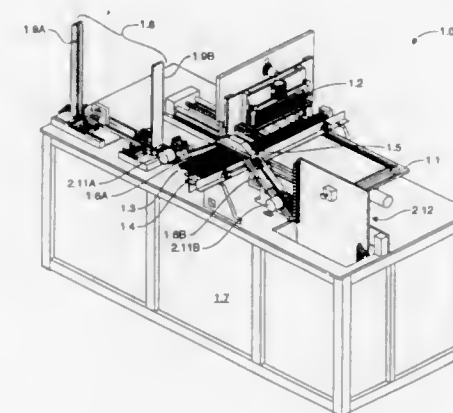
James P. Nuxoll, Boise, Id., assignor to Micron Technology, Inc., Boise, Id.

Filed May 6, 1994, Ser. No. 239,199

Int. Cl.⁶ H05K 3/30

U.S. Cl. 29—741

21 Claims



1. A machine for unloading packaged integrated circuit (IC)

devices from sockets on a burn-in board, moving said IC devices to an intermediate location, and transferring the unloaded IC devices from the intermediate location to a staging location, said machine comprising:

- an indexing system for positioning at least one loaded socket on said board directly beneath said intermediate location;
- at least one extraction device for extracting an IC device from said socket and moving said IC device to said intermediate location;
- a transport device for transporting an extracted IC device from the intermediate location to the staging location; and
- a linear induction motor coupled to said transport device, said motor providing bidirectional linear motion to said transport device between said intermediate location and said staging location.

5,509,194

POWER CRIMPING TOOL FOR TAPE FEED PRODUCTS

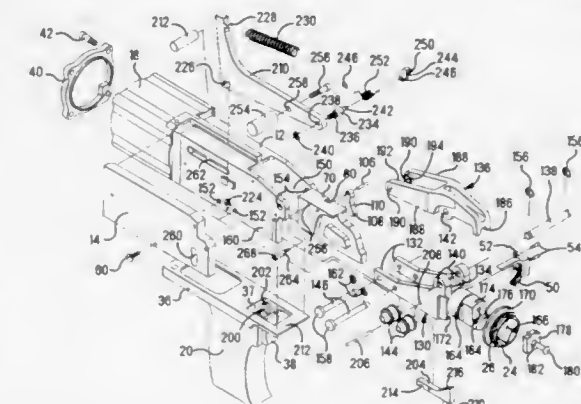
Craig W. Hornung, Harrisburg, and William H. Bair, Marysville, both of Pa., assignors to The Whitaker Corporation, Wilmington, Del.

Filed Jan. 17, 1995, Ser. No. 373,711

Int. Cl.⁶ H01R 43/045

U.S. Cl. 29—751

13 Claims



1. A powered hand tool for crimping a terminal onto an electrical conductor, said tool having a frame, a linear actuator having a piston rod arranged to move in a first direction and a second opposite direction along the longitudinal axis,

a terminal crimping mechanism comprising:

- (a) a fixed crimping jaw attached to said frame;
- (b) a cam attached to and carried by said piston rod, said cam having a cam track including first, second, and third portions;
- (c) an indent member pivotally attached to said frame and having a cam follower at one end thereof for following engagement with said cam track; and
- (d) a movable crimping jaw attached to another end of said indent member and arranged so that when said indent member is pivoted in one direction said movable crimping jaw matingly engages said fixed crimping jaw,

wherein said cam track is arranged so that as said piston rod is moved in said first direction, said follower engages said cam and follows along said first portion of said cam track causing

said indent member to pivot in said one direction thereby effecting the mating engagement of said movable and fixed jaws and then, while said piston rod continues to move in said first direction, said follower follows along said second portion of said cam track causing said indent member to pivot in an opposite direction thereby moving said jaws apart.

5,509,195

APPARATUS FOR CHANGING INTERVALS AT WHICH SELECTED WIRES ARE ARRANGED IN A LATERAL ARRANGEMENT OF WIRES

Souichi Watanabe, Yokohama, Japan, assignor to Molex Incorporated, Ill.

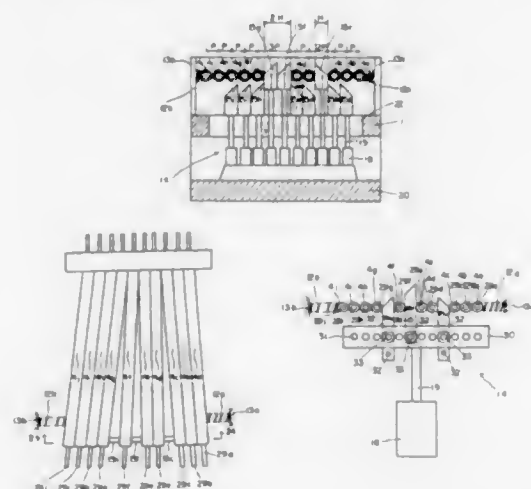
Filed Nov. 18, 1994, Ser. No. 342,075

Claims priority, application Japan, Dec. 29, 1993, 5-350702

Int. Cl.⁶ H01R 43/28; B21F 21/00

U.S. Cl. 29—755

21 Claims



1. An apparatus for changing the positioning of selective wires within a plurality of wires, comprising:

a base;

a plurality of elongated wire-receiving carriers movably supported on the base, one of said plurality of wires passing through each carrier;

biasing means for biasing the wire-receiving carriers into a first arrangement upon said base, wherein all of said wire-receiving carriers are generally parallel with respect to each other; and,

a wire-receiving carrier shifting assembly for moving said wire-receiving carriers into and out of their first, parallel arrangement, the carrier shifting assembly including at least one shifter member which is selectively moveable actuatable between two operative positions, said shifter member being spaced from said wire-receiving carriers at said first position, and said shifter member contacting at least one of said wire-receiving carriers at said second position, said shifter member being aligned with said wire-receiving carriers such that when said shifter member occupies said second position, it moves between at least two adjacent wire-receiving carriers, thereby causing said adjacent wire-receiving carriers to spread transversely apart with respect to each other against said biasing means to thereby shift said wire-receiving carriers out of said first, parallel, arrangement into a second arrangement wherein said wire-receiving carriers are no longer parallel.

5,509,196

METHOD OF FABRICATING A FLEX LAMINATE PACKAGE

Charles R. Davis; Thomas P. Duffy, both of Endicott; Steven L. Hanakovic; Vestal; Howard L. Heck, Endicott; John T. Kollas, Vestal; John S. Kresge, Binghamton, all of N.Y.; David N. Light, Friendsville, Pa., and Ajit K. Trivedi, Endicott, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

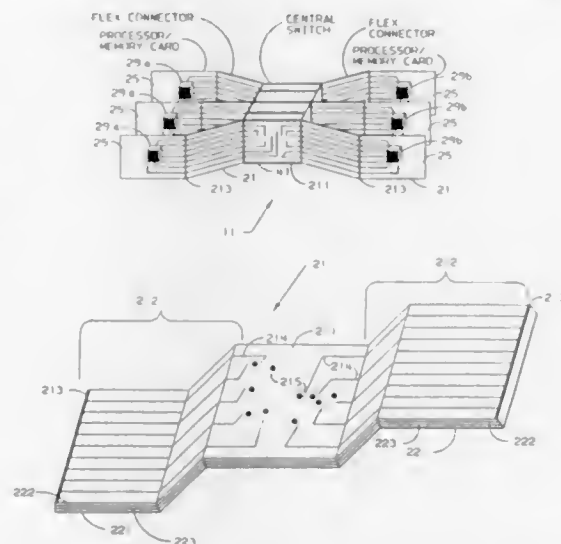
Division of Ser. No. 97,544, Jul. 27, 1993, Pat. No. 5,384,690.

This application Sep. 21, 1994, Ser. No. 310,190

Int. Cl.⁶ H05K 3/36; 3/20

U.S. Cl. 29—830

3 Claims



1. A method of forming signal interconnection circuitization means in a parallel processor structure having a plurality of processor integrated circuit chips, a plurality of memory integrated circuit chips, with the signal interconnection circuitization means therebetween, wherein:

a. the processor integrated circuit chips and the memory integrated circuit chips are mounted on a plurality of printed circuit boards with a first processor integrated circuit chip mounted thereon, a second processor integrated circuit chip mounted thereon, a first memory integrated circuit chip mounted thereon, and a second memory integrated circuit chip mounted thereon; and

b. said printed circuit boards are mounted on a plurality of circuitized flexible strips, said circuitized flexible strips having a signal interconnection circuitization portion with X-Y planar circuitization and vias and through holes terminating at electrically conductive pads for Z-axis circuitization, a terminal portion having means for joining a printed circuit board thereto, and a flexible, circuitized portion between said signal interconnection circuitization portion and said terminal portion, whereby said circuitized flexible strips are laminated in physical connection and through said electrically conductive pads in electrical connection at their signal interconnection circuitization portions and spaced apart at their terminal portions;

said method comprising:

a. depositing metals on said pair of facing pads, said metals being from a eutectic forming system and having a non-eutectic stoichiometry; and

b. heating and applying a compressive force to the circuitized polymeric panels to bond the panels; and wherein said panels are heated above a first thermal transition temperature of the polymer, and the eutectic temperature of the eutectic forming system is below the first thermal transition temperature of the

polymer used in bonding, and the melting point of the homogenized metallic composition is above the first thermal transition temperature of the polymer used in bonding, to thereby form signal interconnection circuitization means in the parallel processor.

5,509,197

METHOD OF MAKING SUBSTRATE EDGE CONNECTOR

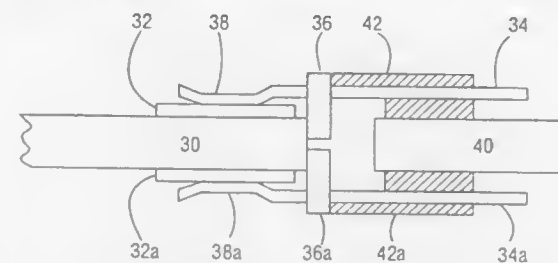
William M. Stone, Austin, Tex., assignor to Xetel Corporation, Austin, Tex.

Filed Jun. 10, 1994, Ser. No. 257,864

Int. Cl.⁶ H01R 9/00

U.S. Cl. 29—842

13 Claims



1. A method of forming an edge connector on a substrate, the substrate having a first side and a second side and having at least one connector pad disposed proximate an edge, comprising: coupling at least one connector pin to a carrier, each pin having a head end and a tail end;

placing the carrier adjacent the substrate with the head end of the at least one pin positioned adjacent the at least one connector pad;

fastening the head end of the at least one connector pin to the at least one connector pad; and

removing the carrier so as to expose the tail end of the at least one connector pin.

5,509,198

PRELOADING METHOD FOR PRELOAD-ADJUSTABLE ROLLING BEARING AND MANUFACTURE OF THE SAME

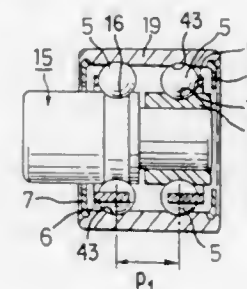
Toru Takamizawa; Daljaro Kitahara, Tokyo, and Seizo Miyazaki, Kanagawa, all of Japan, assignors to NSK Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 20,533, Feb. 22, 1993, Pat. No. 5,341,569. This application Jun. 6, 1994, Ser. No. 254,589. Claims priority, application Japan, Feb. 24, 1992, 4-72181; Dec. 2, 1992, 4-345146; Feb. 10, 1993, 5-44383; Jun. 8, 1993, 5-163293

Int. Cl.⁶ B23P 15/00

U.S. Cl. 29—898.09

53 Claims



1. A method of preloading a preload-adjustable bearing apparatus comprising first and second members which are relatively rotatable to each other, and first and second ball rows which are

provided radially between the first and second members and have a plurality of balls, respectively,

the first member having first and second raceways which are axially juxtaposed and prevented from being closer to each other,

the second member having a third raceway which is opposed to the first raceway of the first member with the first ball row therebetween, and a fourth raceway which is axially juxtaposed to the third raceway and opposed to the second raceway of the first member with the second ball row therebetween, the third raceway prevented from being more spaced on the second member from the fourth raceway, the fourth raceway fitted onto the second member in a relatively movable interference relationship, such that the fourth raceway is movable toward the third raceway with an axial force relatively applied to the fourth raceway and the second member, and

the method comprising the steps of relatively applying the axial force to the fourth raceway and the second member so as to move the fourth raceway closer to the third raceway while detecting a parameter of press-in condition and stopping the axial force when the parameter reaches a predetermined value, thereby applying a preload to the bearing apparatus.

5,509,199

METHOD OF MAKING A DUAL RADIATOR AND CONDENSER ASSEMBLY

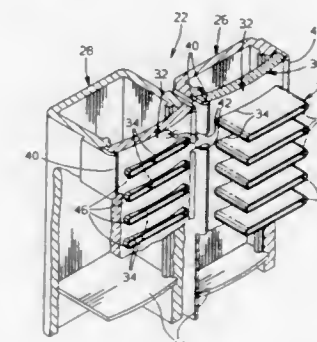
Henry E. Beamer, Middleport; Prasad S. Kadle, East Amherst; Richard P. Ryan, East Amherst, all of N.Y., and John P. Papin, Gasperich, Luxembourg, assignors to General Motors Corporation, Detroit, Mich.

Filed Jan. 17, 1995, Ser. No. 373,702

Int. Cl.⁶ B23P 15/00

U.S. Cl. 29—890.07

3 Claims



3. A method of manufacturing and assembling a vehicle dual radiator and condenser assembly having minimal structural and heat conductive interconnection, comprising,

providing a pair of identical tandem header plate units, each tandem unit having a pair of elongated, regularly slotted header plates, one corresponding to said radiator and one to said condenser, and maintained in parallel relation on either side of a central plane by a pair of discrete, longitudinally separated webs occupying a small percentage of the total length of said header plates, thereby maintaining said header plate slots in coplanar pairs with a predetermined greatest edge to edge slot spacing and a predetermined least edge to edge slot spacing,

providing four structurally separate, generally trough shaped tank units, one pair corresponding to said radiator and one pair corresponding to said condenser, each tank unit having an open side defined by a pair of parallel deformable flanges that are spaced apart by substantially the width of a respective one of said header plates, said flanges being continuous along their length but for a pair of spaced apart, discrete notches matching said header plate unit webs,

providing a plurality of radiator tubes to fit into the slots in one of said header plates,

providing a plurality of condenser tubes structurally separate from said radiator tubes to fit into the slots in the other of said header plates,

providing a plurality of corrugated cooling fins to fit between adjacent pairs of said radiator tubes having a width substantially equal to said radiator tubes,

providing a plurality of corrugated cooling fins to fit between adjacent pairs of said condenser tubes having a width substantially equal to said condenser tubes,

placing said header plate webs into said notches to locate said header plates between said tank unit flanges and deforming said flanges over the edges of said header plates to produce two dual tanks,

stacking one of said plurality of radiator or condenser tubes in a first tube layer with a tube spacing equal to said header slot spacing and with said cooling fins aligned with said tubes,

inserting temporary spacers having a width equal to said least edge to edge slot spacing laterally across said first layer tubes,

stacking the other of said plurality of radiator or condenser tubes in a second tube layer spaced from said first layer by said temporary spacer and also with a tube spacing equal to said header slot spacing,

inserting cooling fins between adjacent tubes of said second layer until they abut said temporary spacers to complete said central core,

tying said central core together and removing said temporary spacers,

installing each of said dual tanks to said central core by inserting said header plate slots simultaneously over said radiator and condenser tube ends,

and brazing said dual tanks and central core together to create said dual radiator and condenser assembly, the radiator and condenser portions of which are retained together only by said discrete webs, thereby reducing conductive heat cross flow.

5,509,200

METHOD OF MAKING LAMINAR STACKABLE CIRCUIT BOARD STRUCTURE

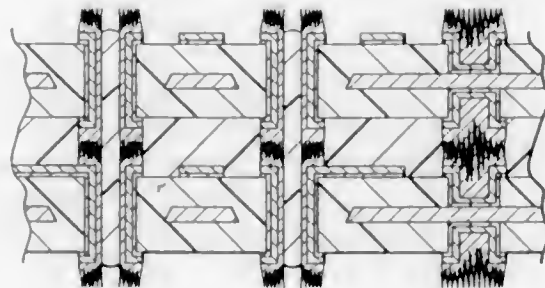
Jerome A. Frankeny, Taylor; Richard F. Frankeny, Austin; Ronald L. Imken, Round Rock, and Keith A. Vanderlee, Austin, all of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 21, 1994, Ser. No. 342,506

Int. Cl.⁶ H01K 3/10

U.S. Cl. 29—852

10 Claims



1. A method of fabricating a stackable circuit board layer, comprising the steps of:

forming holes through a metallic sheet;

after forming the holes in the metallic sheet, forming a first dielectric material layer over the metallic sheet and holes therein;

forming first and second holes through the formed first dielectric material layer at respective first and second locations, the first location being aligned with one of the holes formed in the metallic sheet and the second location being not aligned with one of the holes formed in the metallic sheet;

selectively forming deposits of metal at the first and second locations to have the deposit of metal at the first location form a via electrically insulated from the metallic sheet by first

dielectric material and the deposit of metal at the second location form a via electrically connected to a surface layer of the metallic sheet; and forming dendrites at the ends of the vias.

5,509,201

WIRE POSITION SHIFTING MECHANISM AND METHOD OF ASSEMBLING WIRE HARNESSES

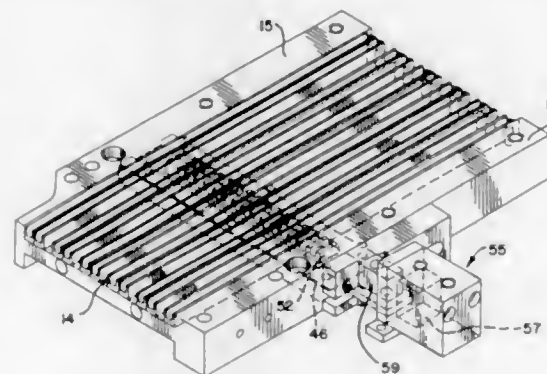
Peter Ingwersen, Gilberts, Ill., assignor to Molex Incorporated, Lisle, Ill.

Filed Oct. 17, 1994, Ser. No. 323,987

Int. Cl.⁶ H01R 43/04; B23P 19/00

U.S. Cl. 29—861

22 Claims



21. A method for assembling a wire harness, comprising the steps of:

providing a wire shifting mechanism with an entrance and exit having a plurality of first and second wire guide members thereon, said first wire guide members being fixedly mounted to said shifting mechanism to define fixed wire passages extending between said shifting mechanism entrance and exit, said second wire guide members being movably mounted to said shifting mechanism to define movable wire passages extending between said shifting mechanism entrance and exit and movable between first and second operative positions;

providing a first electrical connector having a connector body with a plurality of wire-receiving openings therein and aligning said wire-receiving openings with said first and second wire guide members such that each of said first and second wire guide members are in said first operative position and are further in alignment with a wire-receiving opening of said first connector;

feeding a plurality of wires into said shifting mechanism such that an individual wire enters each of said first and second wire guide members;

terminating said wire in said first connector wire receiving opening;

shifting said second wire guide members to said second operative position to shift the alignment of said second wire guide members with respect to said first connector;

advancing said plurality of wires such said wires enter said first connector wire-receiving openings;

shifting said second wire guide members back into said first operative position;

advancing said plurality of wires into said second connector wire-receiving openings; and

terminating said wires in said second connector wire receiving openings.

22. An apparatus for changing the order of wire in an array of wires, comprising:

a support surface, first and second wire guide means disposed on the support surface, the first wire guide means having means for engaging said support surface which retains said first wire guide means in place upon said support surface and which restrains said first wire guide means from movement, means for urging the second wire guide means between first and

second operative positions on said support surface, said second wire guide means having means for engaging said support surface and defining a point upon said support surface about which said second wire guide means pivots in response to said urging means, said urging means effecting a lateral displacement in the order of wires in said array as between opposing ends of said wires.

5,509,202

HYDROSTATIC SEALING SLEEVE FOR SPICED WIRE CONNECTIONS

David A. Abdow, Somerset, Mass., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

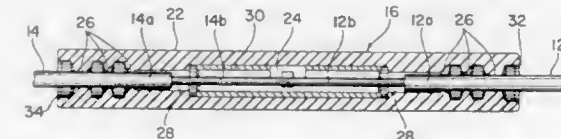
Division of Ser. No. 978,550, Nov. 19, 1992, Pat. No.

5,432,302. This application May 30, 1995, Ser. No. 453,858

Int. Cl.⁶ H01R 43/00

U.S. Cl. 29—871

1 Claim



1. A method of installing a sealing sleeve over a butt wire spliced connection between first and second insulated wires, said hydrostatic sealing sleeve comprising a length of heat-stable elastomeric tubing having first and second ends, an internal cavity centrally located between said first and second ends, and at least one internal hydrostatic sealing baffle positioned adjacent each of said first and second ends, said method comprising the steps of:

lubricating said first and second ends of said sealing sleeve with a silicone gel compound;

sliding said first end of said sealing sleeve over the end of said first insulated wire;

stripping the insulation from the ends of said first and second insulated wires;

inserting said stripped ends of said first and second wires into a butt wire splice and crimping said butt wire splice to form a spliced connection between said first and second wires; and

sliding said sealing sleeve over said crimped butt wire spliced connection so that said spliced connection is positioned in said internal cavity, said hydrostatic sealing baffles compressing against an outer periphery of said first and second wires to form a high-pressure water-tight seal therewith.

5,509,203

METHOD FOR MANUFACTURING A SHEET FORMED CONNECTOR FOR INSPECTION OF AN INTEGRATED CIRCUIT

Chikara Yamashita, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jul. 21, 1994, Ser. No. 278,159

Claims priority, application Japan, Jul. 22, 1993, 5-181337

Int. Cl.⁶ H01R 43/02; 43/20; 9/09; G01R 1/06

U.S. Cl. 29—879

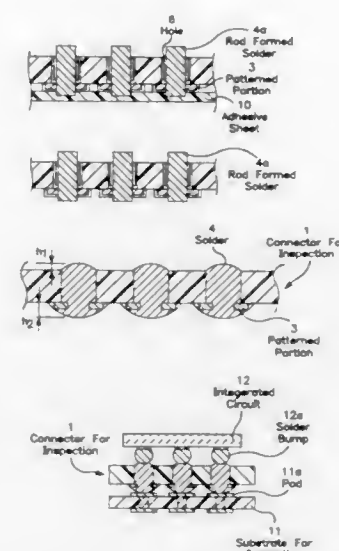
3 Claims

1. A method for manufacturing a sheet formed connector for inspection of an integrated circuit, comprising the steps of:

sticking a heat-resistant plastic sheet and a metallic sheet together,

making circular holes on said heat-resistant sheet, which reach an inner surface of said metallic sheet, such that centers of said holes are positioned on lattice points assumed on a surface of said heat-resistant sheet,

forming patterned portions by eliminating metal on said metallic sheet except areas bounded by two concentric circles and containing peripheries of bottom surfaces of holes,



forming plated layers on inner surfaces of said holes and said patterned portions respectively,

fitting rod formed solders of equal diameters and equal thicknesses relative to each other into said centers of said holes respectively, and

melting said rod formed solders located in said circular holes, thereby to fill up said holes, and solidifying said melted rod formed solders,

whereby a sheet formed connector is produced.

5,509,204

METHOD OF FORMING A FLAT FLEXIBLE JUMPER

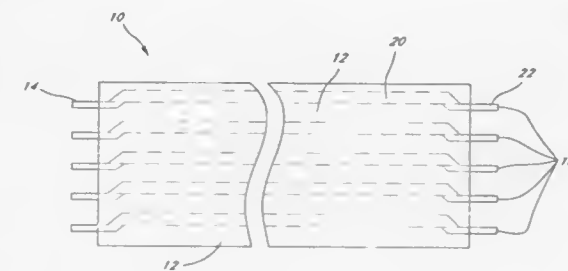
Amir-Akbar Sadigh-Behzadi, 14690 Lanark St., Van Nuys, Calif. 91402

Filed Oct. 25, 1993, Ser. No. 143,174

Int. Cl.⁶ H01R 43/00

U.S. Cl. 29—883

3 Claims



1. A method of forming an electrical jumper, wherein said jumper comprises a series of individual, flexible, parallel conductors partially contained within an insulation material, comprising the steps of:

constructing a preformed conductive strip, wherein said strip comprises alternating conducting bands having first and second cross-sectional areas;

selectively removing said conducting bands having said first cross-section in a first length of said preformed conductive strip to form a first termination of said jumper;

selectively removing said conducting bands having said second cross-section in a second length of said preformed conductive strip to form a flexible conductive portion of said jumper; and

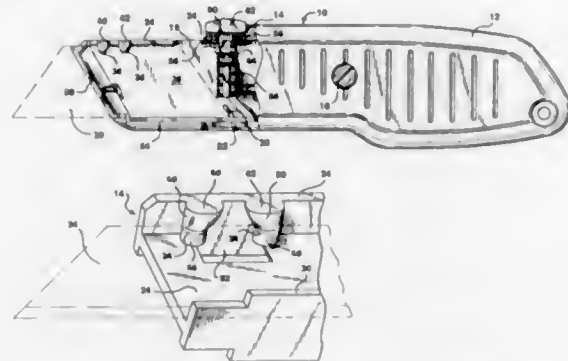
selectively removing said conducting bands having said first cross-section in a third length of said preformed conductive strip to form a second termination of said jumper.

5,509,205 UTILITY KNIFE HAVING BLADE RETENTION FEATURE

Nicholas Ragland, III, Cincinnati, Ohio, assignor to Millers Falls Tool Company, Cincinnati, Ohio
Filed Jan. 30, 1995, Ser. No. 380,115
Int. Cl.⁶ B26B 1/08

U.S. Cl. 30—162

11 Claims



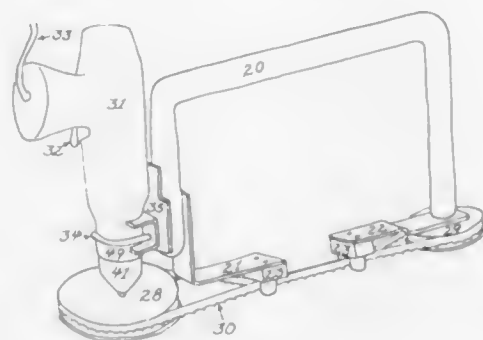
1. A utility knife having a replaceable blade comprising:
 - a) a pair of complementary opposing knife handle halves adapted to mate together to form a blade opening at a forward end of the knife;
 - b) a replaceable blade including at least one locating notch along an edge thereof; and
 - c) a blade carrier adjacent said blade opening adapted for mounting said replaceable blade thereon such that the mounted blade extends through said blade opening and presents a cutting edge, said blade carrier including a blade support portion, a blade retaining flange for retaining a first edge of said blade, and at least one laterally extending post for receiving said notch in said blade when said blade is mounted on said blade carrier, said at least one post having a profile which increases in thickness along its length and which engages said notch in said blade when said blade is subjected to a lateral or twisting force to prevent said blade from disengaging from said blade carrier during use.

5,509,206 PORTABLE OR TABLE MOUNTED BAND SAW UTILIZING DUAL CUTTING PROCEDURE OF BAND SAW BLADE

Jack L. Rowe, P.O. Box 5281, Kingsport, Tenn. 37663, and
Donald M. Rowe, P.O. Box 543, Bedford, Va. 24523
Filed Oct. 27, 1993, Ser. No. 141,631
Int. Cl.⁶ B23D 53/12; B27B 13/10

U.S. Cl. 30—380

1 Claim



1. A motor operated hand-held band saw comprising:
 - (a) a portable frame, said frame consisting of a bow having a first leg and a second leg, said legs being spaced from each other; and

- a first and second guide roller support bars, the first guide roller support bar being mounted to one side of the first leg, and the second guide roller support bar being mounted to a free end of the second leg;
- (b) a first and a second guide roller assemblies each being mounted to a respective distal end of the first and second guide roller support bars, each said guide roller assembly having a pair of guide rollers;
- (c) a power source mounted on the other side of the first leg;
- (d) a drive wheel driven by the power source and spaced from the first guide roller assembly;
- (e) an idle wheel mounted to the free end of the second leg; and
- (f) an endless loop type band saw blade mounted on the wheels and driven by the drive wheel, whereby two opposed portions of the band saw blade which run through each of the guide roller assemblies being pressed against each other and guided between the respective pair of guide rollers.

5,509,207 SPEED LAYOUT STICK

Dale N. Harms, 7311 Glen Oaks Way, Dublin, Calif. 94568
Filed Sep. 9, 1994, Ser. No. 303,633
Int. Cl.⁶ B43L 13/02; G01D 21/00

U.S. Cl. 33—41.4

6 Claims



1. A new and improved speed layout stick for providing a method for drawing eight lines with a single push on a crossbar comprising, in combination:
 - an oblong crossbar having an upper surface and a lower surface, a handle secured to the upper surface at a midpoint thereof, the oblong crossbar having a length of sixty-four inches, the oblong crossbar having four pair of apertures formed there-through at areas spaced at sixteen inch intervals, each of the four pair of apertures straddling an existing layout stick;
 - four pair of lead holders secured to the lower surface of the oblong crossbar adjacent the four pair of apertures, each of the lead holders having a pull pin thereattached, the pull pin functioning to removably secure an object within the lead holder;
 - a plurality of lead sticks, each lead stick received through one of the apertures of the oblong crossbar and one of the lead holders and secured therein by the pull pin, the lead sticks functioning to draw lines on a surface.

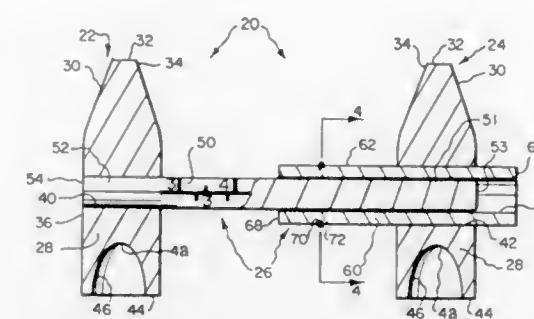
5,509,208 WHEEL HOLE AND LUG MEASURING TOOL AND METHOD

Chris J. Oja, 131 W. 500 South, Ste. 608, Bountiful, Utah 84010
Filed Dec. 20, 1993, Ser. No. 171,056
Int. Cl.⁶ G01B 5/14

U.S. Cl. 33—203

21 Claims

1. A tool for vehicle wheel hole and lug measurement comprising:
 - first and second hole/lug measuring stations;
 - an adjustable connector spanning between and attached to the stations;
 - each station comprising a male projection and a female receptacle, the male projection and the female receptacle at each station oriented in opposite directions relative to one another, the two male projections being adapted for selective place-



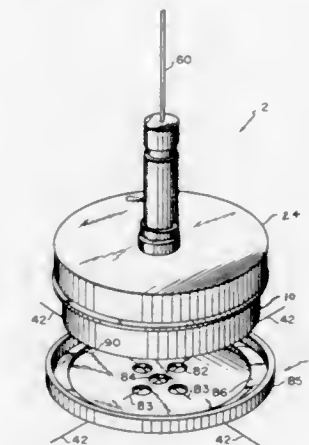
ment in spaced vehicle wheel hole, and the two female receptacles being adapted for selective placement over spaced vehicle wheel lugs.

5,509,209 LASER PLUMBING DEVICE

Thomas Swierski, 1221-204 Kelston Pl., Charlotte, N.C. 28212
Filed Jun. 27, 1994, Ser. No. 266,185
Int. Cl.⁶ G01C 15/02

U.S. Cl. 33—282

8 Claims



1. A projected light plumb device comprising a container, a float platform buoyantly supported within the container by a fluid suspension means, a light projecting device, and a support means for securing said light projecting device to said platform at a predetermined angular orientation wherein said container includes aligning means such that the light projecting device will transmit a beam of light to align a first position designated by said aligning means and a second position designated by said light projecting device, said float platform includes a donut shaped ring having an outer diameter slightly less than the inside dimension of the inner walls of said container, and an inner diameter, and said float platform is connected to said support means by spaced apart vertical ribs, and wherein said float platform has a lower surface which is inclined upwardly from said outer diameter to said inner diameter allowing any developed air bubbles on the lower surface thereof to escape therefrom.

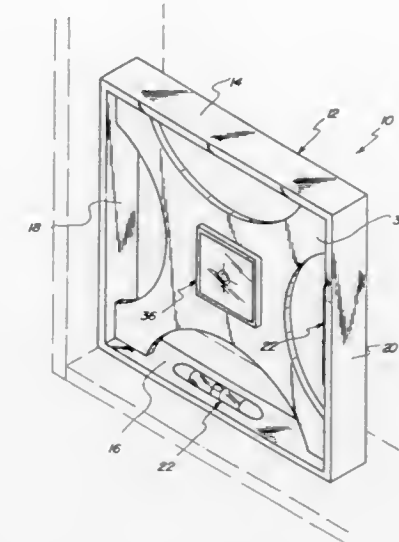
5,509,210 MULTIPLE POSITION LEVEL

Timothy K. Murphy, 1307 61st Ave. North, Nashville, Tenn. 37209
Filed Oct. 27, 1994, Ser. No. 329,989
Int. Cl.⁶ G01C 9/28

U.S. Cl. 33—382

4 Claims

1. A multiple position level comprising:



- a frame means for positioning against an object to be levelled, said frame means comprising a first elongated member spaced from and parallel to a second elongated member; a third elongated member extending orthogonally between first ends of said first and second elongated members; and a fourth elongated member extending orthogonally between second ends of said first and second elongated members, wherein said first member and said second member are both of a first length, and said third member and said fourth member are both of a second length, with said first length being substantially equal to said second length so as to define a substantially square shade of said frame means, said frame means further including a center web extending between said elongated members, said center web including a substantially planar member having a plurality of projecting corners which are fixedly secured to interior surfaces of said elongated members at a juncture of adjacent members, said center web including an aperture directed through said planar member thereof;
- a pair of vial levels secured in an orthogonal orientation relative to one another along interior surfaces of said frame means; and,
- a center level mounted to said frame means, said center level being mounted to said center web of said frame means, said center level comprising a seal extending about a perimeter of said aperture directed through said planar member of said center web; a pair of spaced glass plates coupled to said seal which cooperate to define an interior space; a fluid positioned within said interior space; and a gas bubble positioned within said interior space.

5,509,211 MULTI-COORDINATE PROBE

Alfons Ernst, Traunreut, Germany, assignor to Johannes Heidenhain GmbH, Traunreut, Germany
Filed Jul. 26, 1994, Ser. No. 280,862

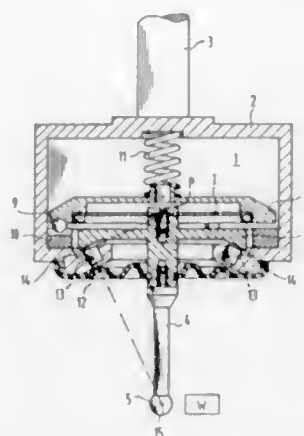
Claims priority, application Germany, Jul. 31, 1993, 43 25 744.5

Int. Cl.⁶ G01B 5/012; 5/016

U.S. Cl. 33—561

7 Claims

1. A multi-coordinate probe, comprising:
 - a housing;
 - at least one tracer pin for scanning an object, the tracer pin being located in the housing and having a portion, extending from the housing, and a feeler element provided at a free end of the extending portion for engaging the object and having a point defining a scanning pole;



means for supporting the tracer pin in the housing and for enabling deflection of the tracer pin in a plurality of coordinate directions upon engagement of the feeler element with the object; and

a plurality of sensors located in the housing for detecting the deflection of the tracer pin and having respective measuring axes thereof intersecting at the scanning pole.

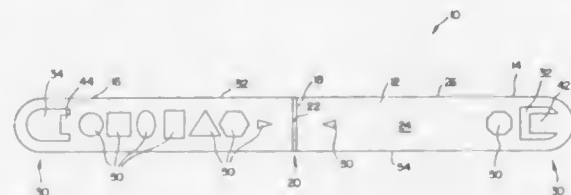
5,509,212 FOLDING AND LOCKING DRAFTING AID APPARATUS AND METHOD

Douglas A. Henricksen, 9156 Bedford Dr., Boca Raton, Fla. 33434

Filed Sep. 12, 1994, Ser. No. 304,778
Int. Cl.⁶ G01B 3/06

U.S. Cl. 33—565

14 Claims



1. A folding latching drafting aid apparatus, comprising:

a planar member having a first planar member end and a second planar member end and a first side and a second side, and being foldable at hinge means such that said second side pivots face to face against itself;

a flexible, resilient first tab having a free end and retained on a first tab structure, said first tab being substantially co-planar with said planar member;

and a flexible, resilient second tab having a tab free end and retained on a second tab structure, said second tab being substantially co-planar with said planar member;

wherein said tabs are positioned relative to each other such that when said strip is folded at said hinge means to pivot said second side face to face against itself, one said tab overlays the other said tab and such that pressing one said tab against the other said tab causes both tabs to bend until the free end of said one tab crosses over the free end of the other said tab and remains in this crossed-over position to hold said apparatus in the folded position.

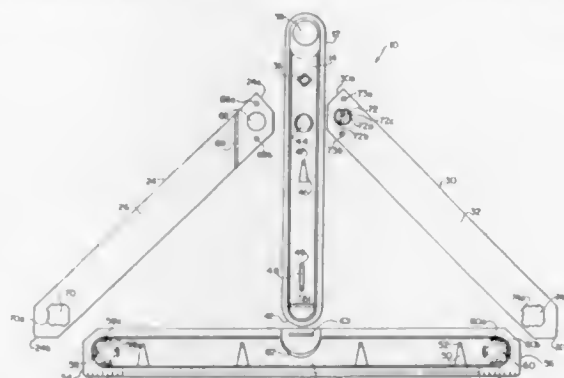
5,509,213 PICTURE HANGER AID AND ALIGNING DEVICE

Mary H. Kelly, 507 Chase St., Park Forest, Ill. 60466; Malcolm T. Kelly, 3112 W. 100th Pl., Evergreen Park, both of Ill. 60642, and John Kelly, 221 E. Market St., P.O. Box 263, Iowa City, Iowa 52245

Filed Jan. 21, 1994, Ser. No. 183,745
Int. Cl.⁶ G01B 5/00

U.S. Cl. 33—613

21 Claims



1. A hanger aligning device comprising:

an elongated vertical center member having a first scribe hole; an elongated horizontal member having a first end, a second end, a plurality of object-receiving hooks extending outwardly and upwardly therefrom, and a set of second scribe holes associated with the hooks; and

a pair of elongated first and second side members, each side member having a top end and a bottom end, the top end of each side member being connected to the vertical member and the bottom ends of the first and second side members being connected to the first and second ends of the horizontal member, respectively.

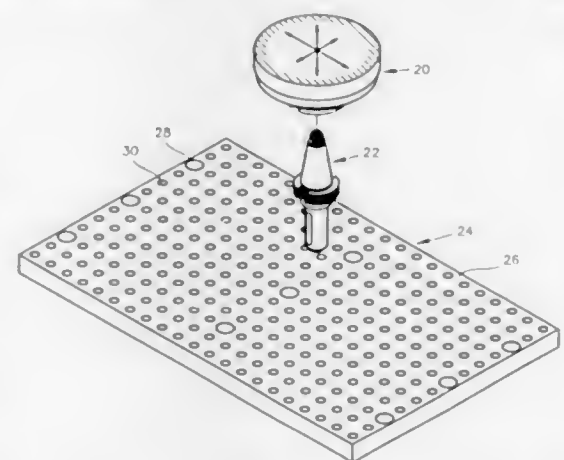
5,509,214 MACHINE-SET MODULAR-FIXTURING SYSTEM

Paul V. Hudimac, North Wales, Pa., assignor to Mechanical Service Co., Inc., Allentown, Pa.

Filed Dec. 30, 1993, Ser. No. 175,638
Int. Cl.⁶ B27G 23/00; B23Q 17/22

U.S. Cl. 33—642

13 Claims



1. A fixture building system to accurately position and fasten fixturing elements relative to an employed machine's coordinate reference frame, comprising: a fixed flat mounting surface, a locating tool, a machine tool spindle, and said fixturing elements, said locating tool is of tubular form having a tapered shank located at its upper portion, a cylindrical elongation concentrically extending from the base of said shank, and a cannular protrusion concen-

trically positioned and projecting from the base of said elongation, and said locating tool is carried in said machine tool spindle of said employed machine, an internal pilot diameter, an external pilot diameter, and an end-referencing surface forming said cannular protrusion are in perfect orientation to the coordinate reference frame of the employed machine, thus, by virtue of mating said internal pilot diameter, said external pilot diameter, or said end-referencing surface with said fixturing elements and fastening said fixturing element in this location, the said locating tool can position and fasten said fixturing element on said fixed flat mounting surface relative to said employed machine's coordinate reference frame.

5,509,215 METHOD AND DEVICE FOR STABILIZATION OF A PAPER WEB IN A GROUP OF CYLINDERS IN A DRYING SECTION OF A PAPER MACHINE

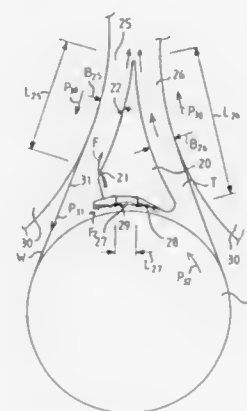
Vesa Koironen, Raisio; Vesa Vuorinen, and Raimo Virta, both of Turku, all of Finland, assignors to Valmet Paper Machinery Inc., Helsinki, Finland

Filed Apr. 9, 1993, Ser. No. 45,638

Claims priority, application Finland, Apr. 10, 1992, 921629
Int. Cl.⁶ D06F 58/00

U.S. Cl. 34—117

30 Claims



1. A device for stabilizing a paper web in a group of cylinders in a dryer section of a paper machine, said group of cylinders including a row of drying cylinders having at least one pair of adjacent drying cylinders, and a corresponding row of at least one leading roll, each leading roll interposed between said drying cylinders of a pair of adjacent drying cylinders, and a looped drying wire for carrying the web running between said cylinders and rolls with said drying cylinders situated outside said loop and said at least one leading roll situated within said loop, said stabilizing device comprising:

a body situated in a space between a pair of adjacent drying cylinders and a leading roll interposed between them, said body having a substantially smooth surface shaped and positioned in opposed relationship to a segment of one of said pair of adjacent drying cylinders over which said drying wire runs, said smooth surface extending substantially parallel to said drying cylinder segment; and

nozzle means provided on said body for directing an air flow over said smooth surface to follow the shape thereof in a direction opposite to a running direction of said drying wire to eject air surrounding said air flow.

5,509,216 APPARATUS FOR DRYING PARTICULATE MATERIAL

Achim Becker, Darmstadt, and Michael Elotos, Biebesheim, both of Germany, assignors to SOMOS GmbH, Weiterstadt, Germany

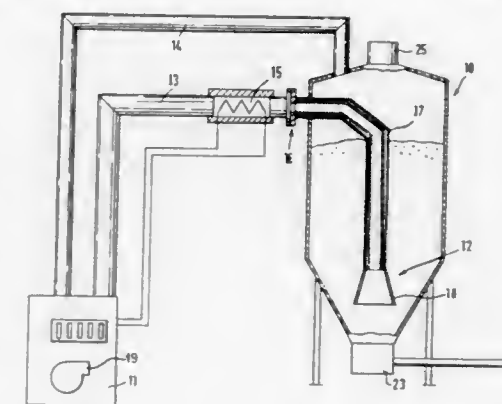
Filed Dec. 20, 1994, Ser. No. 359,819

Claims priority, application Germany, Dec. 24, 1993, 43 44 593,4

Int. Cl.⁶ F26B 19/00; 21/06

U.S. Cl. 34—219

8 Claims



1. An apparatus for drying particulate material comprising at least one particulate material container which is connected in a closed air circulating system with an air drying device and a heater, in which a dry heated gas is moved through the particulate material by means of the blower in order to extract moisture from the particulate material, and air discharged from the particulate material container subsequently is dried again, reheated by means of the heater and then supplied again to the particulate material container, wherein a connection for introducing dry, heated gas is provided in an upper region of the particulate material container, said connection leading into a duct arranged substantially centrally in the container; said duct having a lower end provided with a gas distributor, and said duct being thermally insulated at least inside the particulate material container.

5,509,217 INNER COMFORT BOOT FOR SKI BOOT

Alessandro Condini, Villazzano, Italy, assignor to Lange International S.A., Lausanne, Switzerland

Filed Nov. 15, 1994, Ser. No. 340,166

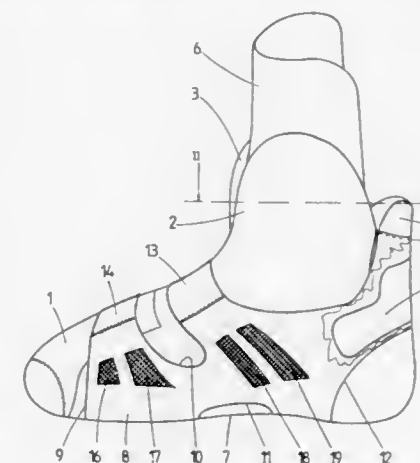
Claims priority, application Switzerland, Dec. 1, 1993, 3585/93

Int. Cl.⁶ A43B 23/07

U.S. Cl. 36—10

8 Claims

1. An inner comfort boot for a ski boot comprising means



intended for retaining on the inner boot corrective pieces (23) for modification of the thickness of the inner boot, wherein said means of retaining the corrective pieces are constituted by an at least partially elastic outer casing (8) which extends at least over the sides of the inner boot and is fixed to the inner boot in the region of its sole (7), the casing (8) being in the form of a sandal with cut out portions at its ends (9, 12) and transversely over the foot.

5,509,218

CUSHIONING DEVICES FOR FEET

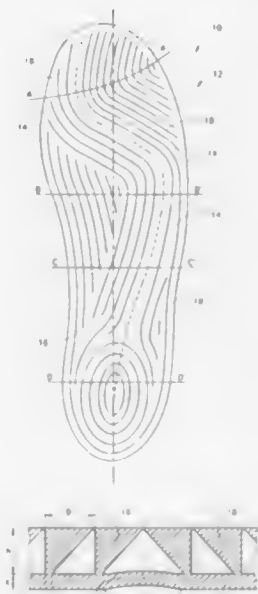
Mircea Arcan, Tagore 42/22, Tel Aviv, Israel, and Radu Arcan, 609 Old Country Rd., Elmsford, N.Y. 10523

Filed Dec. 19, 1994, Ser. No. 359,312

Int. Cl.⁶ A43B 13/38; 13/40; 23/28

U.S. Cl. 36—43

12 Claims



1. A cushioning device for cushioning a foot during gait, the device comprising:

- a plurality of shock absorbing rings, said plurality of shock absorbing rings located around a common center-line and positioned to lie under and support the heel of a foot in a first end-portion of the cushioning device; and
- a plurality of shock absorbing rows, said plurality of shock absorbing rows lying parallel to each other and following the contour of a maximum contact stress path, said maximum contact stress path extending from said plurality of shock absorbing rings to just prior a metatarsal break along an axis forming a small acute angle lateral from a longitudinal axis of the cushioning device, and continuing through the metatarsal break along an axis approximately 60 degrees medial from the longitudinal axis of the cushioning device and continuing through a second opposite end portion of the cushioning device along an axis parallel to the longitudinal axis of cushioning device, said maximum contact stress path corresponding to a path of maximum pressure developed by the foot as it is rolled from a heel strike position to a toe off position.

5,509,219

LIGHT WEIGHT PORTABLE SNOW PLOW

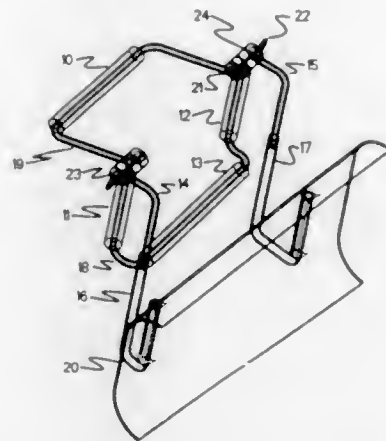
Leonard W. Mecca, 117 Ocean Dunes Cir., Jupiter, Fla. 33477

Filed Nov. 2, 1994, Ser. No. 332,798

Int. Cl.⁶ E01H 5/04

U.S. Cl. 37—231

1 Claim



1. In combination with a snow plow assembly and a vehicle having a hood and a bumper, the snow plow assembly comprising: a one piece plastic blade and a frame assembly consisting of:
 - a first U-shaped support member existing in a substantially horizontal plane and having a first tubular support member cushion slidably installed at a midportion of the first support member;
 - a second U-shaped member having two leg portions and a cross portion wherein the two leg portions exist in a substantially vertical plane and the cross portion exists in a second vertical plane disposed from that of the two leg portions, each of the two leg portions and the cross portion having one each of a slidably installed tubular cushion;
 - two lower vertical supports having upper ends and lower ends wherein the lower ends are in an operational connection to said one piece plastic blade and the upper ends are in telescopically adjustable connection to two upper vertical supports, wherein;
 - said first U-shaped support member, said second U-shaped member and the two upper vertical supports being interconnected at least one point by a connection means;
 - the connection means having a plurality of radially ribbed hubs which are held in a mating relationship by means of a looped shear pin capable of failure upon exceeding a predetermined force on either the blade or the frame assembly;
 - strap means for connection between the looped shear pin and the vehicle in order to securely fasten the snow plow assembly to the hood and the bumper of the vehicle.

5,509,220

TRACK TRENCHER PROPULSION SYSTEM AND PROCESS

Mark R. Cooper, Pella, Iowa, assignor to Vermeer Manufacturing Company, Pella, Iowa

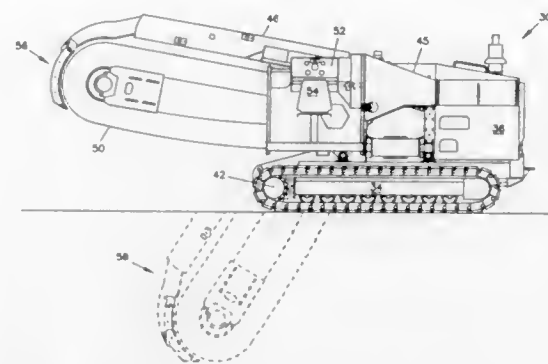
Filed Jul. 29, 1994, Ser. No. 283,080

Int. Cl.⁶ F16D 67/04

U.S. Cl. 37—348

22 Claims

1. A system for operating a track trencher including an engine coupled to left and right track drives, the system comprising:
 - means for producing a travel mode signal indicative of one of a plurality of track trencher travel modes;
 - a propulsion control, operative in one of a plurality of distinct operating modes in response to the travel mode signal, for producing a propel signal associated with one of the plurality of track trencher travel modes; and



computer control means for controlling propulsion of the left and right track drives in one of the plurality of track trencher travel modes to effect propulsion changes in response to the propel signal.

5,509,221

SPRAY NOZZLE ASSEMBLY FOR AN ELECTRIC IRON

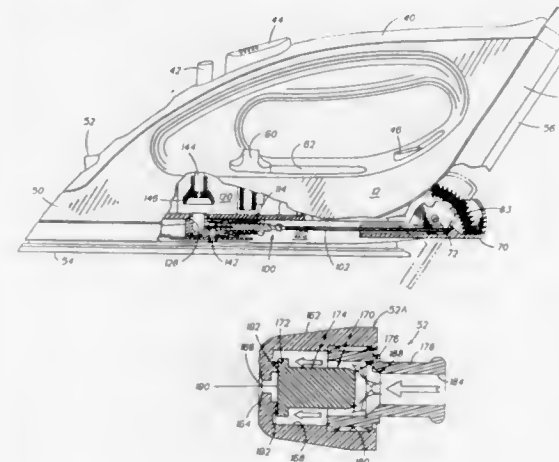
Kenneth H. Patrick, Rainbow City, Ala.; Michael D. Morrissey, Bristol, and Angelo J. Rainone, Wolcott, both of Conn., assignors to Black & Decker Inc., Newark, Del.

Filed May 10, 1994, Ser. No. 240,517

Int. Cl.⁶ D06F 75/22; B05B 1/00

U.S. Cl. 38—77.5

1 Claim



1. An electric iron comprising:
 - a soleplate;
 - a housing connected to the soleplate;
 - a water reservoir formed within the housing;
 - a fluid pump having an inlet in fluid flow communication with the water reservoir and an outlet;
 - a spray nozzle extending from a front wall of said housing;
 - fluid delivery means communicating the spray nozzle with the outlet from said pump;
 - said spray nozzle including a nozzle cap having an outlet orifice formed in a first end wall thereof, said cap including an axially extending cylindrical wall defining an axially extending bore and a plurality of circumferentially spaced pads disposed within said bore for directing fluid from said wall toward said outlet orifice;
 - a fluid flow coupling inserted into a second end wall of said cap and including a valve seat, said fluid flow coupling being in fluid flow communication with said fluid delivery means; and
 - a movable valve member disposed within said bore and operable to direct fluid through said outlet orifice to direct fluid through said outlet orifice when fluid flows through said valve seat and thence through said bore towards said outlet, said valve member moving towards said outlet orifice solely in response to

fluid flow through said seat, said valve member including an enlarged generally cylindrical head facing towards said outlet orifice and a relatively smaller diameter elongated section facing towards said valve seat moving in a linear flow path within the bore into engagement with said valve seat when flow of fluid through said pump outlet is terminated, said valve member moving within said bore into engagement with said valve seat solely in response to the stoppage of fluid flow through said pump outlet.

5,509,222

RECEIVING CONTAINER FOR CARD-LIKE INFORMATION CARRIERS

Jürgen Rathenber, Northeimer Strasse 4, D-37581 Bad Gandersheim, Germany

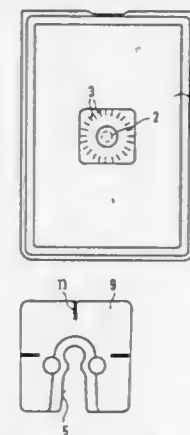
Filed Mar. 30, 1994, Ser. No. 221,060

Claims priority, application Germany, Apr. 28, 1993, 9306413 U

Int. Cl.⁶ A44C 3/00

U.S. Cl. 40—1.5

5 Claims



1. A receiving container for card-like information carriers, comprising a container part having a rear surface provided with a plug button and a plurality of friction projections surrounding said plug button; and a plug part having a receiving opening provided with inwardly extending projections which are releasably engageably pluggable on said plug button and is provided with a plurality of engaging projections engageable with said friction projections of said container part, said plug part being frictionally and form-lockingly releasably and turnably pluggable on said plug button, said plug part being provided with clamping means for mounting on a clothing piece.

5,509,223

LIGHTING SYSTEM

Hae-Ryong Jung, Lanham, Md., assignor to Shenandoah Creations Co., Inc., Lanham, Md.

Continuation of Ser. No. 963,627, Oct. 20, 1992, abandoned.

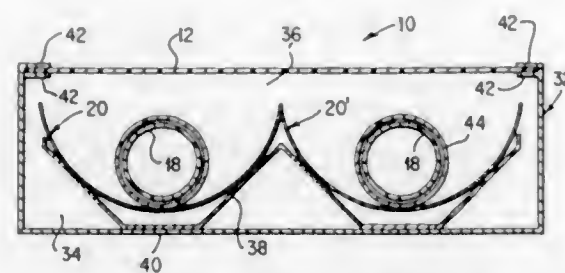
This application May 26, 1994, Ser. No. 250,118

Int. Cl.⁶ G09F 13/04

U.S. Cl. 40—564

8 Claims

8. A lighting system comprising:
 - (a) a housing;
 - (b) light means fixedly mounted within said housing for emitting electromagnetic radiation within the visible bandwidth; and,
 - (c) a reflector member having a concavely contoured inner reflective surface defining a substantially continuous semi-circular contour, said inner reflective surface contour defining a reflector surface focal point, said light means being fixedly positioned between said reflector member focal point and said inner reflective surface for producing a plurality of intersecting virtual images of said light means viewable external said



lighting system in an overlapping pattern for providing a substantially wide angle illumination pattern, said light means having a first diameter and said inner reflective surface defining a second diameter approximating three times said light means first diameter.

5,509,224

PERSONAL IDENTIFICATION NUMBER SHIELD

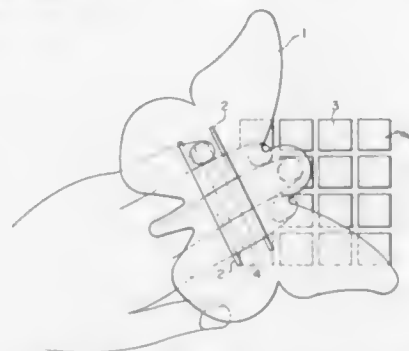
Elizabeth Roy, Santa Monica, Calif., assignor to J. T. Martin, Washington, D.C.

Filed Mar. 22, 1995, Ser. No. 408,572

Int. Cl.⁶ G09F 21/02

U.S. Cl. 40—586

4 Claims



1. A shield for obscuring visual access to information that consists of a substantially planar and pliant means of a size and shape adequate to obscure visual access to information through which at least two substantially parallel slits have been provided to form a retention portion of said means around which the fingers of a hand of the user may be wrapped to retain said shield while the user is obscuring visual access to information with said shield.

5,509,225

REPLACEABLE SIGN PANEL ASSEMBLY FOR A MERCHANDISE CABINET

Tran Q. Minh, Stockbridge; Edwin F. Womack, Jr., Marietta, and Leonard F. Antao, Lawrenceville, all of Ga., assignors to The Coca-Cola Company, Atlanta, Ga.

Filed Jul. 29, 1994, Ser. No. 281,647

Int. Cl.⁶ G09F 7/02

U.S. Cl. 40—611

29 Claims

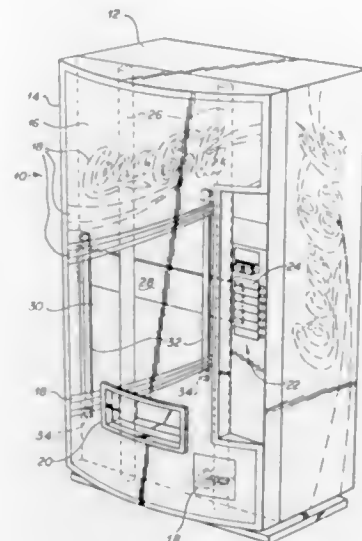
28. In a vending machine having an outer door and an illuminated sign in said outer door, the improvement comprising:

a sign panel assembly for use on a selected area of the illuminated sign in the door including,

at least two elongated framing strips formed of transparent plastic material, said framing strips having inner and outer longitudinal edges, at least the inner edges being beveled to minimize light scattering therefrom,

fastening means for connecting said strips to said illuminated sign, and

a flexible sign panel having a central field for containing graphic material therein and spaced side portions to be supported by said strips against a rear surface of said illuminated sign.



5,509,226

FIREARM WITH MODIFIED TAKE DOWN LATCH FOR CONTROLLING LASER SIGHT

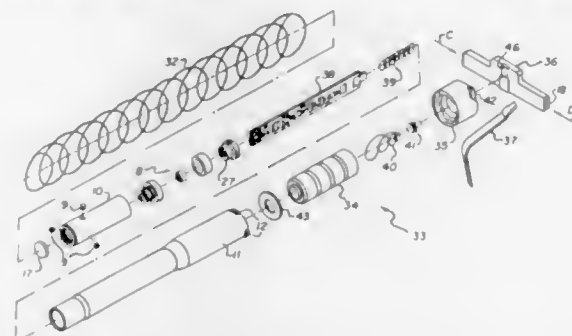
William R. Houde-Walter, Rush, N.Y., assignor to LaserMax Incorporated, Rochester, N.Y.

Filed Nov. 8, 1993, Ser. No. 148,846

Int. Cl.⁶ F41G 1/35; 1/36

U.S. Cl. 42—103

6 Claims



1. A firearm comprising

a frame supporting a structure containing a reciprocating chamber, a recoil chamber formed between said structure and said frame, and a laser sight mounted in said recoil chamber,

a take down latch disposed between said structure and said frame and moveable from a normal position for retaining said structure on said frame in a first direction for permitting the removal of said structure from said frame, said take down latch having an electrically conductive portion and an electrically insulating portion, said take down latch also being moveable from said normal position in a second direction for turning on said laser sight,

an electrical circuit including said take down latch for supplying electrical energy to said laser sight through said take down latch when said latch is moved in said second direction and for terminating electrical energy to said laser sight when said latch is returned to said normal position.

5,509,227

FISHING NET MECHANISM

Orestes Marrero, 75 W. 9th St., Hialeah, Fla. 33010

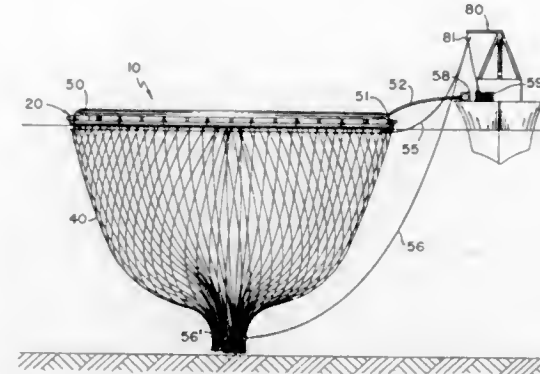
Filed Mar. 22, 1995, Ser. No. 408,369

Int. Cl.⁶ A01K 71/00

U.S. Cl. 43—7

6 Claims

1. A fishing net mechanism, comprising:



A. supporting tubular means including a plurality of cooperative interlocking sections that form a frame having first and second pairs of symmetrical opposing sides;

B. a plurality of hook carrier assemblies mounted to said supporting tubular means;

C. fishing net means having an upper edge mounted to said hook carrier assemblies;

D. inflatable floating means mounted to said supporting tubular means and said inflatable floating means having sufficient capacity to cause said supporting tubular means to float when fully inflated;

E. a source of compressed air connected to said inflatable floating means; and

F. cable means for hoisting said mechanism and said cable means being connected to said supporting tubular means.

5,509,228

ERGONOMICALLY DESIGNED HANDLE AND CONTOURED GRIPPING PORTION

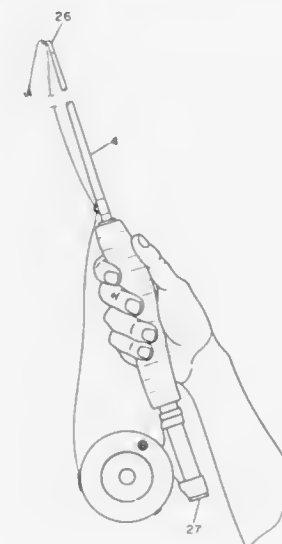
Philip N. Wright, Jr., 1011 River Dr., No. 101, Livingston, Mont. 50047

Filed Mar. 29, 1994, Ser. No. 219,509

Int. Cl.⁶ A01K 87/08

U.S. Cl. 43—23

9 Claims



1. An ergonomically optimized handle for use on a fishing rod with an elongated shaft member and a reel located at a proximal end of said elongated shaft member, said handle comprising:

a. an axially extending opening for engaging said elongated shaft member; and

b. a contoured gripping portion for receiving a user's hand and fingers adjacent said axially extending opening having a distal gripping portion end and a proximal gripping portion end

located opposite said proximal gripping portion end, said contoured gripping portion comprising:

(i) a top side extending between said proximal and distal gripping portion ends, said top side having a first angular curvature angularly disposed away from said axially extending opening, and originating at said distal gripping portion end, coupled to a second angular curvature angularly disposed toward said axially extending opening, and terminating at said proximal gripping portion end; and

(ii) a bottom side opposite said top side having a third angular curvature originating at said distal gripping portion end with an angular curvature angularly disposed away from said axially extending opening, a fourth angular curvature terminating at said proximal gripping portion end with an angular curvature angularly disposed toward said axially extending opening, and a fifth angular curvature intermediate said third and fourth angular curvatures with an angular curvature angularly disposed toward said axially extending opening aligned such that said fifth angular curvature extends from said third angular curvature to said fourth angular curvature, and creates a depression between said third and fourth angular curvatures dimensioned to receive the user's four non-thumb fingers.

5,509,229

SELF-SUPPORTING THERMALLY-PROTECTIVE PLANT ENCLOSURE FORMED BY SELF-STANDING CONTAINER BODIES

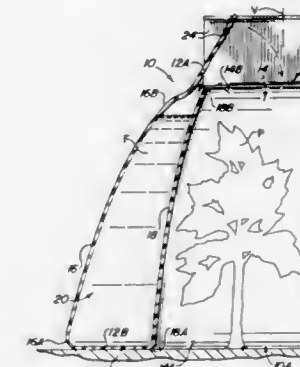
Joseph R. Thomasson, Hays, and John Van Dyke, Plainville, both of Kans., assignors to Phytac, Inc., Hays, Kans.

Continuation-in-part of Ser. No. 163,948, Dec. 8, 1993, abandoned. This application Aug. 19, 1994, Ser. No. 293,693

Int. Cl.⁶ A01G 13/02

U.S. Cl. 47—21

22 Claims

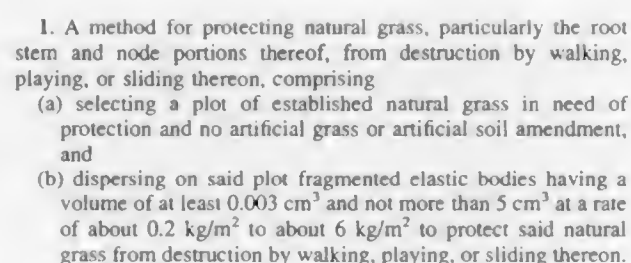


1. A protective plant enclosure, comprising:

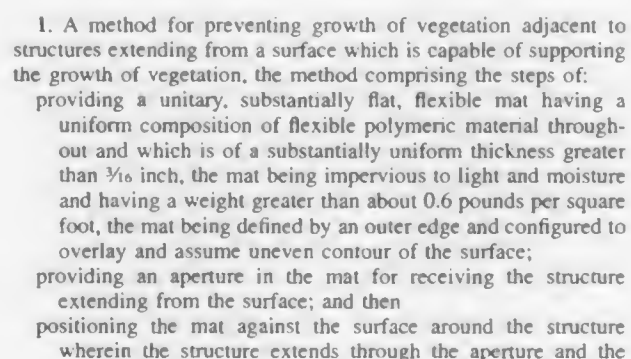
(a) a plurality of elongated hollow container bodies each having an outer and an inner transparent wall, said outer and inner walls being spaced apart and peripherally interconnected by a plurality of walls defining a base, a top and a pair of opposite sides extending upwardly from said base to said top, each of said container bodies being closed along said opposite sides and said base and open through at least a portion of said top to define an internal cavity in said container body capable of receiving and holding a quantity of fluid therein, said container bodies being positioned in side-by-side relation and at least some of said container bodies being coupled one body to the next along said opposite sides thereof so as to form said plant enclosure with an open top and bottom and a generally annular configuration surrounding a protective plant growth chamber; and

(b) means for releasably coupling at least a pair of said container bodies of said plurality thereof together along adjacent pairs of said opposite sides thereof so as to permit opening and closing of said plant enclosure at said pairs of opposite sides of said container bodies of said plant enclosure.

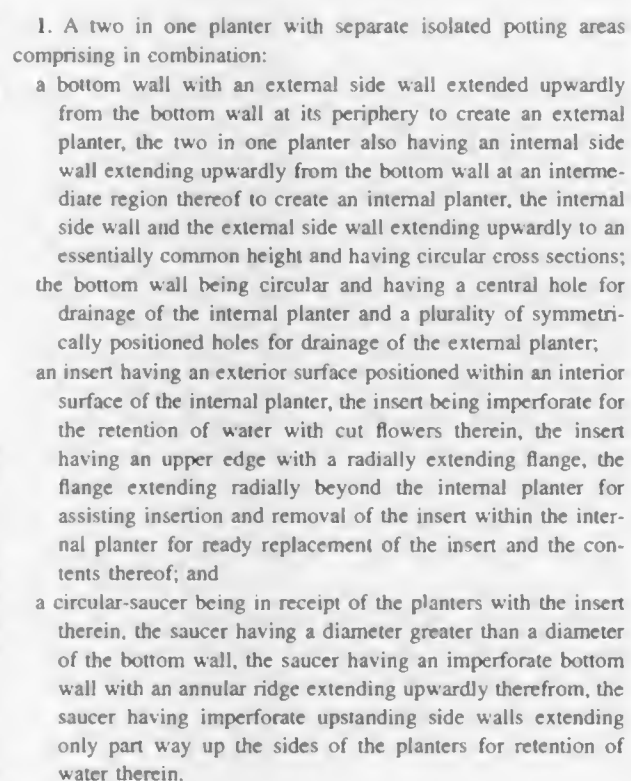
5 Claims



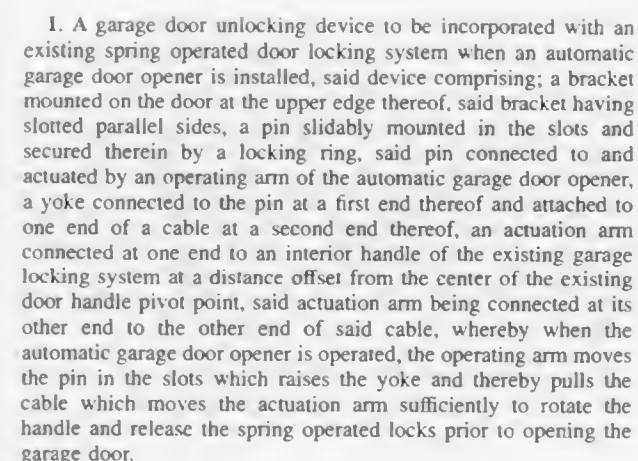
18 Claims



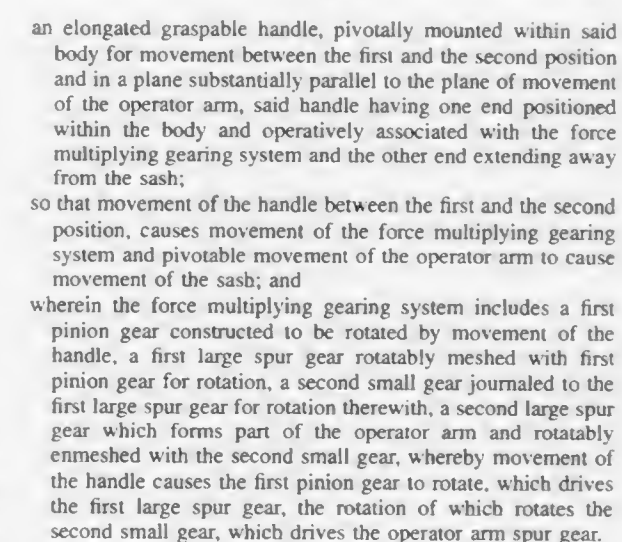
3 Claims



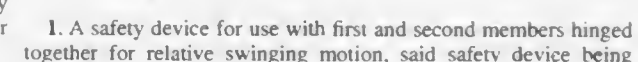
1 Claim



17 Claims



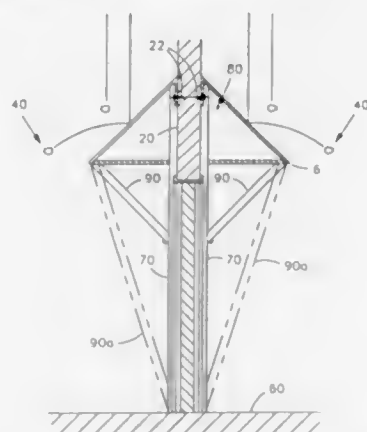
9 Claims



and operatively associated with said other end of the operator arm:

insertable in a gap between said first and second members, said safety device comprising bracket means for being secured to one of said first and second members, a stopper, hinge means carried by said bracket means, arms means connected between said hinge means and said stopper, and spring means disposed between said bracket means and said stopper for biasing said stopper relative to said bracket means.

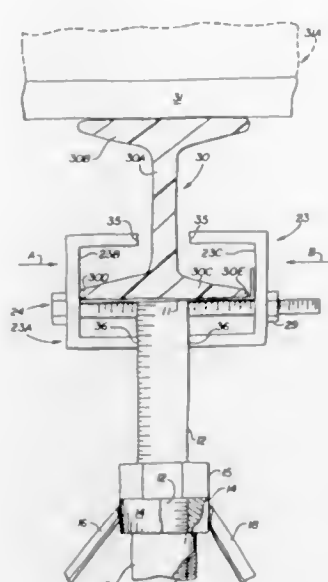
5,509,236
SAFETY CANOPY FOR A DOORWAY OR PORTAL
 Peter V. Angles, 345 S. Reese Pl., Burbank, Calif. 91506
 Filed Jun. 2, 1994, Ser. No. 252,683
 Int. Cl.⁶ E04B 1/34
 U.S. Cl. 52—74 11 Claims



1. A safety canopy for use with a doorway in a wall of the type having a door jam configured in width and height by a pair of vertical walls and a header respectively, the canopy comprising a structural metal plate being rigid and puncture resistant fixed to the wall and extending from the wall above the header, on a downward angle terminating in a margin edge so as to be protruding outwardly from the wall at a position approximately level with the header, the canopy being positioned, and having sufficient size to shelter an individual standing in the doorway from objects falling from above the doorway; the safety canopy further including a pair of vertically oriented pillars each positioned at one side of the doorway and extending from a support surface upwardly to a juncture of the canopy and the wall, and a pair of angled canopy support braces each fixed to the canopy margin edge and extending downwardly to intersect one of the pillars, the braces providing support to the canopy for preventing the canopy from collapsing under load.

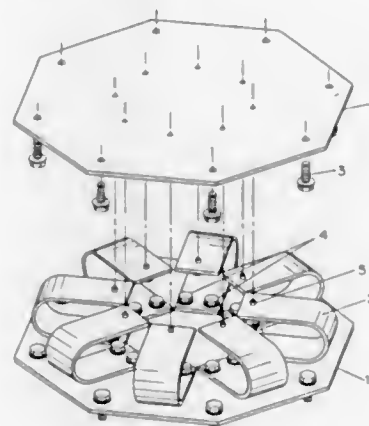
5,509,237
MOBILE HOME ANCHOR SYSTEM
 William L. Coulter, 25633 Bejoal St., Barstow, Calif. 92311
 Filed Feb. 17, 1994, Ser. No. 198,143
 Int. Cl.⁶ E02D 27/48
 U.S. Cl. 52—126.6 1 Claim

1. In combination with a mobile building and an anchor apparatus for the mobile building, the mobile building including a body member rigidly supported on a frame member, the frame member having a flange member extending therefrom and spaced from the body member, the anchor apparatus including
 a frame having a top and a bottom anchored to the ground,
 a support member contacting the flange member, the support member having first and second side surfaces, and
 a neck interconnecting the frame and the support member, the improvements for preventing movement of the flange member off of the support member, said improvements comprising an adjustable bracket assembly including
 (a) a first bracket;



(b) a second bracket spaced apart from said first bracket; and
 (c) fastening means connecting said first and second brackets; said fastening means and brackets being shaped and dimensioned such that
 (i) said fastening means inwardly compresses each of said first and second brackets toward one another and against said neck and one of said first and second side surfaces, and
 (ii) said brackets prevent said flange member from moving off of said support member.

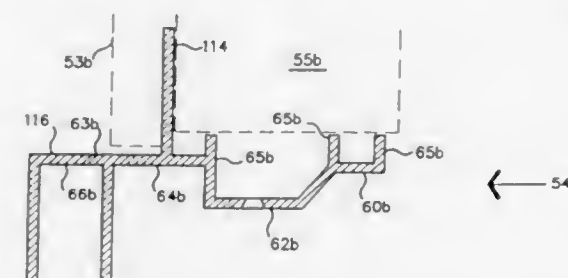
5,509,238
MULTIDIRECTIONAL MECHANICAL DEVICE
DISSIPATING ENERGY, PARTICULARLY FOR THE
CONSTRAINT OF STRUCTURES IN SEISMIC ZONES
 Daniele Scalfati, Viale Gorgia di Leontini, Italy, assignor to TIS
 Tecnliche Idraulico Stradali S.p.A., Rome, Italy
 Filed Aug. 1, 1994, Ser. No. 283,983
 Claims priority, application Italy, Aug. 3, 1993, RM93A0530
 Int. Cl.⁶ E04H 9/02
 U.S. Cl. 52—167.7 6 Claims



1. A multidirectional mechanical device for dissipating energy, particularly for the constraint of structures in seismic zones, able to give a dissipative response for forces acting on a plane, for any direction of the same forces, characterized in that it comprises a plurality of C-shaped elastic-plastic response elements, provided between two parallel planes, each element being constrained at a first end by a restrained joint, and at a second end by a cylindrical hinge having an axis perpendicular to the plane upon which said

forces act so as to allow a portion of the element adjacent to the second end to rotate around the cylindrical hinge when said forces act.

5,509,239
STORM SHUTTER WINDOW FRAME SYSTEM
 James Fullwood, Tequesta, Fla., assignor to Duraframe Window Shutter Systems, Inc., West Palm Beach, Fla.
 Division of Ser. No. 328,197, Oct. 24, 1994, Pat. No. 5,465,537.
 This application Jul. 21, 1995, Ser. No. 505,006
 Int. Cl.⁶ E06B 3/26
 U.S. Cl. 52—202 6 Claims

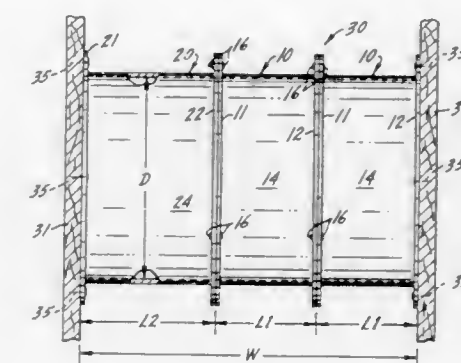


1. A portal frame structure for insert therein of a window frame and a shutter comprising:

(a) a pair of longitudinally displaced and aligned portal jamb frames, each of said portal jamb frames having a plurality of portal jamb frame sections formed each to the other in side by side relation including a first cross-sectionally formed U-shaped jamb frame section, a second cross-sectionally formed U-shaped jamb frame section for mounting of said window frame and having a second jamb frame section leg member in commonality with said first jamb frame section, a third cross-sectionally formed U-shaped jamb frame section having a third jamb frame section leg member in commonality with said second frame section, a fourth cross-sectionally formed U-shaped jamb frame section having fourth and fifth jamb frame section leg members, said fourth jamb section leg member having a greater longitudinal dimension than said fifth jamb section leg member;

(b) a longitudinally extending portal head frame having a plurality of head frame sections formed each to the other in side by side relation including a first cross-sectionally formed U-shaped head frame section, a second cross-sectionally formed U-shaped head frame section for receipt of said window frame and having a second head frame section leg member in commonality with said first head frame section, a third cross-sectionally formed U-shaped head frame section having a third head frame section leg member in commonality with said second head frame section and an exterior surface plate member extending therefrom for contiguous interface with a surface of a building wall, and a fourth cross-sectionally formed U-shaped head frame section having a fourth head section leg member in commonality with said third head frame section and forming a head guide channel for insert of said shutter; and
 (c) a longitudinally extending portal sill frame having a plurality of sill frame sections formed each to the other in side by side relation including a first cross-sectionally formed U-shaped sill frame section, a second cross-sectionally formed U-shaped sill frame section having a second sill frame section leg member in commonality with said first sill frame section, a third cross-sectionally formed U-shaped sill frame section having a third sill frame section leg member in commonality with said second sill frame section, a fourth cross-sectionally formed U-shaped sill frame section having a fourth sill frame section leg member in commonality with said third sill frame section, said fourth sill frame section leg member extending contiguous an outer surface of said building wall.

5,509,240
SYSTEM FOR FORMING LINED PASSAGES THROUGH CONCRETE WALLS
 Bruce G. Barton, Jr., 10823 Plaza Dr., Whitmore Lake, Mich. 48189
 Filed Aug. 19, 1991, Ser. No. 746,896
 Int. Cl.⁶ E04C 2/52
 U.S. Cl. 52—220.8 9 Claims



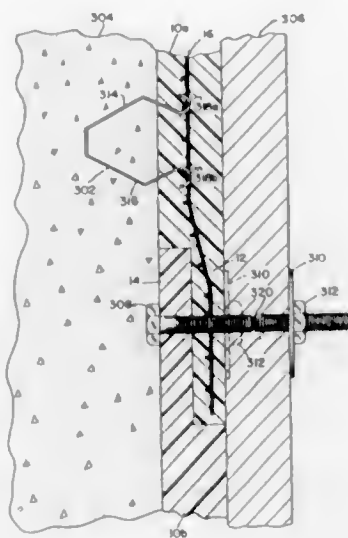
1. A system of modular spools to be joined together in a unitary stack and mounted in a concrete wall form to create a lined passage of uniform diameter D through a concrete wall molded in the concrete wall form, the concrete wall form including first and second form plates mounted in fixed spaced relation to each other and separated by a wall width W, the system including a multiplicity of modular spools, with each spool comprising:

an annular shell having an inside diameter D, an axial length less than W, a front rim, and a rear rim;
 flat front and rear flanges extending radially outwardly of the front and rear rims, respectively, of the shell, and the flanges each having an inner diameter D, so that a series of the spools can be assembled, end-to-end and flange-to-flange, without change of the internal diameter D through the entire assembly;
 a first plurality of the spools each having an axial length L1; and a further plurality of the spools each having an axial length L2, with L2>L1;
 the difference between L1 and L2 being one inch (2.5 cm) and L2 being no larger than six inches (15 cm).

5,509,241
FIREPROOFING PANEL ATTACHMENT SYSTEM
 John M. Coconis, Derry; John C. Solloway, Salem, and George K. Castle, Hollis, all of N.H., assignors to Avco Corporation, Providence, R.I.
 Continuation of Ser. No. 886,052, May 20, 1992. This application Oct. 5, 1994, Ser. No. 317,699
 Int. Cl.⁶ E04C 2/00
 U.S. Cl. 52—232 11 Claims

1. A preformed, integral fireproofing panel, having at least one substantially planar surface, and adapted to be attached to a substrate to be fireproofed, comprising:

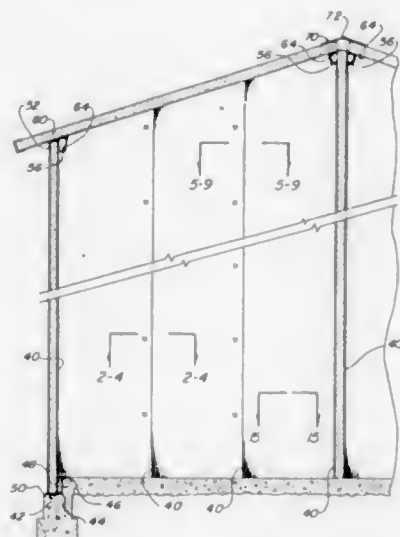
a. a region of intumescent fireproofing material; and
 b. a projecting member having an end embedded within the region of fireproofing material and connected to a planar surface of the fireproofing panel and having another end extending orthogonally away from the region of fireproofing material for attaching the fireproofing material to the substrate;
 wherein the panel comprises a sheet of mesh embedded in the fireproofing material and the embedded end of the projecting member is attached to the mesh.



5,509,242
STRUCTURAL INSULATED BUILDING PANEL SYSTEM
Steven A. Rechsteiner, and Jesse Fuller, both of Barrington, Ill., assignors to American International Homes Limited, Hoffman Estates, Ill.

Filed Apr. 4, 1994, Ser. No. 222,645
Int. Cl.⁶ E04B 2/00; 5/00; 7/00
U.S. Cl. 52—270

22 Claims

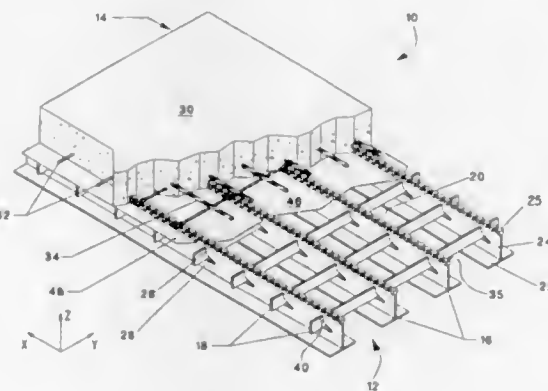


1. A structural insulated building panel system assembled from individual structural composite panels having an insulating foam core sandwiched between an outside metal skin and an inside metal skin, the system defining a panel to panel connection comprising:
a channel shaped projection integral with a panels outside skin on a first end,
a channel shaped extension joggled away from an inside skin on a first end of a panel opposite the projection within a same panel end forming male junction members,
an outwardly protruding U-shaped leg extending parallel from a second end of a panel outside skin having a joggle formed into the leg away from an outside skin, also a female recess integrally formed into a panel skin such that when a panel first end and an adjacent panel second end are joined together, the projection interfaces with the recess to form a slip fit structural joint and the joggled leg provides a space between the leg and the projection, and

an inwardly contoured overlapping Z-shaped finger formed integrally from a second end of a panel inside skin, the panels insulating foam configured parallel with the extended finger such that a socket is formed between the foam and the finger in a panel skin, the socket interfacing with the extension to form a male and female joint when a panel first end and a panel second end are joined together.

5,509,243
EXODERMIC DECK SYSTEM
Neal H. Bettigole, 89 Howard Dr., Old Tappan, N.J. 07675, and Robert A. Bettigole, 21 Robin Hill Rd., Scarsdale, N.Y. 10583
Filed Jan. 21, 1994, Ser. No. 183,945
Int. Cl.⁶ E01D 19/12; E04B 5/23
U.S. Cl. 52—334

12 Claims



11. A module for a structural floor having an open-lattice grating base member comprising:

an open-lattice base member, said grating base member having a plurality of main bearing bars and a plurality of distribution bars and without any tertiary bars, said distribution bars being substantially perpendicular to said main bearing bars defining interstices therebetween, said distribution bars intersecting and interlocked with said main bearing bars to distribute load transverse to said main bearing bars, said distribution bars having a top surface and a bottom surface, said main bearing bars having a top surface and a bottom surface, said top surface of said main bearing bars being above said top surface of said distribution bars, and said bottom surface of said main bearing bars being below said bottom surface of said distribution bars, said main bearing and distribution bars forming an integral modular unit without any tertiary bars adapted to be supported on and transmit forces to main structural framing members, said top surfaces of said plurality of distribution bars defining a horizontal axis;

a top component fixed to said grating base member above said horizontal axis, said top component having a planar top surface and a planar bottom surface, said planar bottom surface being parallel and proximate to said horizontal axis so that said top component does not fill the interstices of said grating base member;

said main bearing bars having an upper shear transfer portion, said upper shear transfer portions of said plurality of main bearing bars including lock means for providing mechanical locks between said top component and said grating base member, said lock means being embedded within said top component; said upper shear transfer portion of said plurality of main bearing bars effecting shear transfer between said top component and said grating base member in a horizontal direction parallel to said embedded main bearing bars and in a horizontal direction perpendicular to said embedded main bearing bars.

5,509,244
FLOORING SYSTEM HAVING JOINABLE TILE ELEMENTS, PARTICULARLY PLASTIC TILES
Frank Bentzon, C.A. Thyregodvej 105, DK-8230 Åbyhøj, Denmark

PCT No. PCT/DK92/00153, § 371 Date Nov. 15, 1993, § 102(e)
Date Nov. 15, 1993, PCT Pub. No. WO92/20885, PCT Pub. Date Nov. 26, 1992

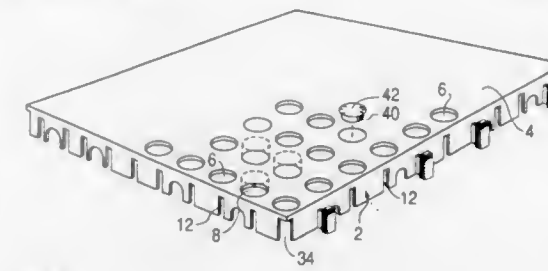
PCT Filed May 13, 1992, Ser. No. 146,168

Claims priority, application Denmark, May 13, 1991, 0892/91

Int. Cl.⁶ E04F 15/10; 15/22

U.S. Cl. 52—387

11 Claims



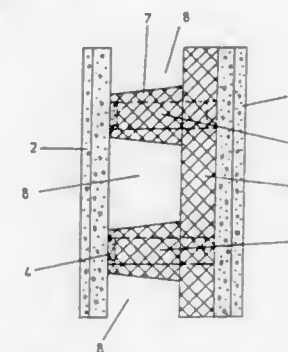
1. A floor covering system including a plurality of tiles coupled together to form a floor covering, wherein each of the tiles includes edge areas extending completely around the respective tiles and including a plurality of downwardly open channels disposed behind vertically extending edge walls of the tiles, a plurality of coupling members with each coupling member having a pair of head portions respectively inserted into one of the plurality of channels of adjacent tiles, a middle portion projecting outwardly through an upwardly closed and downwardly open vertical slot in each of the edge walls of the adjacent tiles, a width in a horizontal direction of the middle portion less than a height of the middle portion and less than a width of each of the pair of head portions in a horizontal direction, the open slot having a height greater than a width thereof, and the height of the middle portion extending vertically in the open slot.

5,509,245
FORMWORK BRICK
Siegfried Gebhart, Tobelstadel, Germany
Filed May 31, 1994, Ser. No. 251,744
Claims priority, application Germany, Jun. 4, 1993, 43 18 578.9

Int. Cl.⁶ E04B 1/88; E04C 1/00

U.S. Cl. 52—405.1

14 Claims



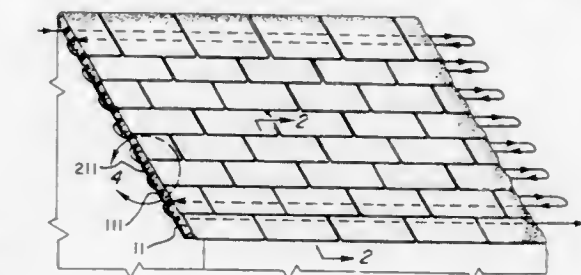
1. Formwork brick having a longitudinal external wall and a longitudinal internal wall, comprising:
at least two cross walls connecting the external wall to the internal wall which extend upwardly for only a portion of the height of the longitudinal walls;
a first insulating insert located on an inside surface of at least one of the two longitudinal walls extending only a portion of the distance between the external and the internal wall; and

a pair of spaced apart second insulating inserts each abutting said first insulating insert and extending transversely and abutting to the other one of said two longitudinal walls and enclosing said cross walls so as to form a cavity between said pair of second insulating inserts and said first insulating insert suitable for receiving concrete.

5,509,246
SOLAR ROOF SHINGLE
Mark E. Roddy, 170 White Horse Pike, Absecon, N.J. 08201
Filed Nov. 14, 1994, Ser. No. 339,342
Int. Cl.⁶ E04D 1/24

U.S. Cl. 52—533

8 Claims



1. A roof shingle for solar heat collection comprising an upper segment with a first transverse opening extending therethrough, a lower segment, hollow tubing means extending through said first transverse opening in said upper segment and means for securing said shingle to said roof, said hollow tubing means being adapted to contain a fluid therein, said upper segment having a greater thickness than said lower segment, said first transverse opening being adapted to be aligned with openings in adjacent roof shingles on either side of said roof shingle and being substantially larger than the diameter of said hollow tubing means so that misaligned adjacent roof shingles can accommodate said hollow tubing means.

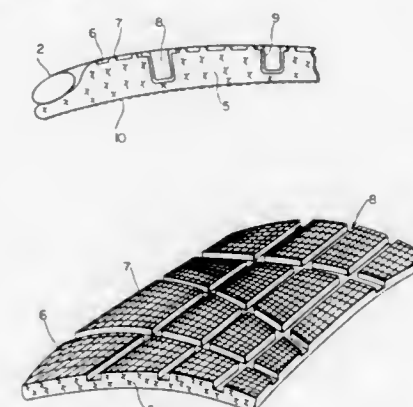
5,509,247
VIBRATION-DAMPING INSIDE ROOF CONSTRUCTION
Maurice Fortez, Vanves, France, and Thorsten Alts, Gross-Bieberau, Germany, assignors to Matec Holding AG, Küssnacht, Switzerland

Filed Sep. 23, 1993, Ser. No. 125,250
Claims priority, application Switzerland, Sep. 23, 1992, 02974/92

Int. Cl.⁶ E04B 1/74; E04C 2/32

U.S. Cl. 52—630

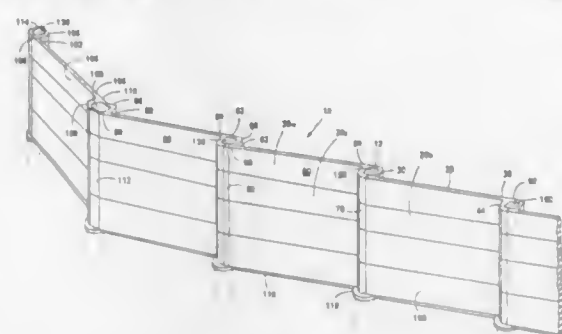
14 Claims



11. A sound-absorbing lining suitable for use in the interior of a vibration-damping roof construction, said lining comprising:
a moulded part comprising a porous, compressed fibrous web material, said moulded part having locally stiffened regions

giving said moulded part a self-supporting stability, and said moulded part having a side having a waffle-like structured surface of spaced depressed surfaces separated by individual projecting segments arranged in a grid of spaced horizontal and perpendicular lines, said structured surface being configured to impede air currents less in the lateral direction than the air flows at a right angle to the lateral direction.

5,509,249
COMBINATION COLUMN AND PANEL BARRIER SYSTEM AND METHOD OF CONSTRUCTION
 Randall H. House, San Antonio; Freddie C. Birck, Boerne, and Johann H. Hofmann, San Antonio, all of Tex., assignors to Marylyn House, San Antonio, Tex.
 Division of Ser. No. 249,692, May 26, 1994, Pat. No. 5,400,563, which is a continuation of Ser. No. 675,503, Mar. 26, 1991, abandoned. This application Mar. 28, 1995, Ser. No. 412,267
 Int. Cl.⁶ E02D 5/00; E04B 2/00
 U.S. Cl. 52—745.1 7 Claims

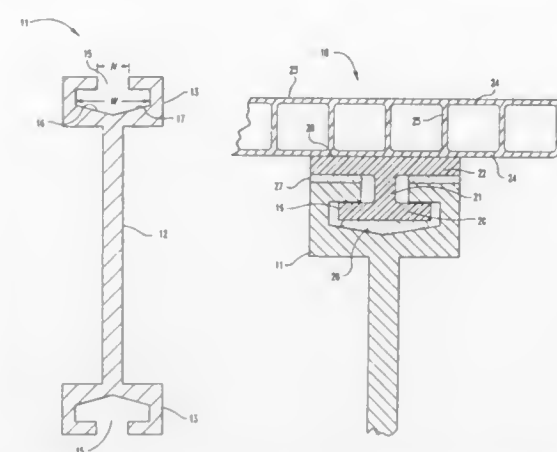
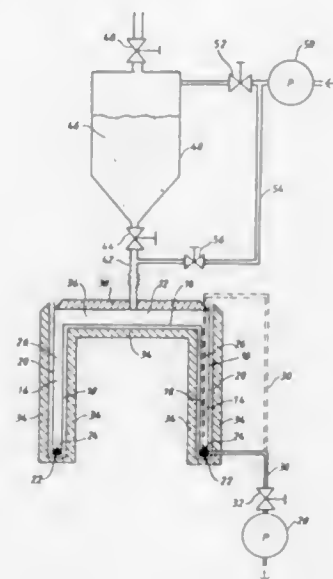


- I. A precast concrete, combination panel and column module comprising:
 - a. a generally vertically disposed panel having a thickness, a height, and a first generally vertical edge and a second generally vertical edge;
 - b. a first generally vertically disposed U-shaped member and a second generally vertically disposed U-shaped member, each said first and said second U-shaped member having a front leg and a rear leg, and a thickness and a height substantially similar to said thickness and said height of said panel, each said first and said second U-shaped members horizontally located at opposite ends of said panel;
 - c. each said panel of said first precast module and said second precast module slanting in a horizontal plane from said front leg of said first U-shaped member to said rear leg of said second U-shaped member; and
 - d. said first U-shaped member, said second U-shaped member, and said panel capable of overcoming ambient overturning forces exerted on said panel, whereby each said precast module is inherently stable and capable of standing upright with no other support.

5,509,250
STRUCTURAL PANEL USEFUL FOR SKYLIGHTS
 Randall A. Jensen, and Jeffrey Burgardt, both of Indianapolis, Ind., assignors to Skylights, Incorporated, Mooresville, Ind.
 Filed Sep. 20, 1993, Ser. No. 123,875
 Int. Cl.⁶ E04C 2/54
 U.S. Cl. 52—200 33 Claims

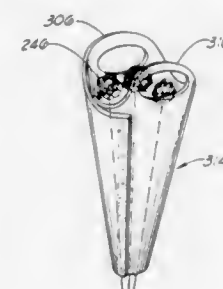
- I. A structural panel comprising:
 - a plurality of elongate members defining a panel frame having first and second sides;
 - each of said elongate members having first and second elongate edges, said first and second edges each having a channel defined therein;
 - elongate infill members movably engaged by said channels, said infill members having first portions received in said channels with clearances provided between said first portions and said channels, said infill members further having, second portions exterior of said channels, said second portions providing bonding surfaces on first and second sides of said panel frame;
 - sheet material bonded to said bonding surfaces of said elongate infill members and covering said first and second sides of said panel frame;

I. Method for filling and packing insulating powder in hollow walls of a boxlike body (10) and then evacuating gaseous medium from the walls, so that the powder forms a vacuum insulation in the walls (14), the body (10) having a rear wall (12) and four side walls (14), said method comprising the steps of supporting the inner and outer sides of the walls in a fixture (34) with free edges (22) of the side walls pointing downwards, filling the walls by blowing the powder (46) into the rear wall (12) by gaseous medium of a first pressure, packing the powder by gaseous medium of a second pressure, which is higher than the first pressure, let into the rear wall, the media during the steps of filling and packing being let out of the walls via a filter element (24) arranged at the free edges (22), and evacuating the walls through the filter element (24) after the steps of filling and packing.



said elongate members and said sheet material having differing coefficients of thermal expansion, wherein differential expansion of said elongate members and sheet material causes said infill members to move within said channels.

5,509,251
METHOD OF WRAPPING A FLORAL GROUPING USING A WRAPPER WITH A HANDLE
 Donald E. Weder; Joseph G. Straeter, and John Bergstrand, all of Highland, Ill., assignors to Highland Supply Corporation, Highland, Ill.
 Continuation-in-part of Ser. No. 922,971, Jul. 30, 1992, abandoned, which is a continuation-in-part of Ser. No. 803,318, Dec. 4, 1991, Pat. No. 5,344,016, which is a continuation-in-part of Ser. No. 707,417, May 28, 1991, abandoned, which is a continuation of Ser. No. 502,358, Mar. 29, 1990, abandoned, which is a continuation-in-part of Ser. No. 391,463, Aug. 9, 1989, abandoned, which is a continuation-in-part of Ser. No. 249,761, Sep. 26, 1988, abandoned, which is a continuation-in-part of Ser. No. 219,083, Jul. 13, 1988, Pat. No. 4,897,031, which is a continuation of Ser. No. 4,275, Jan. 5, 1987, Pat. No. 4,773,182, which is a continuation of Ser. No. 613,080, May 22, 1984, abandoned. This application Jul. 16, 1993, Ser. No. 92,678
 Int. Cl.⁶ B65D 61/14; 25/02; 11/02; 11/04
 U.S. Cl. 53—399 24 Claims



- I. A method for wrapping a floral grouping comprising:
 - providing a sheet of material having an upper surface, a lower surface, a first end, a second end, a first side and a second side, a first width near the first end and extending generally from the first side to the second side, and a second width near the second end and extending generally from the first side to the second side, and wherein the sheet of material has a closure bonding material disposed on at least one of the upper and the lower surfaces thereof, and wherein the sheet of material has a handle integral to the sheet of material, the handle comprising a portion of the sheet of material and extending from near the first end of the sheet of material;
 - providing a floral grouping having a stem end and a bloom end;

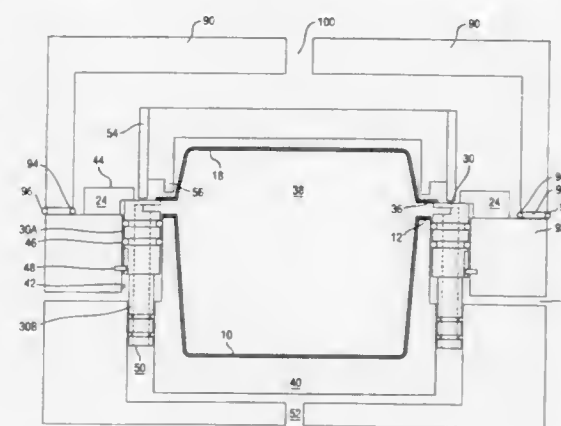
disposing the floral grouping on the upper surface of the sheet of material with the bloom end of the floral grouping positioned generally near the first end of the sheet;

wrapping the sheet of material about the floral grouping and disposing the closure bonding material adjacent a portion of the sheet of material whereby the closure bonding material bondingly engages with and connects to an adjacent portion of the sheet of material for cooperating to secure the sheet of material wrapped about the floral grouping to provide a wrapper for the floral grouping, the wrapper having an upper end and a lower end opposite the upper end and with the handle extending from the upper end of the wrapper, and wherein the bloom end of the floral grouping is positioned near the upper end and wherein the handle can be grasped for carrying the wrapper with the floral grouping in a generally vertical orientation with the bloom end oriented upwardly and the stem end oriented downwardly.

5,509,252
PACKAGE, PACKAGING METHOD, AND PACKAGING APPARATUS FOR PACKAGING LARGE MEAT PRODUCTS IN A DESIRED GASEOUS ATMOSPHERE
 Michael p. Gorlich, Hilton Head Island, S.C., assignor to World Class Packaging Systems, Inc., Hilton Head Island, S.C.

Continuation of Ser. No. 98,530, Jul. 28, 1993, Pat. No. 5,419,096. This application May 26, 1995, Ser. No. 450,894. The portion of the term of this patent subsequent to Jul. 28, 2013, has been disclaimed.
 Int. Cl.⁶ B65B 31/06 11 Claims

U.S. Cl. 53—432



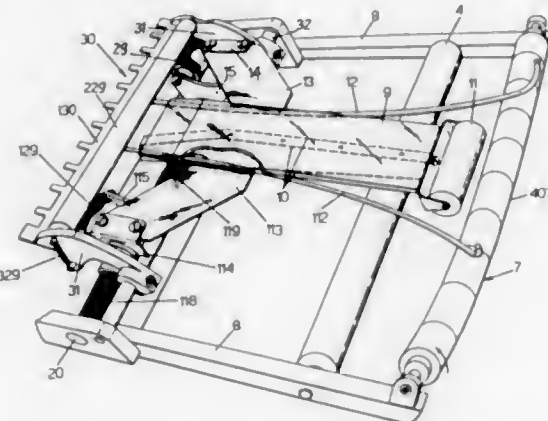
- I. An apparatus for facilitating gas exchange packaging comprising:

a reciprocable device for pushing a preformed upper package portion upwardly from a lower first position in contact with a lower package portion to an upper second position in spaced separation from said preformed lower package portion such that said upper and lower package portions are completely separated from one another to permit gas exchange through the opening created between upper and lower package portions;

said reciprocable device being reciprocable from said second position back to said first position to allow said upper package portion to again rest in abutment on said lower package portion after gas exchange has been accomplished.

5,509,253
PROCESS AND APPARATUS FOR WRAPPING ARTICLES WITH STRETCHABLE FILM
 Angelo Cappl, vlnola, and Renato Rimondi, Bazzano, both of Italy, assignors to A.W.A.X. Progettazione e Ricerca S.r.l., Italy

Filed Apr. 14, 1994, Ser. No. 228,096
 Claims priority, application Italy, Apr. 16, 1993, B093A0156
 Int. Cl.⁶ B65A 41/00
 U.S. Cl. 53—441 11 Claims

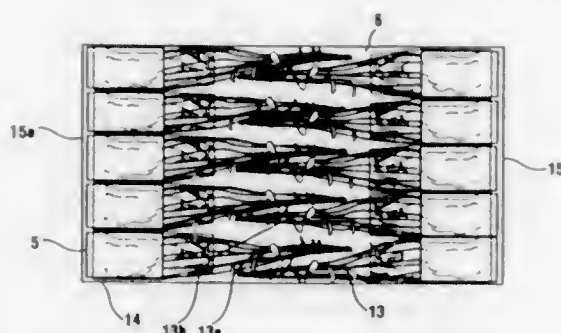


1. A process for wrapping a plurality of articles each having different dimensions using a stretchable film comprising the steps of:

- determining the largest width dimension of said plurality of articles to be wrapped;
- measuring dimensions of the specific article to be wrapped;
- adapting width of the film proportionally to sections of the said specific article having smaller widths than said largest width dimension by forming pleats in said film in a direction longitudinal to a length of the film; and
- feeding said pleated film to a wrapping station where said film is folded onto the article.

5,509,254
METHOD FOR PACKAGING FLOWERS
 Peter F. Ulrich, Coral Gables, Fla., assignor to Hilsa Investments, Limited, Ecuador

Filed May 5, 1994, Ser. No. 238,650
 Int. Cl.⁶ B65B 11/56; 67/08; B65D 85/50
 U.S. Cl. 53—449 20 Claims

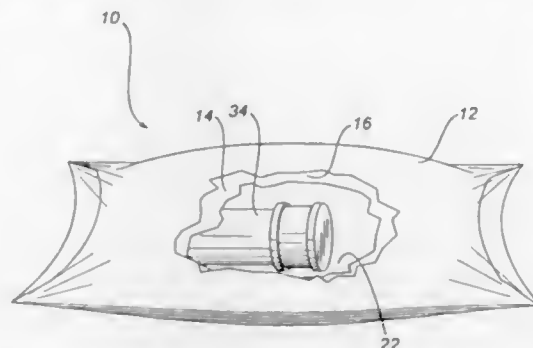


1. A method for protecting flowers during transport which comprises:

- (a) placing the flowers on a protective wrap suitable for rolling in an arrangement wherein the heads of said flowers are placed below the top edge of the wrap and in a manner so that no two adjacent flower heads are the same distance from the top edge of the wrap; and
- (b) rolling the protective wrap and the flowers so as to form a bunch suitable for transport.

5,509,255
PRESSURE VESSEL
 Arthur Rutledge, 36 Burnham Avenue, St. Albert, Alberta, Canada

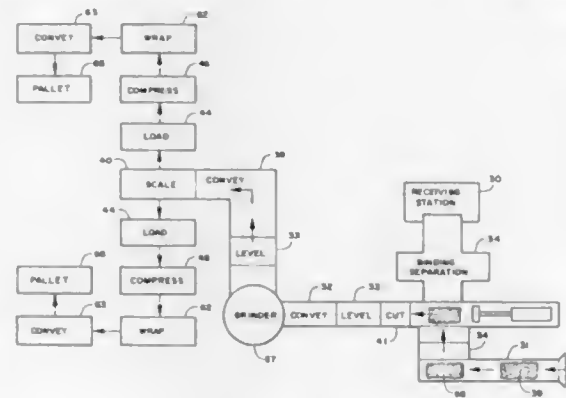
Filed Aug. 4, 1994, Ser. No. 284,996
 Int. Cl.⁶ B65B 11/58 5 Claims



5. A method of maintaining pressure containment on dangerous goods, such as diagnostic specimens, comprising the steps of:

- firstly, placing dangerous goods into an interior cavity of a flexible, air tight, liquid impervious, inner bladder, and sealing an access opening into the interior cavity with an air impervious closure; and
- secondly, placing the inner bladder into an interior cavity of a flexible, air permeable, liquid permeable, containment envelope and closing an access opening into the interior cavity with a closure in an unexpanded state, the closure remaining sealed and the containment envelope remaining dimensionally stable at a maximum intended pressure differential and the interior cavity of the containment envelope being smaller than the inner bladder in a fully expanded condition outside of the containment envelope, such that when the inner bladder within the interior cavity of the containment envelope with internal pressure exceeding external pressure thereby creating a pressure differential internal pressure acting upon the inner bladder places the inner bladder in compression within the interior cavity of the containment envelope while placing the containment envelope in tension.

5,509,256
FIBROUS MATERIAL PACKAGING MACHINE
 Ernest F. Groth, 285 E. Rutherford Rd., Brawley, Calif. 92227
 Continuation-in-part of Ser. No. 267,555, Jun. 29, 1994. This application Dec. 20, 1994, Ser. No. 359,432
 Int. Cl.⁶ B65B 63/02; 13/20; B67B 7/46
 U.S. Cl. 53—513 20 Claims



1. Apparatus for packaging fibrous material which comprises: means for receiving fibrous material in the form of bales having bands therearound;

means for cutting and removing said bands comprising knife blades for cutting said bands along the lower side of said bales as said bales move thereover, pickup rods for engaging the upper surface of said bales and lifting said bands and cooperating closely spaced endless belts for carrying said bands away from said bales;

conveyor means for moving a stream of said fibrous material from said band removal means;

leveling means for maintaining a substantially uniform depth of said fibrous material on said conveyor;

measuring means for separating a selected quantity of said fibrous material from said stream;

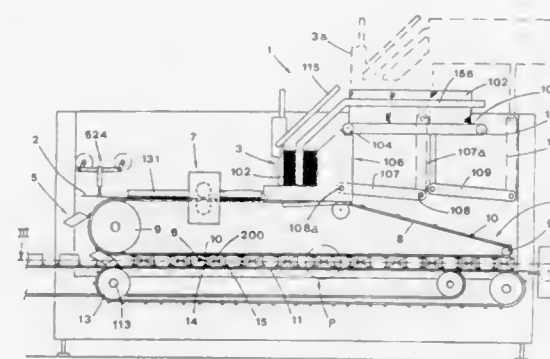
compression means for compressing said selected quantity into a shape retaining package having selected density; and

enclosing means for enclosing said package in a plastic film cover.

5,509,257
PACKAGING MACHINE FOR WITHDRAWING AND OPENING FLAT FOLDED CASES AND FOR FILLING THEM WITH RELATIVE ARTICLES

Roberto Tagliaferri, Castel S. Pietro Terme; Franceschi Giancarlo, Budrio, and Paolo Marzocchi, Castel S. Pietro Terme, all of Italy, assignors to I.M.A. Industria Macchine Automatiche S.p.A., Ozzano Emilia, Italy

Filed Apr. 21, 1995, Ser. No. 426,068
 Claims priority, application Italy, Apr. 29, 1994, B094A0181
 Int. Cl.⁶ B65B 5/04; 43/18; 43/20; 43/30
 U.S. Cl. 53—566 18 Claims



1. Packaging machine for withdrawing flat folded carton blanks from a magazine where said carton blanks are stored in flat folded condition to form a stack, and for erecting and filling said cases with relative articles, including:

- a blank feeding line, cantilever supported by a fixed frame structure and equipped with first belt conveying means for conveying blanks withdrawn from said magazine, in flat folded condition;
- a withdrawal station where said flat folded blanks are withdrawn from said magazine, said withdrawal station being situated along said blank feeding line and equipped with bars for supporting a stack of blanks, and with stop means aimed at cooperating with the same bars so as to define a passage through which a single flat folded blank is withdrawn by the said first belt conveying means;
- a carton erecting device, situated downstream of the said withdrawal station and comprising a rotary member that carries gripping means located along the periphery of the said rotary member and including suction cups mounted on respective shafts pivoting on a rotary drum coaxial to and rotated in synchrony with said rotary member;
- further gripping means including suction cups situated over said rotary member and operated in phase relation with the said gripping means between a gripping position, in which said suction cups grip at opposed sides a flat folded blank, and an opening position in which adjacent wall panels of said blank are opened;

a packaging line situated below the said blank feeding line and parallel thereto, supported in cantilevered fashion by the said fixed frame structure and equipped with second belt conveying means aimed at cooperating with a lower run of said first belt conveying means, so as to hold the cases, obtained from the said blanks, while conveying them;

an article feeding line situated at the side of the packaging line, in intermediate position with respect to the said fixed frame structure for feeding articles to be packaged;

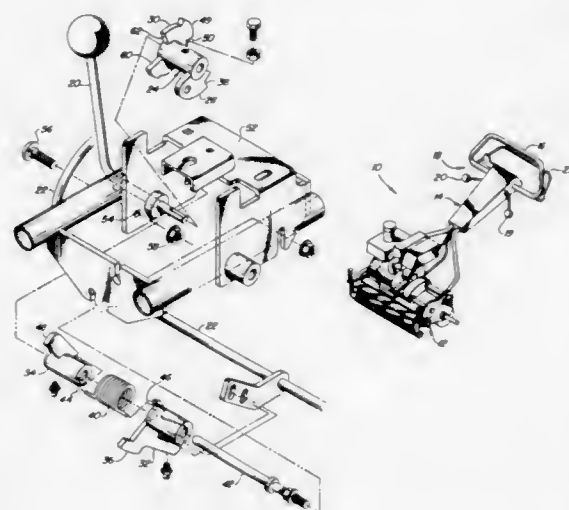
a plurality of pushers carried along a closed path, that extends along a straight section at the side of the article feeding line, moved with a speed equal to the speed of said article feeding line, said pushers being operated axially when they run the above mentioned straight section, so as to push the articles inside respective cases;

first adjustment means aimed at moving vertically a group comprising the said withdrawal station, said blank feeding line, and said carton erecting device, for adjusting height of said group in accordance with the height of the cases to be packaged, in such a manner that the distance between the lower run of the said belts conveying means first and second of the said packaging line is changed accordingly;

second adjustment means equipped with a centralized control member aimed at operating, by means of flexible transmission means, actuating means for changing width of the blank feeding line, of the packaging line and of the magazine in accordance with the length of the cases to be packaged.

5,509,258
OPERATOR PRESENCE CONTROL FOR REEL MOWER
 Richard D. Thier, Juneau; Howard V. Speer, and Phillip O. Swenson, both of Beaver Dam, all of Wis., assignors to Deere & Company, Moline, Ill.

Filed Jan. 30, 1995, Ser. No. 380,272
 Int. Cl.⁶ A01D 34/68 11 Claims



1. A control mechanism for a walk-behind mower, comprising: a drive lever control engagable for initiating forward travel of the mower, said drive lever having a non-driven position whereat the mower is not driven forward, said drive lever having a fully engaged position whereat the mower is at full forward speed, said drive lever also being shiftable to intermediate positions for inching said mower forward, said drive lever being biased to return to the non-driven position when an operator releases the lever from the intermediate positions, a locking linkage means for generally locking the drive lever in its fully engaged position, said locking linkage allowing said drive lever to shift back to its non-driven position when an operator releases the drive lever in the intermediate positions.

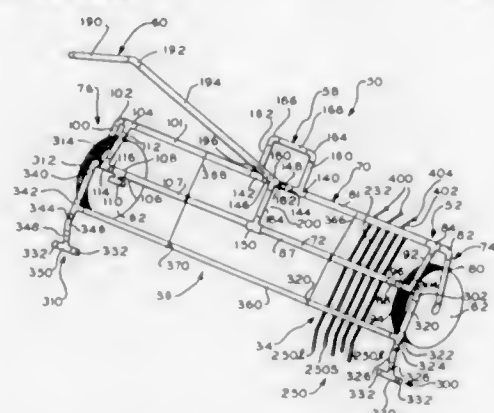
an operator presence lever operatively coupled with the drive lever for returning the drive lever to the non-driven position when the operator presence lever is disengaged, and a lockout linkage means coupled between the drive lever and the operator presence lever for preventing the drive lever from being engaged without the operator presence lever being engaged.

5,509,259

LAWN DEBRIS RAKE AND COLLECTION DEVICE
Thomas Milbury, 26 Carolina Dr., New City, N.Y. 10956
Filed Aug. 19, 1994, Ser. No. 293,025
Int. Cl.⁶ A01D 7/04; 7/06

U.S. Cl. 56—400.04

29 Claims



1. A lawn raking and debris-collecting device, comprising:
 - (a) a frame assembly;
 - (b) wheels carried by said frame assembly for rotation about a wheel axis;
 - (c) a tine array including a plurality of tines carried by said frame assembly so that free ends of said tines comprising said tine array are disposed for coaction with leaves and other lawn debris when the lawn device is in a raking disposition; and
 - (d) a push handle assembly connected to said frame assembly to facilitate moving same frame assembly and said tine array in a predetermined direction while in said raking disposition;
 - (e) said push handle assembly being movable about a predetermined axis of rotation to move said frame assembly and said tine array into a debris collection disposition different from said raking disposition;
 - (f) said tines of said tine array being arranged in adjacent spaced but side-by-side disposition with each such tine secured to said frame assembly proximate a first end thereof and having a second end thereof freely disposed for coaction with lawn leaves and other debris; said second ends of a first plurality of said tines forming a first tine set and terminating along a first line, and said second ends of a second plurality of said tines forming a second tine set and terminating along a second line;
 - (g) said tines of said first tine set being alternately disposed with said tines of said second tine set.

5,509,260

GUIDING BOW

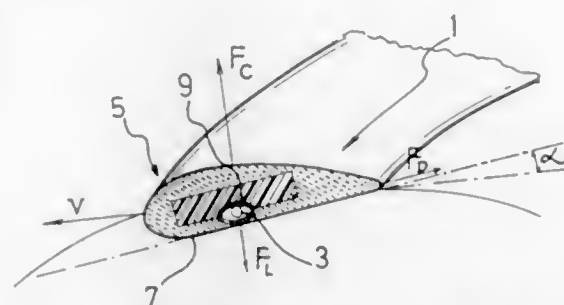
Marc Derdeyn, Zwevegem, Belgium, assignor to N.V. Bekaert S.A., Zwevegem, Belgium
Continuation of Ser. No. 902,360, Jun. 22, 1992, abandoned.
This application Apr. 15, 1994, Ser. No. 229,130
Claims priority, application European Pat. Off., Jul. 23, 1991, 91201929

U.S. Cl. 57—58.83

Int. Cl.⁶ D01H 7/80; 1/10

1 Claim

1. An apparatus for winding or twisting an elongated element, the apparatus comprising:



at least one bobbin filled with said elongated element; and at least one guiding bow which receives said elongated element from said at least one bobbin, said guiding bow guiding said elongated element around said apparatus during winding or twisting; wherein said guiding bow includes a core and a sheath completely surrounding the core, said core being made of a load carrying material which resists substantially all forces exerted upon the guiding bow, and said sheath being made of a synthetic material and formed to give said guiding bow a predetermined cross-sectional shape; and wherein the guiding bow is oriented with respect to a direction of movement of the guiding bow such that during movement of the guiding bow the predetermined cross-sectional shape of the guiding bow ensures that a dimensionless lift coefficient C_L is negative.

5,509,261

STEPPING MOTOR ARRANGEMENT FOR DRIVING A SILVER FEED ROLLER IN A ROTOR SPINNING MACHINE

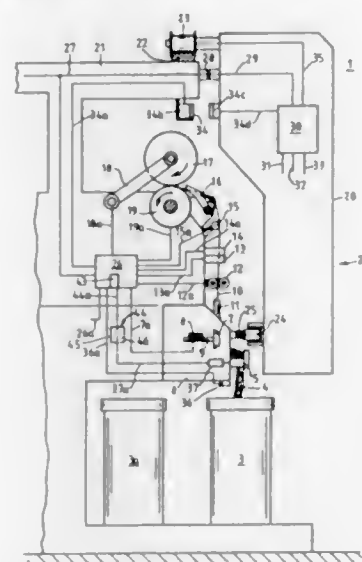
Heinz-Georg Wassenhoven, Moenchengladbach, and Manfred Lassmann, Nettetal, both of, Germany, assignors to W. Schlafhorst AG & Co., Moenchengladbach, Germany
Filed Mar. 21, 1994, Ser. No. 215,277

Claims priority, application Germany, Mar. 26, 1993, 43 09 948.3; Feb. 12, 1994, 44 04 503.4

Int. Cl.⁶ D01H 13/26; 7/46

U.S. Cl. 57—263

6 Claims



1. A rotor spinning machine having a spinning station comprising a spinning rotor, an opening roller, a feed roller for delivery sliver to the opening roller, a stepping motor connected directly to the feed roller for driving rotation thereof, and means for actuating the stepping motor selectively to drive the feed roller including a means for a normal driving mode advancing in normal stepped

increments of the stepping motor during normal spinning operation and a means for a second driving mode advancing in shorter stepped microincrements of the stepping motor during yarn piecing operations.

5,509,262

SUPPORTING DISK FOR A SUPPORTING DISK BEARING FOR OPEN-END SPINNING ROTORS
Fritz Stahlecker, Ueberkingen, Germany, assignor to Fritz Stahlecker, Bad Ueberkingen, and Hans Stahlecker, Suesen, both of, Germany

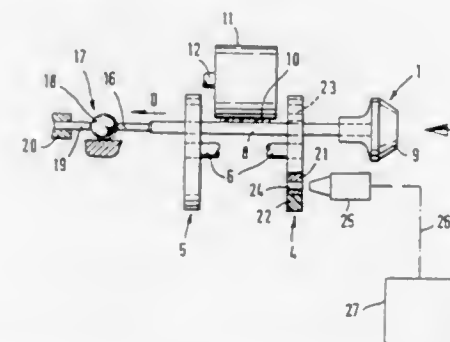
Filed Apr. 28, 1994, Ser. No. 234,382

Claims priority, application Germany, Apr. 27, 1993, 43 13 753.9

Int. Cl.⁶ D01H 4/12

U.S. Cl. 57—264

6 Claims



1. A supporting disk for a supporting disk bearing for open-end spinning rotors, a front side of said supporting disk being provided with two permanent magnets that are disposed diametrically opposite one another and which constitute signal generators generating magnetic field lines rotating with the disk, wherein said permanent magnets are fitted into respective recesses so as to be flush on the front side,

wherein said supporting disk comprises a disk like base body composed of a first material and a synthetic ring of a different material surrounding the base body, wherein said recesses are located in said base body, and wherein said recesses are holes extending through the disk.

5,509,263

METHOD AND DEVICE FOR MANUFACTURING A TWISTED YARN

Ulrich Lossa, Krefeld, Germany, assignor to Palitex Project-Company GmbH, Krefeld, Germany

Filed Sep. 16, 1994, Ser. No. 310,696

Claims priority, application Germany, Sep. 18, 1993, 43 31 802.9

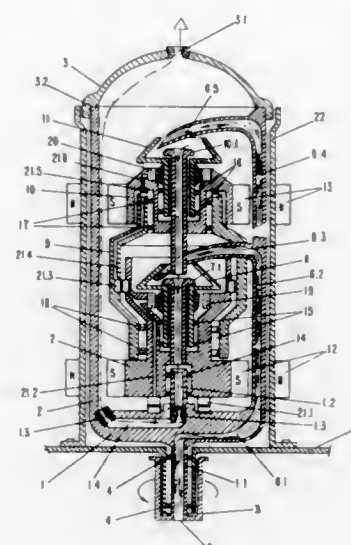
Int. Cl.⁶ D01H 4/08

U.S. Cl. 57—409

5 Claims

1. A method for manufacturing a twisted yarn, said method comprising the steps of:

providing a spindle rotor having a hollow spindle axle with an inlet and an outlet and further having a yarn guide channel extending radially outwardly from said outlet, wherein a yarn exiting from said yarn guide channel forms a yarn balloon; feeding a stream of dissolved fiber material axially through said spindle rotor into a space delimited by the yarn balloon; dividing said stream of dissolved fiber material into at least two partial streams; guiding each of said partial streams first radially outwardly, then in an upward direction substantially parallel to said hollow spindle axle to a predetermined level and subsequently radially inwardly to a respective spinning device arranged within said space delimited by said yarn balloon;



spinning a fiber in each said spinning device; withdrawing said fiber from each said spinning device and guiding said fibers axially downwardly; and feeding said fibers together into said inlet of said hollow spindle axle to form a yarn; and guiding said yarn through said hollow spindle axle and said yarn guide channel, wherein said yarn exiting from said yarn guide channel forms said yarn balloon and is guided in a direction parallel said upward direction of said partial streams to a centering element positioned on an extension of an axis of said hollow spindle axle, and wherein said partial streams maintain a constant distance to said yarn in said yarn balloon.

5,509,264

DIRECT COAL FIRED TURBINE COMBINED POWER GENERATION SYSTEM

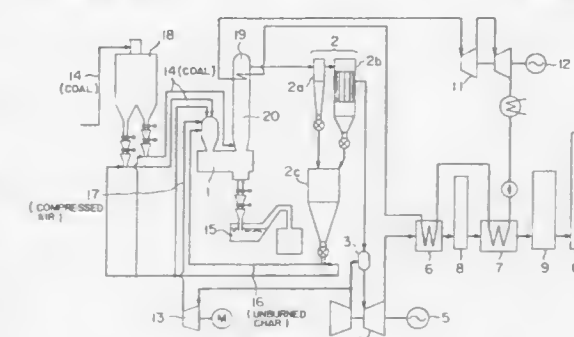
Seiya Ito, Kobe; Motoaki Hirao, Tokyo; Michihiro Shiraha, Kobe; Shunpei Nozoe, Urayasu; Kazuyoshi Kawamura, Kashiwa; Kenichi Fujii, Akashi; Eiichi Harada, Kakogawa; Tatsuo Ito, Tomisato; Masahiro Uozumi, Kobe, and Tetsuo Abe, Tokyo, all of, Japan, assignors to Kawasaki Jukogyo Kabushiki Kaisha, Kobe, Japan

Filed Apr. 7, 1994, Ser. No. 224,323

Claims priority, application Japan, Jun. 18, 1993, 5-147191
Int. Cl.⁶ F02C 3/28; 6/18

U.S. Cl. 60—39.12

14 Claims



1. In a direct coal fired turbine combined power generation system comprising a gasifier, a gas refining equipment, a gas turbine, a gas turbine generator, a steam turbine, a steam turbine generator, a dust collecting unit, a gas turbine combustor and a heat recovery boiler, wherein the gasifier is composed of a pressurized gasifier, the gas refining equipment comprises at least one of a desulfurization unit or a combination of a desulfurization unit and a denitration unit, the dust collection unit is composed of a high

temperature dust collection unit treating a raw gas of a temperature lower than about 700° C. and having an alkali removing function, the high temperature dust collecting unit is disposed between the gasifier and the gas turbine combustor, and thus the gas refining equipment is disposed on a downstream side of the heat recovery boiler.

5,509,265 OPERATIONAL SIGNAL STABILITY MEANS FOR TURBINE

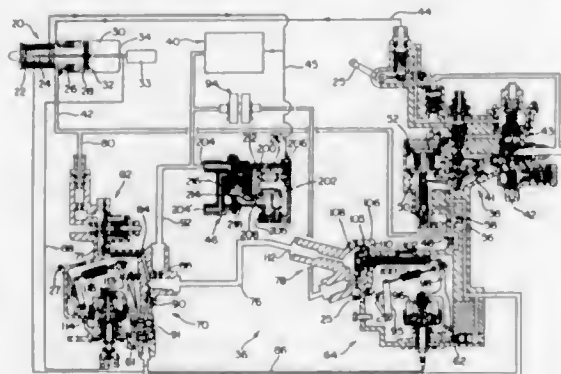
Leonard A. Benkosky, Granger, and Timothy F. Wiegand, South Bend, both of Ind., assignors to AlliedSignal Inc., Morristown, N.J.

Filed Jan. 23, 1995, Ser. No. 377,065

Int. Cl. F02C 9/28

U.S. Cl. 60—39,161

9 Claims



1. In a gas turbine engine having at least one compressor connected to a power turbine, a housing with a first chamber and a second chamber located therein, a main fuel passage connected to a source of fuel, a metering valve located in said main fuel passage for controlling the flow of fuel from the source to a combustion chamber, said compressor rotating as a result of the combustion of fuel in the combustion chamber to develop a compressor discharge pressure P_c in a first operational fluid and oil pressure P_o in second operational fluid, said power turbine responding to the development of said compressor discharge pressure by rotating, a control system for operating said metering valve in accordance with a fuel supply schedule corresponding to a desired rotational speed for said compressor, first bellows means for separating a first chamber from a second chamber and being connected to said metering valve, a first passageway for communicating compressor discharge pressure P_c to said first chamber, a first bleed orifice through which said first passageway is connected to a second passageway connected with said second chamber and to a second bleed orifice through which said second passageway is communicated to the surrounding environment, first governor means having a first lever arrangement having a face on the end thereof which is located adjacent said second bleed orifice, said first lever arrangement being responsive to an input signal applied to a power lever by an operator and the rotational speed of said compressor for controlling flow of operational fluid from said second passageway through said second bleed orifice to establish an operational fluid pressure P_y in the operational fluid presented to said second chamber, said bellows means responding to a pressure differential between compressor discharge P_c in the first chamber and an operational pressure P_y in the second chamber to provide said metering valve with an operation input to control fuel supplied to said combustion chamber in accordance with the fuel supply schedule, second governor means responsive to the rotational speed of said power turbine having a second lever arrangement with a first face thereon which is located adjacent a third bleed orifice connected to said second passageway and a second face thereon which is located adjacent a fourth bleed orifice connected to a third passageway, pressure regulator means connected to receive compressor discharge pressure P_c and develop a regulated pressure P_r , a fifth bleed orifice through which regulated pressure P_r is presented to

said third passageway, said first face on said second lever controlling the flow of operational fluid through said third bleed orifice from said second passageway as a function of the rotational speed of said power turbine and said second face on said second lever controlling the flow of regulated pressure P_r through said fourth bleed orifice to create a control pressure P_g , reset means connected to said first lever means and responsive to a pressure differential developed between said regulated pressure P_r and control pressure P_g for controlling the development of said operational pressure P_y as a function of the rotational speed of said power turbine, limiter means connected to said third passageway for limiting the communication of said control pressure P_g to said reset means as a function of the development of said oil pressure P_o in said second operational fluid, the improvement comprising:

accumulator means connected to said third passageway and responsive to a predetermined fluid pressure P_o of said second operational fluid for increasing the volume of operational fluid at control pressure P_g to modify the time constants in operating said reset means and change the operation of said control means such that the fuel supplied to said combustion chamber provides a smooth operation of said gas turbine engine.

5,509,266

DEVICE FOR MEASURING VARIATIONS IN THE THRUST OF A PLASMA ACCELERATION WITH CLOSED ELECTRON DRIFT

Alexel Morozov; Antonina Bougrova; Vadim Kharchevnikov, all of Moscow, Russian Federation, and Dominique Valentin, Rosny, France, assignors to Societe Europeenne de Propulsion, Suresnes, France

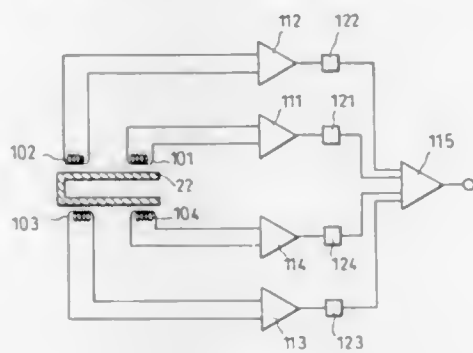
PCT No. PCT/FR93/00609, § 371 Date Feb. 15, 1995, § 102(e) Date Feb. 15, 1995, PCT Pub. No. WO95/01085, PCT Pub. Date Jan. 5, 1995

PCT Filed Jun. 21, 1993, Ser. No. 381,866

Int. Cl. F03H 1/00

U.S. Cl. 60—203.1

12 Claims



1. A device for measuring variations in the thrust of a plasma accelerator with closed electron drift comprising a main annular channel (24) for ionization and acceleration, at least one hollow cathode (40) disposed outside the main channel and downstream therefrom, an anode (25), ionizable gas feed means (41, 26) associated respectively with the hollow cathode (40) and with the anode (25), and magnetic field creation means (31 to 33), the device being characterized in that it comprises a plurality of magnetic flux sensors (101 to 104, 31 to 33) disposed around the acceleration channel (24), a plurality of amplifiers (111 to 114) whose inputs receive the respective signals delivered by the magnetic flux sensors (101 to 104; 31 to 33), and a summing circuit (115) whose inputs are connected to the outputs of said amplifiers (111 to 114).

5,509,267

AUTOMOTIVE VEHICLE CATALYST DIAGNOSTIC

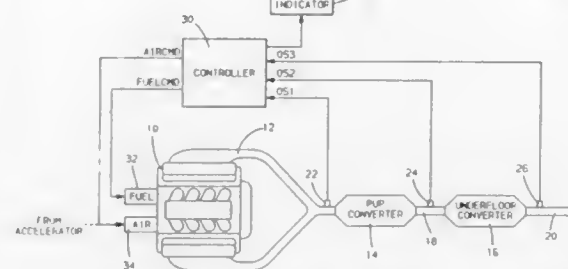
Joseph R. Theis, Grand Blanc, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 14, 1994, Ser. No. 337,703

Int. Cl. F01N 3/20

U.S. Cl. 60—274

13 Claims



1. An engine control and diagnostic method for varying the source of an actual air/fuel ratio feedback signal in an automotive internal combustion engine having an exhaust system including at least an upstream and a downstream catalytic treatment device for catalytically treating engine exhaust gas passing therethrough, comprising the steps of:

during a diagnostic period, sensing a treated oxygen content of exhaust gas after such exhaust gas has been catalytically treated by the upstream catalytic treatment device; during engine operating periods other than the diagnostic period, sensing a substantially untreated oxygen content of engine exhaust gas prior to such exhaust gas being catalytically treated by at least the upstream and downstream catalytic treatment devices; controlling engine air/fuel ratio in response to the sensed treated oxygen content during the diagnostic period; and controlling engine air/fuel ratio in response to the sensed substantially untreated oxygen content during engine operating periods other than the diagnostic period.

5,509,268

COMBUSTION STATE-DETERMINING SYSTEM AND COMBUSTION STATE CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINES

Shigetaka Kuroda; Kazutomo Sawamura, and Masayoshi Yamanaka, all of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

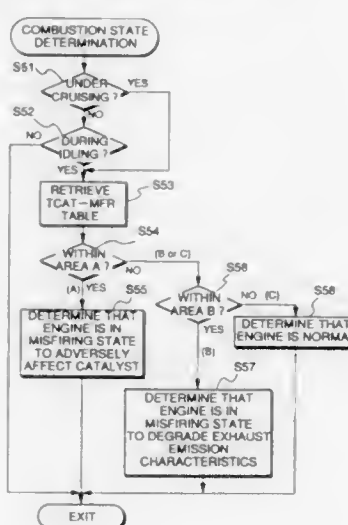
Filed Mar. 11, 1994, Ser. No. 208,686

Claims priority, application Japan, Mar. 26, 1993, 5-092035

Int. Cl. F01N 2/28

U.S. Cl. 60—277

7 Claims



1. In a combustion state-determining system for an internal combustion engine having an exhaust system, and a catalytic converter arranged in said exhaust system, for purifying exhaust gases emitted from said engine, said combustion state-determining system including misfire-determining means for determining a misfiring state of said engine, and misfiring rate-calculating means for calculating a misfiring rate of said engine, based on a determination result of said misfire-determining means, the improvement comprising:

temperature-detecting means for detecting a temperature of said exhaust system of said engine; and combustion state-determining means for determining a combustion state of said engine, based on the temperature of said exhaust system detected by said temperature-detecting means and said misfiring rate calculated by said misfiring rate-calculating means, wherein when the misfiring rate is below a first predetermined value, said combustion state-determining means determines that the combustion state of said engine is normal if the temperature of said exhaust system is below a predetermined value and when the misfiring rate exceeds said first predetermined value, said combustion state-determining means determines that the combustion state of said engine is in a first misfiring state which causes an adverse effect on component parts of said exhaust system if the misfiring rate exceeds a second predetermined value which decreases as the temperature of said exhaust system increases, and the combustion state of said engine is in a second misfiring state which causes degradation of exhaust emission characteristics of said engine if the misfiring rate is below said second predetermined value.

5,509,269

THERMO-ACTUATOR

Yoshikazu Kuze, 31-3, Higashimagome 1-chome, Ohta-ku, Tokyo, Japan

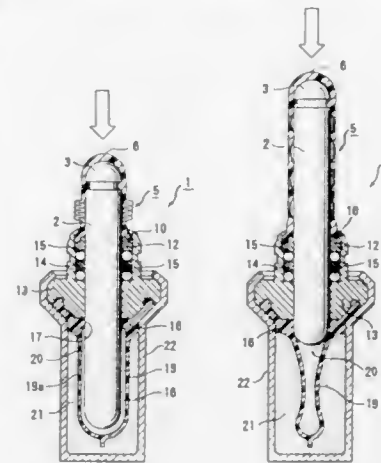
Filed Apr. 12, 1993, Ser. No. 44,599

Claims priority, application Japan, Apr. 15, 1992, 4-137481 The portion of the term of this patent subsequent to Jun. 2, 2009, has been disclaimed.

Int. Cl. F03G 7/06

U.S. Cl. 60—527

6 Claims



1. A thermo-actuator having an actuating rod, a guide member slidably mounted on the actuating rod, a resilient seal bag provided around a first end portion of the actuating rod and hermetically sealed to the guide member, a heat conductive cylinder housing the seal bag and the actuating rod and secured to the guide member, wax provided in the heat conductive cylinder to enclose the seal bag, and a tubular sealing member made of rubber slidably mounted on a second end portion of the rod, the improvement comprising:

the seal bag having a base portion secured to the guide member, and a bag portion around the actuating rod with a gap which is filled with lubricating oil;

a seal device comprising an O-ring and a retainer and provided in the guide member around the actuating rod so as to prevent the lubricating oil in the gap from entering the sealing member;

the sealing member having a tubular body having a straight tubular form in a free condition, skirt portion, a head portion, and a plurality of thinner portions and thicker portions which are alternatively disposed so as to be shrunk into a bellows, the skirt portion being secured to the guide member and engaged with the retainer so as to hold the seal device, the head portion being secured to the rod at an end of the second end portion of the rod.

5,509,270

GAS TURBINE ENGINE COMBUSTOR HEATSHIELD

Donald E. Pearce, Bristol, and Michael J. Westlake, Charfield, both of, England, assignors to Rolls-Royce plc, London, England

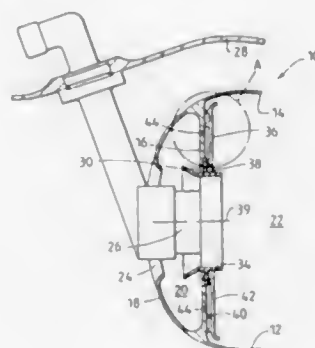
Filed Feb. 24, 1995, Ser. No. 393,837

Claims priority, application United Kingdom, Mar. 1, 1994, 9403986

Int. Cl.⁶ F23R 3/04

U.S. Cl. 60—740

12 Claims



1. A combustor for a gas turbine engine comprising a cylindrical radial inner wall, a cylindrical radial outer wall, an upstream bulkhead wall extending between said inner and outer walls, and an internal heatshield located on a downstream face of said upstream bulkhead wall and spaced therefrom to create a passageway for cooling air, each of the internal heatshield and the upstream bulkhead wall being formed with a fuel nozzle aperture therethrough,

a fuel nozzle seal ring located concentrically within each fuel nozzle aperture in the upstream bulkhead wall and the internal heatshield,

wherein the internal heatshield is formed with a plurality of heatshield slots extending in a generally outward direction from a circumference of each fuel nozzle aperture, said plurality of heatshield slots defining a plurality of exit apertures for cooling air in the passageway for cooling air behind the internal heatshield.

5,509,271

PROCESS AND INSTALLATION FOR THE SEPARATION OF A GASEOUS MIXTURE

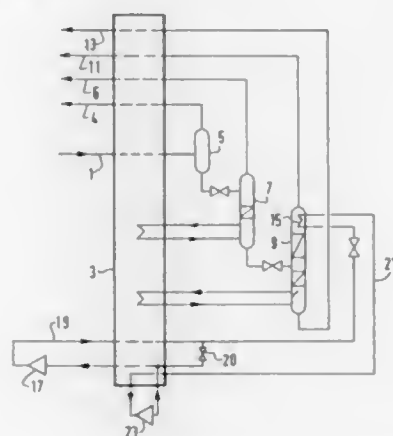
Jean Billy, Le Plessis Trevis; François Granier, Nogent Sur Marne, and Pascal Victor, Grenoble, all of, France, assignors to L'Air Liquide, Societe Anonyme Pour L'Etude Et L'Exploitation Des Procédes Georges Claude, Paris Cedex, France

Filed Feb. 2, 1995, Ser. No. 382,499

Claims priority, application France, Apr. 13, 1994, 94 04392 Int. Cl.⁶ F25J 3/02

U.S. Cl. 62—24

17 Claims



1. In a process for the production of carbon monoxide and hydrogen from a gaseous mixture consisting essentially of these two components and methane; the improvement comprising the following steps:

- cooling a said gaseous mixture so as partially to condense it;
- separating a condensed portion of the mixture from an uncondensed portion containing principally hydrogen;
- sending said condensed portion to a stripping column to produce a gaseous fraction at the head of the column comprising hydrogen and a liquid fraction at the base of the column containing carbon monoxide and methane;
- distilling the liquid fraction in a purification column to produce substantially pure carbon monoxide at the head of the column and methane at the base of the column; and
- supplying a portion of the separation energy by means of a refrigeration cycle using an autonomous refrigeration fluid.

5,509,272

APPARATUS FOR DEHUMIDIFYING AIR IN AN AIR-CONDITIONED ENVIRONMENT WITH CLIMATE CONTROL SYSTEM

Robert E. Hyde, 18448 SE. Pine, Portland, Oreg. 97233-4859 Continuation-in-part of Ser. No. 136,112, Oct. 12, 1993, Pat. No. 5,329,782, which is a continuation-in-part of Ser. No. 948,300, Sep. 21, 1992, Pat. No. 5,291,744, which is a division of Ser. No. 666,251, Mar. 8, 1991, Pat. No. 5,150,580. This application Jul. 18, 1994, Ser. No. 276,705

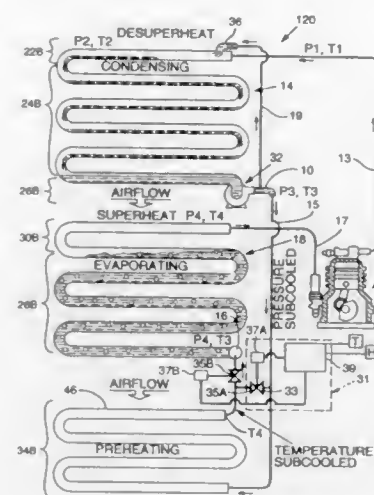
Int. Cl.⁶ F25D 17/04

U.S. Cl. 62—176.5

8 Claims

1. An air conditioning system for cooling and decreasing relative humidity of a flow of air, the system comprising:

- a compressor, a condenser, an expansion valve and an evaporator interconnected in series in a closed loop for circulating refrigerant therethrough, the evaporator positioned in series to receive the flow of air therethrough to be cooled and dehumidified;
- a first conduit transmitting a flow of liquid refrigerant through the expansion valve to the evaporator to vaporize the liquid refrigerant and to effect cooling for refrigeration of the flow of air;



a second conduit coupling an outlet of the evaporator to an inlet of the compressor to transmit refrigerant vapor to the compressor to be compressed;

a third conduit coupling an outlet of the compressor to an inlet of the condenser to convey compressed vapor refrigerant from the compressor into the condenser to be condensed into liquid refrigerant at a first pressure and first temperature;

a pump, coupled to the outlet of the condenser, for boosting a pressure of the condensed liquid refrigerant by an incremental pressure to a second pressure;

a reheat section positioned adjacent the evaporator receiving cooled air therefrom and coupled to an outlet of the pump and thereby defining means, for receiving liquid refrigerant from the pump to subcool the liquid refrigerant to a second temperature less than the first temperature and to effect a partial reheating of the flow of air cooled by the evaporator thereby decreasing the relative humidity of the flow of the air; and

means, coupled between the inlet of the evaporator and the outlet of the pump, for controlling the climate within the flow of air.

5,509,273

GAS ACTUATED SLIDE VALVE IN A SCREW COMPRESSOR

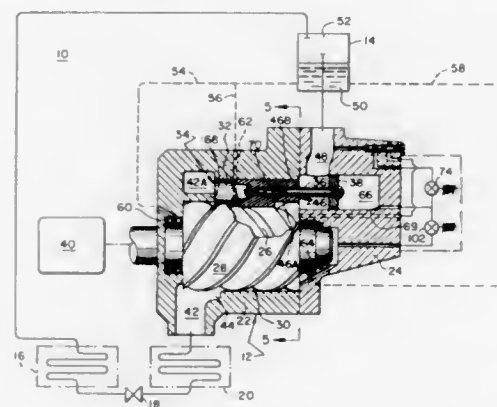
Rodney L. Lakowski, Arthur L. Butterworth, and Garry E. Andersen, all of La Crosse, Wis., assignors to American Standard Inc., Piscataway, N.J.

Filed Feb. 24, 1995, Ser. No. 393,957

Int. Cl.⁶ F25B 49/02; F04B 49/02; F04C 18/16; 29/10

U.S. Cl. 62—228.5

34 Claims



1. A refrigeration screw compressor, having a suction and discharge port, comprising:

a housing, said housing defining a working chamber in flow communication with said suction and said discharge ports of said compressor;

a male rotor disposed in said working chamber;

a female rotor disposed in said working chamber in meshing engagement with said male rotor, rotation of said male and said female rotors operating to compress a gaseous working fluid within said working chamber from a suction to a discharge pressure;

a slide valve, said slide valve having an actuating piston;

a first conduit for selectively communicating refrigerant gas from said working chamber to said actuating piston at a pressure sufficient to move said slide valve in a direction which loads said compressor; and

a second conduit for selectively venting refrigerant gas communicated to said actuating piston to a location in said compressor where the pressure is less than discharge pressure so as to move said slide valve in a direction which unloads said compressor.

5,509,274

HIGH EFFICIENCY HEAT PUMP SYSTEM

David Lackstrom, Cape Canaveral, Fla., assignor to Applied Power Technologies Incorporated, Cape Canaveral, Fla.

Continuation-in-part of Ser. No. 959,859, Oct. 13, 1992, Pat.

No. 5,313,874, which is a continuation-in-part of Ser. No.

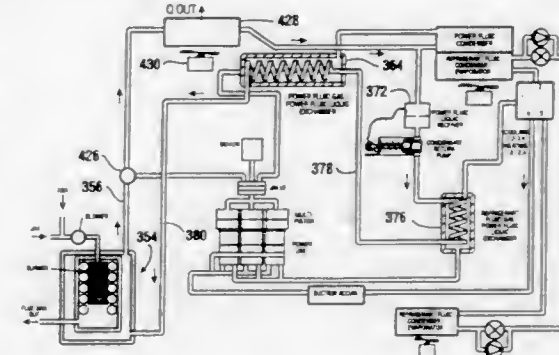
821,391, Jan. 16, 1992, Pat. No. 5,205,133. This application

Apr. 26, 1994, Ser. No. 234,007

Int. Cl.⁶ F15B 13/00

U.S. Cl. 62—238.4

7 Claims



1. A high efficiency gas fired heat pump system comprising:

a power circuit including

a gas fired heater heating and vaporizing a first working fluid;

a power unit having a first chamber, said first chamber having a driving piston movably mounted therein;

a valve for selectively delivering and exhausting first working fluid from the first chamber of the power unit wherein said driving piston undergoes movement responsive to said delivery and exhaust of first working fluid;

a first condenser in connection with said valve for receiving first working fluid, exhausted from the first chamber, the first condenser in fluid communication with the gas fired heater wherein condensed first working fluid is returned thereto;

a heat pump circuit including:

a second chamber in the power unit; the second chamber having a second piston therein in driven operative connection with the first piston wherein a second working fluid is compressed in the second chamber;

an exterior coil having a first expansion device in connection therewith; an interior coil having a second expansion device in connection therewith; and

a control valve for selectively directing the compressed second working fluid from the power unit to one of either the interior or exterior coil for condensation therein and directing said condensed second working fluid to said other of said coils through the expansion device in connection therewith,

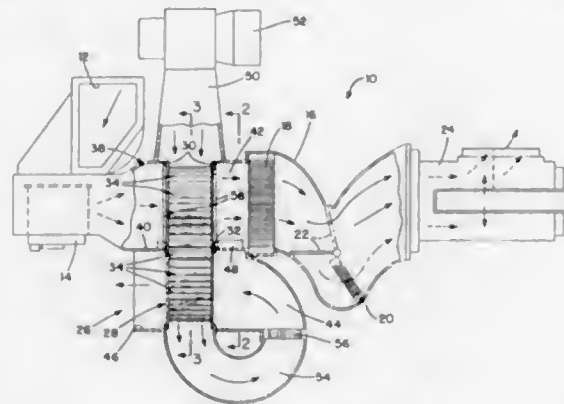
wherein said other coil returns vaporized second working fluid to the second chamber of the power unit.

5,509,275
DEHUMIDIFYING MECHANISM FOR AUTO AIR CONDITIONER

Mohinder S. Bhatti, Amherst; Prasad S. Kadle, East Amherst, and James A. Baker, Williamsville, all of N.Y., assignors to General Motors Corporation, Detroit, Mich.
Filed Sep. 22, 1994, Ser. No. 310,528
Int. Cl.⁶ F25B 17/00

U.S. Cl. 62—271

3 Claims



1. A mechanism for continually dehumidifying the outside air that is forcibly drawn into a vehicle air conditioning system so as to reduce the potential for moisture condensation on a cooler heat exchanger, said vehicle having a source of engine waste heat, comprising:

- a desiccant wheel including a pair of parallel circular end plates spaced axially apart by a plurality of hollow, heat conductive tubes running axially through said end plates generally perpendicular to said plates and parallel to one another, each tube opening through each of said end plates and containing a layer of desiccant material capable of exothermic moisture adsorption and endothermic moisture desorption and disposed with the interior of said tube so as to be exposed to, but still allow, air flow through the interior of said tube, said heat conductive tubes also being sufficiently spaced from one another so as to allow free air flow over their exterior and radially across said wheel between said end plates;
- a feed duct divided from a side by side regeneration duct by a partition wall to which said wheel is rotatably mounted so as to place a portion of said wheel robes in each duct;
- a cross flow plenum into which air is forcibly drawn independently from said feed duct and opening through said feed duct between said wheel end plates;
- a return plenum having opening through said regeneration duct between said wheel end plates and running from said return plenum inlet to said regeneration duct upstream from said wheel; and,
- an auxiliary heater in said regeneration duct that draws heat from said source of waste heat and is capable of raising the temperature of air passing therethrough to the necessary moisture desorption temperature;

whereby, outside air at ambient temperature and humidity is drawn into said outside air inlet and is forced axially through said wheel and through the interior of those wheel tubes located on the feed duct side of said partition, thereby giving up moisture and latent heat at a higher temperature, while simultaneously outside air at ambient temperature is independently drawn forcibly through said cross flow plenum and across the exterior of the wheel tubes while confined between said wheel end plates, thereby cooling and removing heat from those tubes located on the feed duct side of said partition and cooling the air passing through the interior thereof before crossing both ducts and entering into said return plenum, after

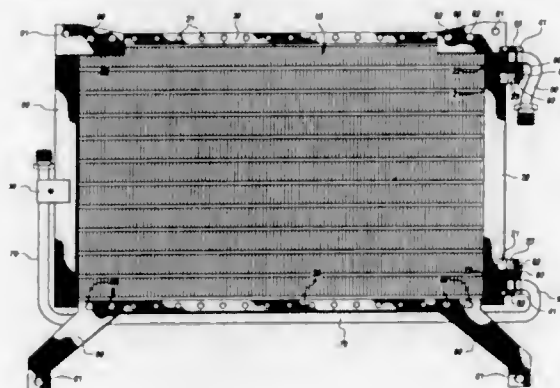
which said heated air flows across said auxiliary heater and through the interior of those tubes located on the regeneration duct side of said partition, thereby removing moisture, before exiting said exhaust port.

5,509,276
UNIVERSAL CONDENSER FOR AN AIR CONDITIONING SYSTEM

Stephen W. O'Brien, Fort Worth, Tex., assignor to Tripac International, Fort Worth, Tex.
Continuation of Ser. No. 36,395, Mar. 24, 1993, Pat. No. 5,456,089. This application Jan. 11, 1995, Ser. No. 371,398
Int. Cl.⁶ F25B 39/04

U.S. Cl. 62—298

20 Claims



1. A universal condenser for replacement in an air conditioning system, comprising:

- a condenser housing having a forward and rear edge along a top and a bottom;
- tubular side members, each tubular side member including a condenser mounting block having an opening;
- a fastener for engaging the condenser mounting block for coupling a tube assembly to the condenser housing in a sealing engagement, the fastener including a vertical member and two side members extending substantially perpendicularly from the vertical member, each side member having an inwardly projecting lip to form a vertical slot with the vertical member;
- a condenser mount attached to the condenser housing adapted to receive the fastener including substantially vertical side ribs positioned to engage the inwardly projecting lips of the fastener of the side members; and
- parallel rail members attached to and extending across the top and bottom of the condenser housing, a first rail member aligned with the forward edge of both the top and bottom of the condenser housing and a second rail member aligned with the rear edge of both the top and bottom of the condenser housing.

5,509,277
COMBINATION IMMERSION/IMPINGEMENT TUNNEL FREEZER

Edward F. Kiczek, Long Valley, N.J.; Jeremy P. Miller, Mortimer, United Kingdom, and Joseph P. Cohen, Bethlehem, Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

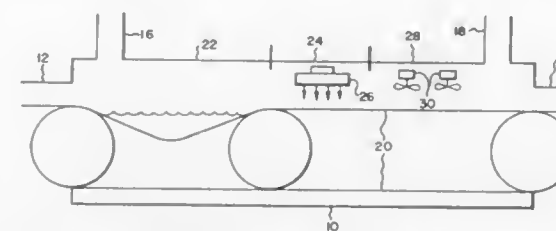
Filed Dec. 14, 1994, Ser. No. 355,758
Int. Cl.⁶ F25D 17/02

U.S. Cl. 62—374

4 Claims

1. A combination immersion/impingement tunnel freezer comprising:

- (a) an elongated tunnel having a first end and a second end;
- (b) an item entrance port located at or near the first end for introducing items to be frozen into the tunnel;



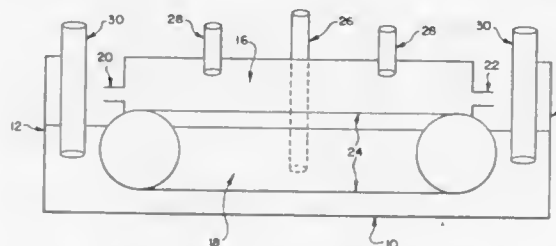
- (c) an item exit port located at or near the second end for withdrawing the frozen items from the tunnel;
- (d) a refrigerant admission port located at or near the first end for introducing a refrigerant in its liquid state into the tunnel;
- (e) a refrigerant discharge port located at or near the second end for withdrawing the refrigerant in its evaporated state from the tunnel;
- (f) a solid conveyor belt for moving the items from the item entrance port, through the interior of the tunnel, and to the item exit port wherein said moving occurs at an angle substantially parallel to the longitudinal axis of the tunnel;
- (g) an immersion section located at or near the first end for receiving the refrigerant in its liquid state from the refrigerant admission port; and
- (h) an impingement section located adjacent to the immersion section wherein said impingement section contains one or more impingement fans which receive, as intake, the refrigerant in its evaporated state from the immersion section and subsequently direct said intake toward the solid conveyor belt at a high velocity and at an angle substantially perpendicular to the longitudinal axis of the tunnel.

5,509,278
DUAL CHAMBER TUNNEL FREEZER
Edward F. Kiczek, Long Valley, N.J.; Russell I. Snyder, III, and Robert J. Shaw, both of Allentown, Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Apr. 20, 1995, Ser. No. 426,538
Int. Cl.⁶ F25D 17/02

U.S. Cl. 62—374

7 Claims



1. A dual chamber tunnel freezer for crust freezing the bottom surfaces of items to be processed without substantially refrigerating the remainder of the items comprising:

- (a) an elongated tunnel having a first end and a second end and a plate that divides said tunnel into a top chamber and a bottom chamber;
- (b) an item entrance port located in the top chamber at or near the first end for introducing the items to be processed into the top chamber and for introducing ambient air into the top chamber;
- (c) an item exit port located in the top chamber at or near the second end for withdrawing the processed items from the top chamber and for introducing additional ambient air into the top chamber;
- (d) a solid conveyor belt for moving the items from the item entrance port, through the top chamber and to the item exit port wherein said moving occurs at an angle substantially parallel to the longitudinal axis of the tunnel;
- (e) a belt return section located in the bottom chamber for returning the conveyor belt back to the item entrance port; and

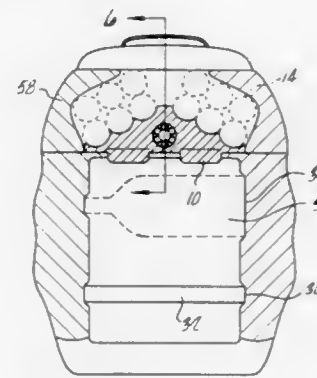
(f) a refrigerant admission port for introducing a refrigerant into the bottom chamber.

5,509,279
COOLER BACKPACK WITH COMPARTMENTS
Douglas M. Brown, Monterey; Donald J. Erickson, Cupertino, and Geoffrey H. Willis, Marina, all of Calif., assignors to Blue Leaf Design, Inc., Monterey, Calif.

Filed Jun. 8, 1994, Ser. No. 255,650
Int. Cl.⁶ F25D 3/08

U.S. Cl. 62—457.5

3 Claims



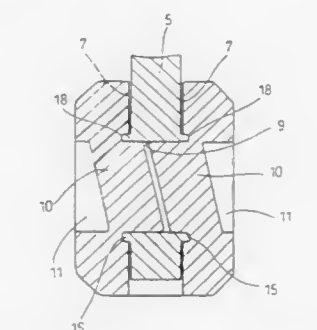
1. A cooler, comprising:
- an insulated compartment;
 - a container for storing a coolant material, positioned to be thermally conductive with the insulated compartment;
 - a plurality of recesses on the container, each adapted to receive and hold at least one beverage container;
 - a backpack bag having at least one carrying strap, and adapted to hold the insulated compartment, the container, plurality of beverage containers, wherein the beverage containers are held within the bag in a storage area formed by the recesses on the top of the container and the interior top of the bag;
 - an expandable layer disposed inside the bag to hold the beverage containers in contact with the top of the container, the expandable layer comprising a layer of foam and an inflatable bladder.

5,509,280
LATCH NEEDLE FOR TEXTILE MACHINES
Bernhard Schuler, Sonnenbühl, and Siegfried Wissmann, Albstadt, both of Germany, assignors to Theodor Groz & Söhne & Ernst Beckert, Albstadt, Germany

Filed Jan. 27, 1995, Ser. No. 379,777
Claims priority, application Germany, Jan. 29, 1994, 44 02 706.0

Int. Cl.⁶ D04B 35/04; D05B 85/14
U.S. Cl. 66—121

10 Claims



1. A latch needle for textile machines, comprising:

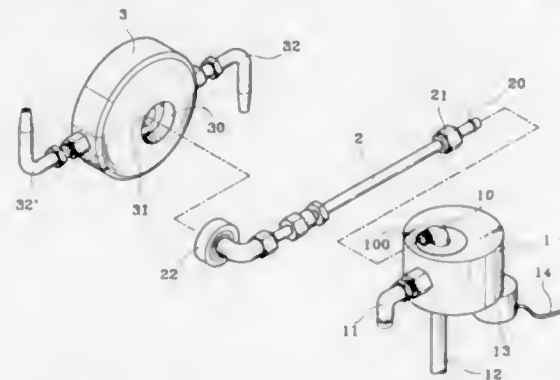
a needle shank having a longitudinal slot formed therein, said needle shank comprising:
 a needle hook located at one end of said needle shank; and
 two opposing shank cheeks each defining a lateral side of the longitudinal slot;
 a latch pivotably disposed in the longitudinal slot, said latch having a bearing bore, and at least one annular ring projecting laterally outward from said latch and surrounding the bearing bore; and
 bearing means attached to at least one of said shank cheeks and in communication with said bearing bore for pivotably seating said latch.

5,509,281

DUST BLOWER FOR CIRCULAR KNITTING MACHINES
 Jinn-Ting Tsay, No. 3, Alley 6, Lane 27, Chung-Hsing Rd., Hsi-Chih Chen, Taipei Hsien, Taiwan
 Filed Feb. 22, 1995, Ser. No. 392,479
 Int. Cl. D04B 35/32

U.S. Cl. 66—168

2 Claims



1. A dust blower for central mounting on a circular knitting machine to blow dust and fluff away from an annular loop-forming zone of the knitting machine, the dust blower comprising:

- a) an electric motor, a compressed air inlet and a compressed air outlet, the compressed air outlet being mounted for rotation by the motor;
- b) a guide tube including a first end and a second end, the first end being mounted to the compressed air outlet for rotation thereby across a first plane and receiving compressed air therefrom; and
- c) a nozzle head for receiving compressed air from the guide tube, means for rotatably mounting the nozzle head to the second end of the guide tube, the nozzle head including a plurality of radially extending and oppositely directed nozzles for ejecting compressed air and rotating the nozzle head across a second plane, and the second plane being perpendicular to the first plane.

5,509,282

DOUBLE CUFFED HOISERY
 James M. Ferrell, Jr., 1371 Pebble Dr., Graham, N.C. 27253
 Filed Oct. 14, 1994, Ser. No. 324,175
 Int. Cl. D04B 1/18; 1/26; A41B 11/00

U.S. Cl. 66—188

15 Claims

- a) an upper leg portion arranged and configured to fit about the leg and ankle and being open at the uppermost end thereof, said leg portion having a crinkle section, said crinkle section comprising:
 - i) a plurality of wide ribs separated by a wide section of plain knit;
 - ii) said wide ribs including alternating courses of textured synthetic yarns and elastic yarns, said textured yarns



including knit stitches in substantially all wales, said elastic yarns having alternating wale sections of knit stitches and floated stitches, said knit and floated stitches extending at least 10 wales;

- b) a lower foot portion arranged and configured to fit snugly about the foot;
- c) a lower band provided at a selected point along said leg portion below the uppermost end of said leg portion; and
- d) whereby said leg portion may be compressed by pushing a section of said upper leg portion above said lower band down towards said lower band.

5,509,283

CLOTHES WASHER HAVING WATER RECIRCULATION SYSTEM

Jae C. Lee, Suwon, and Do W. Kim, Seoul, both of, Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

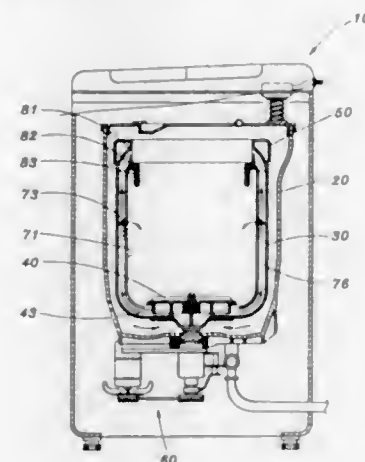
Filed Dec. 8, 1994, Ser. No. 355,197

Claims priority, application Rep. of Korea, Dec. 14, 1993, 93-27703; Mar. 26, 1994, 94-6153 U

Int. Cl. D06F 17/06; 39/10

U.S. Cl. 68—18 F

10 Claims



1. A clothes washing machine, comprising:

- a) a water container;
- b) a dehydrating basket disposed in said water container and mounted for rotation about a vertical axis, said basket including a bottom wall and a vertical wall;

an agitator situated above said bottom wall and mounted for oscillation about said axis, said agitator including a plurality of generally radially extending vanes for discharging water in a generally radially outward direction in response to oscillation of said agitator;

at least one upright passage disposed in said vertical wall of said basket, said passage including a water inlet disposed adjacent a lower end thereof, a first water outlet disposed adjacent an upper end thereof, and a second water outlet disposed below said first water outlet;

a filter mounted at said second outlet for filtering-out lint from water discharged through said second water outlet; and
 a drive mechanism for rotating said basket and rotatably oscillating said agitator for displacing water upwardly through said passage and out of said first and second water outlets;

wherein said passage includes an enlargement adjacent said first and second water outlets for defining a vortex chamber with which said first and second outlets communicate.

5,509,284

WASHING MACHINE TRANSMISSION

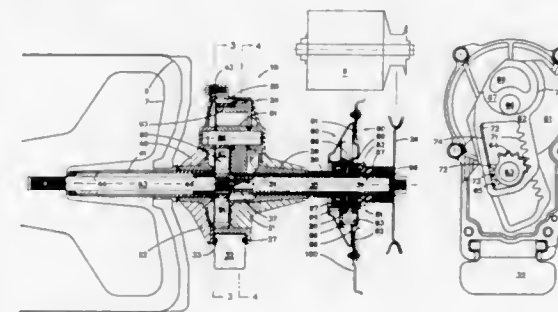
Hans Hauser, Strongsville, Ohio, assignor to MTD Products Inc., Cleveland, Ohio

Filed Apr. 29, 1994, Ser. No. 237,014

Int. Cl. D06F 23/04; F16H 21/40; 19/04

U.S. Cl. 68—23.7

11 Claims



1. An improved transmission for a washing machine comprising a housing, an input shaft, said input shaft having an axis, said input shaft being rotatively mounted to said housing,

an eccentric gear, said eccentric gear having rotary axis and an eccentric bearing piece with a center, said eccentric gear being rotatively mounted to said housing with said center of said eccentric bearing piece being displaced from said rotary axis of said eccentric gear, and said rotary axis of said eccentric gear being displaced from said axis of said input shaft, said input shaft being drivingly connected to said eccentric gear,

an agitator rack, said agitator rack having a bearing piece and a rack, said bearing piece of said agitator rack being connected to said eccentric bearing piece of said eccentric gear,

an agitator shaft, said agitator shaft having an axis and a toothed end, said agitator shaft being rotatively mounted to said housing with said axis being in line with said axis of said input shaft and with said toothed end in driving contact with said rack of said agitator rack so as to provide back and forth agitation of said agitator shaft upon rotation of said input shaft relative to said housing.

5,509,285

METHOD AND APPARATUS FOR MEASURING FLATNESS AND ROLLING CONTROL APPARATUS

Yoshiharu Anbe, Kodaira, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 917,425, Jul. 23, 1992, abandoned.

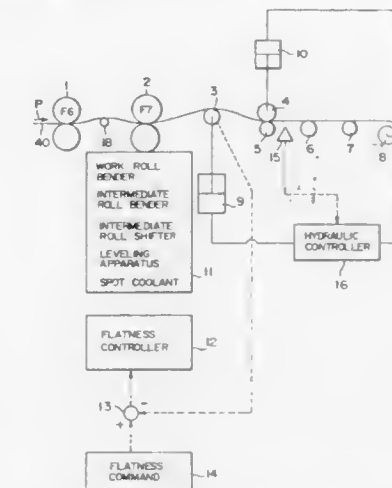
This application May 30, 1995, Ser. No. 453,679

Claims priority, application Japan, Jul. 24, 1991, 3-184705

Int. Cl. B21B 37/06

U.S. Cl. 72—8.6

1 Claim



1. A rolling control apparatus comprising:

first and second pairs of actuators each being disposed symmetrically with respect to each other on respective drive and work sides of a rolling stand as viewed from a center of said rolling stand in a widthwise direction, said first and second pairs of actuators capable of adjusting a flatness of a rolled strip, said first and second pairs of actuators each including first and second actuator means, said first actuator means having a work roll bender, an intermediate roll bender, an intermediate roll shifter and a leveling apparatus, said intermediate roll shifter consisting of an upper shifter and a lower shifter, said second actuator means having a spot coolant;

flatness measuring means provided at an exit of said rolling stand for measuring flatness values at a plurality of points in a widthwise direction of said rolled strip immediately after said rolled strip extends out of said rolling stand, based on a tension applied to said rolled strip;

first calculating means for calculating differences $\Delta\beta_i$ between a plurality of measured values β_{iMEAS} obtained by said flatness measuring means and respective corresponding command values β_{iREF} in accordance with the following expression:

$$\Delta\beta_i = \beta_{iREF} - \beta_{iMEAS} \quad (i=1, 2, \dots, 2n)$$

second calculating means for calculating square sums J_1 and J_2 on said respective drive and work sides in accordance with the following expressions:

$$J_1 = \sum_{i=1}^n \left(\Delta\beta_i - \frac{\partial\beta_i}{\partial F_{WBD}} \cdot \Delta F_{WBD} - \frac{\partial\beta_i}{\partial F_{IBD}} \cdot \Delta F_{IBD} - \frac{\partial\beta_i}{\partial L_{DS}} \cdot \Delta L_{DS} - \frac{\partial\beta_i}{\partial S_{RI}} \cdot \Delta S_{RI} \right)^2 \quad (i=1, 2, 3, \dots, n)$$

$$J_2 = \sum_{i=n+1}^{2n} \left(\Delta\beta_i - \frac{\partial\beta_i}{\partial F_{WBS}} \cdot \Delta F_{WBS} - \frac{\partial\beta_i}{\partial F_{IBS}} \cdot \Delta F_{IBS} - \frac{\partial\beta_i}{\partial L_{WS}} \cdot \Delta L_{WS} - \frac{\partial\beta_i}{\partial S_{RI}} \cdot \Delta S_{RI} \right)^2 \quad (i=n+1, n+2, \dots, 2n)$$

where

$$\frac{\partial \beta_1}{\partial F_{WBDS}} :$$

an influence coefficient of a drive side work roll bending force to the flatness,

$$\frac{\partial \beta_1}{\partial F_{BWS}} :$$

an influence coefficient of a work side work roll bending force to the flatness,

$$\frac{\partial \beta_1}{\partial F_{IBDS}} :$$

an influence coefficient of a drive side intermediate roll bending force to the flatness,

$$\frac{\partial \beta_1}{\partial F_{IBWS}} :$$

an influence coefficient of a work side intermediate roll bending force to the flatness,

$$\frac{\partial \beta_1}{\partial L_{DS}} :$$

an influence coefficient of a drive side leveling to the flatness,

$$\frac{\partial \beta_1}{\partial L_{WS}} :$$

an influence coefficient of a work side leveling to the flatness,

$$\frac{\partial \beta_1}{\partial S_{IU}} :$$

an influence coefficient of an upper intermediate roll shift to the flatness,

$$\frac{\partial \beta_1}{\partial S_{IL}} :$$

an influence coefficient of a lower intermediate roll shift to the flatness,

ΔF_{WBDS} : a manipulated variable of the drive side work roll bender,

ΔF_{BWS} : a manipulated variable of the work side work roll bender,

ΔF_{IBDS} : a manipulated variable of the drive side intermediate roll bender,

ΔF_{IBWS} : a manipulated variable of the work side intermediate roll bender,

ΔL_{DS} : a manipulated variable of the drive side leveling apparatus,

ΔL_{WS} : a manipulated variable of the work side leveling apparatus,

ΔS_{IU} : a manipulated variable of an upper intermediate roll shifter,

ΔS_{IL} : a manipulated variable of a lower intermediate roll shifter;

third calculating means for calculating manipulated variables for said first and second actuator means on said drive and work sides so as to minimize said respective square sums J_1 and J_2 ;

first controlling means for controlling said first actuator means on the drive side inclusive of said upper shifter of said intermediate roll shifter, and for controlling said second actuator means on the work side inclusive of said lower shifter of said intermediate roll shifter;

fourth calculating means for calculating a pair of flatness errors on said respective drive and work sides still resident after control by said first controlling means; and

second controlling means for controlling said second actuator means so as to reduce said flatness errors calculated by said fourth calculating means.

5,509,286

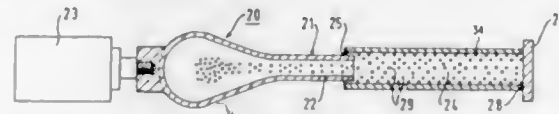
METHOD AND APPARATUS FOR SURFACE TREATING AND PRESTRESSING THE INSIDE WALL OF A CAVITY
André Coulon, Bessoncourt, France, assignor to GEC Alsthom Electromecanique SA, Paris, France

Filed Feb. 3, 1995, Ser. No. 383,221

Claims priority, application France, Feb. 4, 1994, 94 01275
Int. Cl.⁶ B24C 1/00

U.S. Cl. 72—53

13 Claims



1. An ultrasound shot-blasting method for treating and putting under compression prestress an inside wall of a cavity within a workpiece having a longitudinal cavity dimension much greater than a transverse dimension thereof, the cavity having at least one orifice, said method comprising:

exciting a high frequency vibration within a high frequency exciter coupled to a closed end radially enlarged portion of a hollow bulb integral with a coaxial, reduced diameter tubular element terminating in an open, free end adapted to contact said at least one orifice of said workpiece cavity upon alignment therewith,

setting balls of determined diameter within said hollow bulb-shaped vibrator into vibration at a resonant frequency of said bulb-shaped vibrator, and

causing vibrating balls to move from said hollow bulb-shaped vibrator through said free end of said tubular element and said at least one orifice into said cavity for shot-blasting the cavity inside wall of said workpiece by radial impingement.

5,509,287

METHOD OF CONDITIONING THE SURFACE OF A SPLINE FORMING RACK

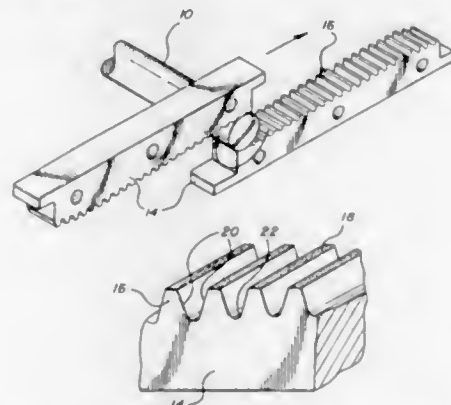
Dale J. Garden, Warren, Mich., assignor to Anderson-Cook, Inc., Fraser, Mich.

Filed Sep. 19, 1994, Ser. No. 308,365

Int. Cl.⁶ B21H 5/00; B21D 37/20

U.S. Cl. 72—88

8 Claims



1. A rack for roll-forming splines on an essentially cylindrical workpiece comprising:

a rack body having a working surface;

a plurality of parallel, spline-forming teeth on said working surface defined by alternating lands and roots connected by flanks;

the length of said working surface being sufficient to permit multiple revolution rolling engagement between the working surface and the workpiece during a continuous spline-forming stroke;

the teeth which engage the workpiece during the first full revolution of the stroke having deposited thereon a substantially uniform layer of particles of material of substantially greater hardness than the material of the rack, which particles project above the surface of the lands to make the treated lands substantially more rough than untreated lands; and

the teeth which engage the workpiece during the last full revolution of the stroke being untreated but of greater depth than the treated teeth.

8. A method of manufacturing roll-formed splines on the exterior surface of a cylindrical workpiece comprising the steps of:

engaging the surface of the workpiece for at least one full revolution of contact with the teeth of a spline-forming tool; said teeth being of progressively increasing depth and having lands which are treated by deposit thereon of carbide particles thereby to substantially increase the roughness thereof; and, thereafter

engaging the workpiece for at least one additional full revolution of working contact with a tool having spline-forming teeth of substantially uniform depth and relatively smooth, untreated land surfaces.

5,509,288

FORMING ROLLER FOR CORRUGATED FIN

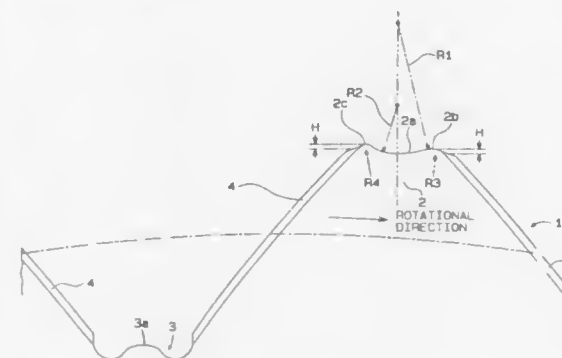
Tetuo Ohno, Nagoya; Yoshitaka Kuroda, Anjo; Hisashi Kobayashi, Kariya, and Yoshinobu Matuzaki, Anjo, all of, Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Sep. 8, 1994, Ser. No. 303,035

Claims priority, application Japan, Sep. 8, 1993, 5-223696
Int. Cl.⁶ B21D 15/00; 13/00

U.S. Cl. 72—186

6 Claims



1. A pair of forming rollers for forming a corrugated fin, each forming roller comprising:

tooth tip portions having tooth tip concave portions at a tip thereof, said tooth tip concave portions being formed from first and second arc-shaped portions having a first radius at a front side of a rotational direction of said rollers, and second radius at a rear side of said rotational direction, said first radius being larger than said second radius, said tooth tip concave portions having a first apex portion at said front side and a second apex portion at said rear side, a radius of said first apex portion being smaller than a radius of said second apex portion;

tooth bottom portions having tooth bottom convex portions at a bottom thereof and being disposed alternately with tooth tip portions;

louver cutters for cutting louvers disposed at oblique line portions between said tooth tip portions and said tooth bottom portions, said louver cutters at the oblique line portions being formed to have a predetermined interval from each said apex portions.

5,509,289

PORTABLE VEHICLE FRAME STRAIGHTENING APPARATUS

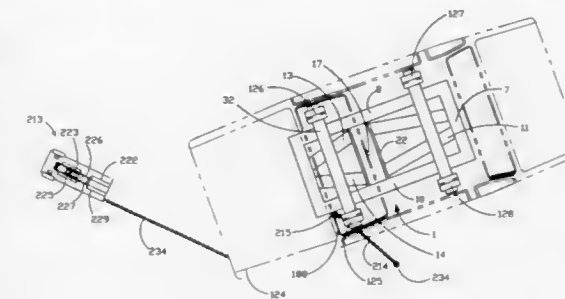
Steven L. Narragon, 1016 SW. Litchfield Ave., Willmar, Minn. 56201

Filed Oct. 26, 1993, Ser. No. 143,483

Int. Cl.⁶ B21D 1/12

U.S. Cl. 72—305

7 Claims



1. A portable vehicle frame straightening device, comprising:

(a) a rotatable carriage, the rotatable carriage being pivotally affixed to a single anchor by a centrally located spindle, the vehicle being affixed to the carriage;

(b) a first chain, the first chain having a first end and a second end, the first end being attachable to the vehicle;

(c) a tower, the second end of the first chain being affixed to the tower, the tower including a plurality of wheels, the wheels thereby permitting the tower to be rolled across a floor;

(d) a cart, the cart being adapted to receive components of the rotatable carriage, the cart including a plurality of wheels, the cart thereby permitting storage and relocation of the rotatable carriage;

(e) four chain retaining members, each of the four chain retaining members being affixed to the rotatable carriage; and

(f) a second chain, the second chain having a first end and a second end, the first end of the second chain being affixed to a single anchor site, the second end of the chain being affixed to one of the four chain retaining members, the second chain thereby preventing rotation of the rotatable carriage when a tensile force is applied to the first chain.

5,509,290

TOOLS FOR COLD FLOW FORMING OF ASSEMBLY POINTS IN SHEET METAL

Jean-Claude Faivre, Rue du Locle 44, CH-2300 La Chaux-de-Fonds, Switzerland

PCT No. PCT/EP94/01445, § 371 Date Apr. 7, 1995, § 102(e) Date Apr. 7, 1995, PCT Pub. No. WO94/25196, PCT Pub. Date Nov. 10, 1994

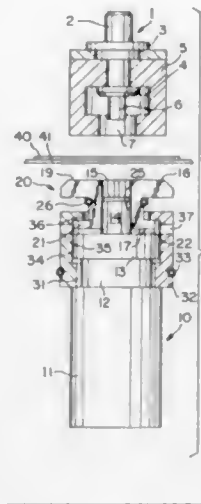
PCT Filed Apr. 29, 1994, Ser. No. 362,539

Claims priority, application France, May 4, 1993, 93 05297
Int. Cl.⁶ B21D 41/00

U.S. Cl. 72—375

14 Claims

1. Tool for forming joints between sheet material, said tool comprising a first tool-part (1) with a punch (6) and a side pressing element (5) for engaging one side of the sheet material, a second tool-part (10) cooperable with the first tool part and provided with a support surface (16) from which an anvil (15) extends, a matrix (20) comprising at least two matrix-parts (18) for engaging the other side of the sheet material and being arranged around said anvil (15) and laterally displaceable relative to said anvil, each matrix-part (18) comprising a heel (21) arranged for sliding against said support surface (16) and being applied against a lateral surface of said anvil (15) by means of elastic means (26), means for guiding the matrix-parts (18) during sliding movement and a stop means limiting the lateral displacement of the matrix-parts (18) characterized in that the stop means comprises at least two shell-formed parts (30) fixed elastically on said second tool-part (10).



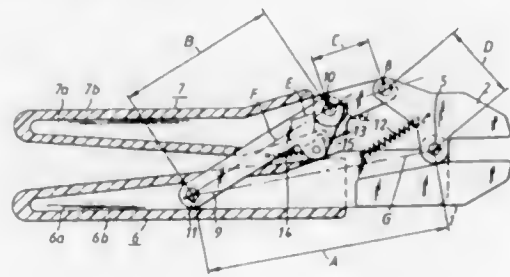
5,509,291
CRIMPING TOOL

Mikael Nilsson, and Mats Norlin, both of Älvdalen, Sweden, assignors to Pressmaster Tool AB, Älvdalen, Sweden
PCT No. PCT/SE93/00291, § 371 Date Oct. 6, 1994, § 102(c)
Date Oct. 6, 1994, PCT Pub. No. WO93/19897, PCT Pub.
Date Oct. 14, 1993
PCT Filed Apr. 5, 1993, Ser. No. 313,303
Claims priority, application Sweden, Apr. 6, 1992, 9201087;
Feb. 19, 1993, 9300564

Int. Cl. 6 H01R 43/042

U.S. Cl. 72—409.14

21 Claims

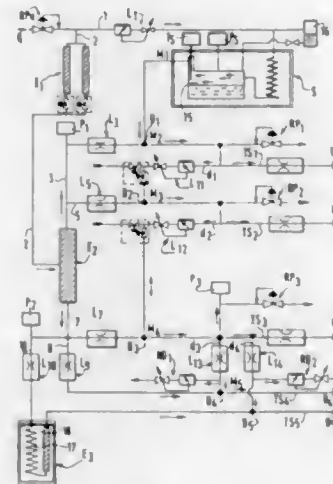


1. A crimping tool comprising first and second jaws (1, 2) each of which is provided with a crimping part (3, 4) and which are journaled in a first pivot point (5) for relative pivotal movement between an open position and a closed crimping position, and which further comprises first and second handles (6, 7) for pivoting the jaws and extending rearwardly from said jaws (1, 2), of which handles the first handle (6) is rigidly connected at a forward end to the first jaw (1), whereas the second handle (7) is pivotally connected to at least a part of the second jaw (2) at a forward end in a second pivot point (8) located rearwardly of the first pivot point (5), and further comprises a link construction (9) which extends obliquely rearwardly from the a third pivot point (10) located on the second handle (7) rearwardly of the second pivot point (8), to a fourth pivot point (11) located on the first handle (6), characterized in that the distance (D) between the first and the second pivot points (5, 8) is 0.30–0.35 times the distance (A) between the first and the fourth pivot points (5, 11), the distance (C) between the second and the third pivot points (8, 10) is 0.20–0.25 times the distance (A) between the first and the fourth pivot points (5, 11), and the distance (B) between the third and the fourth pivot points (10, 11) is 0.62–0.66 times the distance (A) between the first and the fourth pivot points (5, 11); and in that when the jaws (1, 2) are in their crimping position a plane (E) which contains the second and the third pivot points (8, 10) defines an angle (α) within the range of 165°–180° with a plane (F) which contains the third and the fourth pivot points (10, 11) with the apex of the angle facing away from a plane (G) which contains the first and the fourth pivot points (5, 11).

5,509,292
PROCESS AND APPARATUS FOR FURNISHING GAS TO
A HIGH SENSITIVITY ANALYZER
Sylvain S. d'Appollonia, Guyancourt, and Maurice Molozay,
Le Mesnil Saint Denis, both of France, assignors to L'Air
Liquide, Societe Anonyme Pour L'Etude et L'Exploitation
des Procédés Georges Claude, Paris Cedex, France
Filed Jun. 12, 1992, Ser. No. 898,192
Claims priority, application France, Jun. 12, 1991, 91 07139
Int. Cl. 6 G01N 31/00

U.S. Cl. 73—1 G

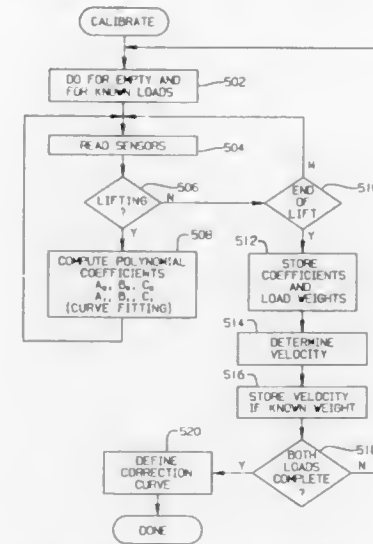
12 Claims



1. A process for providing to at least one high sensitivity analyzer (a_n) small quantities of a first gas (A) contained in a second gas, comprising: dividing a primary flow (Q) of the second gas into a first flow (q_1) and a second flow (q_2) greater than the first flow, introducing into the first flow (q_1) a predetermined quantity of the first gas (A) to constitute a first mixture (M_1), dividing the second flow (q_2) into a third flow (q_3) and into a fourth flow (q_4) larger than said third flow, combining the third flow (q_3) with the first mixture (M_1) to constitute a second mixture (M_2), dividing the second mixture into a first part and a second part, supplying said first part to a first utilization outlet (U_1) for supply to the analyzer, combining said second part with a portion of the fourth flow to constitute a third mixture (M_3), supplying the third mixture to a second utilization outlet (U_2) for supply to an analyzer, dividing the fourth flow (q_4) into a fifth flow (q_5) constituting said portion of the fourth flow for combining with the second part of the second mixture, and into a sixth flow (q_6) larger than said fifth flow, withdrawing a portion of the third mixture before supplying the third mixture to the second utilization outlet (U_2), combining at least a portion of the sixth flow with the withdrawn portion of the third mixture to constitute a fourth mixture (M_4), supplying said fourth mixture to a third utilization outlet (U_3) for supply to an analyzer, dividing the sixth flow (q_6) into a seventh flow (q_7), constituting said portion of the sixth flow for combining with the withdrawn portion of the third mixture, and into an eighth flow (q_8) larger than the seventh flow, withdrawing a portion of the fourth mixture before supplying the fourth mixture to the third utilization outlet (U_3), combining at least a portion of the eighth flow with part of the withdrawn portion of the fourth mixture to constitute a fifth mixture (M_5), supplying said fifth mixture to a fourth utilization outlet (U_4) for supply to an analyzer, dividing the eighth flow (q_8) into a ninth flow (q_9), constituting said portion of the eighth flow for combining with part of the withdrawn portion from the fourth mixture, and into a tenth flow (q_{10}), passing the tenth flow through a cryogenic trap, combining the tenth flow with another part of the withdrawn portion of the fourth mixture, and supplying the mixture thus formed to a fifth utilization outlet (U_5) for supply to an analyzer.

5,509,293
DYNAMIC PAYLOAD MONITOR
Arundhati Karumanchi, Metamora, Ill., assignor to Caterpillar Inc., Peoria, Ill.
Filed Dec. 20, 1994, Ser. No. 359,389
Int. Cl. 6 G01L 25/00; G01G 19/40; 19/08; 19/10
U.S. Cl. 73—1 B

6 Claims



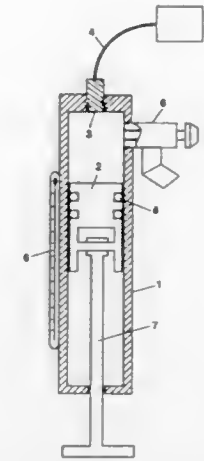
1. A method for dynamically measuring and indicating payload weight for a machine having at least one lift cylinder for elevating a payload carrier, including the steps of:
lifting a load of known mass during a calibration operation;
sensing a calibration lift cylinder velocity during said calibration operation;
lifting a load of an unknown mass during a lifting operation;
sensing a lift cylinder hydraulic pressure during said lifting operation;
sensing a lift cylinder extension during said lifting operation;
determining a first estimate of the payload as a function of said lift cylinder hydraulic pressure and extension;
determining an operating lift cylinder velocity during said lifting operation;
determining a velocity correction factor as a function of said calibration lift cylinder velocity and operating lift cylinder velocity;
calculating a second estimate of the payload as a function of said first estimate and said velocity correction factor.

5,509,294
APPARATUS FOR DETERMINING AMOUNT OF GASES
DISSOLVED IN LIQUIDS
Scott Gowing, Gaithersburg, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Division of Ser. No. 677,941, Apr. 1, 1991, Pat. No. 5,442,948.
This application Apr. 4, 1995, Ser. No. 416,561
Int. Cl. 6 G01N 7/14

U.S. Cl. 73—19.05

16 Claims

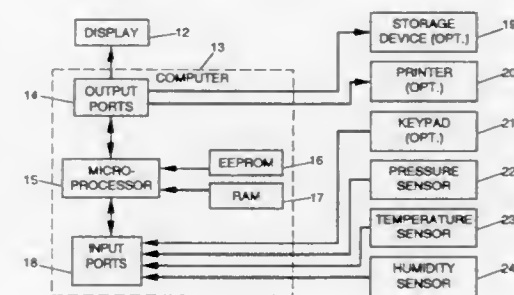
1. Apparatus for determining the amount of gas which is dissolved in liquid, comprising:
a hollow member having a vertical cylindrical body, a closed upper end, an open lower end, and at least one port, said cylindrical body being substantially symmetrical with respect to the longitudinal axis of said member, each said port being located in said cylindrical body near said closed upper end; at least one shutoff valve, each said shutoff valve corresponding to a different said port, said member having a capacity which is fluid-tight when every said port is closed;
a piston device which enters said member through said open lower end and is movable, slidably and fluid-tightly with



5,509,295
WEATHER STATION DEVICE
Fred J. Bartoli, Schiller Park, Ill., assignor to Altronics, a Division of Ridgewood Engineering, Inc., Schiller Park, Ill.
Filed Sep. 16, 1994, Ser. No. 307,200
Int. Cl. 6 G01N 9/00

U.S. Cl. 73—30.02

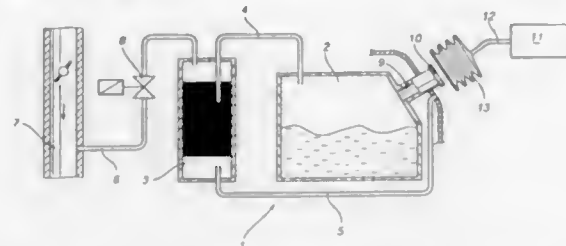
8 Claims



1. A portable self-contained moistureless density altitude measuring apparatus comprising in combination: a housing; temperature sensing means in said housing and providing a temperature output; pressure sensing means in said housing and providing a pressure output; humidity sensing means in said housing and providing a humidity output; a microprocessor contained within said housing and having inputs connected with at least said temperature sensing means, said pressure sensing means, and said humidity sensing means for sampling the temperature outputs, pressure outputs and humidity outputs and calculating a moistureless gas density; said microprocessor also comprising a means for subtracting a moisture content in computing a moistureless gas density; and said microprocessor including means for outputting a moistureless density altitude derived from said moistureless gas density to said means for outputting a moistureless density altitude.

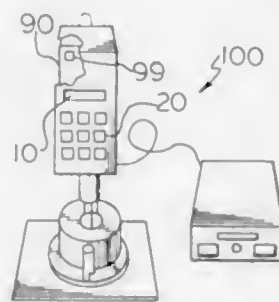
5,509,296
ARRANGEMENT FOR THE STATIONARY LEAK TESTING OF TANK VENTING SYSTEMS
 Hartmut Kolb, Ludwigsburg, Germany, assignor to Mercedes-Benz A.G., Stuttgart, Germany
 Filed Dec. 19, 1994, Ser. No. 358,525
 Claims priority, application Germany, Jan. 15, 1994, 44 01 085.0

Int. Cl.⁶ G01M 3/26
 U.S. Cl. 73—40.5 R



1. An arrangement for determining leaks in a tank venting system of a vehicle with an internal combustion engine including: said tank venting system comprising a fuel tank, an adsorption filter, a connecting pipe interconnecting the fuel tank with the adsorption filter, a venting pipe providing for communication of said adsorption filter with the environment, a regeneration pipe extending between said adsorption filter and an intake manifold of an internal combustion engine and including a regeneration valve for closing said regeneration pipe, said tank having a fuel filler neck and said venting pipe ending adjacent said filler neck, and a test apparatus with a pump for providing a required pressure and a test pipe with a seal sleeve for placement over said tank filler neck and the end of said venting pipe to provide for closed communication between said tank venting system and said test apparatus, said test apparatus also including a pressure sensor to determine the pressure, over time, in the tank venting system and a control device for controlling the application of pressure to said venting system and for the evaluation of the pressure values determined by said pressure sensor for determining a leak in the venting system.

5,509,297
VISCOMETER CALIBRATION
 Gregory C. Miller, and Theodore W. Selby, both of Midland, Mich., assignors to Tannas Co., Midland, Mich.
 Filed Feb. 17, 1995, Ser. No. 392,549
 Int. Cl.⁶ G01N 11/14; 3/62; G01D 18/00
 U.S. Cl. 73—54.32

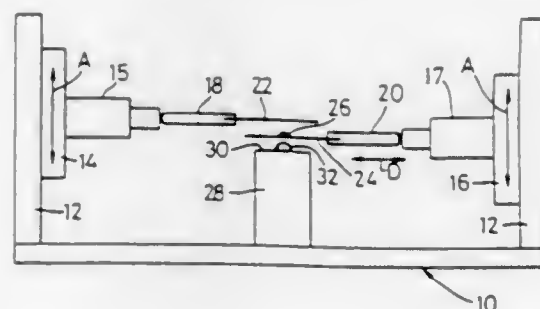


1. In a rotational viscometer instrument having a rotor driven to rotate about an axis, the rotor for contact with a fluid, the viscosity or related property of which can be measured by measuring drag on the rotor rotating with the rotor in contact with the fluid through a drag measuring element, the improvement which comprises the instrument being calibrated by an improved means for yielding true viscosity measurements, having an electronic drive control module, output response readout module, and correction determination and calibration factor interjection module, to include by a means for interjecting a predetermined calibration factor into the instrument based on a multi-part system including a viscosity of a

fluid of known viscosity and the rotor and the drag measuring element, such that the true viscosity sensing ability of the instrument is enhanced.

5,509,298
APPARATUS AND METHOD FOR MEASURING VISCO-ELASTIC CHARACTERISTICS OF A SAMPLE
 Mandranjan S. Cheema, 134 Moorholm Drive, Nottingham, NG8 2EE, United Kingdom
 PCT No. PCT/GB89/01173, § 371 Date Jun. 3, 1991, § 102(e)
 Date Jun. 3, 1991, PCT Pub. No. WO91/05235, PCT Pub. Date Apr. 18, 1991
 PCT Filed Oct. 3, 1989, Ser. No. 687,880
 Int. Cl.⁶ G01N 11/00

U.S. Cl. 73—54.41

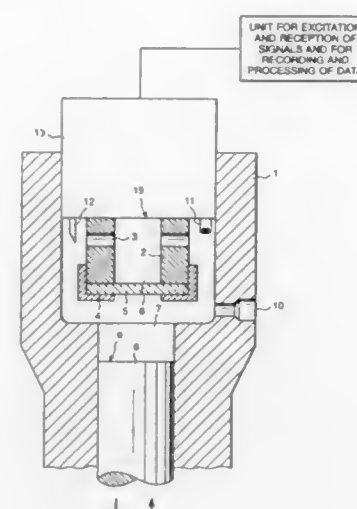


1. Apparatus suitable for use in measuring the visco-elastic characteristics of a sample comprising frame means, at least a first stage mounted on said frame means for rectilinear movement, first mounting means mounted on said first stage, and a first member carried by said mounting means, a second member mounted to said frame means in register with said first member, at least one of the first member and second member being readily interchangeable, positioning means for moving the first stage to adjust the relative positions of said members whereby a sample carried by one of said members can be brought into contact with the other of said members and whereby to adjust the spacing between the first and second members to a preselected distance, means for vibrating said first mounting means rectilinearly, and thus said first member carried thereby, at a preselected frequency, and means for detecting the behaviour of said sample.

5,509,299
APPARATUS FOR DETERMINING PHYSICAL PROPERTIES OF FLUIDS
 Armen P. Sarvazjan, Puschino, and Vladimir N. Belonenko, Razvilka, both of, Russian Federation, assignors to Aktsionernoe Obschestvo Zakrytogo Tipa "Biotekhinvest", Moscow, Russian Federation
 PCT No. PCT/RU93/00200, § 371 Date Sep. 6, 1994, § 102(e)
 Date Sep. 6, 1994, PCT Pub. No. WO94/04914, PCT Pub. Date Mar. 3, 1994
 PCT Filed Aug. 12, 1993, Ser. No. 211,684
 Claims priority, application Russian Federation, Aug. 13, 1992, 5058556

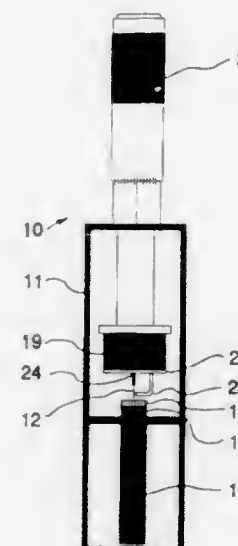
U.S. Cl. 73—64.53

1. An apparatus for determining the physical properties of fluids comprising a casing with a measuring chamber inside, a piston, an oscillation transducer, a unit for excitation and reception of signals and for recording and processing of data, wherein the transducer is installed inside the chamber parallel with an end surface of the piston so that it divides the chamber into two measuring cells with constant and variable acoustic paths, respectively.



5,509,300
NON-CONTACT FORCE MICROSCOPE HAVING A COAXIAL CANTILEVER-TIP CONFIGURATION
 Ralph V. Chamberlin, Tempe, Ariz., and Anthony DiCarlo, Holladay, Utah, assignors to Arizona Board of Regents acting for Arizona State University, Tempe, Ariz.
 Filed May 12, 1994, Ser. No. 241,745
 Int. Cl.⁶ G01B 5/28

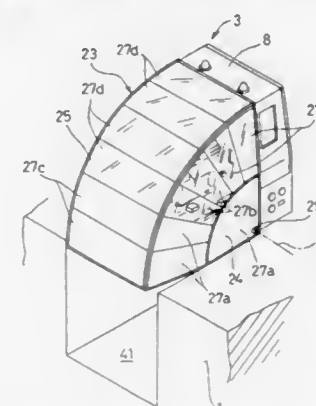
U.S. Cl. 73—105



1. A non-contact force microscope for measuring a plurality of properties of a sample mounted therein comprising:
 a) a support structure;
 b) a cantilever-tip configuration having an elongated cantilever portion and a sharpened tip portion axially extending therefrom and mounted to said support structure;
 c) a sample stage mounted to said support structure in operative relationship beneath said cantilever-tip configuration;
 d) a sample to be measured having an X, Y and Z axis;
 e) means for positioning said sample upon said stage in non-contact responsive relationship to said tip portion along said Z-axis of said sample;
 f) means for rastering said sample under said tip portion in the plane defined by said X and Y axes;
 g) means for exciting the mechanical resonance of said cantilever-tip configuration;
 h) a first capacitance probe disposed on said support structure in operative relationship to said cantilever-tip configuration to

measure variations in the capacitance caused by motion of said cantilever-tip configuration along said X axis which corresponds to the changes of the forces and force gradients of said sample; and
 i) means for generating a graphic image by recording and plotting said changes of the forces and force gradients as a function of X and Y position of said sample.

5,509,301
COVER-EQUIPPED TESTER FOR INTERNAL COMBUSTION ENGINES
 Ryosuke Takano, Nishinomiya; Toshiaki Hayashi, Kobe; Kazuhiko Miyoshi, Amagasaki, and Junzo Iwaoka, Osaka, all of, Japan, assignors to Daifuku Co., Ltd., Osaka, Japan
 Filed Apr. 8, 1993, Ser. No. 45,049
 Claims priority, application Japan, Sep. 4, 1992, 4-236635; Sep. 17, 1992, 4-246948; Nov. 6, 1992, 4-296684
 Int. Cl.⁶ F16M 1/02
 U.S. Cl. 73—116

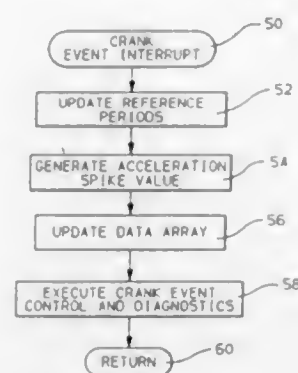


1. A cover-equipped tester for internal combustion engines, comprising:
 an internal combustion engine support block having a first end, a soundproof cover for said support-block comprising a pair of spaced apart lateral plates having outer peripheries and an outer plate extending between the outer peripheries of the lateral plates,
 a controller at the first end of the support block,
 a cover storing section providing space beneath the support block adapted to receive and store said cover, and
 pivot means mounting said cover to said support block for pivotal movement between a closed position and an open position,
 said cover when in the closed position cooperating with the support block and the controller in defining a closed space for an internal combustion engine on the support block,
 said cover when in the open position occupying the space in the cover storing section beneath the support block.

5,509,302
MISFIRE DETECTION IN INTERNAL COMBUSTION ENGINES
 Jeffrey R. Drexel, Rochester Hills, and Larry T. Nitz, Rochester, both of Mich., assignors to Saturn Corporation, Troy, Mich.
 Filed May 2, 1994, Ser. No. 236,812
 Int. Cl.⁶ G01M 15/00

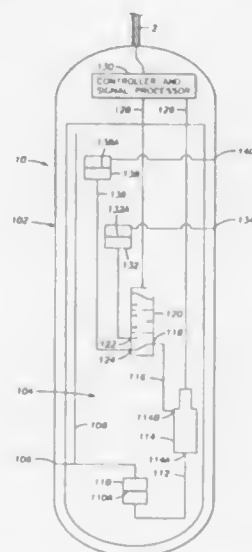
U.S. Cl. 73—117.3

1. A method for diagnosing misfires in an automotive internal combustion engine having an output shaft with a predetermined number of spaced reference points and a predetermined desired spacing between the predetermined number of spaced reference points, comprising the steps of:



sensing a rate of rotation between consecutive sets of the reference points on the output shaft;
sensing a magnitude of a transient rate of rotation characterized by a decrease in the rate of rotation followed by an increase in the rate of rotation;
estimating an actual spacing between the predetermined number of spaced reference points;
generating a spacing error as a difference between the desired spacing and the estimated actual spacing;
generating a transient condition correction value as a predetermined function of the spacing error;
adjusting the sensed magnitude of the transient rate of rotation in accord with the generated transient condition correction value;
comparing the adjusted sensed magnitude to a predetermined misfire threshold value; and
detecting an engine misfire when the adjusted sensed magnitude exceeds the misfire threshold value.

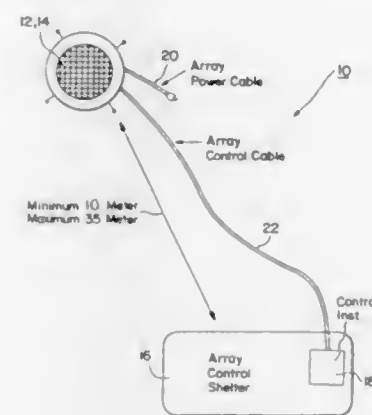
5,509,303
CONTROLLABLE SENSITIVITY DIFFERENTIAL PRESSURE FLUID DENSITY INSTRUMENT
Daniel T. Georgi, Houston, Tex., assignor to Western Atlas International, Inc., Houston, Tex.
Continuation-in-part of Ser. No. 359,581, Dec. 20, 1994. This application Feb. 10, 1995, Ser. No. 386,948
Int. Cl.⁶ G01N 9/26; E21B 47/00
U.S. Cl. 73—151 5 Claims



1. A differential pressure fluid density instrument comprising:
a housing adapted to traverse a wellbore penetrating an earth formation, said housing including a plurality of ports positioned at spaced-apart locations along said housing;
a differential pressure transducer disposed within said housing;

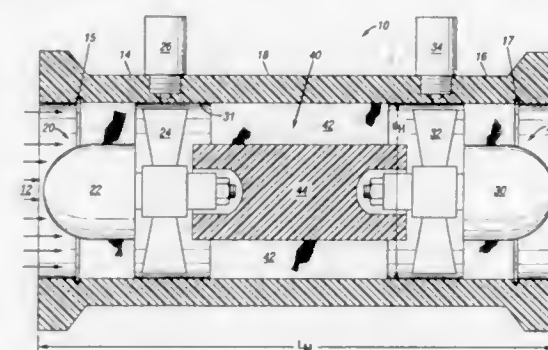
a valve, disposed within said housing and adapted to selectively connect said transducer across two predetermined ones of said plurality of ports; and
a fluid expansion well connected at one end to one of said ports, said fluid expansion well at least partially filled with a fluid of known density.

5,509,304
PHASED ARRAY ACOUSTIC ANTENNA SYSTEM
K. Russell Peterman, Boulder, Colo.; Charles Riese, Austin, Tex., and Michael J. Smith, Knoxville, Tenn., assignors to Radian Corporation, Austin, Tex.
Filed Aug. 10, 1994, Ser. No. 288,939
Int. Cl.⁶ G01K 1/00
U.S. Cl. 73—170.13 21 Claims



1. A sound detection and ranging (SODAR) system comprising:
an array of acoustic transducer elements, wherein each acoustic transducer element in said array is responsive to one of a plurality of analog transmit signals for providing a beam of transmitted acoustic energy, wherein each beam of transmitted acoustic energy provided by each acoustic transducer element in said array is combined so as to form a directed beam of transmitted acoustic energy, and wherein each acoustic transducer element in said array is responsive to a reflected portion of said directed beam of transmitted acoustic energy for providing one of a plurality of analog receive signals, said reflected portion of said directed beam of transmitted acoustic energy being reflected by wind in the atmosphere;
analog signal generating means responsive to digital-to-analog control signals for generating said plurality of analog transmit signals;
analog-to-digital conversion means responsive to analog-to-digital control signals for converting said plurality of analog receive signals into a plurality of digital receive signals; and
control and processing means for generating said digital-to-analog control signals and said analog-to-digital control signals so as to control said analog signal generating means and said analog-to-digital conversion means, respectively, said control and processing means being responsive to said plurality of digital receive signals for providing an indication of wind characteristics based on the characteristics of said reflected portion of said directed beam of transmitted acoustic energy as compared to the characteristics of said directed beam of transmitted acoustic energy.

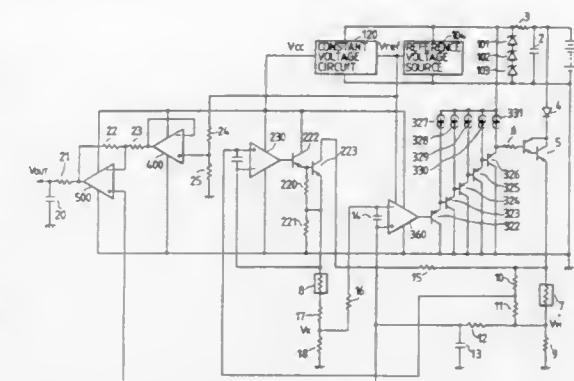
5,509,305
CLOSELY COUPLED, DUAL TURBINE VOLUMETRIC FLOW METER
Zaki D. Husain; Helmet Zenger; F. Dale Goodson, and Donald J. Wass, all of Houston, Tex., assignors to Daniel Industries, Inc., Houston, Tex.
Continuation of Ser. No. 106,365, Aug. 13, 1993, abandoned, which is a continuation-in-part of Ser. No. 84,510, Jun. 29, 1993, abandoned, which is a continuation-in-part of Ser. No. 834,601, Feb. 12, 1992, Pat. No. 5,325,729. This application Mar. 1, 1995, Ser. No. 396,579
Int. Cl.⁶ G01F 7/00; 1/12
U.S. Cl. 73—195 29 Claims



1. A meter for measuring a volumetric flow of a fluid in a conduit, which comprises:
a pair of independent turbine assemblies, each of said turbine assemblies having a plurality of rotor blades and each adapted to have a speed of rotation representative of the volumetric fluid flow;
a flow randomizer located between said pair of turbine assemblies, said randomizer having at least a vane, said randomizer spaced from said rotor blades of one turbine assembly by a distance equal to between approximately 5 and approximately 10 times a thickness of said randomizer vane, and being operable to eliminate substantially all flow effects of one of said turbine assemblies upon said other turbine assembly; and
a transducer for detecting said speed of rotation of at least one of said turbine assemblies.

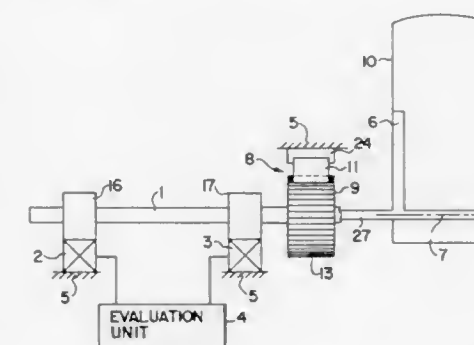
5,509,306
THERMAL TYPE FLOWMETER
Noboru Yamamoto, Kariya, and Yasushi Sugiura, Handa, both of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan
Division of Ser. No. 910,449, Jul. 8, 1992, Pat. No. 5,359,891.
This application Oct. 17, 1994, Ser. No. 323,799
Claims priority, application Japan, Jul. 8, 1991, 3-167048; Jul. 8, 1991, 3-167054; Jul. 8, 1991, 3-167064; Jul. 9, 1991, 3-168191; Jul. 10, 1991, 3-170162
Int. Cl.⁶ G01F 1/68
U.S. Cl. 73—204.15 19 Claims

4. A thermal type flowmeter for measuring a flow rate of a fluid in a fluid passage, the thermal type flowmeter comprising:
a first thermo-sensitive resistor provided in the fluid passage and being heated to a predetermined temperature;
a second thermo-sensitive resistor provided in the fluid passage for detecting a temperature of the fluid in the fluid passage and for outputting a signal corresponding to the detected temperature;
a first power adjusting circuit including at least one first differential amplifier circuit for adjusting an amount of power supplied to the first thermo-sensitive resistor, the first thermo-sensitive resistor heating to a temperature which is a predetermined value higher than the temperature detected by the second thermo-sensitive resistor in response to the adjusted amount of power supplied to the first thermo-sensitive resistor;



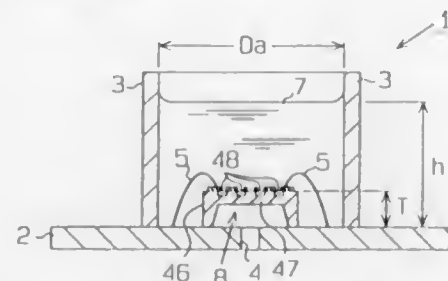
a second power adjusting circuit including at least one second differential amplifier circuit for adjusting an amount of power supplied to the second thermo-sensitive resistor, the second thermo-sensitive resistor outputting the signal corresponding to the temperature of the fluid in the fluid passage in response to the adjusted amount of power supplied to the second thermo-sensitive resistor; and
an output circuit for outputting a signal indicative of the flow rate of the fluid in the fluid passage and corresponding to a supply voltage which is based on the amount of power supplied to the first thermo-sensitive resistor, wherein an internal offset voltage of the first differential amplifier circuit and an internal offset voltage of the second differential amplifier circuit act on the supply voltage as voltages having opposite polarities which cancel each other.

5,509,307
MECHANICAL DRIVE ARRANGEMENT FOR A MEASURING SPINDLE OF A WHEEL BALANCING MACHINE
Kurt Humber, Griesheim, and Uwe Moench, Bensheim, both of Germany, assignors to Hofmann Werkstatt-Technik GmbH, Brungstadt, Germany
Filed Nov. 30, 1993, Ser. No. 158,736
Int. Cl.⁶ G01M 1/16
U.S. Cl. 73—487 8 Claims



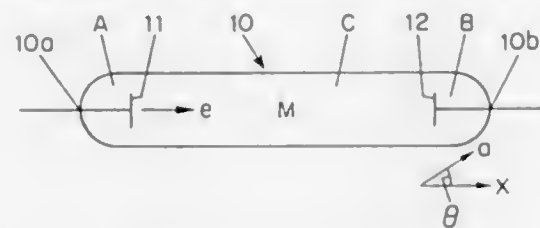
1. A mechanical drive arrangement for a wheel balancing machine comprising:
a frame;
a measuring spindle rotatably mounted with respect to said frame;
a lever pivotably mounted with respect to the frame to be movable between first and second positions for producing a driving torque; and
means operatively associated with said lever and said measuring spindle for transmitting the driving torque produced by pivotal movement of said lever to said measuring spindle.

5,509,308
ACCELERATION DETECTING APPARATUS
 Hitoshi Iwata, Hashima; Katsuya Kogiso, Iwakura, and Kenichi Kinoshita, Kuwana, all of Japan, assignors to Kabushiki Kaisha Tokai Rika Denki Seisakusho, Aichi, Japan
 Filed Oct. 13, 1994, Ser. No. 322,566
 Claims priority, application Japan, Oct. 13, 1993, 5-256073; Aug. 23, 1994, 6-198579
 Int. Cl.⁶ G01P 15/00
 U.S. Cl. 73—514.09 8 Claims



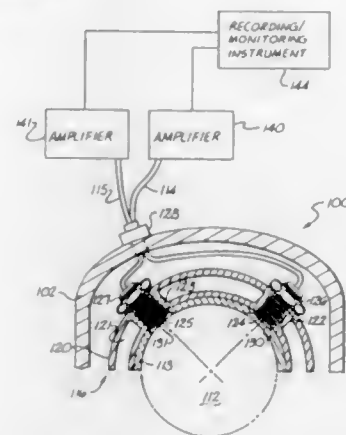
1. A sensor for detecting the acceleration of an object to which the sensor is attached, comprising:
 - a casing having a bottom portion and a center axis;
 - a pressure sensitive element located at the bottom portion of said casing at a position that deviates from said center axis by a value "x"; and
 - a gel based medium filled within said casing to a height "h", measured relative to the height of said casing, said medium being used to apply pressure to said pressure sensitive element, said value x and said height h being adjusted to set an anisotropic sensitivity ratio of the sensor to a desired value, wherein the anisotropic ratio is equal to the value of 2 x/h.

5,509,309
ACCELERATION MEASURING DEVICE
 Shotaro Yokoyama; Akira Amano, and Kazuo Matsuzaki, all of Kawasaki, Japan, assignors to Fuji Electric Co., Ltd., Iino, Japan
 Filed Nov. 30, 1994, Ser. No. 346,864
 Claims priority, application Japan, Dec. 1, 1993, 5-300718
 Int. Cl.⁶ G01P 15/00
 U.S. Cl. 73—514.09 20 Claims



1. A device for measuring acceleration comprising:
 - a sealed tube containing a gas, said tube having a gas-density-varying space;
 - a cold cathode located within the sealed tube; and
 - an anode located within the sealed tube and directly facing said cold cathode on a substantially same plane, said anode being separated from said cold cathode by an inter-electrode space through which an anode current flows, said inter-electrode space being connected to the gas-density-varying space within the sealed tube;
 wherein the density of the gas in said inter-electrode space varies as a function of acceleration experienced by the sealed tube, whereby acceleration is measured by means of the magnitude of the anode current varying as a function of acceleration experienced by the sealed tube when a constant voltage is applied between the cold cathode and the anode.

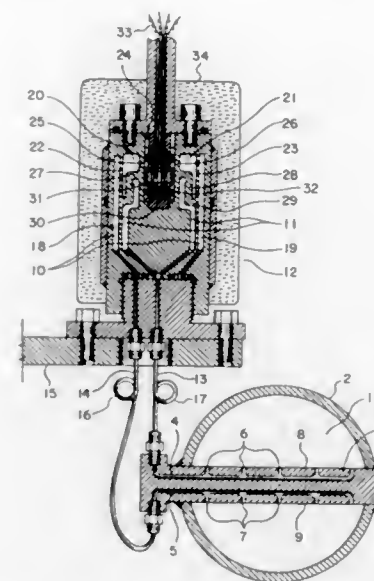
5,509,310
BEARING ASSEMBLIES INCLUDING PROXIMITY PROBES
 Yehia El-Ibary, Greenville, S.C., assignor to Reliance Electric Industrial Company, Greenville, S.C.
 Filed Mar. 18, 1994, Ser. No. 214,979
 Int. Cl.⁶ G01H 1/00
 U.S. Cl. 73—660 26 Claims



1. An improved bearing assembly, said bearing assembly comprising:
 - a) a bearing housing adapted to rotatably support a shaft;
 - b) a cylindrical shell contained within said bearing housing and defining a shaft bore for receiving a rotatable shaft there-through, said cylindrical shell including a liner portion having a softer metal layer disposed on an interior thereof such that an inner surface of said softer metal layer defines said shaft bore, said cylindrical shell further defining at least one probe receiving channel extending therethrough; and
 - c) at least one proximity probe for directly sensing proximity of the shaft and having a sensing end, said proximity probe located in said probe receiving channel such that said sensing end is situated radially external of said inner surface of said softer metal layer but is adjacent to said shaft bore where sensing is desired for sensing the relative vibration and position of a rotating shaft without contact therewith.

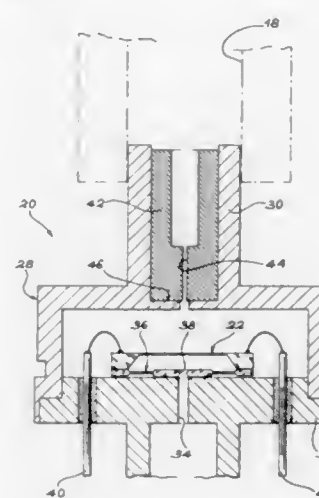
5,509,311
DYNAMICALLY ISOLATED VORTEX SENSING PRESSURE TRANSDUCER
 Hyok S. Lew, 7890 Oak St., Arvada, Colo. 80005
 Continuation-in-part of Ser. No. 280,216, Jul. 25, 1994, Pat. No. 5,503,021, Ser. No. 248,354, May 24, 1994, and Ser. No. 34,516, Mar. 19, 1993, Pat. No. 5,456,116, which is a continuation-in-part of Ser. No. 772,964, Oct. 8, 1991, Pat. No. 5,214,965, and a continuation of Ser. No. 860,767, Mar. 23, 1992, abandoned. This application Aug. 1, 1994, Ser. No. 283,566
 Int. Cl.⁶ G01F 1/32
 U.S. Cl. 73—661 20 Claims

1. An apparatus for measuring flow rate of fluid comprising in combination:
 - a) a flow passage;
 - b) means for generating vortices in a stream of fluid moving through the flow passage;
 - c) means for converting an oscillation in fluid pressure to an alternating electrical signal; and
 - d) at least one pressure communicating hole with one end exposed to a fluctuating fluid pressure associated with generation of vortices by said means for generating vortices and the other end connected to a pressure compartment included in said means for converting an oscillation in fluid pressure to an alternating electrical signal, wherein at least a portion of said at least one pressure communicating hole includes a conduit



with low stiffness disposed intermediate said flow passage and said means for converting an oscillation in fluid pressure to an alternative electrical signal; wherein the fluctuating fluid pressure generates the alternating electrical signal.

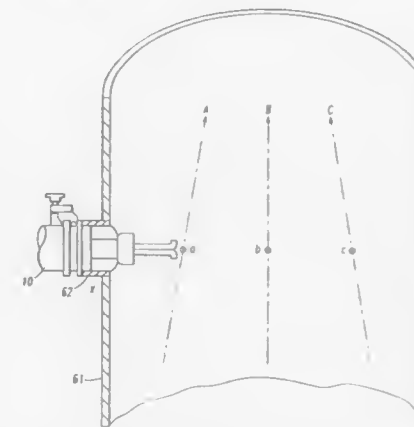
5,509,312
DIAPHRAGM PRESSURE SENSOR INCLUDING ANTI-STOCK PROTECTION MEANS AND GRADIOMANOMETER INCORPORATING SUCH A SENSOR
 Eric P. Donzier, Blandy les Tours, and Fadhel Rezgui, Sceaux, both of France, assignors to Schlumberger Technology Corporation, Houston, Tex.
 Filed May 25, 1994, Ser. No. 249,122
 Claims priority, application France, May 25, 1993, 93 06185
 Int. Cl.⁶ G01L 9/06
 U.S. Cl. 73—706 20 Claims



1. A pressure sensor comprising a deformable diaphragm closing a fluid passage in sealed manner, and means for measuring deformation of the diaphragm, said passage including a restriction so designed as to co-operate with the diaphragm to form a lowpass filter with a determined cutoff frequency (f_0).

169-397 O.G.-96-4: QL3

5,509,313
METHOD FOR MEASURING FLOW RATE AND DIRECTION OF A FLUID IN A CONDUIT
 John E. Traina, Glenshaw, and William G. Moul, Marshall Township, Allegheny County, both of Pa., assignors to United Sciences, Inc., Gibsonia, Pa.
 Filed Sep. 30, 1994, Ser. No. 315,558
 Int. Cl.⁶ G01F 1/46
 U.S. Cl. 73—861.065 18 Claims



1. A method for finding true flow direction ignoring pitch at a measurement point of a fluid flowing in a known nominal direction through a conduit comprising the steps of:
 - a. placing an S-type pitot tube at the measurement point;
 - b. orienting the S-type pitot tube along a selected axis through the conduit;
 - c. taking a first pressure reading p_1 ;
 - d. rotating the S-type pitot tube through a selected rotation increment angle to a new angle;
 - e. taking a second pressure reading p_2 at the new angle;
 - f. comparing the two just-taken pressure readings to determine whether an approximate null has been found;
 - g. if no approximate null has been found, choosing a new selected angle, rotating the S-type pitot tube through a rotation increment angle to the new selected angle and taking a pressure reading p_3 ;
 - h. comparing the most recently taken pressure readings;
 - i. if the two most recently taken pressure readings have opposite signs and the new selected rotation increment angle is less than one degree then an approximate null has been found, but if no approximate null has been found repeating steps g, h and i until an approximate null is found;
 - j. when an approximate null has been found, rotating the S-type pitot tube in selected increments through a range about the approximate null and at each incremental position, taking an incremental position pressure reading and recording the incremental position pressure reading and a corresponding probe angle;
 - k. performing a statistical correlation using pressure readings and probe angles to determine a most probable probe angle at which the differential pressure changes sign;
 - l. determining a predicted zero crossing angle from the statistical correlation;
 - m. if the predicted zero crossing angle is within the range of step j, use the predicted zero crossing angle as the true null angle;
 - n. if the predicted zero crossing is outside of the range of step i, rotating the S-type pitot tube through a selected angle to a new approximate null and repeating steps i through l using the new approximate null until a true null is found; and
 - o. assigning a direction 90° from the true null toward the nominal flow direction as the true flow direction ignoring pitch at the measurement point.

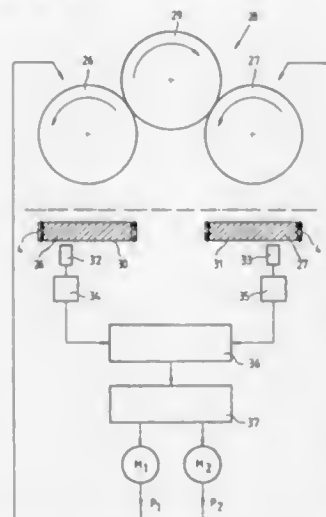
5,509,314

TORQUE-MEASURING ARRANGEMENT IN A GEAR DRIVE FOR TRANSMITTING A ROTARY MOVEMENT
Helmuth Kipphan, Schwetzingen, and Tessa Uwe, Nussloch, both of Germany, assignors to Heidelberger Druckmaschinen AG, Heidelberg, Germany
PCT No. PCT/EP93/00396, § 371 Date Dec. 5, 1994, § 102(e) Date Dec. 5, 1994, PCT Pub. No. WO93/20420, PCT Pub. Date Oct. 14, 1993

PCT Filed Feb. 19, 1993, Ser. No. 313,296
Claims priority, application Germany, Apr. 2, 1992, 42 10 990

Int. Cl.⁶ G01L 5/16
U.S. Cl. 73—862.06

5 Claims



1. An assembly for measuring a torque in a gear wheel drive, comprising:
three mutually meshing, helically toothed spur gears rotatably mounted about respective, mutually parallel axes;
at least one of said spur gears having a planar surface perpendicular to said axes;
a distance sensor stationarily disposed and directed towards said planar surface of said at least one spur gear; and
an evaluation unit connected to said distance sensor for determining a distance between said distance sensor and said planar surface.

5,509,315

ABSORPTION DYNAMOMETER TORQUE MEASURING DEVICE AND CALIBRATION METHOD

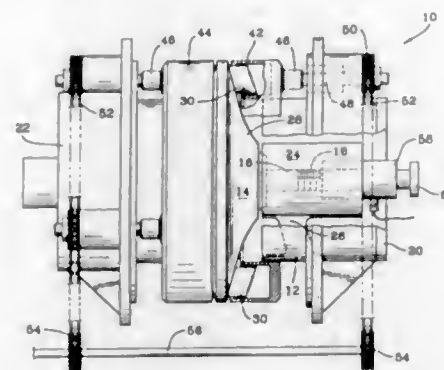
Walter L. Brassert, Belmont, and Paul N. Dahlstrand, Andover, both of Mass., assignors to Northern Research & Engineering Corporation, Woburn, Mass.

Division of Ser. No. 187,428, Jan. 26, 1994, Pat. No. 5,426,986, which is a continuation-in-part of Ser. No. 92,094, Jul. 15, 1993, Pat. No. 5,345,827. This application Mar. 2, 1995, Ser. No. 397,455

Int. Cl.⁶ G01L 3/00
U.S. Cl. 73—862.09

7 Claims

1. A method for calibrating an absorption dynamometer, the absorption dynamometer having a torque sensing system, the torque sensing system including a torsion shaft, at least one first tooth projecting from a first location on the torsion shaft, at least one second tooth projecting from a second location on the torsion shaft, the first location being distal to the second location, the at least one first tooth being proximate the at least one second tooth whereby the teeth interleave, the angular distance between the at least one first tooth and the at least one second tooth varying as the torque in the torsion shaft changes, and a sensor positioned proximate the interleaved teeth, the method for calibrating comprising the steps:



keeping the torsion shaft secured to the absorption dynamometer;
securing the torsion shaft in a fixed position;
loading the torsion shaft to a predetermined torque;
moving the sensor past at least two interleaved teeth, the sensor producing an output signal representative of the position of the at least two interleaved teeth, the distance between the interleaved teeth being representative of the torque in the torsion shaft.

5,509,316

SYSTEM FOR MEASURING THE TORQUE APPLIED TO A THREADED CONNECTION BETWEEN SECTIONS OF OILFIELD PIPE

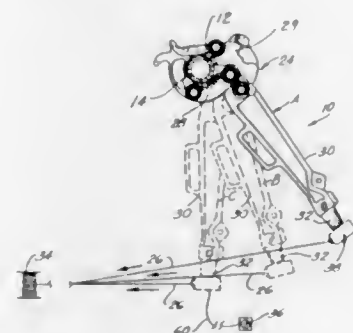
Terry Hall, Belle Chasse, La., assignor to Connection Technology Ltd., New Orleans, La.

PCT No. PCT/US93/04242, § 371 Date Oct. 31, 1994, § 102(e) Date Oct. 31, 1994, PCT Pub. No. WO93/22640, PCT Pub. Date Nov. 11, 1993

PCT Filed Apr. 30, 1993, Ser. No. 331,569
Int. Cl.⁶ G01L 5/00

U.S. Cl. 73—862.25

9 Claims



1. A system for accurately measuring the amount of force applied to a threaded pipe connection, the system comprising:
a) at least a first and second section of pipe, to be threadably connected together on their end portions;
b) a wrench means for applying torque to sections of pipe engagable around at least one of the pipe members during connection;
c) means for exerting a pulling force on the wrench means to tighten the sections of pipe to a predetermined torque; and
d) a plurality of wire strain gauges embedded in the wall of a pin member inserted adjacent the distal end of the wrench means for receiving the pulling force on the wrench means, and for registering that pulling force to be recorded as actual torque on the connection.

5,509,317

LOAD CELL MOUNTING

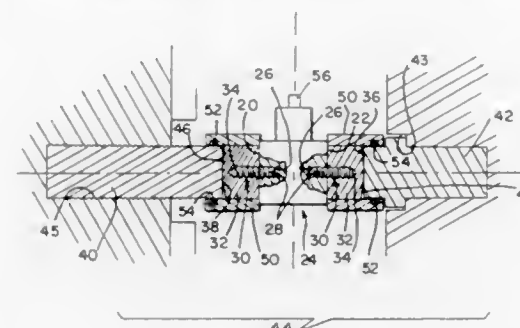
Peter L. Gross, Indianapolis, Ind., assignor to Illinois Tool Works, Inc., Glenview, Ill.

Filed Oct. 7, 1994, Ser. No. 319,936

Int. Cl.⁶ G01L 1/04

U.S. Cl. 73—862.632

27 Claims



1. A load cell mounting arrangement for a load cell having first and second ends and a pair of output terminals across which an output signal appears when the load cell is subjected to compressive stress exerted between the first and second ends, the mounting arrangement comprising a first mechanical interface member for positioning against a first surface between which and a second surface the load cell is to measure compressive stress, the first mechanical interface member having a first mechanical interface member interface surface to contact the first surface substantially at a point, first coupling means for permitting non-compressive relative movement between the first surface and the first mechanical interface member interface surface substantially without altering the output signal.

5,509,318

MEMORY MOPET

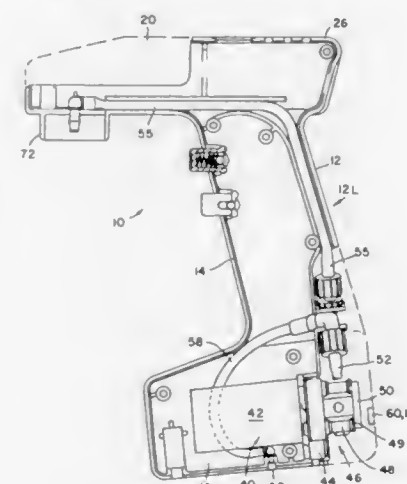
Francis Gomes, Jersey City, N.J., assignor to Manostat Corporation, New York, N.Y.

Filed Oct. 13, 1993, Ser. No. 136,575

Int. Cl.⁶ B01L 3/02; G01N 1/14

U.S. Cl. 73—864.11

34 Claims



1. A hand-held automatic pipetting apparatus operable with a standard glass or plastic pipet for aspirating and dispensing a predetermined amount of liquid, the apparatus comprising:
(a) a housing including a handle and a pipette adapter for holding a pipette,
(b) an electric motor carried by the housing

(c) a peristaltic pump carried by the housing and driven by said motor,
(d) conduit means communicating said pump with said pipette adapter, and
(e) control means for activating the motor and pump, wherein said pump comprises a compressible conduit for conveying said liquid and at least two spaced apart pressure elements for engaging and compressing said conduit at locations spaced lengthwise thereon as the pressure elements are moved lengthwise on said conduit, and means for moving each of said pressure elements lengthwise on said conduit successively into and out of pressure contact with said conduit, said apparatus operable selectively for continuous or intermittent aspirating and dispensing liquid.

5,509,319

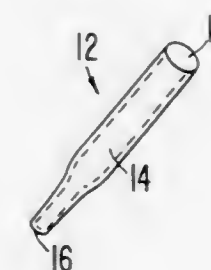
ADAPTER FOR PIPETTER AND HYPODERMIC NEEDLE
Donald O. Hitzman, Bartlesville, Okla., assignor to Geo-Microbial Technologies, Inc., Ochelata, Okla.

Filed Jun. 21, 1994, Ser. No. 267,016

Int. Cl.⁶ G01N 1/14

U.S. Cl. 73—864.14

11 Claims



1. An adapter for connecting a pipetter to a hypodermic needle having a holder, comprising:
a conduit having a male end and a female end and a volume;
the female end having means for receiving an end of the pipetter so that a connection between the female end and the end of the pipetter includes an air-tight friction fit;
the male end of the conduit having means for inserting into the holder of the hypodermic needle so that a connection between the male end and the holder includes an air-tight friction fit; wherein
the volume of the conduit is greater than a volume of a fluid to be transferred.

5,509,320

METHOD AND APPARATUS FOR TESTING ELONGATED OBJECTS HAVING A NON-CIRCULAR CROSS-SECTION

Friedrich M. Förster, Pfaffingen, Germany, assignor to Institut Dr. Friedrich Förster, Reutlingen, Germany

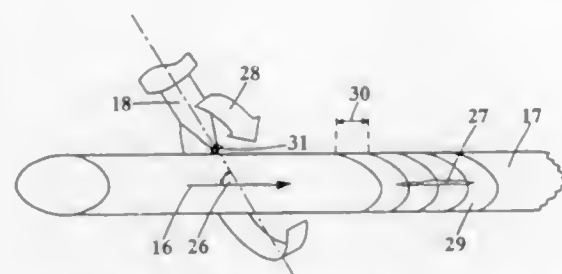
Filed Jul. 22, 1994, Ser. No. 279,288

Claims priority, application Germany, Aug. 26, 1993, 43 28 711.5

Int. Cl.⁶ G01B 2/30; 7/34; G01N 27/90; B21C 51/00
U.S. Cl. 73—866.5

10 Claims

1. A method for testing an elongated object having a non-circular cross section and comprising the steps of
advancing the elongated object along a travel direction and through a rotating rotor which defines a rotational axis and which mounts at least one test probe,
adjustably positioning the rotor so that its rotational axis is inclined with respect to the travel direction of the advancing elongated object and so that when considered in the travel



direction, the test probe is guided in a probe orbit which diverges in a predetermined manner from a circular shape.

5,509,321

TOOTHED GEAR

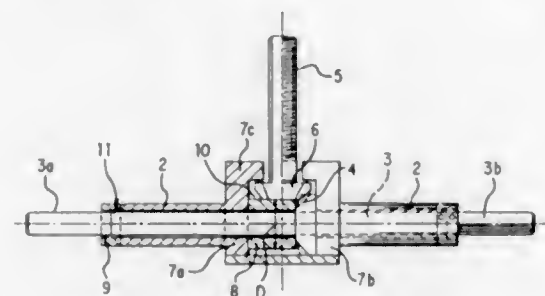
Viktor Lohausen, Oberhelmet, Germany, assignor to Techno-lizen Establishment, Liechtenstein

Filed Jul. 11, 1994, Ser. No. 277,653

Claims priority, application Switzerland, Jan. 13, 1992, 84/92 Int. Cl.⁶ F16H 27/02

U.S. Cl. 74—89.13

18 Claims



1. A toothed gear having a first shaft carrying a first gear wheel, and a second shaft arranged at an angle thereto and carrying at least one second gear wheel, wherein the shafts are mounted in a bearing block, at least the first shaft passing through the bearing block and having a support zone which supports the second shaft, wherein the support zone directly supports the second shaft and serves as an axial pivot bearing for the second shaft and is formed along the axis of the first shaft such that the support zone fills a space between the first gear wheel and the bearing block so that the first shaft can still be easily rotated but is capable of resisting warping caused by tensile or compressive forces.

5,509,322

SHIFT CONTROL MECHANISM TO MANUALLY SHIFT AN AUTOMATIC TRANSMISSION

Arthur Anderson, Clarkston, and Michael F. Donoughe, Rochester Hills, both of Mich., assignors to Chrysler Corporation, Auburn Hills, Mich.

Filed Jun. 2, 1994, Ser. No. 253,014

Int. Cl.⁶ F16H 59/00

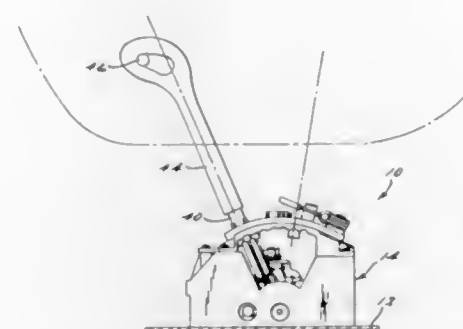
U.S. Cl. 74—335

16 Claims

1. A shift control mechanism for an automatic transmission comprising:

a housing including a shift control pattern having a longitudinal portion defining a plurality of automatic transmission operating settings and a transverse portion at one end of said longitudinal portion defining a plurality of manual transmission operating settings;

shift lever means being manually moved along said shift control pattern for selecting said automatic transmission operating settings and for selecting said manual transmission operating settings;



means for receiving said shift lever means when said shift lever means is disposed in said transverse portion and for centering said shift lever means in said transverse portion; and switch means actuated by moving said shift lever means in a first direction in said transverse portion to send a signal to manually upshift the automatic transmission and in a second direction in said transverse portion opposite said first direction to send a signal to manually downshift the automatic transmission.

5,509,323

TRANSMISSION DEVICE, ESPECIALLY A REVERSE GEAR FOR BOATS

Oddhjörn Hallenstvedt, Valskog; Kaj Skogman, and Bo Kristansson, both of Kungsör, all of Sweden, assignors to AB Volvo Penta, Gothenburg, Sweden

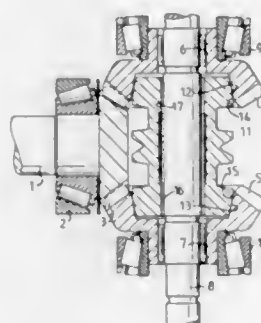
Filed Apr. 20, 1994, Ser. No. 230,520

Claims priority, application Sweden, May 5, 1993, 9301541

Int. Cl.⁶ F16H 3/14; F16D 13/26

U.S. Cl. 74—378

1 Claim



1. In a transmission device comprising a reverse gear for a boat motor, comprising a first shaft with a first gear non-rotatably fixed to the shaft, a second shaft mounted perpendicularly to the first shaft with two second gears freely rotatably mounted on said second shaft, and engaging the first gear and each having a individual inner conical frictional surface, and an engaging sleeve axially displaceable on the second shaft between said second gears, and having two outer conical frictional surfaces facing away from each other which each cooperates with an individual one of said inner frictional surfaces to alternatively lock the second gears to the second shaft; the improvement wherein each inner conical frictional surface (14,15) is a surface on a steel body (4,5), while the respective outer conical frictional surface (12,13) is a surface consisting essentially of a molybdenum layer on a bronze body (11), the respective outer conical frictional surface (12,13) being an unworked surface of a molybdenum layer which is sprayed onto the sleeve to a thickness of about 0.1 mm.

5,509,324

INTERMEDIATE STEERING SHAFT

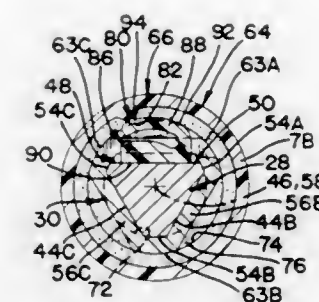
William D. Cymbal, Freeland, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 17, 1994, Ser. No. 340,913

Int. Cl.⁶ B62D 1/16

U.S. Cl. 74—492

4 Claims



1. A telescopic steering shaft comprising:

a polygonal tubular shaft connected by a first universal joint to a first one of a steering shaft and a steering gear input shaft, a polygonal solid shaft telescopically slidably disposed in said polygonal tubular shaft and rotatable as a unit therewith and connected by a second universal joint to a second one of said steering shaft and said steering gear input shaft, and a twist lock on said polygonal tubular shaft manually actuated between an open position in which said polygonal solid shaft is freely telescopically slidable relative to said polygonal tubular shaft and a closed position in which said twist lock forces a side of said polygonal solid shaft against a side of said polygonal tubular shaft so that torque transfer therebetween is angular lash-free,

said twist lock including

a sleeve supported on said polygonal tubular shaft for rotation about a longitudinal centerline thereof, a window in a first side of said polygonal tubular shaft, a plug in said window shiftable radially relative to said longitudinal centerline of said polygonal tubular shaft having an end engageable on a first side of said polygonal solid shaft for applying a force thereto perpendicular to a longitudinal centerline of said polygonal solid shaft whereby a second side of said polygonal solid shaft is forced against a second side of said polygonal tubular shaft, a cantilever spring on said plug, and an actuator on said sleeve engageable on said cantilever spring to flex said cantilever spring and bias said plug against said first side of said polygonal solid shaft when said sleeve is manually rotated to a first position thereof corresponding to said closed position of said twist lock from a second position thereof corresponding to an open position of said twist lock.

5,509,325

STEERING COLUMN ASSEMBLY

Robert M. Thomas, South Lyon, Mich., assignor to Chrysler Corporation, Highland Park, Mich.

Filed May 18, 1994, Ser. No. 245,276

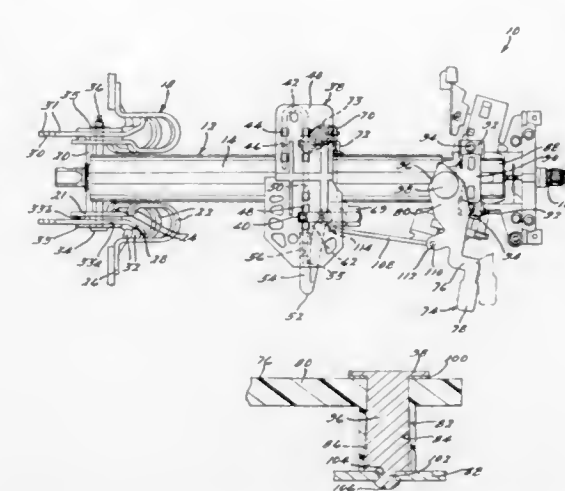
Int. Cl.⁶ B62D 1/18; F16B 3/00

U.S. Cl. 74—493

9 Claims

1. A steering column assembly for a collapsible energy absorbing steering column comprising:

a lower support bracket for pivotally attaching a lower portion of the steering column to vehicle support structure; an upper mounting mechanism for pivotally attaching an upper portion of the steering column to vehicle support structure; locking means for locking the steering column in a plurality of tilt positions relative to said upper mounting mechanism;



tilt release lever means for actuating said locking means to allow the steering column to be tilted to a desired position and locked in place; said tilt release lever means including a tilt release lever being made as one-piece from a plastic material, said tilt release lever means comprising a clamp bracket attached to the steering column and a pivot pin for pivotally attaching the tilt release lever to said clamp bracket, said tilt release lever having a handle portion at one end and an attachment portion at the other end, said attachment portion having a bushing extending generally perpendicular with an aperture extending axially there-through, and said bushing having a plurality of ribs extending axially and spaced circumferentially along said aperture, said ribs having alternating reverse tapers.

5,509,326

PARKING BRAKE FOR MOTOR VEHICLE WITH A LOW APPLICATION FORCE

Jean-Marc Belmond, Noyemont-les-Fosses, France, assignor to Rockwell Body and Chassis Systems, France

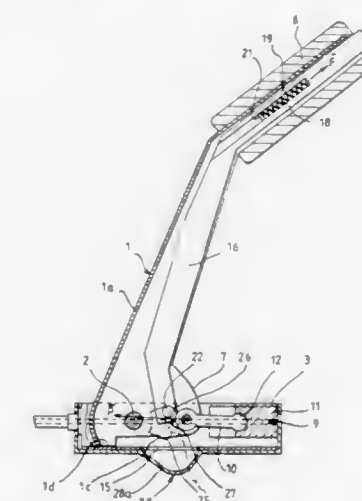
Filed Dec. 1, 1993, Ser. No. 160,343

Claims priority, application France, Dec. 3, 1992, 92 14573

Int. Cl.⁶ G05G 1/04

U.S. Cl. 74—523

7 Claims



1. A parking brake for a vehicle, said parking brake including a soleplate, a force transmitting cable, and a lever, said lever articulatedly attached to said soleplate at an articulation end about an articulation point, said lever having lateral walls and said lateral walls having a plurality of ribs extending axially and spaced circumferentially along said aperture, said ribs having alternating reverse tapers.

lever walls having oblong slots formed therein, said soleplate having walls extending on each side of said lever about said articulation end and said sole plate walls having cam profiles arranged thereon, said parking brake comprising:

means for keeping and locking said lever in a given angular position, said means for keeping and locking the lever (1) comprising a push-rod (16) translatable mounted within said lever, said push-rod having a first end and a second end, said first end (17) of said push-rod projecting from a grip (6) for grasping said lever and said second end of said push-rod having lateral lugs (22) engaged in said oblong slots (23) of said lateral walls (1a) said lever, bearing upon and sliding upon said cam profiles during operation said lever

5,509,327

WINCH HANDLE

Geoffrey D. Cropley, New South Wales, Australia, assignor to Titan Australia Pty Limited, New South Wales, Australia

Continuation of Ser. No. 30,155, Mar. 9, 1993, abandoned.

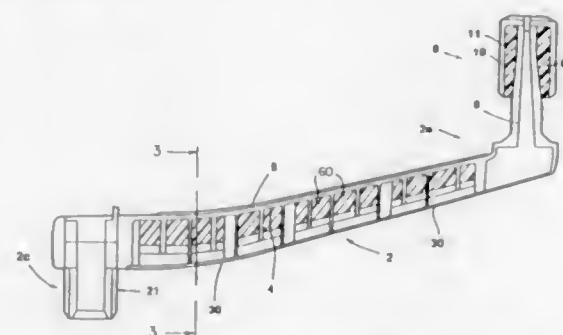
This application Mar. 3, 1995, Ser. No. 400,279

Claims priority, application Australia, May 27, 1991, PK6347

Int. Cl.⁶ G05G 1/00

U.S. Cl. 74—545

11 Claims



1. A handle that floats in water, said handle comprising an elongate recessed body portion of an open-faced U-shaped configuration when viewed in transverse cross-section; a cover extending over the body portion and sealing said body portion against the ingress of water, so as to form a sealed buoyancy chamber; and reinforcing means within the buoyancy chamber for reinforcing the buoyancy chamber; said handle being provided with engaging means at a first end of the body portion for releasable engagement with a winch and a hand grip at an opposite end of said body portion.

5,509,328

ADJUSTABLE UPRIGHT TUBE OF A BICYCLE HANDLEBAR

Yung-Hsin Lai, No. 302-1 Chang Yuan Road, Chang Sha Village, Hwatan, Chang Hwa, Taiwan

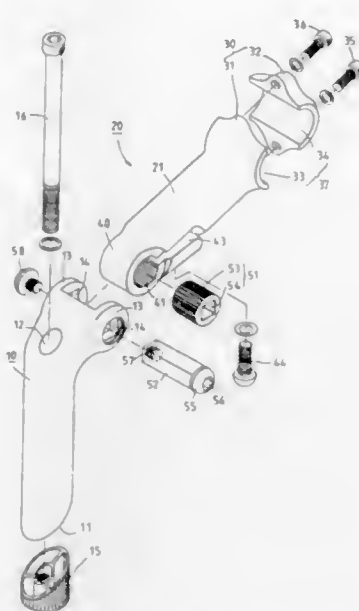
Filed Feb. 3, 1995, Ser. No. 383,177

Int. Cl.⁶ B62K 21/14

U.S. Cl. 74—551.3

7 Claims

1. A bicycle handlebar upright tube assembly comprising: a head tube fastened at a bottom end thereof with a bicycle front fork and provided at a top end thereof with two lugs extending in a predetermined direction and parallel to each other, said two lugs provided axially and respectively with a fitting hole having a polygonal cross section; an upright tube comprising an extension rod provided at a front end thereof with a fastening tube for holding securely a bicycle handlebar, said extension rod further provided at a rear end thereof with a pivoting portion having a fitting hole which is in turn provided in the wall thereof with an arcuate



tangent slot extending toward the bottom edge of said extension rod and engageable with a bolt;

a metal braking member of a substantially cylindrical construction and disposed in said fitting hole of pivoting portion, said braking member provided with an axial hole corresponding in dimension and cross section to said fitting hole of said lugs of said head tube; and

a metal shaft having a cross section corresponding to and engageable with said fitting holes of said two lugs and with said axial hole of said braking member such that both ends of said shaft are fastened with said two lugs.

5,509,329

CASING ASSEMBLY ADAPTED FOR EITHER MANUAL OR AUTOMATIC TRANSMISSIONS

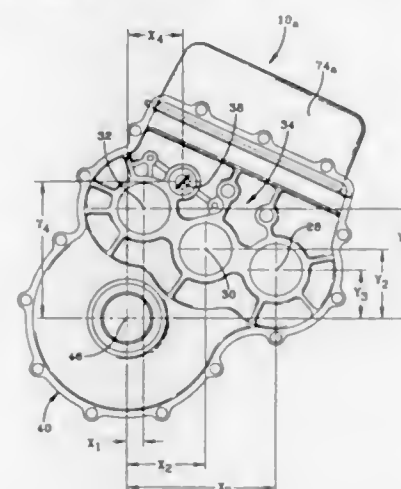
Marc R. Jackson, Pickney; Joel M. Maguire, Dearborn, and Thomas E. Diehl, Ann Arbor, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Oct. 24, 1994, Ser. No. 327,943

Int. Cl.⁶ F16H 57/02

U.S. Cl. 74—606 R

17 Claims



1. A casing assembly adapted to receive a vehicular transmission mechanism selected from a family of automatic and manual versions, comprising:

an input operating axis in each version of automatic and manual transmission mechanisms;

an output operating axis in each version of automatic and manual transmission mechanisms;

a countershaft operating axis in each version of automatic and manual transmission mechanisms;

a reverse/idler operating axis in each version of automatic and manual transmission mechanisms;

the geometric array of said operating axes being common to both said automatic and manual transmission arrangements; the casing assembly being provided with a plurality of mounting axes corresponding to said plurality of operating axes in said family of transmission mechanism;

said mounting axes of the casing assembly having a geometric array that is congruent with the geometric array of said operating axes in said family of automatic and manual transmission mechanisms.

5,509,330

FASTENER SUPPORT APPARATUS

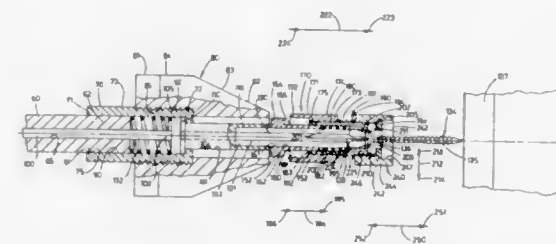
Edward V. Nick, 512 Lexington Ave., Fox River Grove, Ill. 60021

Filed Mar. 23, 1995, Ser. No. 409,343

Int. Cl.⁶ B25B 13/00; 23/00

U.S. Cl. 81—55

19 Claims



1. A fastener support apparatus for facilitating the installation of individual screws into a work surface, and wherein the fastener support apparatus works in combination with a drive assembly having a clutch, the fastener support apparatus comprising:

a drive shaft oriented in force receiving relation relative to the clutch and moveable along a given path of travel;

a depth adjustment assembly located in a predetermined orientation relative to the drive shaft and operable for movement along a path of travel which is substantially coaxially aligned relative to the drive shaft;

a rotatable bit for engaging the head of the screw and which is disposed in force receiving relation relative to the drive shaft;

a base member fixed on the rotatable bit, and simultaneously rotatable therewith;

a sleeve telescopically borne by the base member and reciprocally moveable relative thereto;

a screw support assembly reciprocally borne by the base member and matingly interfitted with the sleeve, the screw support assembly including a passageway defining a screw receiving station which is operable to receive the head of the screw;

a locking assembly borne by the screw support assembly and operable to travel from a first, partially occluding position relative to the passageway to a second, substantially non-occluding position; and

an actuating assembly borne by the screw support assembly, and which positions the locking assembly in the first, partially-occluding position or the second, substantially non-occluding position, and wherein the actuating assembly is freely rotatable relative to the screw support assembly, and wherein during operation, the locking assembly, when disposed in the first partially occluding position retains the head of the screw in the screw receiving station, and when disposed in the second, substantially non-occluding position releases the screw from the screw receiving station such that the screw may be driven completely into the work surface.

5,509,331

GEAR DRIVE RATCHET ACTION WRENCH

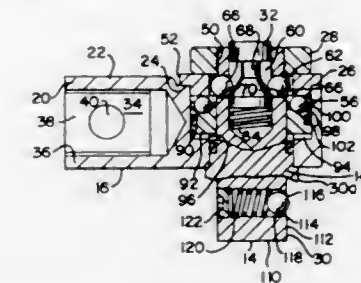
Michael F. Nickipuck, 1323 W. Cossitt Ave., LaGrange, Ill. 60525

Continuation of Ser. No. 45,990, Apr. 9, 1993. This application Mar. 8, 1995, Ser. No. 400,552

Int. Cl.⁶ B25B 13/46

U.S. Cl. 81—58.3

18 Claims



1. A ratchet action fastening tool with drive and return strokes comprising:

a housing formed with a drive chamber and a shank opening;

a shank rotationally reversible and rotatably carried in the shank opening said shank having a single drive end and a housed end with a longitudinal axis therebetween, whereby said fastening tool has a top and a bottom, and is rotationally reversible while maintaining said top and bottom orientation;

said drive end being mounted to extend out of said housing and said housed end being opposite said drive end and mounted to be maintained within said housing;

a driven gear having bilaterally symmetric teeth vertically slidably mounted on said shank and rotationally engaging said shank;

a drive gear formed in said chamber, said drive gear also having bilaterally symmetric teeth; and

a biasing assembly comprising a cam, and a plurality of camming balls;

said biasing assembly being attached to said housing being selectable between drive direction controlling position and a return direction controlling position, said assembly vertically biasing said driven gear into engagement with said drive gear on a drive stroke and biasing said gear out of said engagement on a return stroke.

5,509,332

FRICTION CLUTCH HAND TOOL

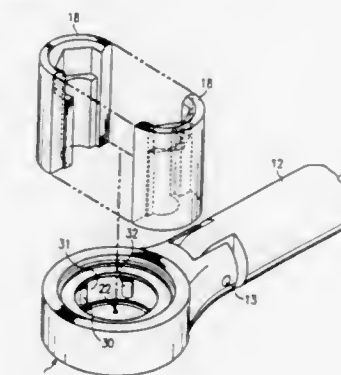
Robert D. Donaldson, Jr., Dallas, Tex., assignor to Three Star Enterprises, Inc., Kingsland, Ga.

Filed Feb. 28, 1994, Ser. No. 202,574

Int. Cl.⁶ B25B 13/00

U.S. Cl. 81—59.1

2 Claims



1. A split socket, comprising:

a socket, the socket being of substantially cylindrical shape, the cylindrical shape having a substantially smooth outer surface, the socket split longitudinally into a plurality of individual interlocking socket pieces, the socket, when assembled, also having a drive recess in at least one end, the interlocking socket pieces being magnetically charged, the interlocking socket pieces also having a plurality of locating lug means, each locating lug means positioned at a point of interlock; whereby access to a fastener by the socket may be improved by assembling the interlocking socket pieces around the fastener.

5,509,333

LOW PROFILE RATCHET ADAPTER

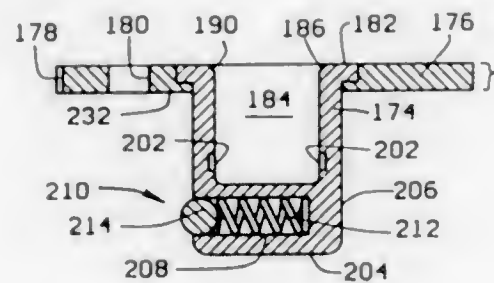
John D. Klon, P.O. Box 149, Weir, Kans. 66781

Continuation-in-part of Ser. No. 10,532, Jan. 28, 1993, abandoned. This application May 12, 1994, Ser. No. 241,761

Int. Cl.⁶ B25B 13/00

U.S. Cl. 81—180.1

1 Claim



1. A low profile adapter for use with a ratchet wrench and a plurality of separate sockets the wrench including a square driver of a predetermined geometry, each one of the plurality of sockets having a square drive cavity larger than the predetermined geometry of the square driver, each one of the plurality of sockets also having a driving cavity with a predetermined geometry that mates with a nut or bolt of like predetermined geometry, said low profile adapter being provided for interconnection between the square driver of the ratchet wrench and the square drive cavity of each of the plurality of sockets, said low profile adapter comprising:

- a thin disk-shaped rim having a wrench seating side, a socket support side, and a knurled outer surface intermediate said seating side and said support side;
- an adapter drive shaft disposed on said socket support side of said rim and extending axially outward therefrom, said adapter drive shaft having a predetermined geometry ratably receivable in said square drive cavity of each of said plurality of separate sockets;
- an adapter drive cavity disposed on said seating side of said rim and extending through said rim and into said adapter drive shaft, said adapter drive cavity constructed with a geometry selected to mate with the square driver;
- a ball detent assembly, including a ball and spring located in said adapter drive shaft below said adapter cavity, said ball to engage in the socket drive cavity and removably lock the socket thereon; and
- said low profile adapter positioned intermediate one of said plurality of sockets and the ratchet wrench wherein the displacement between the ratchet wrench and the socket is minimized.

5,509,334

DRIVER BIT FOR A RECESSED SCREW

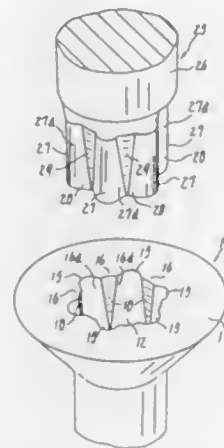
Katsumi Shinjo, Osaka, Japan, assignor to Yugenkaisha Shinjo Seisakusho, Osaka, Japan

Division of Ser. No. 149,624, Nov. 9, 1993. This application Feb. 28, 1995, Ser. No. 396,438

Claims priority, application Japan, Nov. 17, 1992, 4-332544 Int. Cl.⁶ B25B 15/00; 23/00

U.S. Cl. 81—460

3 Claims



1. A driver bit adapted to engage in a recess of a recessed screw, the recess being defined as a coaxial superimposition of two equilaterally-triangular and cylindrical recesses each having arcuate vertices and arranged with a phase shift of 60° about a center axis of the recessed screw to provide six engagable grooves and six driven vanes, the driver bit comprising:

- a shank member having a driving portion extending therefrom, the driving portion including six driving vanes and six valleys, wherein each driving vane is shaped in conformity with a groove in the screw recess, with each valley being interposed between adjacent driving vanes and shaped in conformity with the driven vanes in the screw recess, and wherein over at least the distal half of the driving portion, the cross-sectional area of each driving vane is larger than the cross-sectional area of the adjacent valleys.

5,509,335

CRYOGENIC VAPOR OXYGEN FREE MACHINING METHOD

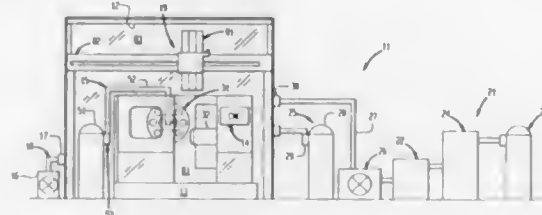
Edwin L. Emerson, Holliston, Mass., assignor to Value Tech Engineering, Inc., Holliston, Mass.

Filed Feb. 25, 1994, Ser. No. 201,943

Int. Cl.⁶ B23Q 11/10; B23B 1/00

U.S. Cl. 82—1.11

5 Claims



1. A machining method comprising the steps of: providing a hermetically sealed chamber around a workpiece; evacuating said chamber so as to produce therein a substantially oxygen free environment;

directing a cryogen vapor onto only a limited portion of said workpiece so as to substantially cool only said limited portion thereof; and machining said limited portion of said workpiece to produce a finished part therefrom.

5,509,336

APPARATUS FOR SUPPORTING AND RESTRAINING A LOG OF PAPER DURING THE CUTTING THEREOF BY A LOG-SAW

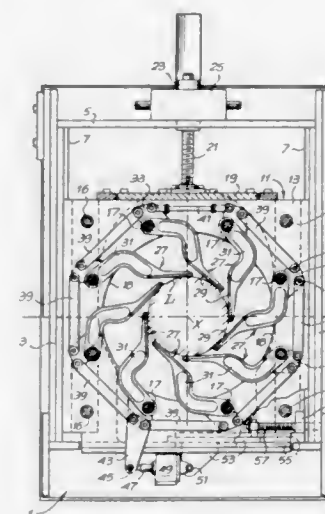
Guglielmo Biagiotti, Lucca, Italy, assignor to Fabio Perini S.p.A., Lucca, Italy

Filed Nov. 19, 1993, Ser. No. 155,022

Claims priority, application Italy, Dec. 14, 1992, FI92A234 Int. Cl.⁶ B26D 3/16

U.S. Cl. 83—461

3 Claims



1. Apparatus for holding a log (L) of web material during the cutting thereof along a plane perpendicular to the longitudinal log axis (X), comprising:

- a plurality of curved clamping elements (27) distributed around the longitudinal log axis (X) and arranged to clamp the log during cutting and also to allow said log to be moved axially between cuts,
- each clamping element (27) including a journal (17) at one end and a substantially flat log contacting member (29) at its other end,
- a plurality of links (39) interconnected with the clamping elements (27), each of said links being connected between successive clamping elements and said plurality of links being mounted radially outside of said clamping elements,
- at least one actuator (49) connected to said links which causes movement of said links and a simultaneous oscillation of said curved clamping elements (27) about the journals (17), whereby when the clamping elements (27) oscillate in the same direction about their journals (17), the log is clamped by the log contacting members (29),
- each curved clamping element (27) forming a concave recess between the log contacting member (29) and the journal (17), wherein the log contacting member (29) of each curved element (27) nests within the concave recess of an adjacent element when the links (39) move the log-contacting members (29) away from the log,
- wherein the faces of the log-contacting members (29) are smooth so as to permit the log to slide thereon while the log is moved axially between cuts with the faces in contact with the log.

5,509,337

RING GUARD FOR FOOD SLICING MACHINE BLADE

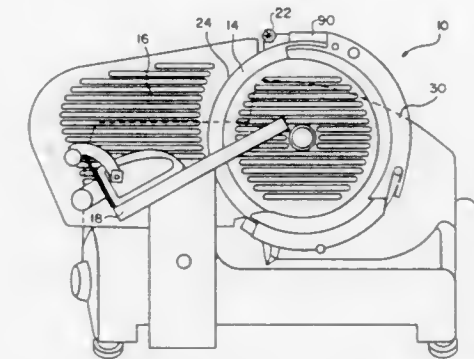
Clyde W. Norman, Montgomery; James A. Shirk, Union Montgomery, and Danny J. Mitchell, New Carlisle Clark, all of Ohio, assignors to Premark FEG Corporation, Wilmington, Del.

Filed Aug. 12, 1994, Ser. No. 289,888

Int. Cl.⁶ B26D 7/22

U.S. Cl. 83—546

12 Claims



1. A food product slicing machine comprising: a housing; a circular slicing blade having a peripheral cutting edge, the blade being rotatably mounted on the housing; a bracket extending from the housing; a plurality of fasteners mounted on the bracket; a ring guard surrounding the peripheral cutting edge of the blade, the ring guard having at least one aperture through which at least one of the fasteners extends; and a generally circular cover plate is removably mounted on the fasteners; wherein, the ring guard is maintained in a first position when the cover plate is mounted on the ring guard, and the ring guard is axially displaceable to a second position when the cover plate is removed, the ring guard surrounding the peripheral cutting edge of the cutting blade in both the first and second positions.

5,509,338

SAW GUIDE FOR CUTTING TRUSS JOIST I-BEAMS

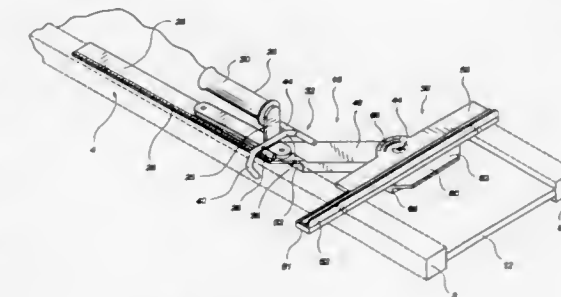
Shawn Ekker, P.O. Box 964, Cedar City, Utah 84721

Filed Jan. 27, 1994, Ser. No. 187,643

Int. Cl.⁶ B27B 9/04

U.S. Cl. 83—745

9 Claims



1. A saw guide for cutting with a hand-held power saw a truss joist I-beam having first and second chords connected by a web comprising

a base including means for positioning said base along a top surface and an inner edge of said first chord of said I-beam; means for releasably attaching said base to said first chord of said I-beam, said attachment means being mounted on said base; and

a cutting guide pivotally mounted on said base for guiding the hand-held power saw at a selected angle in cutting said I-beam, the cutting guide comprising

a face plate comprising an elongate member having a flat bottom surface for bridging and resting upon said top surface of said first chord and a top surface of said second chord, and a flat front surface generally perpendicular to said bottom surface for guiding a side support edge of the hand-held power saw when cutting the I-beam,

a shoe support mounted on said face plate comprising a forwardly extending member having a flat top surface coplanar with said bottom surface of said face plate for guiding a lower support edge of the hand-held power saw when cutting the I-beam, and

means for setting the cutting guide for cutting the I-beam at a selected angle.

5,509,339

DEVICE FOR REPAIRING A BROKEN RECIPROCATING SAW BLADE

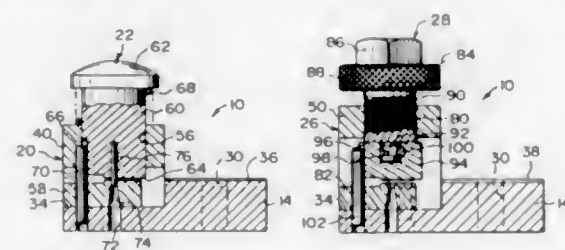
Jarek E. Grant, 1751 Puowaina Dr., Honolulu, HI. 96813

Filed Jun. 22, 1994, Ser. No. 263,724

Int. Cl.⁶ B26D 3/08; 11/00

U.S. Cl. 83—862

3 Claims



1. A device for repairing a broken reciprocating saw blade comprising:

- a) a base;
- b) means for mounting said base to a work surface, said mounting means including said base having a plurality of spaced apart holes therethrough, and a plurality of screws, each inserted through one said hole in said base and then threaded into the work surface, so as to maintain said base to the work surface;
- c) a first station on said base, said base including a recessed seat extending thereacross, having a first slot and a second slot spaced away from said first slot, with both said slots extending at a slight angle away from said recessed seat, said first station including a first bridge housing, and means for attaching said first bridge housing within said recessed seat in said base, said attaching means including said base having a plurality of spaced apart threaded apertures within said recessed seat, said first bridge housing having a plurality of spaced apart bores, which align with one half of said threaded apertures within said recessed seat when said first bridge housing is inserted therein, and a plurality of bolts, each inserted into one said bore in said first bridge housing and then threaded into one said aligned threaded aperture in said recessed seat of said base, to hold said first bridge housing thereto;
- d) means in said first station, for scoring a pattern of a new shank onto an end of a broken saw blade that is inserted into said first station;
- e) a second station on said base, said second station including a second bridge housing, and means for affixing said second bridge housing within said recessed seat in said base next to said first bridge housing, said affixing means including said second bridge housing having a plurality of spaced apart

openings, which align with the other half of said threaded apertures within said recessed seat, when said second bridge housing is inserted therein next to said first bridge housing, and a plurality of bolts, each inserted into one said opening in said second bridge housing, then threaded into one said aligned threaded aperture in said recessed seat of said base to hold said second bridge housing thereto, said scoring means including said first bridge housing having a central aperture therethrough, a lower scoring die secured to said recessed seat in said base within said first bridge housing, a piston having an enlarged head on a top end, an upper scoring die formed on a bottom end, which slideably fits into said central aperture in said first bridge housing and a vertical guide groove; a spring on said piston between said enlarged head and a top surface of said first bridge housing to normally bias said upper scoring die away from said lower scoring die, so that a space between said upper scoring die and said lower scoring die will be in a proper alignment with said first slot, so as to receive the broken saw blade; a first guide pin extending upwardly from said recessed seat, through said lower scoring die and into said vertical guide groove in said piston, to keep said upper scoring die aligned with said lower scoring die, so that when a hammer strikes said enlarged head of said piston, the scoring pattern of the new shank will be placed onto the end of the broken saw blade; and

f) means in said second station, for punching out the new shank from the end of a broken saw blade that is inserted into said second station.

5,509,340

METHOD FOR ADJUSTMENT OF HAMMER LET OFF ON A KEYBOARD MUSICAL INSTRUMENT

Kiyoshi Kawamura, Hamamatsu, Japan, assignor to Yamaha Corporation, Japan

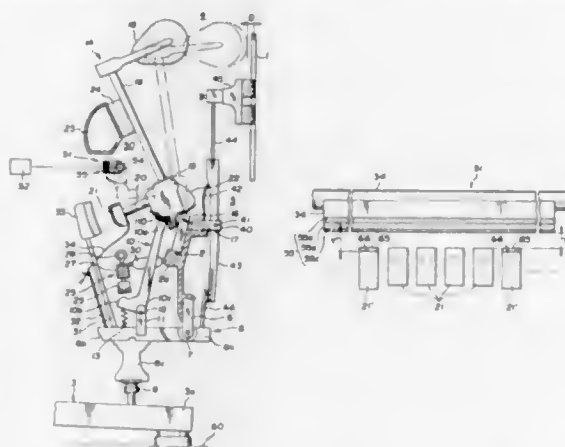
Filed Nov. 28, 1994, Ser. No. 345,497

Claims priority, application Japan, Dec. 27, 1993, 5-347215

Int. Cl.⁶ G10C 3/18

U.S. Cl. 84—236

8 Claims



1. On a keyboard musical instrument provided with a plurality of action assemblies each including a swingable catcher and a hammer adapted for striking an associated string, and a silent assembly including a stopper adapted for prohibiting continued swing of said catchers just before string striking by said hammers, method for adjustment of hammer let off comprising the steps of measuring a real silent distance between each said catcher and said stopper, calculating a difference between said real silent distance and an optimal silent distance, sorting out each catcher whose real silent distance is larger than said optimal silent distance, and covering an operating face of a sorted catcher with an adjuster strap of a thickness equal to said calculated difference in silent distance.

5,509,341

THUMB PICK

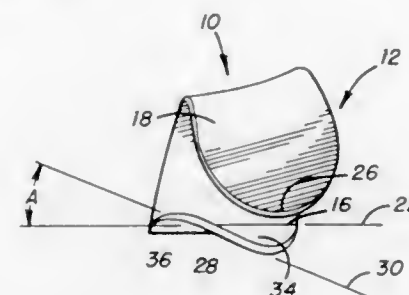
Jim Dunlop, P.O. Box 846, Benicia, Calif. 94510

Filed Dec. 13, 1994, Ser. No. 354,601

Int. Cl.⁶ G10D 3/16

U.S. Cl. 84—322

8 Claims

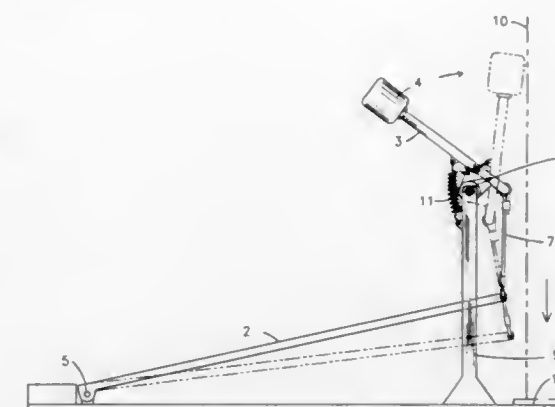


1. A thumb pick comprising:

thumb engaging means for coupling said pick to the distal portion of the thumb of a user, said engaging means comprising a bottom portion and an arcuate portion having a substantially frusto-conical cross-section and formed above said bottom portion and extending substantially parallel thereto such that said pick has a common longitudinal axis, said arcuate portion and said bottom portion substantially encircling the thumb when coupled thereto, said bottom portion comprising a planar surface lying generally within a thumb plane extending generally parallel to the longitudinal axis of the thumb, said arcuate portion terminating in a substantially wide end for engaging the thumb;

a pick portion adjacent said bottom portion and lying generally within a pick plane, said pick portion having a predetermined length for engaging a string of a musical instrument at a predetermined depth when said pick is coupled to the thumb; and

an intermediate portion integrally coupling said bottom portion and said pick portion, said intermediate portion located adjacent to the end of said arcuate portion such that said intermediate portion abuts the thumb when said pick is coupled thereto, said intermediate portion formed such that said pick portion is rotated about the longitudinal axis to a predetermined angular relationship of said pick plane relative to said thumb plane to orient said pick plane parallel to said string without said thumb plane extending substantially parallel to said string, such that said pick portion engages the string at an optimum angle to cause the string to exert a force on said pick plane substantially perpendicular thereto.



wherein the length of said footplate element from said pivotal coupling at said heel end to the linkage coupling at said toe end is at least 18 inches.

5,509,343

TAMBOURINE WITH LIGHT CONTROL EFFECT

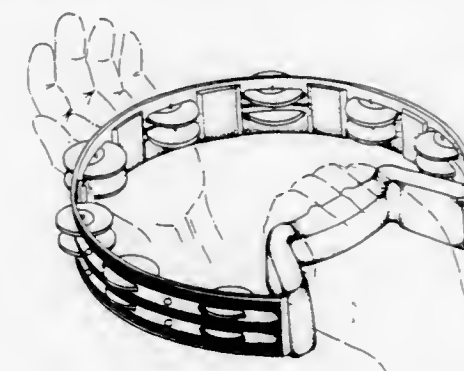
Yu-yin C. Hsu, No. 18-7, Alley 22, Lane 265, Tai Ping Rd., Tai Ping Hsiang, Taichung Hsien, Taiwan

Filed Nov. 21, 1994, Ser. No. 345,442

Int. Cl.⁶ G10D 13/02; A63J 17/00

U.S. Cl. 84—418

2 Claims



1. An illuminated tambourine comprising:

- a) a tambourine collar having first and second ends;
- b) a plurality of luminous units located on the tambourine collar;
- c) a handle attached to each of the first and second ends of the tambourine collar, the handle comprising:
 - i) a lower handle seat having a generally "U" shaped configuration, the lower handle seat having a retaining seat and a setting hole in opposite ends;
 - ii) an upper handle seat having a generally "U" shaped configuration, a battery holder configured to hold at least one battery, a removable battery cover covering the battery holder, a covering post on opposite ends of the upper handle seat, each said covering post having a setting post configured to engage a corresponding one of said retaining seats on the lower handle seat, and a printed circuit board mounted thereon; and
 - iii) a fastener inserted through each said setting hole and engaging each said covering post, respectively, to fasten the upper and lower handle seats together such that the first and second ends of the tambourine collar are fastened between said covering posts and said retaining seats;
- d) an electrical cable connecting the printed circuit board and each of the plurality of luminous units and extending around the tambourine collar; and
- e) a cable protecting cover attached to the tambourine collar and covering at least a portion of the electrical cable.

5,509,342

EXTENDED LENGTH BASS DRUM PEDAL

Brad Augsburg, 16111 Chastain Rd., Odessa, Fla. 33556

Filed Mar. 13, 1995, Ser. No. 402,718

Int. Cl.⁶ G10D 13/02

U.S. Cl. 84—422.1

7 Claims

1. A bass drum foot pedal assembly comprising:

a base,

a footplate element having a heel end and a toe end and pivotally coupled at said heel end to said base so as to be capable of pivoting between a rest position and an operating position, means for biasing the footplate element towards the footplate element rest position,

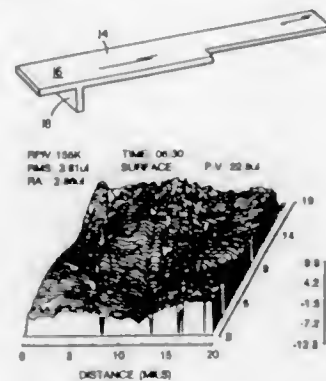
a beater arm pivotally mounted about an axis on said base for pivoting between a rest position and a beater position, and linkage means operatively connecting one end of said beater arm to said toe end of said footplate element,

wherein downward movement of said toe end of said footplate element acts, via said linkage means, to cause the beater arm to pivot about the mounted axis to bring the beater arm towards the beater arm beater position, and

5,509,344
MEMBER WITH SYNTHETIC SURFACE REPLICATING
A SURFACE OF A SPECIMEN OF A NATURAL
MATERIAL

Salvadore J. Calabrese, Clifton Park; Henry A. Scarton, Troy; S. Frank Murray, Clifton Park; Christopher M. Ettles, Glenmont; Warren C. Kennedy, Feura Bush; Salm Dinc; Bessem Jildi, both of Troy, all of N.Y., and William Strong, Stamford, Conn., assignors to Rensselaer Polytechnic Institute, and Steinway Musical Properties, Inc., both of Troy, N.Y. Continuation of Ser. No. 118,042, Sep. 8, 1993, abandoned, which is a division of Ser. No. 930,487, Aug. 14, 1992, Pat. No. 5,265,515, which is a continuation of Ser. No. 696,600, May 7, 1991, abandoned, which is a continuation-in-part of Ser. No. 525,468, May 18, 1990, Pat. No. 5,183,955. This application Dec. 22, 1994, Ser. No. 361,715
Int. Cl.⁶ G10C 3/12; A41G 1/02; B22C 9/22
U.S. Cl. 84—437

1 Claim

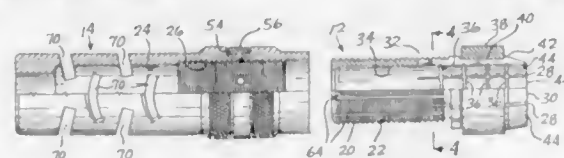


1. A member having a body comprising synthetic material, said body defining a surface of synthetic material exposed for tactile contact, said surface of synthetic material having the random orientation of peaks and valleys found in a surface of a specimen of a predetermined material and defining a multiplicity of fine pores, a majority of said pores having a pore diameter of from 0.0002 to 0.0012 inch, said surface of synthetic material replicating said surface of said predetermined material.

5,509,345
MUZZLE ATTACHMENT FOR IMPROVING FIREARM
ACCURACY

James M. Cyklich, P.O. Box 2471, Everett, Wash. 98203
Continuation-in-part of Ser. No. 186,626, Jan. 26, 1994, abandoned. This application Aug. 12, 1994, Ser. No. 289,946
Int. Cl.⁶ F41A 21/32; 21/38
U.S. Cl. 89—14.05

27 Claims



1. A vibration dampening attachment for a firearm barrel of a type having a circumferentially continuous tubular muzzle, said attachment including a tubular weight attachable to the muzzle by a threaded connection such that the tubular weight can be rotated to adjust it in position axially along the muzzle, so as to change the effective weight applied for barrel vibration dampening purposes, and the improvement comprising:

fixed external threads on the muzzle and a plurality of elongated axial grooves formed in the external threads and spaced circumferentially about the muzzle between threaded segments;

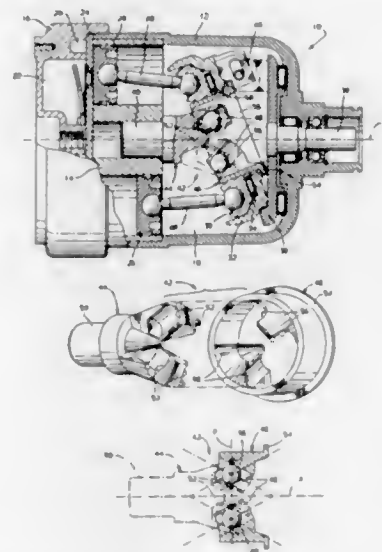
said tubular weight including an axial opening with internal threads which mate with said external threads; and

at least one detent ball carried by the tubular weight and projecting radially inwardly from the internal threads of the tubular weight, for entry into said elongated axial grooves, one groove at a time, in response to the tubular weight being rotated about the muzzle, wherein engagement of the detent ball within a groove holds the tubular weight in position relative to the muzzle, and wherein said detent ball and grooves provide for an axial position adjustment of the tubular weight in discrete increments axially along the barrel.

5,509,346
VARIABLE DISPLACEMENT COMPRESSOR WITH
SIMPLIFIED TORQUE RESTRAINT
William J. Kumpf, Lockport, N.Y., assignor to General Motors Corporation, Detroit, Mich.

Filed May 30, 1995, Ser. No. 453,227
Int. Cl.⁶ F01B 3/00; 13/04
U.S. Cl. 92—12.2

1 Claim



1. An assembly for providing torque restraint to a socket plate of a variable displacement piston compressor of the type in which said socket plate is nutated by a journal that is supported coaxially on and is axially fixed to said socket plate, but rotates freely around said socket plate, and which journal is driven by a rotating hub located on one side of said socket plate which is rotatably supported coaxial to the central axis of a compressor housing, and in which the journal and hub are interconnected so as to allow the angle of said socket plate relative to said hub to adjust, said torque restraint assembly comprising:

an inner ball joint race non rotatably and axially fixed relative to said housing on an opposite side of said socket plate and coaxial to said central axis, said inner ball joint race having a plurality of straight inner ball tracks arrayed along a conical surface the slope of which diverges relative to said hub,

an outer ball joint race supported coaxially within and axially fixed relative to said socket plate such that said journal may rotate freely about said outer ball joint race and socket plate concurrently, said outer ball joint race having an equal plurality of oppositely sloped, straight outer ball tracks arrayed along a conical surface, so that said outer and inner ball tracks overlap one another in a plane that bisects the angle between said socket plate and hub axes, and,

a plurality of balls captured in the area of overlap between said overlapping inner and outer ball tracks and arrayed in said bisecting plane,

whereby, as said socket plate is nutated by said journal and hub, said socket plate is restrained against rotation relative to said compressor housing as said balls roll back and forth in said ball tracks, and as said angle between said socket plate and

hub axes changes, said balls shift within said ball tracks and remain in a plane that bisects the angle between said socket plate and hub axes.

5,509,347
RADIAL PISTON PUMP

Leendert W. C. de Jong, Oldenzaal; Arjan P. van Heiningen, Haaksbergen, and Willem H. Masseling, Oldenzaal, all of, Netherlands, assignors to Applied Power Inc., Butler, Wis. PCT No. PCT/NL94/00140, § 371 Date Feb. 7, 1995, § 102(e) Date Feb. 7, 1995, PCT Pub. No. WO94/29591, PCT Pub. Date Dec. 22, 1994

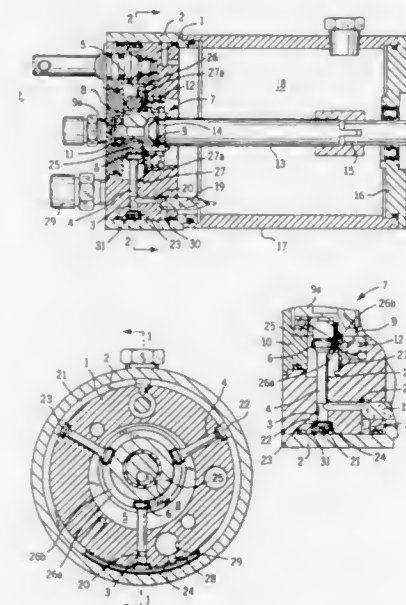
PCT Filed Jun. 13, 1994, Ser. No. 381,835

Claims priority, application Netherlands, Jun. 11, 1993, 9301011

Int. Cl.⁶ F01B 1/00

U.S. Cl. 92—72

1 Claim



1. A radial piston pump of the type in which an eccentric rotor is adapted to cause pistons to perform a reciprocating movement within radial cylinders in a pump body, radial inner ends of said pistons being each provided with a broadened foot, said broadened feet being kept in contact with said rotor also during suction strokes of said respective pistons by means of a coupling ring of a substantially L-shaped cross-section, said coupling ring having an axial ring portion which engages radial outer end faces of said broadened feet and having a radial portion which keeps said ring axially in place, characterized in that said radial portion of said coupling ring bears loosely against a radial sliding surface, and said broadened feet at said radial inner piston ends are in the shape of heads which are integrally formed with the respective pistons, free end faces of said heads and end faces of said heads adjoining the respective pistons being spherically shaped, and an axial portion of said coupling ring having an inner circumferential surface of a slightly conically widening shape.

5,509,348
COFFEE MAKER FOR THE PREHEATING AND
KEEPING WARM OF CUPS

Manfred Klawuhn, Frankfurt am Main; Walter Hufnagl, Sulzbach; Roland Müller, Dreieich; Gerhard Schäfer, Frankfurt am Main, and Andreas Peter, Kronberg, all of, Germany, assignors to Braun Aktiengesellschaft, Frankfurt, Germany PCT No. PCT/EP93/00375, § 371 Date Sep. 27, 1994, § 102(e) Date Sep. 27, 1994, PCT Pub. No. WO93/19656, PCT Pub. Date Oct. 14, 1993

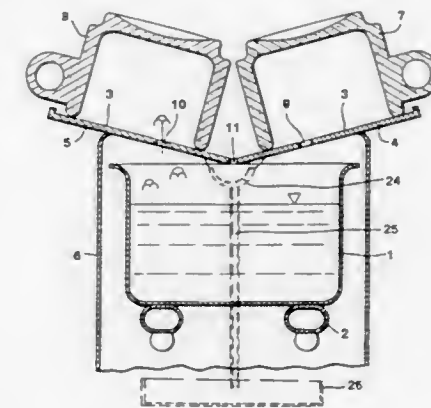
PCT Filed Feb. 17, 1993, Ser. No. 307,806

Claims priority, application Germany, Apr. 2, 1992, 42 10 886.1

Int. Cl.⁶ A47J 31/54

U.S. Cl. 99—290

16 Claims



1. In a beverage making appliance, beverage cup preheating apparatus comprising water reservoir structure, heater structure coupled to said water reservoir structure for heating water in said water reservoir structure,

support surface structure above said water reservoir structure having a substantially imperforate lower surface directly exposed to upwardly rising water vapor from said water reservoir structure and a substantially imperforate upper surface for receiving a beverage cup for preheating,

structure defining discharge port structure extending through said support surface structure for passing heated water vapor upwardly from said water reservoir structure to a beverage cup on said upper surface, and

cup positioning structure in said support surface structure for positioning a beverage cup to be heated on said upper surface in alignment with said discharge port structure.

5,509,349
BEVERAGE VALVE VENTURI APPARATUS
Kyle T. Anderson, Issaquah; Duke W. Goss, Kirkland, and Michael G. Lee, Redmond, all of Wash., assignors to Caffè Acorto, Inc., Bellevue, Wash.

Continuation of Ser. No. 543,157, Jun. 25, 1990, Pat. No. 5,207,148. This application Apr. 15, 1993, Ser. No. 47,967

The portion of the term of this patent subsequent to May 4, 2010, has been disclaimed.

Int. Cl.⁶ A47J 31/44

U.S. Cl. 99—323.1

10 Claims

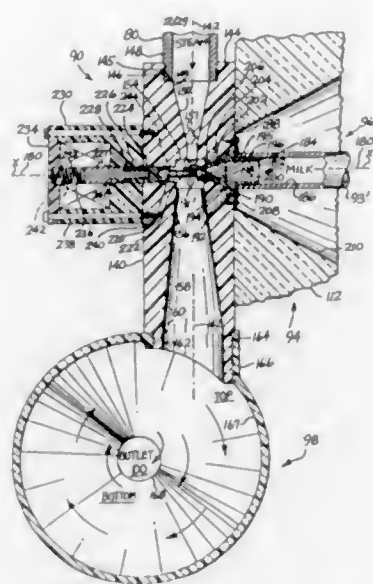
1. Beverage valve apparatus comprising:

a venturi body having an inlet port of the character to receive pressurized venturi driving gas,

an outlet port, a venturi throat extending between said inlet and outlet ports, and

a milk injection port communicating with said venturi throat and of the character to receive liquid milk;

electrically controlled pressurized gas valve means coupled to said inlet port;



electrically controlled milk valve means coupled to said milk injection port; and
electric controller means coupled to said pressurized gas valve means and to said milk valve means for operating said pressurized gas valve means and said milk valve means independently of each other.

5,509,350

MACHINE FOR LAYERING STRIPS OF FOOD MATERIAL

Lars Askman, Billsholm; Anders B. Ganrot, Bjuv, and Werner Leonhardt, Astorp, all of, Sweden, assignors to Nestec S.A., Vevey, Switzerland

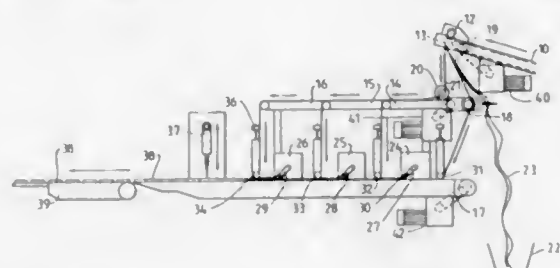
Filed Aug. 8, 1994, Ser. No. 287,181

Claims priority, application European Pat. Off., Sep. 3, 1993, 93114125

Int. Cl.⁶ A21C 9/04; A23L 1/16; A23P 1/00

U.S. Cl. 99—450.2

12 Claims



1. A machine for layering strips of food material comprising:
means for forming a plurality of parallel strips of flexible food material;

a first conveyor belt which extends from a first end to a second end and which is positioned for receiving a first strip from the strip-forming means for transporting the first strip and so that the first end is at a position intermediate of the strip-forming means and the second end;

a second conveyor belt which is positioned above the first conveyor belt and for receiving a second strip from the strip-forming means for transporting the second strip and which extends to an end at a position displaced from the strip-forming means and above the first conveyor belt between the first conveyor belt first and second ends for delivering the second strip off of the second conveyor belt towards the first conveyor belt;

first guiding means for guiding the plurality of strips from the strip-forming means for delivery to the conveyor belts so that

the first strip is delivered on the first conveyor belt and so that the second strip is delivered on the second conveyor belt;
means connected with the first conveyor belt and to the second conveyor belt for powering and advancing each conveyor belt to transport the strips in a direction away from the strip-forming means; and
product-forming strip guiding means for guiding the second strip delivered by the second conveyor belt end so that the delivered strip is deposited to lie over the transported first strip for forming a layered food product transported by the first conveyor belt.

5,509,351

DYNAMICALLY BALANCED MECHANICAL PRESSING MACHINE

Heizaburo Kato, Shizuoka, Japan, assignor to Sankyo Seisakusho Co., Tokyo, Japan

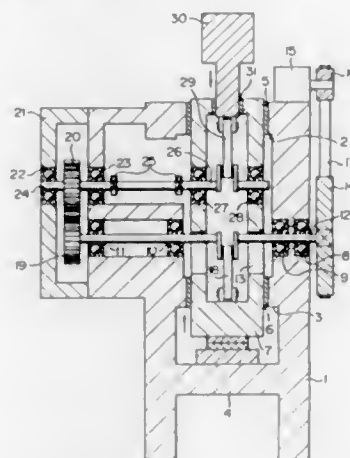
Filed Aug. 22, 1994, Ser. No. 293,583

Claims priority, application Japan, Aug. 25, 1993, 5-210665

Int. Cl.⁶ B30B 1/06

U.S. Cl. 100—282

4 Claims



1. In a mechanical pressing machine wherein a slider, connected through a connecting rod to a crankshaft to which a rotational force of a motor is transmitted, is slidingly moved vertically relative to a frame;

the improvement comprising a balance weight, support means connected to said slider for supporting said balance weight on said slider for slidable movement on said slider in a direction opposite to the direction of movement of said slider whereby the inertia force of said balance weight is opposite to the inertia force of said slider and is applied substantially directly to said slider.

5,509,352

PAPERBOARD PROCESSING MACHINE WITH VACUUM TRANSFER SYSTEM

James M. Kowalewski, Baltimore; Mikhail Elks, Columbia, and Leonard T. Katlas, Belcamp, all of Md., assignors to Ward Holding Company, Wilmington, Del.

Filed Sep. 23, 1994, Ser. No. 311,063

Int. Cl.⁶ B41F 21/06; 21/08

U.S. Cl. 101—232

13 Claims

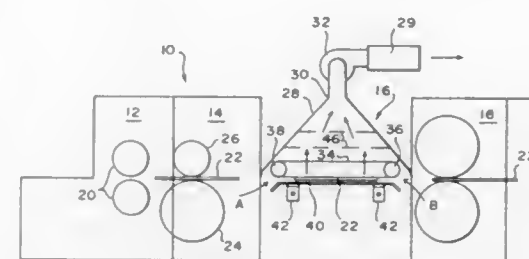
1. A machine for printing and otherwise processing paperboard sheets comprising:

(a) a printing section;

(b) an adjacent processing section;

(c) a transfer section located between said sections;

(d) said transfer section comprising a plurality of parallel conveyor belts having upper and lower reaches extending from



adjacent said printing section to adjacent said processing section for transferring said sheets from said printing section to said processing section, said belts having first ends adjacent said printing section and second ends adjacent said processing section;

(e) a hood positioned above said upper reaches of said plurality of conveyor belts, said hood having an open bottom portion surrounding said conveyor belts;

(f) a solid, impervious closure plate extending horizontally below said lower reaches of said conveyor belts, said plate being of such size and shape such as to substantially close said bottom portion of said hood and provide restricted openings positioned only adjacent said first and second ends of said conveyors;

(g) said hood having an opening above said conveyor belts for the flow of air out of said hood so as to create a subatmospheric pressure within said hood surrounding said conveyor belts; and

(h) air flow inducing means for drawing air out of said hood through said opening and creating said subatmospheric pressure surrounding said conveyor belts such that said paperboard sheets located below said lower reaches of said conveyor belts and above said closure plate are forced into frictional engagement with said lower reaches of said conveyor belts and are transported by said lower reaches from said printing section to said processing section.

5,509,353

DRUM CLEANING APPARATUS FOR PRINTING MACHINE

Hiroshi Aoki, Kawasaki, Japan, assignor to Shimizu Seisaku Kabushiki Kaisha, Tokyo, Japan

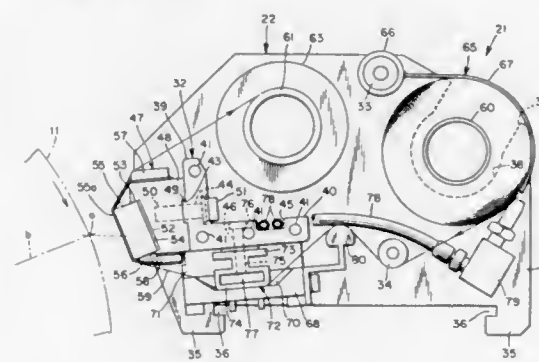
Filed Nov. 21, 1994, Ser. No. 342,574

Claims priority, application Japan, Jun. 8, 1994, 6-126192

Int. Cl.⁶ B43L 19/00

U.S. Cl. 101—425

5 Claims



1. A drum cleaning apparatus, comprising:

a cassette body;

first and second cassette frames on first and second sides of said cassette body;

a roll shaft;

said roll shaft being rotably attached between said first and second cassette frames;

a cleaning sheet on said roll shaft;

a cleaning head;

means for suspending said cleaning head between said first and second cassette frames facing said drum;

a winding shaft;

means for moving said cleaning sheet from said roll shaft, across said cleaning head and onto said winding shaft;

means for impregnating a portion of said cleaning sheet with a cleaning fluid while said cleaning sheet is between said roll shaft and said cleaning head;

means for moving said cassette body toward said drum, whereby said cleaning sheet over said cleaning head contacts said drum;

said means for impregnating including a reservoir extending substantially between said first and second cassette frames;

means for feeding a cleaning fluid to said reservoir;

said cleaning sheet passing below said reservoir;

means for transferring said fluid from said reservoir to said cleaning sheet;

a receiving tray below said reservoir; and

a space between said reservoir and said receiving tray for permitting said cleaning sheet to pass therebetween.

5,509,354

IGNITER HOLDER

Michael K. Dorfner, Canon City, and Ronald L. McClaren, Pueblo, both of Colo., assignors to Centuri Corporation, Penrose, Colo.

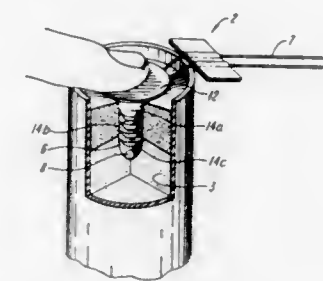
Continuation-in-part of Ser. No. 973,769, Nov. 9, 1992, abandoned, which is a continuation-in-part of Ser. No. 858,109, Mar. 26, 1992, abandoned. This application Mar. 7, 1994, Ser. No. 207,352

The portion of the term of this patent subsequent to Mar. 7, 2014, has been disclaimed.

Int. Cl.⁶ F42C 19/12

U.S. Cl. 102—202

12 Claims



1. An igniter holder for a pyropulsive model rocket engine having an ignition cavity, and being arranged for ignition by an electrical igniter having lead wires connected to an electrical resistance section, said igniter holder comprising

a substantially rigid article having a one piece construction, with a disk-like head and a stem projecting from a central portion of said head, said stem having an axis substantially perpendicular to a plane of said head and terminating in a positioning end, adapted for positioning the electrical igniter in the ignition cavity,

wherein said igniter holder, when inserted into the ignition cavity of the model rocket engine fitted with the electrical igniter, temporarily secures the igniter in the ignition cavity, and

wherein said igniter holder is adapted to be expelled from the model rocket engine following said ignition.

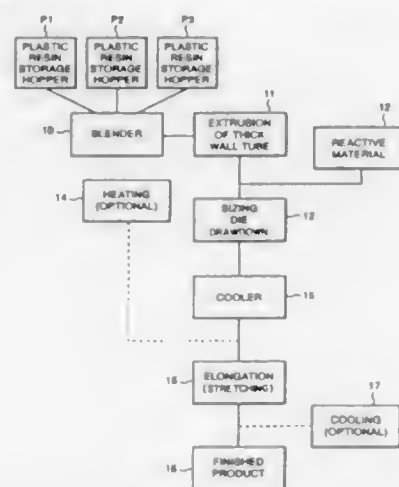
5,509,355 LOW ENERGY FUSE AND METHOD OF MANUFACTURE

Ronald F. Stewart, Ayr, Scotland; David J. Welburn; David M. Welsh, both of Brownsburg, Canada, and Robert C. Greenhorn, L'Orignal, Canada, assignors to Imperial Chemical Industries PLC, London, United Kingdom
Division of Ser. No. 581,411, Sep. 12, 1990, abandoned, which is a continuation of Ser. No. 306,013, Feb. 3, 1989, abandoned. This application Aug. 19, 1992, Ser. No. 932,089
Claims priority, application United Kingdom, Feb. 3, 1988, 8802329

Int. Cl.⁶ C06C 5/04

U.S. Cl. 102—275.8

29 Claims



1. A cold drawn low energy shock wave conductor comprising an extruded single-wall, dimensionally stable plastic tube having an inner surface coated with a particulate reactive energetic material, the plastic of the tube comprising a homogeneous extrudable blend of a major amount of a draw orientable polymer resin lacking adequate reactive material-retaining properties, and a minor amount of a modifier which is a miscible or compatible material which imparts an enhanced reactive material-retaining capability to the inner surface of said extruded plastic tube.

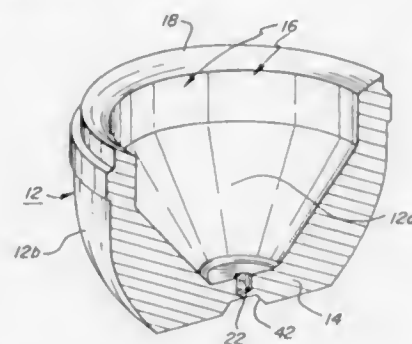
5,509,356 LINER AND IMPROVED SHAPED CHARGE ESPECIALLY FOR USE IN A WELL PIPE PERFORATING GUN

Steven L. Renfro, Windsor Locks, Conn., assignor to The Engh-Blickford Company, Simsbury, Conn.
Filed Jan. 27, 1995, Ser. No. 379,702

Int. Cl.⁶ B32B 1/00

U.S. Cl. 102—307

15 Claims



1. A liner for a shaped charge, the liner having a convex outer surface, a concave inner surface, a closed end defining an apex having a center and a skirt portion terminating at an opposite, open

end of the liner in a circular skirt edge having a skirt edge diameter, the apex having a radius of curvature which is from about 35% to 45% of the skirt edge diameter, and the thickness of the liner at the center of the apex is from about 5% to 50% greater than the thickness of the liner at the skirt edge, with the thickness of the liner between the apex and the skirt edge tapering in a smooth curvilinear transition between the apex and the skirt edge.

5,509,357

DUAL OPERATING MODE WARHEAD

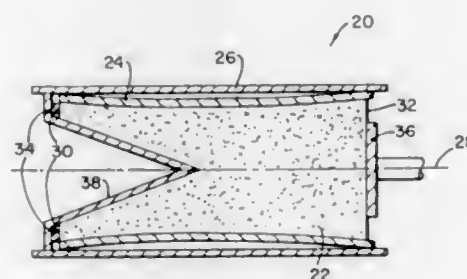
Robert J. Lawther, Brea, Calif., assignor to Northrop Grumman Corporation, Los Angeles, Calif.

Filed Mar. 3, 1995, Ser. No. 399,114

Int. Cl.⁶ F42B 1/02

U.S. Cl. 102—307

3 Claims



1. A dual operating mode warhead comprising:

an axially symmetric explosive charge having a longitudinal axis and an outer peripheral surface extending between a front facing initiation surface and a rear facing initiation surface, said front facing initiation surface and said rear facing initiation surface both lying in planes transverse of said outer peripheral surface;

first detonating means for initiating detonation of said explosive charge at said front facing initiation surface and creating a first detonation wave for travelling through said explosive charge toward said rear facing initiation surface; and

second detonating means for initiating detonation of said explosive charge at said rear facing initiation surface and creating a second detonation wave for travelling through said explosive charge toward said forward facing initiation surface;

shaped lined charge means shaped for penetration of armor or hard target material proximate said front facing initiation surface and responsive to the second detonation wave to produce a high speed forward traveling jet with armor piercing capability; and

a fragmentation case having a fracture grid construction proximate said outer peripheral surface and intermediate said front facing initiation surface and said rear facing initiation surface;

whereby actuation of said second detonating means alone results in maximum armor penetration of a target; and

whereby substantially simultaneous actuation of said first and second detonating means results both in armor penetration of the target and in a radially directed sidespray pattern of fragmentation of said fragmentation case against the target.

5,509,358 RAILCAR TRUCK BEARING ADAPTER CONSTRUCTION

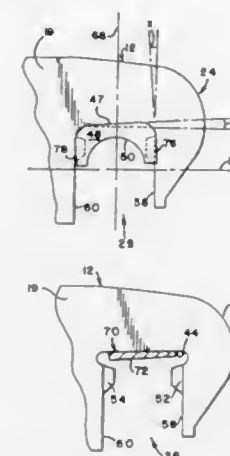
V. Terrey Hawthorne, Lisle; Glen F. Lazar, Palatine, and Norman A. Berg, Wheaton, all of Ill., assignors to AMSTED Industries Incorporated, Chicago, Ill.

Filed Dec. 8, 1994, Ser. No. 351,809

Int. Cl.⁶ B61F 5/26

U.S. Cl. 105—218.1

9 Claims



8. A railway truck side-frame pedestal jaw arrangement, said railway truck having a truck longitudinal axis, a first side frame, a second side frame and a bolster,

each said first and second side frame having a first longitudinal axis, an upper surface, a lower surface, an outboard surface, an inboard surface, a first end, a second end, a longitudinal midpoint between said first and second side-frame ends and, a pedestal jaw at each said side frame first and second end, said railway truck having at least one axle, each said axle having an axle axis generally transverse to said truck longitudinal axis, a first axle end and a second axle end, each said end mountable in a pedestal jaw,

a plurality of bearing assemblies, one of said bearing assemblies mountable on each said axle end,

a plurality of bearing adapters, one of said bearing adapters mountable in each said pedestal jaw, said bearing assembly and axle end mountable in said pedestal jaw against said adapter for retention in said pedestal jaw,

each said pedestal jaw comprising:

a pedestal-jaw roof portion, a first side wall portion and a second side wall portion cooperating to define a pedestal jaw cavity, said cavity open at said lower surface,

said side-frame inboard surface having at least one stop lug positioned in proximity to said jaw opening,

said side-frame outboard surface having at least one stop lug positioned in proximity to said jaw opening, which inboard and outboard stop lugs are substantially aligned;

said side-frame longitudinal axis and said axle axis intersecting and being about normal, said axes cooperating to define a horizontal plane;

said roof portion at a reference position approximately parallel to said side-frame longitudinal axis and said horizontal plane,

said pedestal-jaw first and second side walls approximately normal to said roof portion;

each said bearing adapter having at least an upper surface to contact said roof portion, a first side leg and a second side leg to locate said bearing adapter in said jaw opening;

said pedestal-jaw opening rotationally displaced about said axle axis to provide said roof portion, said first side wall portion and said second side wall portion at an acute angle of displacement to said horizontal plane; and,

said bearing adapter positionable in said angled opening to provide said upper surface and side legs at said acute angle to said horizontal plane from said reference position and operable to receive said axle for transfer of lateral forces

from said axle to said stop lugs to inhibit lateral displacement of said side frame and axle to less than one-half degree of angular displacement.

5,509,359 PEDESTAL LINER SYSTEM FOR LOCOMOTIVES

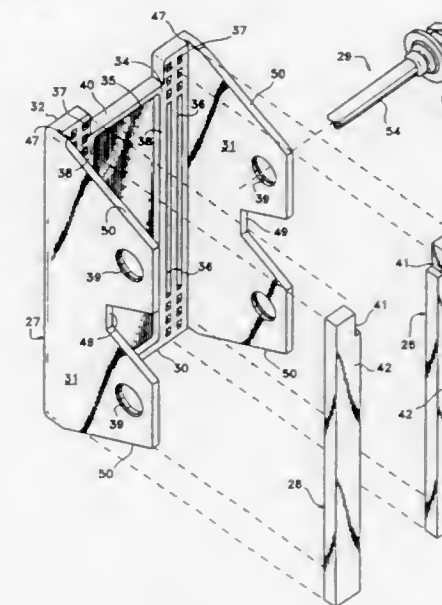
Stanley M. Houston, 930 Detroit Ave., Ste. A, Concord, Calif. 94518

Filed Sep. 13, 1994, Ser. No. 304,831

Int. Cl.⁶ B61F 5/32

U.S. Cl. 105—225

8 Claims



1. An improved bearing system for locomotive trucks comprising:

a channel shaped means of a polymeric material having a rectangular base unit with an upstanding flange along each longitudinal edge, extending perpendicularly from said base unit;

two thermoplastic insert means of a material of a higher resiliency than the resiliency of said thermoplastic used for said base unit, one of said inserts being mounted on said base unit between and adjacent to each of said flanges so it is operable to be compressed under loading;

and attaching means cooperating with said upstanding flanges operable to mount said channel shaped means on a truck, said attaching means having tightening means associated therewith operable to release when a specified torque is applied thereon, whereby said channel shaped means is mounted by said attaching means on said truck in a manner that it can articulate under said attaching means allowing said insert means to compress and expand in service to better accommodate the distribution of the loadings when said system is mounted on a truck, thereby achieving improved service life of said system.

5,509,360 FOLDABLE TRAY TABLE

Mike Chiu, Taoyuan City, Taiwan, assignor to Waffer Industrial Corp., Taoyuan City, Taiwan

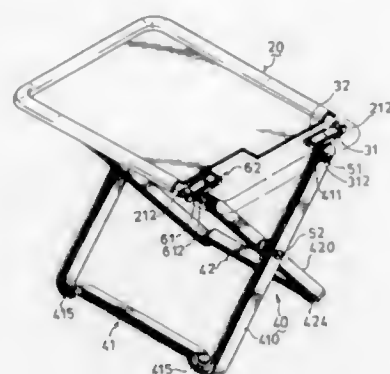
Filed Dec. 9, 1994, Ser. No. 354,852

Int. Cl.⁶ A47B 3/02

U.S. Cl. 108—119

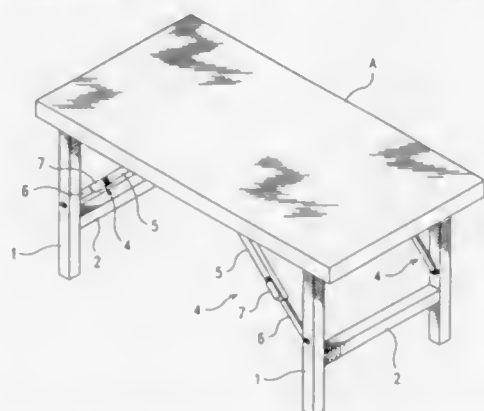
9 Claims

1. A foldable tray table, comprising:
a board member having a bottom surface formed with a pair of spaced mounting seat units and a pair of spaced retaining hook units which are spaced from said mounting seat units; and



a leg frame assembly including first and second leg frame units, said first leg frame unit having two opposed side frames, each of said side frames of said first leg frame unit having an upper end portion connected pivotally to a respective one of said mounting seat units and an intermediate portion, said second leg frame unit having two opposed side frames and a horizontal upper frame, each of said opposed side frames of said second leg frame unit having an upper end portion and an intermediate portion connected pivotally to said intermediate portion of a respective one of said side frames of said first leg frame unit, said horizontal upper frame interconnecting said upper end portions of said side frames of said second leg frame unit and being formed with two retaining holes that engage releasably a respective one of said retaining hook units so as to retain said leg frame assembly in an unfolded position.

5,509,361
FOLDING COLLAPSIBLE TABLE STAND
 Fa-Shon Chen, No. 38, Lane 360, Chien Chia Road, Hsin Chu Hsien, Taiwan
 Filed Sep. 19, 1994, Ser. No. 308,568
 Int. Cl.⁶ A47B 3/00
 U.S. Cl. 108—131 4 Claims

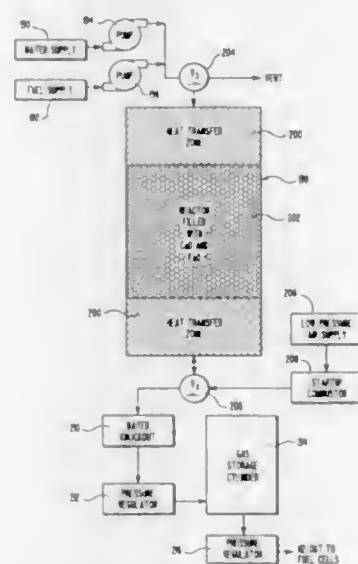


1. A folding collapsible table stand comprising a mounting frame fixedly fastened to a bottom wall of a flat table board, two symmetrical pairs of hollow stand legs bilaterally pivoted to said mounting frame for supporting it on the ground, two horizontal braces transversely respectively connected between said stand legs to make two opposite symmetrical pairs of said stand legs, and two pairs of folding struts respectively obliquely connected between said mounting frame and either pair of said stand legs, wherein: said hollow stand legs have a respective coupling device respectively coupled to said horizontal braces, the coupling device of each stand leg comprising a top retaining hole, a bottom retaining hole, and two opposite lateral retaining holes; each horizontal brace has two opposite ends and two coupling devices respectively made on the two opposite ends, the

coupling device at each end comprising, a top retaining strip, a bottom retaining strip, and two opposite, lateral retaining strips respectively fastened to the top, bottom and lateral retaining holes of said coupling device of the said stand leg; and

each folding strut comprises a base frame made from a channel bar, a flat connecting rod, and a guard plate, said base frame having one end pivotally connected to said mounting frame by a pivot and an opposite end pivotally connected to said flat connecting rod by a pivot, said flat connecting rod having one end pivotally connected to said base frame and an opposite end pivotally connected to the cooperating stand leg by a pivot, said guard plate being hinged to one side wall of said base frame and releasably secured in a closed position by a fastener to hold down said flat connecting rod in an extended-out position, said fastener comprising a stud made on an opposite side wall of said base frame and a socket made on said guard plate for receiving said stud.

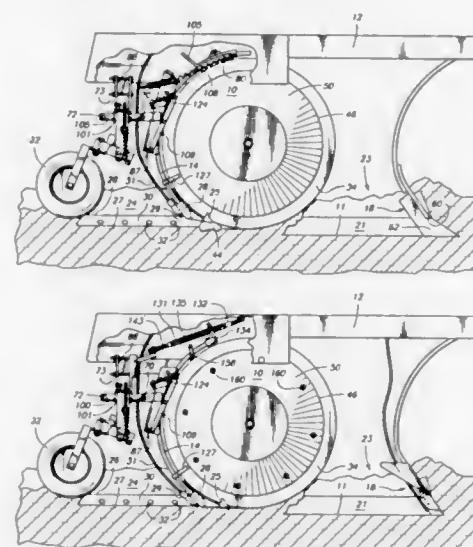
5,509,362
METHOD AND APPARATUS FOR UNMIXED COMBUSTION AS AN ALTERNATIVE TO FIRE
 Richard K. Lyon, Pittstown, N.J., assignor to Energy and Environmental Research Corporation, Irvine, Calif.
 Continuation-in-part of Ser. No. 990,880, Dec. 11, 1992, Pat. No. 5,339,754. This application Jun. 30, 1994, Ser. No. 270,157
 Int. Cl.⁶ F23J 11/00
 U.S. Cl. 110—345 14 Claims



12. A method for generating heat and for producing an inert gas comprising nitrogen, comprising the steps of:
 (a) providing a bed of a readily reducible metal oxide;
 (b) contacting an amount of fuel and an amount of air alternately with the bed in cycles, the ratio of the amount of fuel to the amount of air being contacted during each cycle being greater than that which would be required for stoichiometric combustion, and the amount of the air which is contacted during each cycle being less than sufficient for complete oxidation of the readily reducible metal oxide, wherein the contacting of the air with the bed produces nitrogen and the contacting of the fuel with the bed produces a gas, said contacting of fuel and air with the bed being done in such a manner that the fuel and the air undergo little or no mixing before, during, or after their contacting with the bed;
 (c) contacting the gas produced by passage of fuel through the bed with additional air such that the gas is completely oxidized;

- d) recovering the nitrogen produced by the passage of air through the bed; and
 (e) recovering the heat produced by the passage of the air and the fuel through the bed.

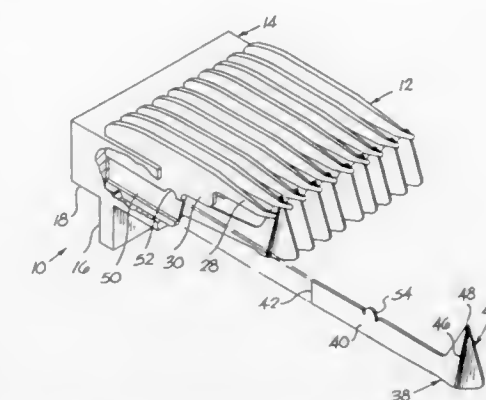
5,509,363
SEED DRILL GUIDE ASSEMBLY
 Robert Zimmerman, Box 6, Almira, Wash. 99103
 Continuation-in-part of Ser. No. 173,507, Dec. 22, 1993, Pat. No. 5,461,994, which is a continuation-in-part of Ser. No. 847,784, Mar. 5, 1992, Pat. No. 5,309,852. This application Feb. 7, 1995, Ser. No. 385,154
 Int. Cl.⁶ A01B 35/16
 U.S. Cl. 111—157 32 Claims



1. A seed drill planting assembly comprising:
 a press wheel assembly rotatably mounted about a horizontal transverse axis for rolling soil engagement while moving in a forward direction along a field;
 an arcuate shank located in a transversely centered upright position behind the press wheel assembly;
 a narrow longitudinal runner mounted to a lower end of the shank and extending rearwardly from beneath the press wheel assembly;
 a guide frame in engagement with the shank for permitting movement of the shank and runner along an upright arcuate path substantially centered about the transverse axis of the press wheel assembly;
 a shaft pivotally connecting the guide frame to a supporting frame for motion about a horizontal transverse axis; and
 seed delivery means on the runner for depositing seeds immediately behind the runner.

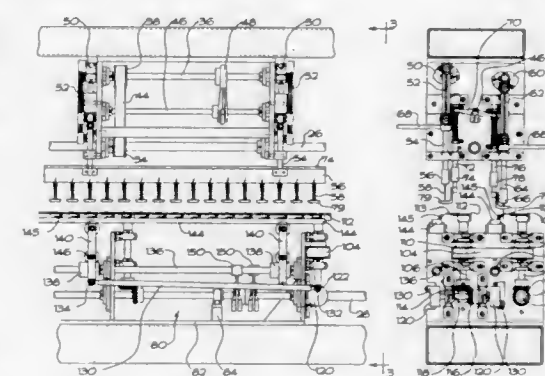
5,509,364
CUT/LOOP MODULE FOR TUFTING MACHINES
 Harold B. Bardsley, 1731 Kimberly Park Dr., Dalton, Ga. 30720
 Filed Sep. 13, 1994, Ser. No. 305,020
 Claims priority, application United Kingdom, Jun. 17, 1994, 9412208
 Int. Cl.⁶ D05C 15/22
 U.S. Cl. 112—80.51 8 Claims

1. A cut/loop hook and clip module for a tufting machine comprising a cast metal body, a plurality of tufting machine hooks, each hook comprising a substantially planar body member including a blade and a shank, said blade extending forwardly from the shank and terminating at a loop seizing beak, an elongated mount-



ing portion having a pair of planar surfaces extending rearwardly from the shank, said mounting portions being permanently mounted in said body member so as to be fixed therein in spaced side-by-side disposition, an elongated groove formed in one planar surface of said mounting portion on one side of each hook and spaced from said body member adjacent said one side, said clip comprising an elongated member having a substantially planar tail portion having first and second planar surfaces, said tail portion having an upwardly extending enlargement at one end and a free end remote from said enlargement, at least a part of said tail portion including said free end being of a width and thickness removably receivable within said groove with the first surface of said part for forming a continuation of said one surface of said mounting portion and with the second surface abutting said body member adjacent said one side, cooperating detent means formed on said mounting portion and on said tail portion for locating said enlargement relative to said blade, and said enlargement being disposed resiliently against said blade on the opposite side of said hook from said one side.

5,509,365
MULTI-NEEDLE QUILTER WITH COMPONENT DRIVE ASSEMBLIES
 David R. Cash, Louisville, Ky., assignor to James Cash Machine Co., Inc., Louisville, Ky.
 Filed May 12, 1995, Ser. No. 439,963
 Int. Cl.⁶ D05B 11/00
 U.S. Cl. 112—117 10 Claims



1. A quilting machine assembly for moving a front looper bar in a desired direction and simultaneously moving a rear looper bar in an opposed direction, said assembly comprising:
 a front looper crank having a first axis, said front looper crank having an off-set bore therein, said off-set bore being a preselected distance from said first axis;
 a rear looper crank having a second axis, said rear looper crank having an off-set bore therein, said off-set bore being said preselected distance from said second axis;

a looper shaft having a looper shaft axis and a front looper end and a rear looper end, said front looper end having said front looper crank connected thereto, said rear looper end having said rear looper crank connected thereto, said first axis and said second axis and said looper shaft axis being in a coaxial relationship, said front looper crank off-set bore and said rear looper crank off-set bore being in a diametrically opposed relationship, said looper shaft having means for rotating said looper shaft connected thereto;

a front looper drive bar connected between said front looper bar and said front looper crank off-set bore;

a rear looper drive bar connected between said rear looper bar and said rear looper crank off-set bore;

whereby, when said looper shaft rotating means rotates said looper shaft and said front and rear looper cranks, said front looper drive bar causes said front looper bar to move in said desired direction and said rear looper drive bar causes said rear looper bar to move in said opposed direction.

5,509,366

PULLER APPARATUS

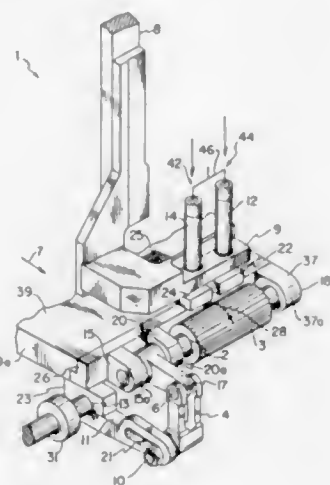
Arthur C. Woceck, Mauldin, S.C., assignor to Clinton Industries, Inc., Carlstadt, N.J.

Filed Apr. 28, 1994, Ser. No. 234,829

Int. Cl.⁶ D05B 27/10

U.S. Cl. 112—318

23 Claims



1. A puller device in combination with a sewing machine having a stitch-forming means that utilizes thread, alternately engageable and disengageable with a garment having portions of different thickness material and a feed means for feeding the garment through the stitch-forming means when the stitch-forming means is disengaged from the garment, comprising:

puller means downstream of the feed means for uniformly pulling the garment when the stitch-forming means is disengaged from the garment;

drive means for driving said puller means in synchronization with the stitch-forming means, said drive means intermittently driving said puller means for advancing the garment when the stitch-forming means is disengaged from the garment;

first and second engagement means positioned adjacent said puller means; and

first and second control means operatively connected to said first and second engagement means for selectively moving said first and second engagement means into and out of engagement with the portions of different thickness material, respectively, of the garment, for urging the garment against said puller means when the stitch-forming means is disengaged from the garment.

5,509,367

CLAMP HAVING ADJUSTABLE PRESSER MEMBERS

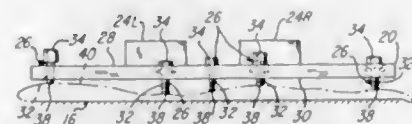
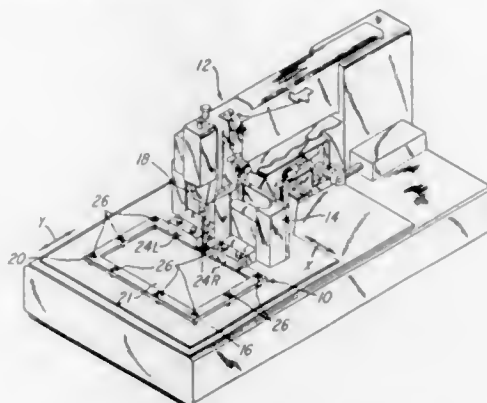
Ralph F. Conley, Jr., Miamisburg, Ohio, assignor to MIM Industries, Inc., Miamisburg, Ohio

Continuation-in-part of Ser. No. 735,822, Jul. 25, 1991, Pat. No. 5,445,090. This application Nov. 16, 1992, Ser. No. 976,557

Int. Cl.⁶ D05B 21/00

U.S. Cl. 112—470.14

2 Claims



1. A clamp for securing a workpiece against a clamping surface in a sewing machine, said clamp comprising:

a frame for positioning above the workpiece; and

at least one adjustable presser member supported by said frame, said at least one adjustable presser member being adjustable to permit the clamp to apply a preselected amount of pressure sufficient to firmly hold the workpiece in position on the clamping surface,

wherein said clamp is an interchangeable clamp including a plurality of interchangeable members and securing means for securing said plurality of interchangeable members together with respect to each other to form a preselected configuration for said frame.

5,509,368

SAILBOAT WITH PIVOTABLE MAST

Walter S. Wald, 1500 Belmont Ave., Mulberry, Fla. 33860

Filed Feb. 27, 1995, Ser. No. 394,778

Int. Cl.⁶ B63B 35/00

U.S. Cl. 114—39.1

2 Claims

1. A sailboat comprising:

a hull having a deck having a port side, a starboard side, and a central portion between said port and starboard sides;

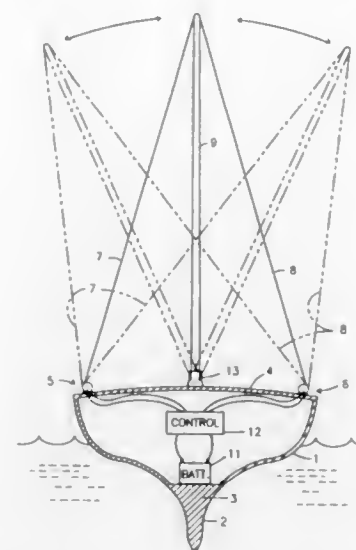
at least one mast extending above said deck, said mast being pivotally attached to said hull about a fore-and-aft running axis so as to be pivotable to port and to starboard; and

a means for controllably pivoting said mast in the port-to-starboard direction;

wherein said means for controllably pivoting the mast to port or starboard comprises at least one starboard cable, at least one port cable, at least one starboard winch for controlling said starboard cable, and at least one port winch for controlling said port cable;

wherein said port and starboard cables are attached to said mast at a point near the top of said mast; and

wherein said port cables are controlled by means of at least one port winch, and said starboard cables are controlled by at least one starboard winch, wherein said winches are provided with adjustable slippage clutches, and wherein said winches are controlled electronically by means of a control unit, wherein



said control unit is provided with input regarding the tension on the port and starboard cables, such that said port and starboard cables are maintained within a minimum and a maximum tension.

5,509,369

SMALL WATERCRAFT AUTOMATIC STEERING APPARATUS AND METHOD

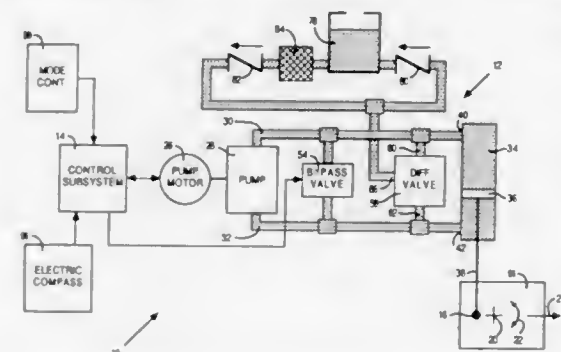
Douglas W. Ford, and Eric K. Juve, both of Newport, Oreg., assignors to Nautamatic Marine Systems, Newport, Oreg.

Filed Oct. 11, 1994, Ser. No. 320,533

Int. Cl.⁶ B63H 25/22

U.S. Cl. 114—150

15 Claims



1. An automatic steering system for a watercraft, comprising: an electric compass providing current heading data associated with the watercraft;

a rate taker generating from the current heading data a yaw rate signal;

a yaw rate control loop storing desired heading data, determining from the desired heading data and the current heading data a heading error, and combining the heading error with the yaw rate signal to generate a steering rate command;

a steering control loop receiving the steering rate command and causing a pump motor and a pump coupled thereto to rotate at a rotational speed commanded by the steering rate command such that a hydraulic fluid is pumped through a hydraulic cylinder to move a piston rod at a rate proportional to the rotational speed of the pump; and

a mechanical link connecting the piston rod to a steering actuator such that the steering rate command causes the piston rod to move the steering actuator in a manner that causes the watercraft to hold the desired heading.

5,509,370

AMPHIBIOUS LAND RECLAMATION VEHICLE

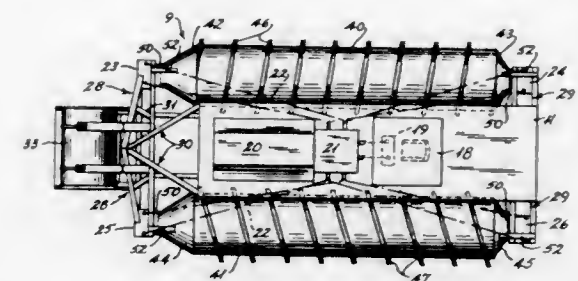
Peter Kovacs; Mihaly Kovacs, and Endro Kovacs, all of Plant City, Fla., assignors to Kempco, Inc., Ft. Meade, Fla.

Continuation-in-part of Ser. No. 906,446, Jun. 30, 1992, abandoned. This application Nov. 3, 1993, Ser. No. 145,214

Int. Cl.⁶ B63H 1/26

U.S. Cl. 114—270

15 Claims



1. A lightweight amphibious land reclamation vehicle which is maneuverable in water, mud, slime and other surface areas comprising, a main frame having a top, a bottom, opposite sides and front and rear portions, a platform frame extending forwardly of said front portion of said main frame, a fuel tank, means for mounting said fuel tank on said platform frame, a first pair of outrigger members extending from said front portion of said main frame and a second pair of outrigger members extending outwardly and downwardly with respect to said rear portion of said main frame, at least one pair of drive drums mounted on opposite sides of said main frame and extending between said front outrigger members and said rear outrigger members, a drive motor means mounted to at least one of said front and rear outrigger members and being drivingly connected to each one of said drive drums, each drive drum having opposite end portions, cutter bar means extending from at least one of said front and rear outrigger members towards and in closely spaced relationship with respect to an end portion of each of said drive drums, each of said drive drums being hollow and having generally cylindrical outer surfaces, said drive drums providing sufficient buoyancy to permit the vehicle to float on water, each of said drums having a spiral flute extending outwardly therefrom and along the length of said cylindrical outer surface, at least a portion of each of said drive drums extending below said bottom of said main frame, and control means for controlling each of said drive motor means.

5,509,371

FLAG HOLDING RINGS

Thomas E. Phillips, 111 E. Washington St., Princeton, Ill. 61356

Filed Jun. 5, 1995, Ser. No. 488,753

Int. Cl.⁶ G09F 17/00

U.S. Cl. 116—173

20 Claims

1. A flagstaff assembly comprising:

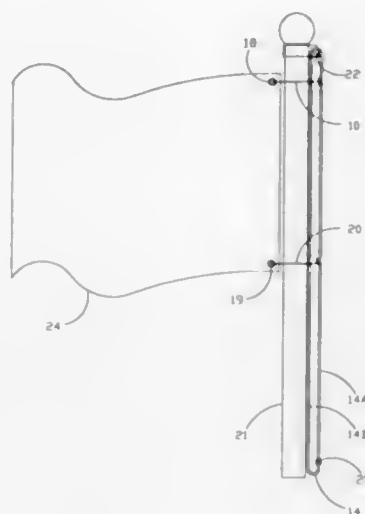
a flag pole having an upper end;

a pulley attached to the upper end of said flag pole;

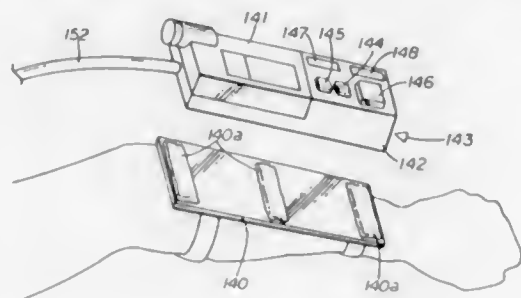
a closed loop halyard secured to said pulley and movable therewith, said closed loop halyard having a first halyard portion on one side of said pulley and a second halyard portion on the other side of said pulley;

a first closed ring attached to said first halyard portion of said closed loop halyard, said first closed ring extending around both said flag pole and said second halyard portion of said closed loop halyard; and

a flag having a first eyelet, said first closed ring extending through said first eyelet.



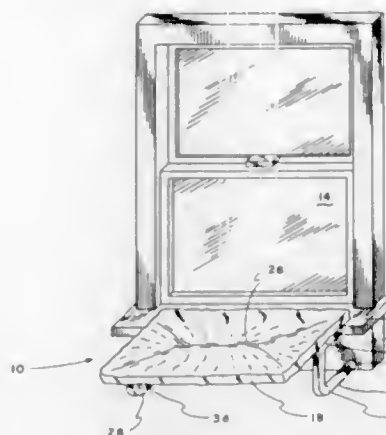
5,509,372
MULTIFEATURE SAFETY MOTOR CONTROL FOR DIVER PROPULSION VEHICLE
 Kenneth W. Culotta, 1141 Willa Vista Trail, Maitland, Fla. 32751
 Filed Nov. 21, 1994, Ser. No. 342,802
 Int. Cl.⁶ B63G 8/00
 U.S. Cl. 114—315 14 Claims



1. A manually operable safety control for use by a diver utilizing an electric motor for propulsion, said safety control serving to automatically prevent an unsafe powered ascent of the diver, said safety control comprising a motor control operatively associated with said electric motor, said safety control utilizing at least a portion of a dive computer interconnected with said motor control, said dive computer having a pressure sensitive device responsive to changes in depth and serving to calculate rate of change of depth, said computer being operatively associated with means connected to said motor control, latter means causing said motor control to deprive said propulsion motor of electric power in the event of the diver ascending too rapidly.

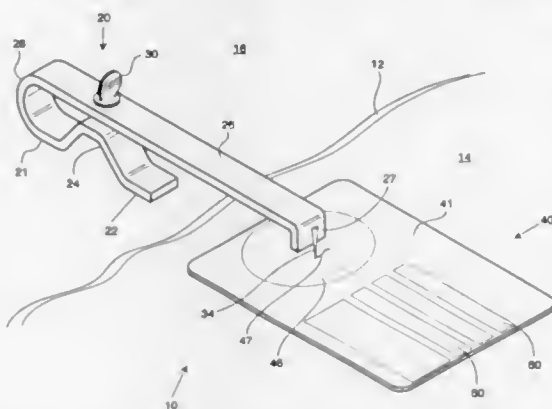
5,509,373
PET PERCH FOR ATTACHMENT TO A WINDOW SILL
 James N. Elesh, Evanston, Ill., assignor to Flexi-Mat Corporation, Chicago, Ill.
 Continuation-in-part of Ser. No. 6,462, Jan. 21, 1993, Pat. No. 5,351,648. This application May 27, 1994, Ser. No. 250,549
 Int. Cl.⁶ A01J 1/00
 U.S. Cl. 119—28.5 12 Claims

1. A pet perch for securing to a support surface, comprising: a frame having a bottom surface and holes in said bottom surface, said frame further defining a central opening; means for affixing the frame to said support surface;



securing means engagable with said frame for supporting said frame against said support surface, said securing means comprising at least one mounting bracket, the mounting bracket including means integrally formed thereon for releasably engaging the holes in said bottom surface of the frame at alternate locations for adjustably spacing the perch from the support surface, the mounting bracket terminating in a surface for abutting against the support surface;
 a jacket covering the central opening and at least partially surrounding said frame, the jacket defining a pet resting area; and
 means for removably attaching said jacket to said frame without disassembling said securing means from said frame.

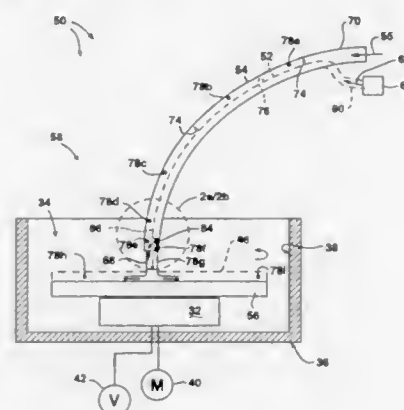
5,509,374
STRUCTURE MOTION MONITOR
 John F. Trout, Aurora, Ill., assignor to Lily Corporation, Aurora, Ill.
 Filed Aug. 15, 1994, Ser. No. 290,154
 Int. Cl.⁶ B43L 13/00; G01B 21/16
 U.S. Cl. 116—200 10 Claims



1. For use with a first structural member and a second structural member to indicate relative motion therebetween, a motion monitoring device comprising:
 a first component including a base and a markable indicator member; said base having a top surface and a bottom surface; said markable indicator member disposed on said top surface; said bottom surface being fixedly mountable to the first structural member;
 a second component including a base, a support arm and a marking indicator member; said support arm having two ends, said second component base being fixedly mountable to the second structural member; said support arm at one end thereof being connected to said second component base; and said support arm at a second end thereof being connected to said marking indicator member; and

said first component and said second component being operationally alignable upon mounting to said respective first and second structural members such that said markable indicator member and said marking indicator member achieve contact therebetween during mounting—wherein movement of one of the structural members relative to the other structural member results in a mark being placed on the markable indicator member by the marking indicator member.

5,509,375
APPARATUS AND METHOD FOR DETECTING CONTAMINANTS CARRIED BY A FLUID
 Anthony Sayka, San Antonio, Tex., and Patricia A. Vargas, Chesapeake Beach, Md., assignors to VLSI Technology, Inc., San Jose, Calif.
 Continuation of Ser. No. 902,119, Jun. 22, 1992, abandoned.
 This application May 27, 1994, Ser. No. 250,659
 Int. Cl.⁶ B05C 11/00; G01N 21/00; G01V 8/00
 U.S. Cl. 118—712 12 Claims

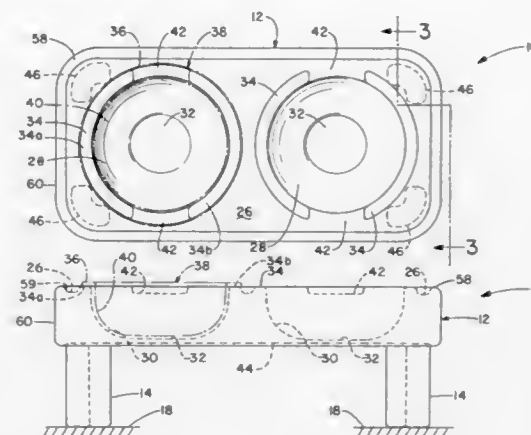


1. A coating apparatus comprising:
 a source of liquid to be used for coating;
 a tube having a distinct length for directing a liquid along a flow path from the liquid source; and
 light guiding means coupled to a light source and attached to the tube along the length of the tube for illuminating the liquid along the length of the tube to illuminate contaminant particles carried by the liquid at multiple locations in the flow path along the length of the tube.

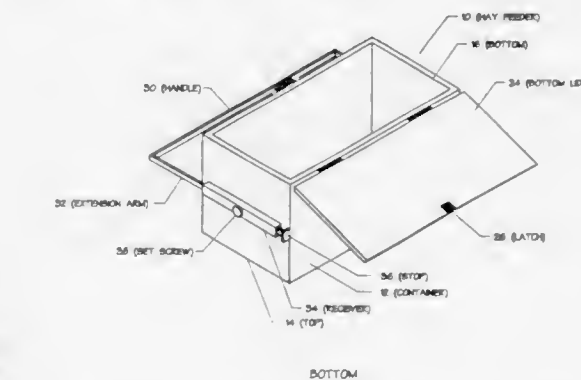
5,509,376
ANIMAL FEEDER ASSEMBLY
 Steven Tsengas, 7768 Litchfield Dr., Mentor, Ohio 44060
 Filed Aug. 15, 1994, Ser. No. 290,235
 Int. Cl.⁶ A01K 5/01 18 Claims

1. An animal feeder assembly for providing food and water at an elevated position from a support surface, said assembly comprising:

a feeder tray comprising a substantially flat top surface having a periphery and including at least one generally concave-shaped depression in said top surface positioned interior of said periphery for receiving a feeding container;
 at least one raised ridge formed in said top surface and substantially circumventing said at least one concave-shaped depression to thereby form a hand access space to facilitate the removal of a food container from said at least one concave-shaped depression; and
 a plurality of spaced apart legs releasably attached to said feeder tray about its periphery, each of said legs having an interior cavity for receiving removable ballast material for selectively adjusting the weight and the center of gravity of said assembly.



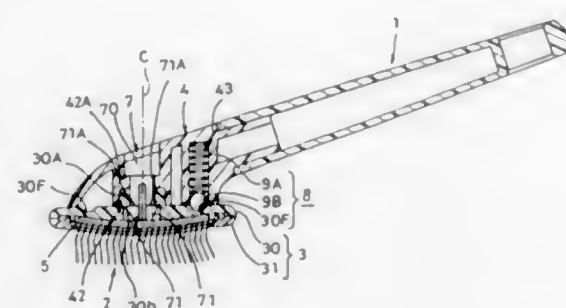
5,509,377
HAY FEEDER
 Hans J. Franklin, 2365 Aspen Dr., Pampa, Tex. 79065-3018
 Filed Jul. 25, 1994, Ser. No. 279,558
 Int. Cl.⁶ A01K 1/10 3 Claims



1. A feeder for feeding hay to livestock, the feeder comprising:
 a container having an interior, an exterior, a top and a bottom, the container being open at the top; and
 a float including a wire mesh, the float being able to fit within the interior of the container, the float being able to move up and down within the container such that when hay is in the container the float rests on the hay and as hay is removed from the container the float moves down with the diminishing level of the hay, wherein the bottom is open and the feeder further includes a bottom lid attached to the container to shut the bottom.

5,509,378
METHOD OF BRUSHING A PET USING A BRUSH WITH AN ADJUSTABLE HEAD
 Yoshihide Kimura, Kasai, Japan, assignor to Araki Industry Co., Ltd., Kasai, Japan
 Continuation of Ser. No. 242,632, May 13, 1994, abandoned.
 This application Dec. 5, 1994, Ser. No. 353,303
 Claims priority, application Japan, May 26, 1993, 5-033184
 Int. Cl.⁶ A01K 13/00 7 Claims

1. A method of brushing a pet having hair, comprising the steps of:
 (1) providing a brush for pets, comprising:



a handle;
a brush element including numerous bristles extending downwardly therefrom;
a brush element holder which holds the brush element;
a connecting part provided at a lower end of the handle;
a vertical connecting pin for connecting the connecting part with the brush element holder such that the connecting part and the brush element holder are rotatable relative to each other around a vertical axis; and
an engaging mechanism provided between the connecting part and the brush element holder for allowing engagement and disengagement of the engaging mechanism at a plurality of engaging positions, said engaging mechanism including a plurality of recesses formed on an upper surface of an upper part of the brush element holder, a coil spring inserted into a blind hole of the connecting part, and a ball which is always biased downwardly by the coiled spring and engageable with any selected one among the plurality of recesses;

- (2) positioning the connecting part and the brush element holder at a desired position via the engaging mechanism by rotating the connecting part relative to the brush element holder around the vertical axis such that the ball engages one of the recesses;
- (3) placing the bristles into contact with the hair of the pet and brushing the hair of the pet with the brush.

5,509,379

AUTOMATED CAT LITTER BOX

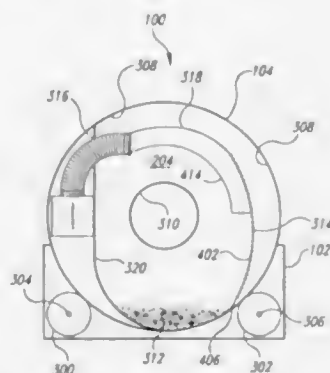
Edward P. Hoeschen, 1500 Eastlake Ave. East, Suite 201, Seattle, Wash. 98102

Filed Apr. 20, 1994, Ser. No. 230,341

Int. Cl.⁶ A01K 1/035

U.S. Cl. 119-166

12 Claims



1. An animal litter box for removing waste materials from animal litter comprising:
rotating cylinder means for supporting the animal litter and waste materials, said rotating cylinder means including an internal surface upon which the animal litter and waste materials are supported;
perforated surface means extending along a portion of said internal surface and responsive to rotation of said rotating

cylinder means for receiving the animal litter and waste materials and for separating the animal litter from the waste materials in a single revolution of said cylinder means; and
collection means within said rotating cylinder means, said collection means comprising:
scoop means coupled to said perforated surface means for receiving the waste material separated from said animal litter;
reservoir means for receiving the separated waste material for storage; and
conduit means coupled to said scoop means for conducting the waste material from said scoop means to said reservoir means.

5,509,380

TAB LIFTING TOOL FOR LIFTING CONTAINER LID TABS

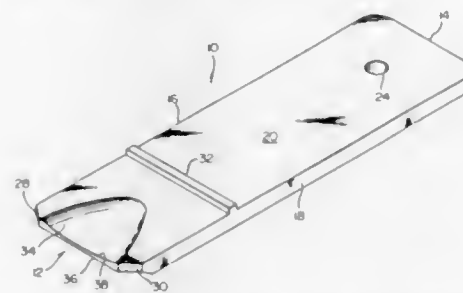
Raymond P. Tipp, P.O. Box 3778, Missoula, Mont. 59806

Filed Aug. 4, 1994, Ser. No. 285,707

Int. Cl.⁶ B67B 7/40

U.S. Cl. 81-3.55

9 Claims



1. A tool for lifting container lid lift tabs which comprises a thin, relatively long and narrow body suitable for holding in a user's thumb and fingers; said body having a front edge and top and bottom surfaces; said front edge having a beveled undersurface that extends rearwardly and downwardly at an acute angle with respect to said bottom surface whereby said tool may be slipped under a container lid tab with said beveled undersurface aligned generally parallel with surface of the container lid; and said top surface having a generally planar main area and having a concavity located adjacent said front edge, said concavity intersecting said front edge and having a sloped container lid tab-contacting surface that extends upwardly and rearwardly from said front edge until intersecting with said top main area, said concavity being generally hemiparabolic in configuration so as to present a concave surface that is (a) transversely concave across said front edge and (b) longitudinally concave and sloping upward from said front edge, said front edge having a straight bottom line and a curved upper line to provide a thickness that is least at the midpoint and greatest at each end, whereby said tool is self-centering when inserted under a container lid tab.

5,509,381

METHOD OF AND MEANS FOR COOLING AND LUBRICATING AN ALTERNATOR

Uriyel Elsher, Haifa, Israel, assignor to Ormat Industries Ltd., Yavne, Israel

Continuation of Ser. No. 968,526, Oct. 29, 1992, abandoned.

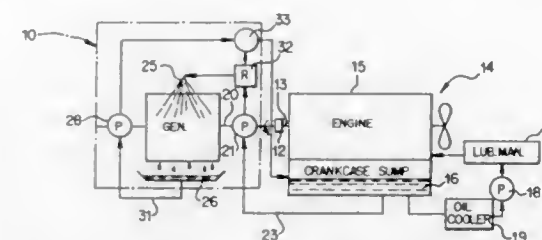
This application Nov. 14, 1994, Ser. No. 340,431

Int. Cl.⁶ F01P 1/06

U.S. Cl. 123-41.31

17 Claims

1. Apparatus including:
(a) housing defining an interior cavity;
(b) a shaft having an axial bore rotatably mounted in said housing and passing through said cavity, said shaft having axial ends;
(c) an alternator in said cavity for generating electrical power in response to rotation of said shaft including a rotor rigidly



- (d) a motor connecting rod that is pivotally attached to the piston rod;
- (e) a pair of charger connecting rods that are pivotally attached to the charger piston;
- (f) a crankshaft having a motor crankpin on which the motor connecting rod is rotatively attached and having a pair of charger crankpins on which the charger connecting rods are rotatively attached, the crank radius of the charger crankpins being larger than the crank radius of the motor crankpin while the crank angle between the motor crankpin and the charger crankpins is proximally phased to bring the charger piston to the zenith of its travel while the motor piston is near the zenith of its travel; and
- (g) the main cylinder having a length sufficient for a charger cavity to be opened between the lower surface of the motor piston and the upper surface of the charger piston when each is near the nadir of its travel and having a plurality of intake ports through its wall into the charger cavity for induction of working fluid and also having a plurality of transfer channels whose lower ends are uncovered by the motor piston when nearing the zenith of its travel while the channels extend upward past the motor-piston crown to the combustion chamber, so that as the crank rotates the pistons reciprocate in concert, creating a charger cavity between the pistons that expands and contracts once in the cycle from differential motion of the pistons while the cavity is brought to its minimum volume when the motor piston is near its zenith so that the working fluid, which is drawn into the charger cavity when the pistons are in the lower part of their strokes, is compressed and forced through the transfer channels past the motor piston into the combustion chamber where heat is added by internal-combustion and mechanical energy is extracted while it expands against the motor piston as it moves downward.

5,509,382

TANDEM-DIFFERENTIAL-PISTON CURSIVE-CONSTANT-VOLUME INTERNAL-COMBUSTION ENGINE

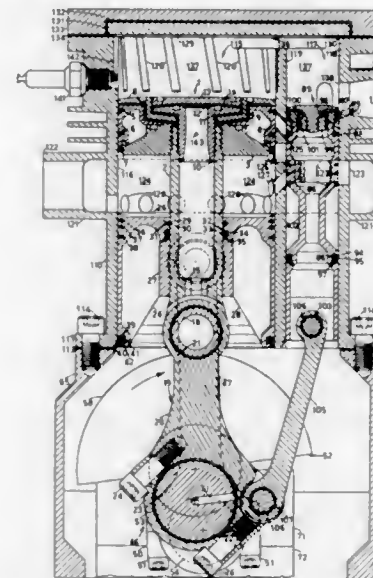
Ronald D. Noland, 2334 State Hwy. NN, Advance, Mo. 63730

Filed May 17, 1995, Ser. No. 442,664

Int. Cl.⁶ F02B 33/10

U.S. Cl. 123-66

20 Claims



1. In a two-stroke cycle reciprocating engine, which inducts and compresses working fluid including air and supplies it under pressure materially above atmospheric to a combustion chamber for a main cylinder with means for exhaust closed, and which has means for attachment of a device for introducing fuel into the working fluid, and which has means for ignition, wherein the improvement comprises:
(a) a crosshead type motor piston, which fits the main cylinder for reciprocation therein, having a lower surface that is closed and suitable to be approached;
(b) a piston rod that is attached to the motor piston;
(c) a charger piston, which fits the main cylinder for reciprocation therein, located below the lower surface of the motor piston, having an upper surface shaped for approaching the lower surface of the motor piston and having a central hole through which the piston rod slides;

- (d) a motor connecting rod that is pivotally attached to the piston rod;
- (e) a pair of charger connecting rods that are pivotally attached to the charger piston;
- (f) a crankshaft having a motor crankpin on which the motor connecting rod is rotatively attached and having a pair of charger crankpins on which the charger connecting rods are rotatively attached, the crank radius of the charger crankpins being larger than the crank radius of the motor crankpin while the crank angle between the motor crankpin and the charger crankpins is proximally phased to bring the charger piston to the zenith of its travel while the motor piston is near the zenith of its travel; and
- (g) the main cylinder having a length sufficient for a charger cavity to be opened between the lower surface of the motor piston and the upper surface of the charger piston when each is near the nadir of its travel and having a plurality of intake ports through its wall into the charger cavity for induction of working fluid and also having a plurality of transfer channels whose lower ends are uncovered by the motor piston when nearing the zenith of its travel while the channels extend upward past the motor-piston crown to the combustion chamber, so that as the crank rotates the pistons reciprocate in concert, creating a charger cavity between the pistons that expands and contracts once in the cycle from differential motion of the pistons while the cavity is brought to its minimum volume when the motor piston is near its zenith so that the working fluid, which is drawn into the charger cavity when the pistons are in the lower part of their strokes, is compressed and forced through the transfer channels past the motor piston into the combustion chamber where heat is added by internal-combustion and mechanical energy is extracted while it expands against the motor piston as it moves downward.

5,509,383

HYDRAULIC UNIT

Manfred Kahrs, Wiesbaden; Gerhard Kunz, Linden; Franz Fleck, Langenscheid; Hans-Gebhard Krines, Usingen; Walter Peterknecht, Wehrheim, and Winfried Huthmacher, Frankfurt/am Main, all of, Germany, assignors to ITT Automotive Europe GmbH, Germany

PCT No. PCT/EP92/00337, § 371 Date Nov. 29, 1993, § 102(c) Date Nov. 29, 1993, PCT Pub. No. WO92/14641, PCT Pub. Date Sep. 3, 1992

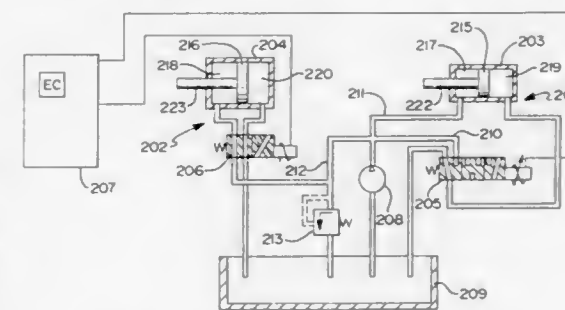
PCT Filed Feb. 18, 1992, Ser. No. 107,730

Claims priority, application Germany, Jun. 22, 1991, 41 20 664.9; Aug. 19, 1991, 41 27 327.3; Feb. 18, 1992, 41 05 144.0

Int. Cl.⁶ F01L 1/34

U.S. Cl. 123-90.12

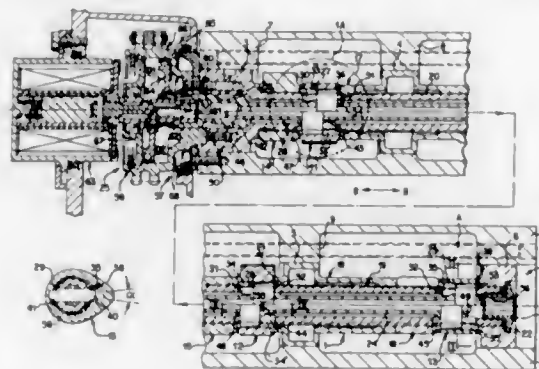
3 Claims



1. A hydraulic system comprising:
a hydraulic pump driven by an internal combustion engine;
a restrictor disposed on an intake side of the hydraulic pump wherein the restrictor limits a delivery rate of hydraulic pressure fluid to the pump;
a first device supplied with hydraulic pressure fluid by said pump, wherein said first device is a variable cam shaft phase adjusting device for inlet valves.

at least one second device supplied with hydraulic pressure fluid by said pump; wherein said second device is a variable cam shaft phase adjusting phase device for outlet valves, proportional control valve fluidly connecting said first device with said pump, a two position valve fluidly connecting said second device with said pump, further wherein said second device connected to the pump through said two-position valve requires a lower driving pressure than the first device actuated by said proportional control valve.

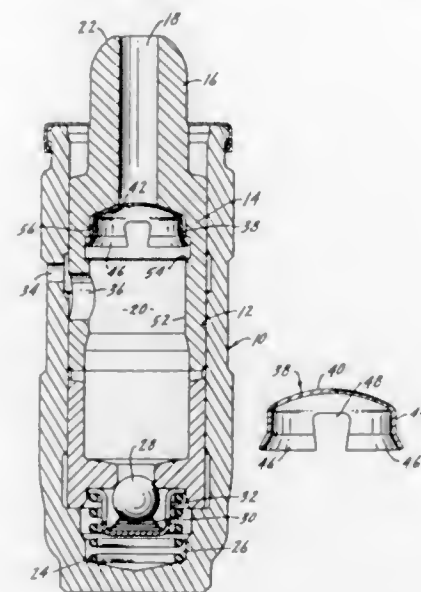
5,509,384
VARIABLE VALVE TIMING GEAR
Peter Schmid, Pleidelsheim, Germany, assignor to Dr. Ing. h.c.F. Porsche AG, Weissach, Germany
Filed Sep. 20, 1994, Ser. No. 309,132
Claims priority, application Germany, Sep. 21, 1993, 43 31 977.7
Int. Cl.⁶ F01L 1/34
U.S. Cl. 123—90.17 11 Claims



11. Variable valve timing gear for internal-combustion engines comprising a control arrangement which includes a control element which is axially movable, the control element causing adjustment of at least one cam with respect to another cam via a respective driver, wherein the respective driver is a pin of the control element, said pin penetrating a guide opening in a camshaft and engaging in at least one groove constructed as a control guide in a bearing bore of the at least one cam which is rotatably disposed on the camshaft, and wherein the control element has a tube-type construction and has at least one piston-type guide section distributed along its length, the at least one guide section interacting with a respective cylinder section of an axial bore of the camshaft.

5,509,385
HYDRAULIC LASH ADJUSTER METERING VALVE
David J. LaVieri, Tallahassee, Fla., assignor to Precision Engine Products Corp., Tallahassee, Fla.
Filed Jun. 15, 1995, Ser. No. 490,624
Int. Cl.⁶ F01M 9/10
U.S. Cl. 123—90.35 12 Claims

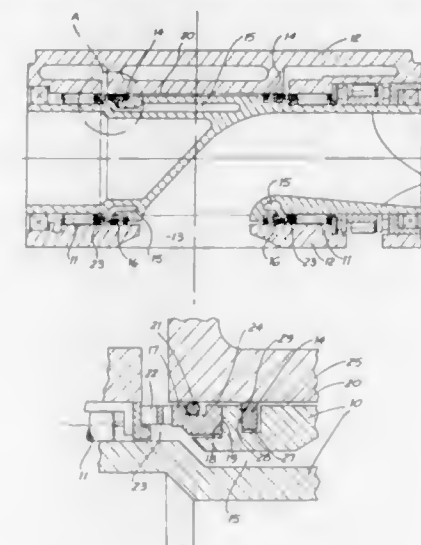
1. In a hydraulic lash adjuster for use in internal combustion engines, a cylindrical body having an internal chamber, a hollow plunger cap reciprocal in said body and having one end thereof extending outwardly from the body, a fluid passage extending through said plunger cap and in communication with the hollow interior of the plunger cap, fluid pressure feed openings in side walls of the body and plunger cap to supply fluid to the hollow interior of said plunger cap, spring means urging said plunger cap outwardly from said body, characterized by said plunger cap hollow interior having a generally conical metering valve seat at an



internal termination of said plunger cap end fluid passage, and a metering valve positioned within said plunger cap hollow interior and having a metering surface, at least in part generally semi-spherical, formed and adapted to seat against said metering valve seat, said metering surface having a fluid passage formed therein communicating with said plunger cap end fluid passage and the hollow interior of said plunger cap, whereby a metered amount of fluid is provided from the interior of said plunger cap to the outwardly extending end thereof during vehicle combustion engine operation.

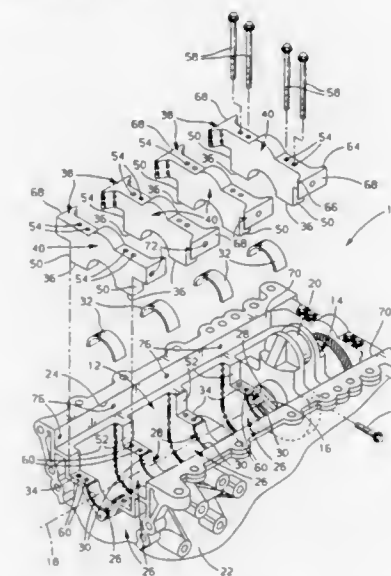
5,509,386
SEALING MEANS FOR ROTARY VALVES
Anthony B. Wallis, Gladestville, and Andrew D. Thomas, East Ryde, both of Australia, assignors to A. E. Bishop Research Pty. Limited, North Ryde, Australia
PCT No. PCT/AU93/00569, § 371 Date May 5, 1995, § 102(e) Date May 5, 1995, PCT Pub. No. WO94/11619, PCT Pub. Date May 26, 1994
PCT Filed Nov. 3, 1993, Ser. No. 424,439
Claims priority, application Australia, Nov. 6, 1992, PL5729
Int. Cl.⁶ F01L 7/00
U.S. Cl. 123—190.17 9 Claims

1. A rotary valve of an internal combustion engine having a



cylindrical valve, bearing means at each end of said valve supporting said valve for rotation in a bore of the cylinder head of the engine with a small radial clearance between the valve and the bore and means of communication between the combustion chamber and the small radial clearance, oil for lubrication of said bearing means, oil sealing means axially inboard of said bearing means arranged to prevent the axial inward leakage of said oil through the small radial clearance to the combustion chamber, a space between said bearing means and said oil sealing means containing oil, and gas sealing means axially inboard of said oil sealing means arranged to minimize outward axial leakage of gas from the combustion chamber through the small radial clearance, characterized in that each gas sealing means consists of at least one circumferential sealing element of the piston ring type housed in at least one circumferentially extending groove formed either in the periphery of the valve or in the bore of the cylinder head and radially preloaded against the surface of the other, each oil sealing means consisting of a non-rotating annular member also having a small radial clearance to the bore of the cylinder head, second sealing means sealing the small radial clearance between the annular member and the bore, an annular cavity lying peripherally in the small radial clearance and extending between the circumferential sealing element and the second sealing means, the annular member having a substantially radially disposed face arranged to seal slidably against a radially disposed face on the valve, spring means acting on one end of the annular member to urge the radial face of the annular member against the radially disposed face on the valve.

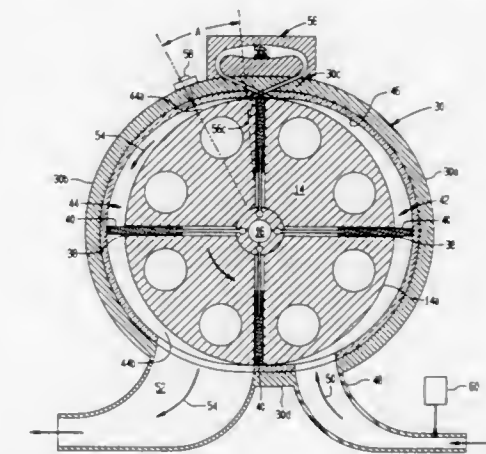
5,509,387
BEARING CAP FOR AN INTERNAL COMBUSTION ENGINE
Brian D. Kaminski, Lake Orion; Paul J. Gelazin, Waterford, both of Mich.; William L. Miller, Norwich, England, and Roger G. Van Vechten, St. Clair Shores, Mich., assignors to General Motors Corporation, Detroit, Mich.
Continuation-in-part of Ser. No. 227,753, Apr. 14, 1994, abandoned. This application Feb. 27, 1995, Ser. No. 395,502
Int. Cl.⁶ F02F 7/00
U.S. Cl. 123—195 R 5 Claims



4. An internal combustion engine including a crankcase structure for rotatably supporting a crankshaft therein, said crankshaft having a plurality of main journals, defining a crankshaft axis, longitudinally spaced along its length, said crankcase structure comprising first and second longitudinally spaced sidewalls and a plurality of transversely extending webs, longitudinally aligned with said crankshaft journals, extending between said sidewalls and integral therewith, said webs including semi-cylindrical bearing recesses

adapted to each receive one of said crankshaft journals, and one of a plurality of main bearing caps, each cap comprising a longitudinally extending body having parallel planar sides terminating in first and second end portions, a centrally located, semi-cylindrical main bearing recess located along a lower side, adapted to receive one of said crankshaft journals therein and mating surfaces located adjacent said main bearing recess and configured to engage corresponding surfaces located on a respective transversely extending web, said bearing caps further comprising through holes extending between an upper surface of said body and said lower mating surfaces which are configured to receive mounting hardware for securing said bearing cap to said transverse web in a first direction, and said first and second end portions comprising flanged feet extending laterally outward from said sides and having end faces configured to mate with complementary faces of said first and second longitudinally spaced sidewalls of said crankcase said laterally extending feet operable against said sidewalls to resist motion of said longitudinally extending bearing cap body.

5,509,388
INTERNAL COMBUSTION ROTARY ENGINE
David C. Andres, Berkeley, Calif., assignor to Robert W. Burnett, and Kathleen C. Barry, both of Arlington, Calif.
Filed Dec. 30, 1994, Ser. No. 366,825
Int. Cl.⁶ F02B 53/00
U.S. Cl. 123—231 14 Claims



1. A rotary engine comprising:
a stator housing having a perimeter casing and first and second annular sidewalls joined thereto;
a cylindrical rotor disposed in said housing between said first and second sidewalls and having a coaxial drive shaft fixedly joined to a center of said rotor and rotatably mounted to said first and second sidewalls, said rotor having four slots extending radially inwardly from a perimeter thereof and equiangularly spaced from each other;
four planar vanes slidably mounted in respective ones of said rotor slots;
said perimeter casing being oblong and having first and second diametrically arcuate portions and first and second diametrically opposite flat portions disposed therebetween, with said arcuate portions being spaced radially further from said rotor perimeter than said flat portions to define generally crescent shaped, diametrically opposite first and second working chambers in which said rotor vanes travel;
an inlet port disposed through said casing adjacent to an upstream end of said first chamber and said casing second flat portion for receiving a compressible fluid for being compressed in said first chamber as said rotor rotates in said casing;
an exhaust port disposed through said casing adjacent to a downstream end of said second chamber and said casing second flat portion for discharging combustion gases therefrom;

a flow chamber fixedly joined to said casing at said first flat portion thereof, and having in turn an inlet passage disposed in flow communication with a downstream end of said first chamber for receiving said compressed fluid therefrom, a central storage passage for temporarily storing said compressed fluid, and an outlet passage disposed in flow communication with an upstream end of said second chamber for discharging thereto said compressed fluid stored in said storage passage, said flow chamber further including means for allowing one-way flow through said flow chamber from said first chamber to said second chamber;

said inlet passage, storage passage, and outlet passage being configured in a crossing loop for changing flow direction of said compressed fluid from a forward direction in a direction of travel of said vanes to a rearward direction relative to said vane travel direction; and

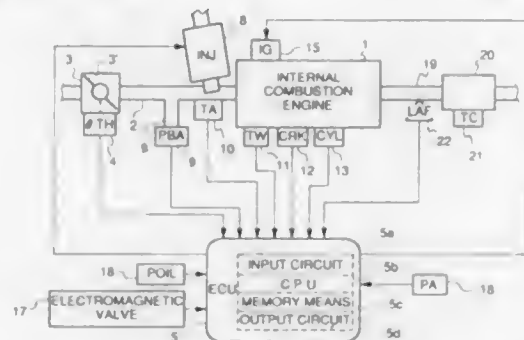
a spark plug disposed in said casing adjacent to said upstream end of said second chamber and downstream from said flow chamber, and being predeterminedly angularly spaced from said flow chamber outlet passage for defining a combustion zone at said upstream end of said second chamber.

5,509,389
IGNITION TIMING CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINES

Yoshikazu Oshima; Ken Ogawa, and Toshiyuki Nishida, all of Wako, Japan, assignors to Honda Giken Kogyo K.K., Tokyo, Japan

Filed Nov. 22, 1994, Ser. No. 343,104
Claims priority, application Japan, Nov. 24, 1993, 5-317388
Int. Cl.⁶ F02P 5/15

U.S. Cl. 123-423 6 Claims



1. An ignition timing control system for an internal combustion engine having an intake passage having an inner wall surface and at least one combustion chamber, said ignition timing control system being associated with a fuel injection amount control system for calculating an amount of fuel to be supplied to said engine, based on operating conditions of said engine, correcting the calculated amount of fuel, based on an adherent amount of fuel adhering to said inner wall surface of said intake passage, and a carried-off amount of fuel to be carried off from said adherent fuel into each of said at least one combustion chamber of said engine, and injecting the corrected amount of fuel into said intake passage, said ignition timing control system comprising:

- engine operating condition-detecting means for detecting operating conditions of said engine including at least pressure within said intake passage;
- fuel supply recovery-detecting means for detecting whether said engine has been recovered from a fuel cut state where fuel supply to said engine is interrupted to a fuel supply state where fuel is supplied to said engine;
- ignition timing-calculating means for calculating ignition timing, based on operating conditions of said engine detected by said engine operating condition-detecting means;
- retard amount-calculating means for calculating a retard amount by which said ignition timing of said engine is to be retarded, based on operating conditions of said engine detected by said

engine operating condition-detecting means when it is detected by said fuel supply recovery-detecting means that said engine has been recovered from said fuel cut state to said fuel supply state; and

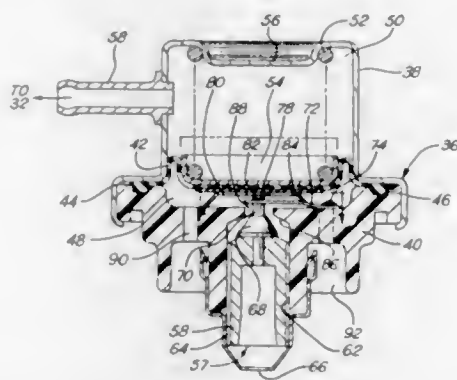
ignition timing-correcting means for correcting said ignition timing, based on said retard amount calculated by said retard amount-calculating means.

5,509,390
TEMPERATURE-RESPONSIVE DEMAND FUEL PRESSURE REGULATOR

Charles H. Tuckey, Cass City, Mich., assignor to Walbro Corporation, Cass City, Mich.

Continuation-in-part of Ser. No. 181,848, Jan. 14, 1994, Pat. No. 5,458,104. This application Mar. 13, 1995, Ser. No. 403,186

Int. Cl.⁶ F02M 41/00
U.S. Cl. 123-463 7 Claims



1. A pressure regulator for an internal combustion engine fuel delivery system that comprises:

- a housing and a flexible diaphragm carried within said housing to define first and second chambers on opposed sides of said diaphragm,
- a first of said chambers including inlet means for connection to a source of under pressure, outlet means for connection to fuel delivery means at the engine, and valve means associated with said inlet means and movable responsive to said diaphragm between open and closed positions to control flow of fuel through said first chamber between said inlet and outlet means, and
- a bimetallic leaf spring disposed within said housing, fastened at one end to said housing and coupled at an opposing end to said valve means, and responsive to the temperature of fuel in said housing for urging said valve means toward said open position when temperature of fuel in said housing reaches a preselected level.

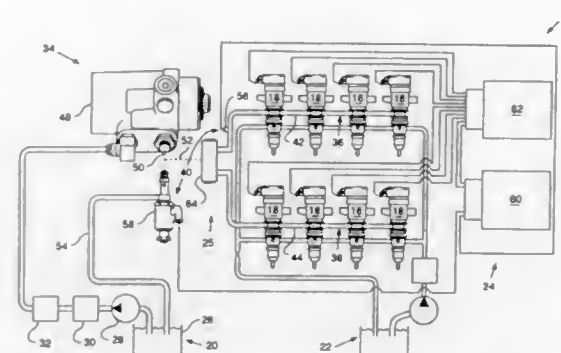
5,509,391
HELMOLTZ ISOLATION SPOOL VALVE ASSEMBLY ADAPTED FOR A HYDRAULICALLY-ACTUATED FUEL INJECTION SYSTEM

Jeffrey L. DeGroot, Metamora, Ill., assignor to Caterpillar Inc., Peoria, Ill.

Filed Oct. 3, 1994, Ser. No. 316,759
Int. Cl.⁶ F02M 41/00

U.S. Cl. 123-467 7 Claims

- 1. A fuel injection system comprising:
- an actuating fluid supply pump;
- a first plurality of hydraulically-actuated fuel injectors;
- a first actuating fluid manifold arranged in fluid communication with each of the first plurality of fuel injectors;
- a second plurality of hydraulically-actuated fuel injectors;



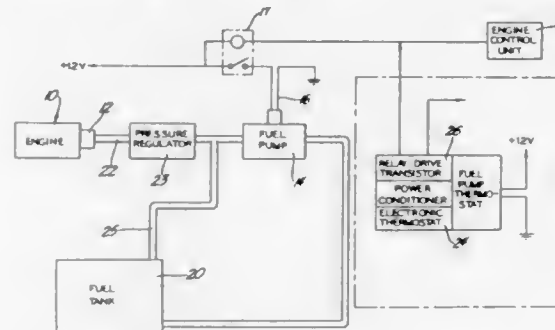
a second actuating fluid manifold arranged in fluid communication with each of the second plurality of fuel injectors;

means for controlling Helmholtz resonance of pressure waves between the first and second manifolds wherein said Helmholtz resonance controlling means includes a spool valve assembly operative to communicate actuating fluid from said actuating fluid supply pump to one of said manifolds only when the actuating fluid pressure in said other manifold is lower than the pressure in said one manifold.

5,509,392
ANTI-VAPOR LOCK FUEL SYSTEM
John J. Schmitz, 19616 Salisbury, St. Clair Shores, Macomb County, Mich. 48080

Filed Apr. 28, 1995, Ser. No. 431,176
Int. Cl.⁶ F02M 37/04

U.S. Cl. 123-516 1 Claim



1. An anti-vapor lock fuel supply system for a vehicle powered by an internal combustion engine having a fuel atomizer, comprising:

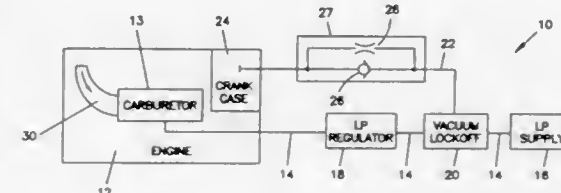
- a fuel tank containing a liquid fuel for use by the internal combustion engine;
- an electrically driven fuel pump having an inlet port fluidly connected to the fuel tank from whence it draws liquid fuel, and a discharge port fluidly connected to a fuel line attached to the fuel atomizer of the internal combustion engine,
- a recycle line having a first end attached to the fuel line at a point near the fuel atomizer, between the fuel atomizer and the fuel pump and a second end attached to the fuel tank;
- an engine control unit associated with the internal combustion engine, the engine control being adapted to control the power to the fuel pump to provide a pumping action;
- a temperature sensor associated with the engine compartment, the sensor measuring the temperature of the engine compartment, the temperature sensor having associated logic circuitry to signal when the engine compartment temperature has risen above a predetermined critical temperature to a point where vapor lock has become probable, the logic signaling and activating the engine control unit when the temperature has risen above the critical temperature to cause the fuel pump to circulate fuel from the tank through the fuel line and recycle line to maintain a constant flow of liquid fuel in the fuel line

until the sensor indicates the temperature has fallen to a level where vapor lock has a low probability at which time the logic signals the engine control unit to cease pumping.

5,509,393
VACUUM LOCKOFF APPARATUS AND METHOD
Curtis D. Leaf; Larry N. Drozdik, both of Madison, Ala.; John C. Hughes, Coon Rapids, and Anthony T. Klejeski, Bethel, both of Minn., assignors to Onan Corporation, Minneapolis, Minn.

Filed Oct. 17, 1994, Ser. No. 323,916
Int. Cl.⁶ F02M 21/04

U.S. Cl. 123-529 6 Claims



1. A system for regulating fuel flow in a fuel line from a supply of fuel to an engine, comprising:

- a) a fuel regulator disposed in the fuel line intermediate of the engine and the fuel supply regulating the flow of fuel to the engine;
- b) a vacuum lockoff apparatus, disposed in the fuel line intermediate of the fuel regulator and the fuel supply and connected to the engine by an air passageway, sensing a partial vacuum condition at the engine, the vacuum lockoff apparatus allowing flow of fuel in the fuel line when a partial vacuum condition is sensed and prohibiting flow of fuel in the fuel line when the partial vacuum condition is no longer sensed;
- c) a one way check valve, disposed intermediate of the engine and the vacuum lockoff apparatus in the air passageway, maintaining partial vacuum condition at the vacuum lockoff means; and
- d) bypass valve means, connected to the air passageway so as to provide an air passageway bypassing the one way check valve, for allowing restricted flow of air to the vacuum lockoff apparatus whereby the partial vacuum condition at the vacuum lockoff apparatus is nullified in a predetermined period of time so that fuel flow is prohibited once the engine has been stopped for the predetermined period of time.

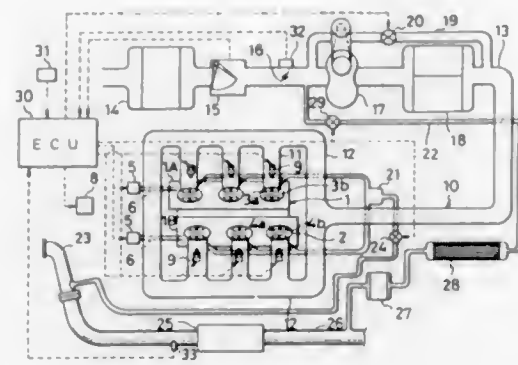
5,509,394
INTERNAL COMBUSTION ENGINE WITH SUPERCHARGER
Mitsuo Hitomi; Kenji Kashiya, and Shunji Masuda, all of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Feb. 1, 1994, Ser. No. 189,838
Claims priority, application Japan, Feb. 3, 1993, 5-016476; Feb. 3, 1993, 5-016477

Int. Cl.⁶ F02B 33/00
U.S. Cl. 123-559.1 46 Claims

1. An internal combustion engine with a supercharger, of a reciprocating piston type, having a supercharger disposed in an intake passage, wherein the relation of a pressure ratio ($\gamma = P/P_0$) of pressure (P) on the discharge side of the supercharger to atmospheric pressure (P_0) at the time of high load with a geometric compression ratio (ϵ) of the engine and a cylinder bore size (B), represented by millimeter, satisfies the following formula:

$$\gamma \geq -0.29E + 6.0 - 0.022B.$$



5,509,395

CANISTER PURGE FLOW REGULATOR

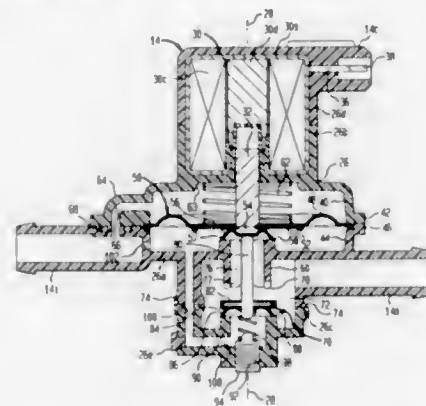
John E. Cook, Chatham, Canada, assignor to Siemens Electric Limited, Chatham, Canada

Filed Mar. 31, 1995, Ser. No. 414,451

Int. Cl.⁶ F02M 33/02

U.S. Cl. 123—518

24 Claims



1. A canister purge flow regulator for regulating purge flow of volatile fuel vapors from a fuel vapor collection canister to an internal combustion engine intake manifold for entrainment with induction flow into an engine in accordance with a purge control input signal to said canister purge flow regulator, said canister purge flow regulator comprising:

- a housing comprising inlet port means adapted to be placed in flow communication with a fuel vapor collection canister and outlet port means adapted to be placed in flow communication with an intake manifold of an internal combustion engine;
- actuating means comprising a movable wall that divides a portion of said housing into first and second chamber spaces;
- means for communicating said inlet port means to said first chamber space to cause pressure in said first chamber space to be substantially equal pressure at said inlet port means;
- means defining a vapor purge flow path through said housing between said inlet port means and said outlet port means;
- said vapor purge flow path through said housing comprising orifice means through which vapor flow from said inlet port means to said outlet port means is constrained to pass and which is disposed to communicate said inlet port means to said second chamber space, said orifice means having a differential pressure versus flow characteristic that provides a predetermined pressure drop at maximum flow through said orifice means such that under an operating condition wherein pressure in said second chamber space approximates intake manifold pressure, pressure at said inlet port means remains significantly above that in said second chamber space;
- said vapor purge flow path comprising first and second parallel branch paths each disposed to communicate said second chamber space to said outlet port means;
- first valve means for controlling flow through said first branch path;

- second valve means for controlling flow through said second branch path;
- means for operatively relating said first valve means and said second valve means for bi-directional motion in unison;
- said actuating means comprising resilient biasing means for causing said first valve means and said second valve means to both be resiliently biased closed to obturate said vapor purge flow path in the absence of a purge control signal commanding opening of said vapor purge flow path; and
- means for causing pressure at said outlet port means to be applied to one of said first valve means and said second valve means in one direction of said bi-directional motion and to the other of said first valve means and said second valve means in another direction of said bi-directional motion when said first valve means and said second valve means are both closed; and
- said actuating means comprising means for acting on said movable wall to cause said first valve means and said second valve means to move in unison in said one direction and respectively open said first branch path and said second branch path in response to a purge control signal commanding opening of said vapor purge flow path whereby the effect of pressure variations at said outlet port means on operation of said actuating means to operate said first valve means and second valve means in unison from closed to open in response to a purge control input signal commanding opening of said vapor purge flow path is made a function of any difference between respective effective areas of said first valve means and of said second valve means that are respectively exposed to pressure at said outlet port means when both said first valve means and said second valve means are closed.

5,509,396

THROTTLE VALVE ACTUATING APPARATUS FOR USE IN INTERNAL COMBUSTION ENGINE

Shigeo Tamaki, Katsuta, Japan, assignor to Hitachi, Ltd. and Hitachi Automotive Engineering Co., Ltd., Japan

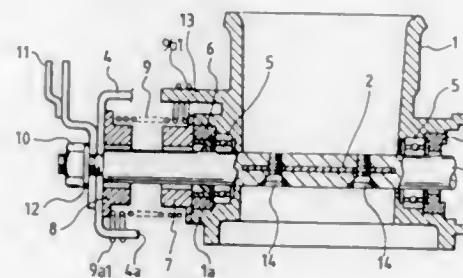
Filed Apr. 12, 1994, Ser. No. 226,468

Claims priority, application Japan, Apr. 12, 1993, 5-084640

Int. Cl.⁶ F02D 9/02

U.S. Cl. 123—400

15 Claims



1. A throttle valve actuating apparatus for use in an internal combustion engine comprising:
- a throttle valve main body;
 - bearing members provided on said throttle valve main body;
 - a throttle valve shaft penetrating said throttle valve main body and supported through said bearing members;
 - a throttle valve mounted fixedly on said throttle valve shaft in said throttle valve main body;
 - an acceleration drum member provided on one end portion of said throttle valve shaft; and
 - a return spring member arranged between one side face of said throttle valve main body and said acceleration drum member;
- said return spring member comprises:
- a first coil spring member and a second coil spring member;
 - each of said first coil spring member and said second coil spring member having the substantially same inner diameter and the substantially same winding number of turns; and

one coil portion of said second coil spring member arranged between two adjacent coil portions of said first coil spring member on the substantially same longitudinal line;

said return spring member giving always the return torque to said throttle valve; wherein

the distance between two adjacent coil portions of said first coil spring member of said return spring member is at least the sum of the wire diameter of said first coil spring member and the wire diameter of said second coil spring member;

the distance between two adjacent coil portions of said second coil spring member of said return spring member is at least the sum of the wire diameter of said first coil spring member and the wire diameter of said second coil spring member; and

a collar member comprises a first collar member and a second member;

said first collar member arranged at an outside of said one side face of said throttle valve main body and surrounding directly an outer peripheral portion of said throttle valve shaft;

said second collar member arranged at an inside of said acceleration drum member and surrounding directly said outer peripheral portion of said throttle valve shaft; and

said first collar member and said second collar member retaining said return spring member therebetween

thereby said return spring member is turned with said throttle valve shaft according to the relative movement of said first collar member and said second collar member and said return spring member is positioned according to said first collar member and said second collar member.

5,509,397

AIR SUPPLY SYSTEM PREVENTING BACKFLOW

Koichi Hoshi, Susono, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

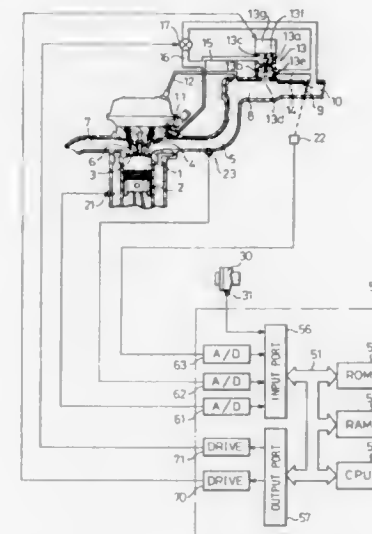
Filed Feb. 27, 1995, Ser. No. 387,304

Claims priority, application Japan, Mar. 11, 1994, 6-041344

Int. Cl.⁶ F02B 23/00

U.S. Cl. 123—585

13 Claims



1. An air supply system for preventing backflow in an internal combustion engine, wherein the engine includes an intake passage and a throttle disposed within the intake passage, the fuel injection system comprising:
- a fuel injector arranged on the intake passage downstream of the throttle valve, wherein the fuel injector includes a fuel injection hole;
 - an air supply passage extending from an upstream portion connected to said intake passage upstream of said throttle valve to a downstream portion connected to a point close to the fuel injection hole of said fuel injector;

a control valve arranged in said air supply passage and controlling an amount of air passing therethrough;

an opening passage for connecting said air supply passage downstream of said control valve to the atmosphere;

a normally closed valve arranged in said opening passage; and

a first control means for controlling the opening of said normally closed valve, wherein the first control means operates to open the normally closed valve when a pressure increase in said intake passage downstream of said throttle valve during predetermined period becomes larger than a predetermined pressure increase value.

5,509,398

Patent Not Issued For This Number

5,509,399

SEMI-AUTOMATIC FLUID POWERED GUN

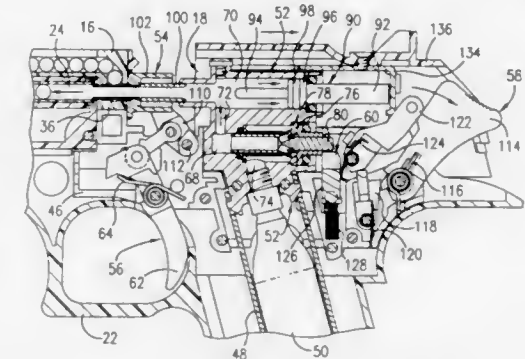
Keith A. Poor, 5302 Whispering Meadows La., Rogers, Ark. 72758

Filed Jan. 12, 1995, Ser. No. 371,759

Int. Cl.⁶ F41B 11/26; 11/06

U.S. Cl. 124—76

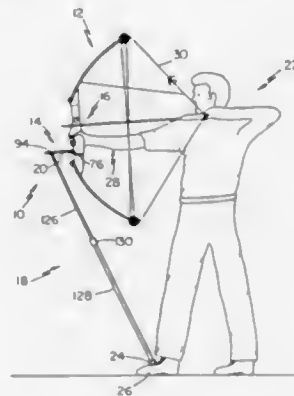
12 Claims



1. A semi-automatic fluid powered gun, comprising:
- an elongated barrel having opposed front and rear open ends;
 - a projectile storage means for storing a plurality of projectiles outside of the barrel and for sequentially positioning each projectile generally in line with the barrel adjacent the rear end;
 - a transfer tube supported to the rear of and in line with the barrel and being movable between a forward position in which the transfer tube moves the positioned projectile into the barrel and prevents the other stored projectiles from being positioned in line with the barrel, and a rear position in which the transfer tube permits the next stored projectile to be positioned in line with the barrel;
 - a moving means for moving the transfer tube between the forward and rear positions to sequentially load projectiles into the barrel each time a projectile is fired;
 - an elongated cylinder positioned to the rear of and in line with the barrel and including opposed front and rear open ends, the transfer tube being received in the front end of the cylinder and providing fluid communication between the cylinder and the barrel when the transfer tube is in the forward position;
 - a piston received in the rear end of the cylinder and being movable within the cylinder relative to the transfer tube between forward and rear positions, the piston facing the transfer tube to define a chamber within the cylinder;
 - a source of pressurized fluid;
 - a fluid passage extending between the source of pressurized fluid and the chamber;
 - a valve provided in the fluid passage for controlling the flow of fluid from the source to the chamber, the valve being movable between open and closed positions;

- a hammer for opening the valve to deliver pressurized fluid to the chamber, the fluid in the chamber acting forward through the transfer tube to fire the projectile from the front end of the barrel and rearward against the piston to move the piston to the rear position, the hammer being movable between a cocked position out of engagement with the valve and a fired position in which the hammer opens the valve;
- a hammer operating means interposed between the piston and the hammer for moving the hammer to the cocked position when the piston is in the rear position; and
- a trigger means for releasing the hammer from the cocked position to initiate firing of the hammer.

5,509,400
BOW ARM SUPPORT STABILIZER SYSTEM
 Manuel L. Chalin, 64 Evergreen Dr., Kinchloe, Mich. 49788
 Filed Sep. 28, 1993, Ser. No. 127,549
 Int. Cl.⁶ F41B 5/14
 U.S. Cl. 124—86 19 Claims

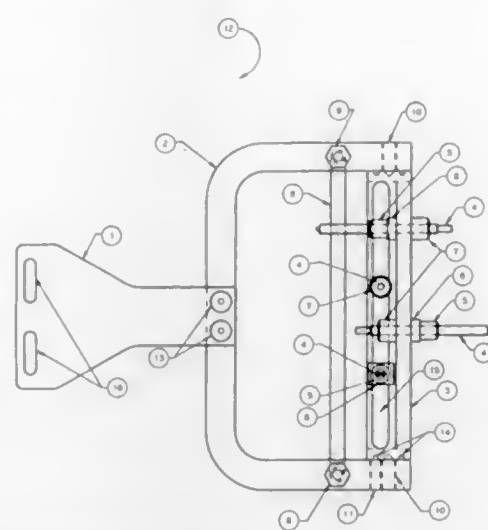


1. A bow arm support stabilizer system in combination with an archer's bow for supporting the archer's bow relative to a support point, comprising:

- a. a bow connecting arm assembly non-rotatably connected to project forwardly from a riser section of the bow, wherein said bow connecting arm assembly includes a connecting shaft having a keyed connection at a rear end thereof to provide for keyed attachment to the riser section; and
- b. a support rod assembly connected to project downwardly from the bow connecting arm assembly so that a lower end of said support rod assembly is engageable with said support point;
- whereby longitudinal axes of said bow, said connecting shaft, and said support rod assembly lie along substantially same plane, whereby said connecting arm assembly and support rod assembly transfers the weight of the bow to the support point so that the archer's support arm does not have to support the bow's weight during aiming and shooting.

5,509,401
ROTARY BOW SIGHT
 Donald R. Truble, 90 Arlington Dr., Warren, Pa. 16365
 Continuation of Ser. No. 874,851, Apr. 28, 1992, abandoned.
 This application Mar. 3, 1994, Ser. No. 205,779
 Int. Cl.⁶ F41G 1/46
 U.S. Cl. 124—87 5 Claims

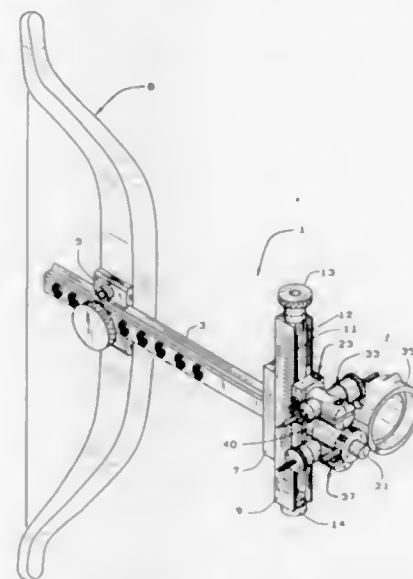
1. An archery bow sight comprising,
- a plurality of sight elements,
- a substantially flat vertical base plate having first and second ends, said first end of said base plate being adapted for mounting an archery bow thereon,
- a C-shaped support frame, said support frame having a vertical central portion and two horizontal extensions, said vertical



central portion being secured to said second end of said base plate in a substantially vertical position, and

a rotatable member, said rotatable member including means for mounting said plurality of sight elements thereon, said rotatable member being rotatably and adjustably mounted between said two horizontal extensions for allowing said plurality of sight elements to move together as the rotatable member is rotated, and said mounting means comprising a plurality of longitudinal slots formed on said rotatable member for adjustably mounting each of said plurality of sight elements thereon.

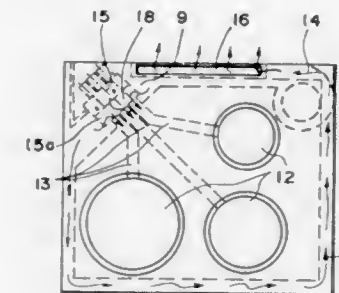
5,509,402
DUAL ARCHERY SIGHT
 Donald R. Sappington, St. Charles County, Mo., assignor to Tokonics Manufacturing, Inc., Wertzville, Mo.
 Continuation-in-part of Ser. No. 91,911, Jul. 16, 1993, Pat. No. 5,379,746, and a continuation-in-part of Ser. No. 127,041, Sep. 27, 1993, Pat. No. 5,414,936. This application Nov. 21, 1994, Ser. No. 342,875
 Int. Cl.⁶ F41G 1/467
 U.S. Cl. 124—87 14 Claims



1. An archery bow sight mountable to an archery bow, the bow sight including a bow sight mounting, a pin sight secured to one side of said mounting, and a scope sight secured to another side of said mounting; said bow sight mounting being pivotally mounted

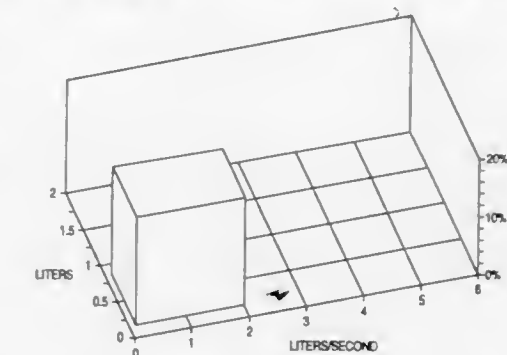
to said bow so that said pin sight and said scope sight may be selectively interchanged.

5,509,403
GAS FIRES COOKING ASSEMBLY WITH PLATE CONDUCTIVE TO HEAT RADIATION
 Michael Kahlke, Mainz, and Kurt Schaupt, Hofheim, both of Germany, assignors to Schott Glaswerke, Mainz, Germany
 Filed Aug. 10, 1994, Ser. No. 288,303
 Claims priority, application Germany, Aug. 11, 1993, 43 26 945.1
 Int. Cl.⁶ F24C 3/00
 U.S. Cl. 126—39 E 14 Claims



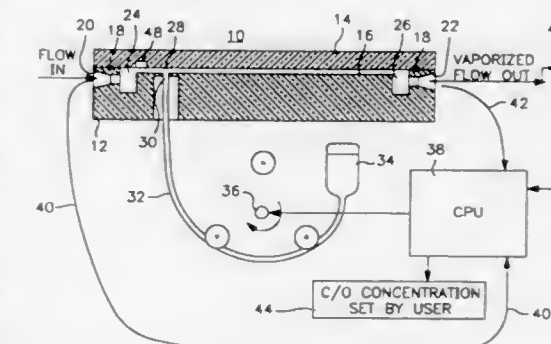
1. A gas cooking assembly comprising:
- a housing having first and second spaces formed therein and said first space being partitioned off from said second space;
- a cover plate mounted atop said housing to define a continuous cooking surface;
- said cover plate being made of a material conductive to heat radiation and having a lower surface facing away from said cooking surface;
- at least one gas-fired burner mounted in said second space below said plate;
- said gas-fired burner including a burner chamber and a porous burner plate mounted in said burner chamber;
- said lower surface of said cover plate and said burner plate conjointly defining a gap therebetween;
- blower means mounted in said first space for introducing air from the ambient into said first space and for maintaining said first space at a predetermined overpressure of at least 0.1 mbar;
- a conduit communicating with said burner chamber and extending from said burner chamber into said first space;
- said conduit having a gas-tight peripheral surface within said second space and having an inlet opening means in said first space;
- a control unit for metering gas;
- said control unit being mounted in said first space whereby said control unit is cooled by said air introduced into said first space by said blower means;
- said control unit including valve block means having an exchangeable nozzle for injecting a jet of said gas into inlet opening means of said conduit thereby entraining air present in said first space to form a gas/air mixture which travels along said conduit and into said burner chamber and upwardly through said porous burner plate into said gap;
- ignition means mounted in said gap for igniting said gas/air mixture to generate said heat radiation whereby exhaust gases are produced; and,
- exhaust-gas channel means arranged in said housing for conducting said exhaust gases away from said gap.

5,509,404
INTRAPULMONARY DRUG DELIVERY WITHIN THERAPEUTICALLY RELEVANT INSPIRATORY FLOW/ VOLUME VALUES
 Lester J. Lloyd, Orinda, and Reid M. Rubsamen, Berkeley, both of Calif., assignors to Aradigm Corporation, Hayward, Calif.
 Filed Jul. 11, 1994, Ser. No. 273,375
 Int. Cl.⁶ A61M 11/00
 U.S. Cl. 128—200.14 30 Claims



1. A method of drug delivery into a patient's airway, comprising: simultaneously measuring a patient's inspiratory flow rate and inspiratory volume; determining whether the measured inspiratory flow rate and inspiratory volume equals a predetermined inspiratory flow rate and inspiratory volume; and releasing an aerosolized drug responsive to said measured inspiratory flow rate and inspiratory volume being determined to be equal to said predetermined inspiratory flow rate and inspiratory volume into the patient's inspiratory flow at substantially zero velocity at a point of release or at a velocity which reduces to substantially zero after travelling 2 cm or less from a point of release in the absence of the patient's inspiration.

5,509,405
PUMP FLOW VAPORIZER
 James N. Mashak, Sun Prairie, Wis., assignor to Ohmeda Inc., Liberty Corner, N.J.
 Filed Nov. 21, 1994, Ser. No. 342,549
 Int. Cl.⁶ A61M 15/00
 U.S. Cl. 128—203.12 11 Claims



1. An anesthetic vaporizer comprising an inlet for receiving carrier gas and an outlet for carrier gas and vaporized anesthetic agent for delivery to a patient, a vaporizing chamber forming a flow path between said inlet and said outlet, said vaporizing chamber comprising an elongated chamber having a large width to height ratio and forming a flow field for the flow of carrier gas therethrough, a liquid anesthetic agent inlet in said vaporizing chamber for admitting liquid anesthetic agent at a predetermined location into the flow of carrier gas through said vaporizing chamber, means for supplying liquid anesthetic agent to said liquid

anesthetic agent inlet, and means for controlling the flow of the anesthetic agent supplied to said liquid anesthetic agent inlet to effect an immediate vaporization of the liquid anesthetic agent in said vaporizing chamber to control the concentration of vaporized anesthetic agent in the carrier gas delivered through said outlet to the patient.

5,509,406

ANESTHESIA DEVICE

Mikael Kock, Akersberg; Georgios Psaros, Tullinge, and Göran Skog, Bromma, all of, Sweden, assignors to Siemens Elema AB, Solna, Sweden

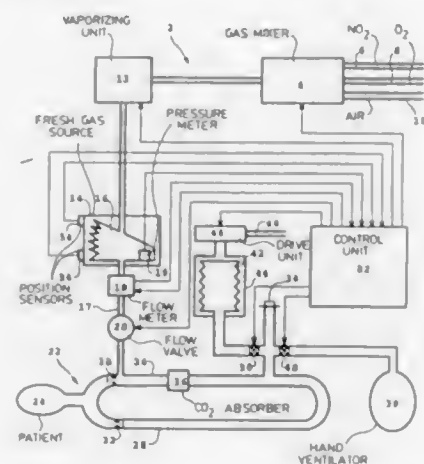
Filed Jul. 20, 1995, Ser. No. 504,409

Claims priority, application Sweden, Jul. 20, 1994, 9402537

Int. Cl.⁶ A61M 16/01

U.S. Cl. 128—203.14

7 Claims



1. An anesthesia system comprising:

- a respiratory circuit connectable to a patient which delivers a respiratory gas to the patient during an inspiratory phase and which conveys expired respiratory gas from the patient during an expiratory phase;
- a fresh gas source containing fresh respiratory gas;
- a fresh gas line connecting said fresh gas source to said respiratory circuit;
- a flow meter disposed in said fresh gas line which measures a flow of fresh respiratory gas being supplied to said respiratory circuit from said fresh gas source, said flow meter requiring periodic calibration;
- a flow valve disposed in said fresh gas line which regulates the flow of fresh respiratory gas therein; and
- control means connected to the flow meter and the flow valve for operating said flow valve dependent on a measured flow of fresh respiratory gas measured by said flow meter for delivering a defined flow of fresh respiratory gas to the respiratory circuit and for calibrating the flow meter independently of the inspiratory phase and the expiratory phase for maintaining substantially continuous control of said flow valve.

5,509,407

FIRST STAGE PRESSURE REGULATOR WITH FLOW AROUND SEAT

Manfred Schuler, 17462 Wayne Ave., Irvine, Calif. 92714

Filed Jun. 10, 1994, Ser. No. 258,093

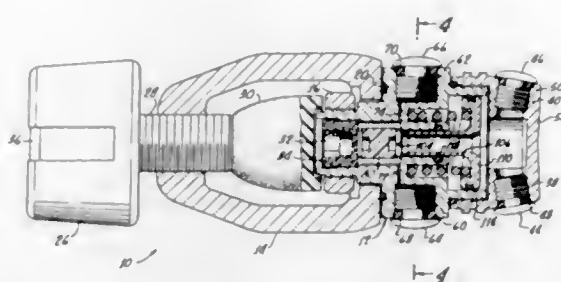
Int. Cl.⁶ A62B 7/04

U.S. Cl. 128—205.24

23 Claims

1. A first stage pressure regulator for use with a high pressure source of breathable gas, said first stage pressure regulator comprising:

- a housing having a longitudinal axis;



means for attaching said housing to a high pressure source of breathable gas;

a valve seat member having a length with a longitudinal axis and a central seating surface perpendicular to the valve seat longitudinal axis, said valve seat member being fixed within said housing with the central seating surface perpendicularly disposed to the housing longitudinal axis, said valve seat member having means for enabling said breathable gas to pass said valve seat member parallel to the valve seat member longitudinal axis to said central seating surface;

a piston having a hollow center in fluid communication with a pressure regulated outlet and open end means for sealing said piston against the central seating surface of the valve seat member; and

spring means for biasing said piston in order to effect a regulated valve opening between the piston open end means and the valve seat member.

5,509,408

NEONATAL RESUSCITATION DEVICE

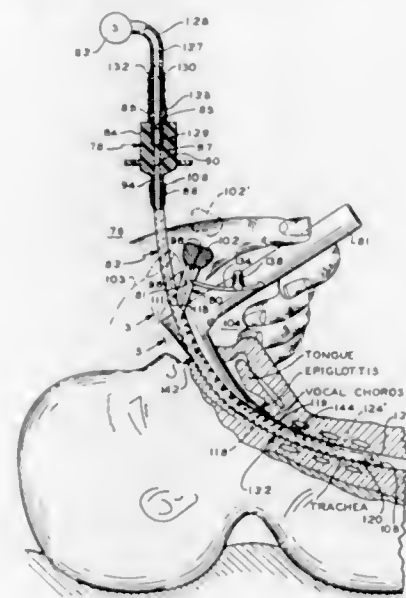
Peter S. Kurtis, West Hartford, Conn., assignor to Vital Signs, Inc., Totowa, N.J.

Continuation-in-part of Ser. No. 842,612, Feb. 27, 1992, abandoned, which is a continuation-in-part of Ser. No. 398,782, Aug. 25, 1989, abandoned, which is a continuation-in-part of Ser. No. 361,730, Jun. 2, 1989, abandoned, which is a continuation of Ser. No. 96,222, Sep. 4, 1987, abandoned, which is a continuation of Ser. No. 25,326, Mar. 13, 1987, abandoned. This application Mar. 16, 1994, Ser. No. 214,398

Int. Cl.⁶ A61M 16/04

U.S. Cl. 128—207.14

39 Claims



1. Apparatus for resuscitating a neonatal infant having a mouth, a trachea and a pathway extending from the mouth into the trachea, and the pathway having a length and a curvature, comprising:

a generally elongated endotracheal tube including a wall and having a proximate end and a distal end and including an upper section and a lower section shorter in length than said upper section, said lower section being flexible and said upper section including a portion which is substantially equal in length to the length of the pathway;

a curved, rigid shape support member mounted in said wall of said endotracheal tube, said support member substantially conforming to the curvature of the pathway and said support member making said upper section of said endotracheal tube substantially rigid and providing said upper section with a curvature substantially conforming to the curvature of the pathway;

a rigid connector including a rigid cylindrical upper portion for being connected to a mechanical source of suctioning or a source of controlled mechanical ventilation connected to a source of oxygen the source of mechanical ventilation for controlling the provision of oxygen to and removal of carbon dioxide from the infant, and a rigid cylindrical lower portion connected to said proximate end of said endotracheal tube, said upper and lower portions being integral, said rigid cylindrical upper portion having a first outer diameter and said rigid cylindrical lower portion having a second outer diameter smaller than said first outer diameter;

said endotracheal tube having at least a first lumen extending therethrough and said connector having a conduit extending therethrough, said first lumen and said conduit connected and combining to form a combined passageway having a substantially uniform cross-section, throughout its length, for suctioning or ventilating and supplying oxygen to or removing carbon dioxide from the infant; and

an adapter provided on said rigid cylindrical lower portion of said connector and said adapter provided with an adapter passageway in fluid communication with said combined passageway, said adapter provided at a location which remains outside of the mouth of the infant while the infant is being resuscitated and said adapter passageway provided with an entrance opening for venting said combined passageway to substantially eliminate suction at said distal end of said endotracheal tube during insertion of said endotracheal tube into the pathway and while said endotracheal tube is connected to the source of suctioning, said adapter passageway permitting the dispensing of liquid medicine therethrough into said combined passageway and into the infant while said endotracheal tube is connected to the source of controlled mechanical ventilation, and said combined passageway and said adapter passageway having cross-sections sufficiently large to permit the insertion therethrough of a suctioning catheter while said endotracheal tube is connected to the source of controlled mechanical ventilation.

5,509,409

NASAL CANNULA ASSEMBLY

Marjorie F. Weatherholt, La Crescenta, Calif., assignor to The Living Trust of Marjorie F. Weatherholt, La Crescenta, Calif.

Filed Sep. 12, 1994, Ser. No. 304,278

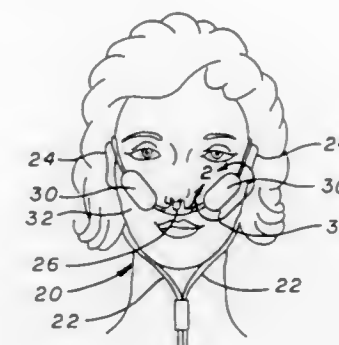
Int. Cl.⁶ A61M 16/00; 15/08

U.S. Cl. 128—207.18

15 Claims

1. A nasal cannula assembly, comprising:

- a nasal cannula having a pair of apertured nostril outlet prongs and a pair of oxygen inlets;
- a pair of oxygen feed tubes, each tube having an inlet and an outlet, the tubes' outlets being connected to the cannula inlets respectively, and the feed tube inlets being adapted for connection to a source of pressurized oxygen, each of the feed tubes intermediate their ends adapted to be looped over a user's ears, respectively; and
- a pair of face guards attached to respective small segments of the feed tubes between the nasal cannula and portions of the feed tubes adapted to be looped over the user's ear to lift an adjacent portion of the feed tubes away from a user's face and



prevent irritation thereof, each face guard having a surface adapted to rest against a user's face and including a pillow-like, rectangular cushioned pad of soft batting material within a flexible enclosure having rounded edges, disposed between the feed tube and the user's cheek, wherein the width of each face guard taken perpendicular to a longitudinal axis of the small segment of the respective feed tube to which the face guard is attached, is substantially greater than the diameter of the feed tube, said surface adapted to rest against a user's face being totally free of adhesive.

5,509,410

STRIP ELECTRODE INCLUDING SCREEN PRINTING OF A SINGLE LAYER

Hugh A. O. Hill, Oxford; Irving J. Higgins, Bedford; James M. McCann, Oxford, all of, Great Britain, and Graham Davis, Plainsborough, N.J., assignors to MediSense, Inc., Waltham, Mass.

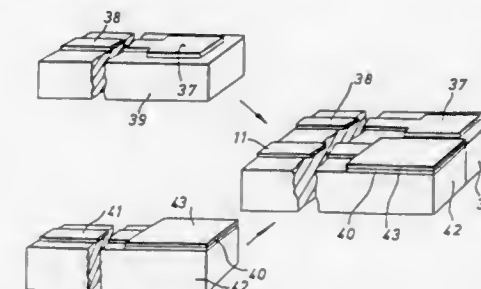
Continuation of Ser. No. 905,504, Jun. 25, 1992, abandoned, which is a continuation of Ser. No. 762,657, Sep. 19, 1991, abandoned, which is a continuation of Ser. No. 429,055, Oct. 30, 1989, abandoned, which is a division of Ser. No. 2,120, Jan. 12, 1987, abandoned, which is a continuation-in-part of Ser. No. 607,599, May 7, 1984, abandoned. This application Jul. 27, 1994, Ser. No. 281,237

Claims priority, application United Kingdom, Jun. 6, 1983, 8323799; Dec. 16, 1983, 8333644; Jan. 11, 1984, 8400650; Feb. 29, 1984, 8405262; Feb. 29, 1984, 8405263

Int. Cl.⁶ A61B 5/00

U.S. Cl. 128—637

9 Claims



1. A method of making a single use disposable electrode strip for attachment to signal readout circuitry of a sensor system to detect a current representative of a compound in a blood sample, the strip comprising:

- a) an elongated support having a substantially flat, planar surface, adapted for releasable attachment to said readout circuitry;
- b) a first conductor extending along said surface and comprising a conductive element for connection to said readout circuitry;
- c) an active electrode on said surface in contact with said first conductor, said active electrode comprising, in a single printed layer on said surface an admixture of an enzyme capable of catalyzing a reaction involving a substrate for said enzyme, a conductive material, and a mediator capable of

transferring electrons transferred between said enzyme-catalyzed reaction and said first conductor to create a current representative of the activity of said enzyme and representative of said compound;

d) a second conductor extending along said support, comprising a conductive element for connecting to said readout circuitry; and

e) a reference electrode in contact with said second conductive conductor,

the method comprising:

a) supplying an ink comprising said admixture of said enzyme, said conductive material, and said mediator; and

b) printing said active electrode by applying said ink to said surface over an area so dimensioned and sufficiently close to said reference electrode that said active electrode and said reference electrode present a combined effective area small enough to be completely coverable by a drop of blood.

5,509,411

INTRAVASCULAR SENSING DEVICE

Laszlo Littmann, Charlotte, N.C.; Gene Samson, Fremont, and Gabriel Vegh, Alamo, both of Calif., assignors to Cardima, Inc., Fremont, Calif.

Continuation-in-part of Ser. No. 10,818, Jan. 29, 1993, Ser. No. 43,449, Apr. 5, 1993, abandoned, and Ser. No. 57,294, May 5, 1993, abandoned. This application Jan. 27, 1994, Ser. No. 188,619

Int. Cl.⁶ A61B 5/04

U.S. Cl. 128—642

48 Claims



1. An elongated intravascular device for detecting electrical activity within a blood vessel of a patient's heart, comprising:

a) an elongated shaft having proximal and distal sections with the distal section being configured to be advanceable through a coronary artery or a cardiac vein of a patient's heart;

b) at least one pair of sensing electrodes mounted on the distal section with the electrodes being electrically connected to separate electrical conductors which extend to the proximal section of the elongated shaft; and

c) a manually shapable flexible guiding tip which extends axially in a distal direction from the sensing electrodes on the distal section and which is configured to be readily advanced through a blood vessel of the patient's heart.

5,509,412

MAGNETIC RESONANCE IMAGING OF BLOOD VOLUME

Mark M. Bahu, Creve Coeur, Mo., assignor to Wisconsin Alumni Research Foundation, Madison, Wis.

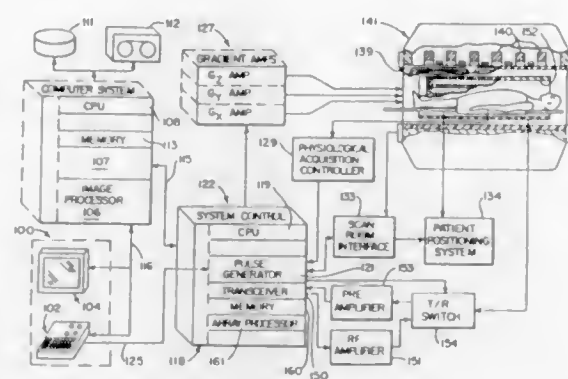
Filed Aug. 24, 1994, Ser. No. 295,190

Int. Cl.⁶ A61B 5/005

U.S. Cl. 128—653.2

5 Claims

1. A method for producing an NMR image which indicates blood volume within a slice in a stationary patient, the steps comprising:



a) acquiring NMR data from the slice for a set of T_2 weighted images depicting the patient over a course of time;

b) injecting a susceptibility contrast agent into the patient during the course of time such that the patient's blood transports the susceptibility agent through the slice as the NMR data is being acquired;

c) reconstructing the set of T_2 weighted images using the acquired NMR data, each T_2 weighted image including an array of NMR signal intensity values S_{xy} ;

d) calculating a blood volume value BV at a voxel location within the slice by forming a time course NMR signal $S_{xy}(t)$ using the corresponding NMR signal intensity values S_{xy} from successive T_2 weighted images and fitting a model curve defined by a set of parameters which include the blood volume BV to the time course NMR signal $S_{xy}(t)$ using a nonlinear regression parameter estimation process;

e) repeating step d) for each voxel location in the NMR image; and

f) producing the NMR image using the blood volume values BV calculated in step d).

5,509,413

ULTRASONIC DIAGNOSTIC APPARATUS

Terufumi Akama, and Yoichi Sumino, both of Tochigi, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

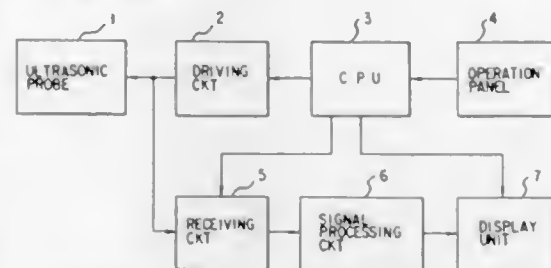
Filed Aug. 5, 1994, Ser. No. 286,329

Claims priority, application Japan, Aug. 11, 1993, 5-199517; Sep. 2, 1993, 5-218503

Int. Cl.⁶ A61B 8/00

U.S. Cl. 128—660.02

24 Claims



1. An ultrasonic diagnostic apparatus for obtaining ultrasonic information by scanning an interior of a subject with an ultrasonic wave through an ultrasonic probe, an output level of the ultrasonic wave being determined on the basis of a first parameter and a second parameter, the first parameter being a drive voltage which is applied to the ultrasonic probe, comprising:

means for setting the second parameter, wherein the second parameter is selected from at least one of depth of focus, rate frequency, burst wave number transmission aperture and duty ratio of the ultrasonic wave; and

means for controlling the drive voltage on the basis of the set second parameter such that the output level of the ultrasonic wave is equal to or less than a predetermined upper limit value.

5,509,414

APPARATUS AND METHOD FOR NON-CONTACTING DETECTION OF RESPIRATION

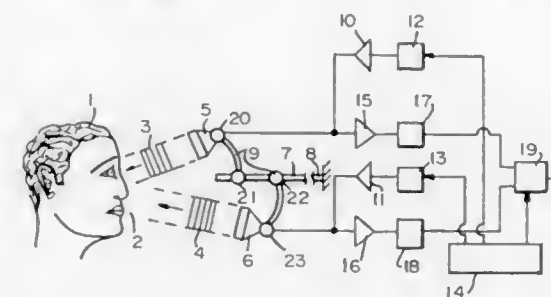
Bertil Hök, Västerås, Sweden, assignor to Hök Instrument AB, Västerås, Sweden

Filed Sep. 27, 1994, Ser. No. 312,756

Int. Cl.⁶ A61B 8/00; 5/08

U.S. Cl. 128—660.02

18 Claims



1. Apparatus for the detection of air flow at the mouth and nose of a subject without contacting the subject, comprising:

at least one transducer for converting an alternating electrical voltage into directional ultrasound waves in air, and for converting airborne ultrasound waves into electrical signals, means for directing said ultrasound waves through unconfined air from said at least one transducer towards the mouth and nose of said subject for reflection therefrom, said waves after or before reflection having their velocity non-reciprocally altered by air flow from respiration of said subject independently of physical movement of said subject,

driving circuit means providing said at least one transducer with alternating voltage, and

detector circuit means performing analysis of said electrical signals converted by said at least one transducer from said ultrasound waves after said waves are reflected by the mouth and nose of said subject, said analysis being directed to a determination of whether said reflected sound waves have had their velocity altered by air flow accompanying respiration of said subject.

5,509,415

METHOD FOR REDUCING VECTOR DENSITY BASED ON IMAGE SIZE

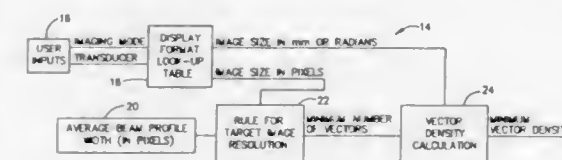
Rowland F. Saunders, Hartland, and Michael J. Washburn, New Berlin, both of Wis., assignors to General Electric Company, Milwaukee, Wis.

Filed Nov. 22, 1994, Ser. No. 343,317

Int. Cl.⁶ A61B 8/00

U.S. Cl. 128—660.07

8 Claims



1. A method for maximizing frame rate of an ultrasound imaging apparatus, comprising the steps of:

determining an actual displayed image size; determining a minimum vector density requirement for a B mode which will provide a useful image based on the actual displayed image size;

determining a minimum vector density requirement for a color mode which will provide a useful image based on the actual displayed image size;

using a vector spacing that will meet the minimum vector density requirements.

5,509,416

FETAL HEART DETECTOR

Barnaby Wilmott, West Sussex, Great Britain, assignor to Oxford Medical Limited, Witney, Great Britain

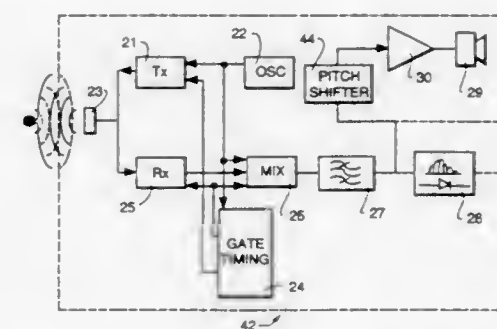
Filed Nov. 7, 1994, Ser. No. 335,465

Claims priority, application United Kingdom, Nov. 8, 1993, 9322977

Int. Cl.⁶ A61B 8/00

U.S. Cl. 128—661.07

5 Claims



1. A self contained, hand held, single unit fetal detector, the detector comprising ultrasonic receiving and transmitting means; a selectively actuable ultrasonic receiving circuit and a selectively actuable ultrasonic transmitting circuit, wherein each circuit is connected to the ultrasonic receiving and transmitting means; control means for actuating either the ultrasonic receiving circuit or the ultrasonic transmitting circuit; and a loudspeaker connected to said ultrasonic receiving circuit for generating an audio output signal, wherein the control means causes the ultrasonic transmitting circuit to transmit pulses of ultrasound and causes the ultrasonic receiving circuit only to pass signals to the loudspeaker between said transmission of pulses of ultrasound and after a predetermined period following termination of said transmission of a pulse.

5,509,417

METHOD AND APPARATUS FOR PHASED ARRAY COUPLING ULTRASONIC ENERGY INTO AN ACOUSTIC WAVEGUIDE WIRE

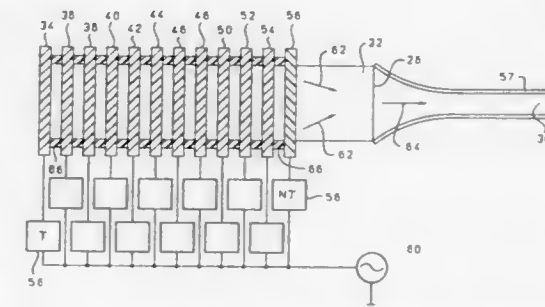
Fleming Dias, Palo Alto, and Hewlett E. Melton, Jr., Sunnyvale, both of Calif., assignors to Hewlett Packard Company, Palo Alto, Calif.

Filed Dec. 19, 1994, Ser. No. 358,279

Int. Cl.⁶ A61B 8/12

U.S. Cl. 128—662.06

23 Claims



1. An apparatus for generating and transmitting ultrasonic energy comprising:

a longitudinally extending transmission line having an input end, said input end having an axis;

an array of ultrasonic transducers in acoustic energy-transfer relationship with said transmission line, said ultrasonic transducers being at dissimilar distances from said input end; and

excitation means connected to said ultrasonic transducers for applying a separate phase-shifted excitation signal to each ultrasonic transducer of said array, each said separate phase-shifted excitation signal applied to an ultrasonic transducer having a phase relationship with phase-shifted excitation signals applied to adjacent ultrasonic transducers of said array such that ultrasonic energy transmitted from said ultrasonic transducers is directed for conduction along said transmission line.

5,509,418

ULTRASOUND DIAGNOSTIC PROBE HAVING ACOUSTICALLY DRIVEN TURBIN

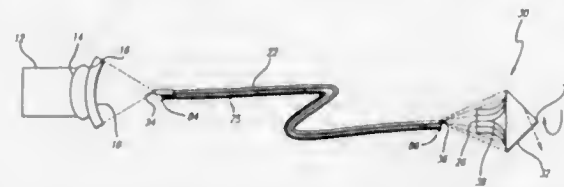
Paul Lum; Michael Greenstein, both of Los Altos, and Edward Verdonk, Redwood City, all of Calif., assignors to Hewlett-Packard Co., Palo Alto, Calif.

Filed Jan. 17, 1995, Ser. No. 373,682

Int. Cl.⁶ A61B 8/12

U.S. Cl. 128—662.06

20 Claims



1. A catheter apparatus for obtaining an image of internal surface characteristics of a vascular vessel, comprising: a tubular element adapted for insertion into the vascular vessel; a non-rotating acoustic waveguide disposed within said tubular element and coupled to a source of an ultrasonic signal located external to the vascular vessel; and means responsive to said ultrasonic signal for directing said ultrasonic signal in a rotating pattern from a distal end of said acoustic waveguide through a distal end of said tubular element.

5,509,419

CARDIAC MAPPING AND ABLATION SYSTEMS

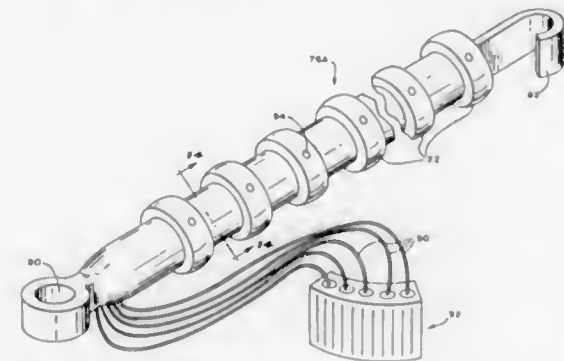
Stuart D. Edwards, Los Altos; Thomas E. Kordis, Sunnyvale, and David K. Swanson, San Jose, all of Calif., assignors to EP Technologies, Inc., Sunnyvale, Calif.

Division of Ser. No. 951,157, Sep. 25, 1992, Pat. No. 5,309,910. This application Dec. 16, 1993, Ser. No. 168,476

Int. Cl.⁶ A61B 5/042; A61N 5/02

U.S. Cl. 128—642

5 Claims



1. An electrode assembly comprising: at least one elongated spline having a distal end and a proximal end and carrying a plurality of spaced apart electrodes, said spline being of a circular cross-section, means for attaching said spline to a distal end of a catheter, said spline comprising a plurality of alternating electrically conductive layers and

electrically non-conductive layers, said conducting and non-conducting layers being configured in the shape of concentric rings, a first plurality of electrical conductors located within said spline, each connecting a different one of said electrodes to a different one of said conductive layers, each one of said first plurality of conductors being electrically insulated except at its ends, and a second plurality of electrical conductors each electrically connected to a different one of said conductive layers for electrically connecting said electrically conductive layers to an electrical signal processing device.

5,509,420

BONE ASSESSMENT APPARATUS AND METHOD

Naoki Ohtomo, and Shigeo Kimura, both of Tokyo, Japan, assignors to Aloka Co., Ltd., Mitaka, Japan

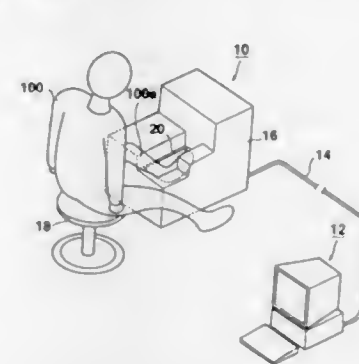
Filed Jun. 29, 1994, Ser. No. 268,187

Claims priority, application Japan, Jun. 30, 1993, 5-162903

Int. Cl.⁶ A61B 8/00

U.S. Cl. 128—660.9

27 Claims



1. A bone assessment apparatus for transmitting and receiving measuring waves through a test part of a patient to diagnose the test part based on data obtained from the received waves, comprising:

- transmitting/receiving devices for transmitting and receiving measuring waves through the test part;
- a measuring bath for containing a coupling liquid to exclude an air layer between the test part and the transmitting/receiving devices; and
- noncontacting means for keeping the test part out of contact with the coupling liquid inside said measuring bath.

5,509,421

SYSTEM, WITH SENSOR POSITIONING INDICATOR, FOR MONITORING A BIOLOGICAL SIGNAL

Jeremy L. Muller, Pelham, N.H.; Gordon W. Neff, Lexington, Mass.; Joseph T. Pappalardo, Magnolia, Mass., and G. Peter Pulsifer, Dracut, Mass., assignors to Analogic Corporation, Peabody, Mass.

Filed Apr. 25, 1995, Ser. No. 428,719

Int. Cl.⁶ A61B 8/00

U.S. Cl. 128—662.04

17 Claims

1. A system for monitoring a biological signal, representative of a physiological characteristic, from a living body, the system being of the type including sensing means, positionable on the living body, for sensing the biological signal and for generating an electrical signal representative of the biological signal; and processing means, coupled to said sensing means, for processing said electrical signal; said system further comprising: indicator means, spatially fixed relative to and within the view of said sensing means, for indicating whether said sensing means is sensing the biological signal as the sensing means is moved relative to and positioned on the living body.

5,509,423

PUMP BAND

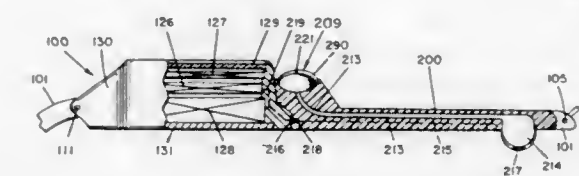
John D. Bryars, Encinitas, Calif., assignor to Advanced Body-metrics Corporation, Rancho Santa Fe, Calif.

Filed Dec. 28, 1993, Ser. No. 174,266

Int. Cl.⁶ A61B 5/0245

U.S. Cl. 128—690

17 Claims



1. A pneumatic pump assembly including, support means, pump means formed in said support means, an inlet valve in said support means for selectively admitting fluid into said pump means, said inlet valve adapted to be self-sealing when pressure is applied to said pump means whereby fluid in said pump means is not passed through said inlet valve, a pressure relief valve in said support means to selectively pass fluid therethrough from said pump means, bladder means mounted in said support means, said bladder means connected to receive fluid from said pump means and be inflated thereby when pressure is applied to said pump means, and sensor means mounted to said bladder means such that the positional orientation of said sensor means is dependent upon the inflation level of said bladder means.

5,509,422

CLINICAL THERMOMETER WITH PULSIMETER

Tetsuji Fukami, 9-33, 3-chome, Kotabe, Sawara-ku, Fukuoka-shi, Fukuoka-ken, Japan

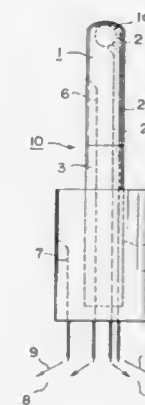
Filed Oct. 12, 1994, Ser. No. 321,970

Claims priority, application Japan, Apr. 14, 1994, 6-075946; May 9, 1994, 6-095197

Int. Cl.⁶ A61B 5/0205

U.S. Cl. 128—670

6 Claims



1. A clinical thermometer in combination with a pulsimeter comprising:

- a first hollow cylinder having a closed end, and an open end and formed of an electrically and thermally conductive material, said first cylinder having a first diameter,
- a second hollow cylinder formed of an electrically conductive material and having a diameter larger than said first diameter and suitable to be hand held,
- a cylindrical body of electrically nonconductive and thermally insulative material joining said first cylinder at said open end substantially coaxially to a first end of said second cylinder,
- a thermoelectric transducer disposed within said first hollow cylinder adjacent said closed end thereof for sensing temperature transmitted through said first cylinder,
- and a plurality of electric conductors disposed within said hollow cylinders and said cylindrical body, wherein two of said electric conductors are connected to said transducer for connecting said transducer to means for measuring the temperature to which said transducer is exposed, and two more of said electric conductors are connected to said hollow cylinders, one to each, for connecting said hollow cylinders to means for measuring pulse rate.

5,509,424

CONTINUOUS CARDIAC OUTPUT MONITORING SYSTEM

Ammar Al-Ali, Costa Mesa, Calif., assignor to Aws Salim Nashif, Huntington Beach, Calif.

Filed Jan. 28, 1994, Ser. No. 188,274

Int. Cl.⁶ A61B 5/028

U.S. Cl. 128—692

7 Claims



1. An apparatus for measuring volume flow rate of a liquid having a pulsatile flow within a body lumen, said apparatus comprising:

- a heat transfer device in thermal communication with said liquid, said heat device to a first temperature, said first temperature varying with the pulsatile flow of said liquid, wherein said heat transfer device comprises a thermal coil;
- a first temperature sensor adapted to be in thermal communication with said heat transfer device to measure the temperature of said heat transfer device, said first temperature sensor having a first output with a first output signal indicative of the temperature of said heat transfer device;
- a second temperature sensor adapted to be in thermal contact with said liquid to measure a native temperature of said liquid, said second temperature sensor having a second output with a second output signal indicative of the native temperature of said liquid;
- a comparator which responds to said first output signal and said second output signal to provide a temperature difference signal representing the difference in temperature between said native temperature of said liquid and the temperature of said heat transfer device;
- a signal processing unit for extracting pre-specified features from said temperature difference signal; and

a neural network responsive to said pre-specified features as input parameters and configured to output volume flow rate of said liquid.

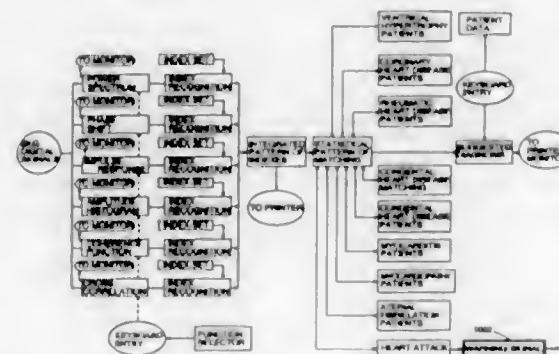
5,509,425

ARRANGEMENT FOR AND METHOD OF DIAGNOSING AND WARNING OF A HEART ATTACK

Genquan Feng, P.O. Box 1796, New York, N.Y. 10185-0016
Continuation-in-part of Ser. No. 397,695, Oct. 30, 1989, abandoned, and Ser. No. 994,492, Dec. 21, 1992, Pat. No. 5,357,976. This application May 5, 1994, Ser. No. 238,719
Int. Cl.⁶ A61B 5/0402

U.S. Cl. 128—702

18 Claims



1. A method of diagnosing a cardiac condition and warning of a heart attack of a patient, comprising the steps of:

- acquiring electrocardiographic signals from the patient;
- mathematically determining a plurality of functions descriptive of the patient from the electrocardiographic signals;
- establishing a set of indices for each function, each index having two states, each indicative of the cardiac condition of the patient;
- recognizing the state of each index for each function;
- generating an integrated pattern of the states of the indices from a plurality of the functions;
- storing a collection of index patterns, each containing a multitude of patterns of the states of indices for a multitude of patients whose cardiac condition is known;
- storing a collection of index patterns of the patients having a heart attack each containing a multitude of patterns of the states of indices for a multitude of patients whose heart attack condition is known;
- matching the generated integrated pattern against the stored collection of the index patterns of the patients having a heart attack, to determine the condition of heart attack of the patient being diagnosed;
- matching the generated integrated pattern against the stored collection of index patterns to determine the cardiac condition of the patient being diagnosed; and
- generating a signal for warning of a heart attack when the heart attack of the patient being diagnosed with step (h).

5,509,426

ARM BRACE

Frederick O. Sowerby, 360 N. Arroyo Grande, #411, Henderson, Nev. 89014

Filed Jun. 9, 1994, Ser. No. 257,210

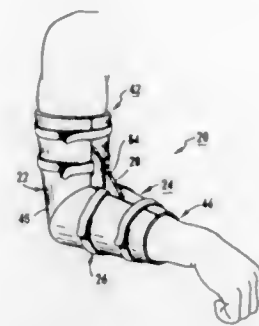
Int. Cl.⁶ A61F 5/37; 5/00

U.S. Cl. 128—878

6 Claims

1. A device for confining the angular movement of an elbow of an athlete, the arm including an upper arm section and a forearm section coupled at the elbow, comprising:

- a brace having a first arm-engaging portion for engaging at least a portion of the upper arm and a portion of the forearm, and a second arm-engaging portion for engaging at least a portion



of the upper arm and a portion of the forearm, each portion surrounding approximately half of the arm, the portions moveable from a first open position for acceptance of an arm therein, and a second closed position for substantially enclosing said arm; and

stop means connected to said first and second arm-engaging portions for preventing the elbow of the athlete from extending to an angle of greater than about 105 degrees.

5,509,427

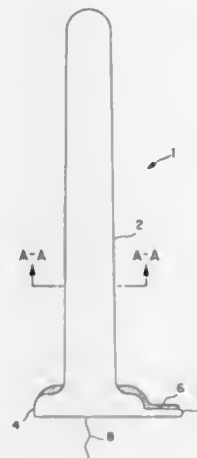
URETHRAL PLUG ASSEMBLY HAVING ADHESIVE FOR ENHANCED SEALING CAPABILITIES AND METHOD OF USING SAID PLUG ASSEMBLY

John G. Simon, Boston; Paul D. McLaughlin, Scituate, both of Mass.; Leo C. Felice, Pascoage, R.I.; Sharad Joshi, Watertown, and Azhar Syad, Boston, both of Mass., assignors to UroMed Corporation, Watertown, Mass.

Continuation-in-part of Ser. No. 62,592, May 17, 1993, and a continuation-in-part of Ser. No. 88,469, Jul. 7, 1993, abandoned, each, Jul. 7, 1993, which is a continuation-in-part of Ser. No. 811,571, Dec. 20, 1991, which is a continuation-in-part of Ser. No. 746,364, Aug. 16, 1991, abandoned, which is a continuation-in-part of Ser. No. 636,285, Dec. 31, 1990, Pat. No. 5,090,424. This application Sep. 20, 1993, Ser. No. 124,264
Int. Cl.⁶ A61F 5/48; 2/00

U.S. Cl. 128—885

31 Claims



1. A remove-to-void urethral plug having enhanced sealing capabilities comprising:

- a non-expandable body for internally occluding the urethra, said body having a substantially constant cross section,
- a meatal plate attached to said body, having a layer of adhesive thereon for anchoring said meatal plate to the urethral meatus, whereby said anchoring by said adhesive, enhances a seal of said body to the urethral wall such that movement of the plug is arrested.

5,509,428

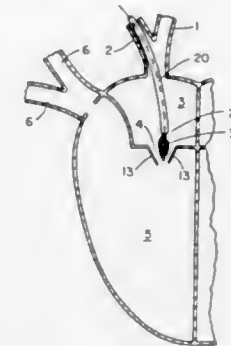
METHOD AND APPARATUS FOR THE CREATION OF TRICUSPID REGURGITATION

Richard W. Dunlop, 14 Landing Rd., Kingston, Mass. 02364
Filed May 31, 1994, Ser. No. 251,109

Int. Cl.⁶ A61B 19/00

U.S. Cl. 128—898

4 Claims



1. A method of treating a patient's congestive heart failure, a condition resulting in elevation of the pulmonary arterial pressures, comprising:

- selecting a catheter comprising an elongated hollow body onto which or through which is affixed a radially expandable device which can be controlled from outside the patient's body;
- inserting the catheter into a patient's venous system;
- advancing the catheter through the patient's venous system into a patient's heart area so as to position the radially expandable device of the catheter across a tricuspid valve;
- radially expanding the radially expandable device of the catheter, through manipulation of controls located outside the patient's body, so that the catheter holds open leaflets of the tricuspid valve;
- inducing tricuspid regurgitation by the holding open of said leaflets of the tricuspid valve;
- monitoring the patient's pulmonary pressures and cardiac output;
- adjusting, as desired, the degree of tricuspid regurgitation to affect improvement in a patient's condition; and
- removing the catheter from the patient's body.

an outer elongate annular cylinder of tobacco smoke filter materials having a higher resistance to cigarette smoke flow therethrough,

an inner elongate hollow cylinder of microfine fibres which is supported as said cylinder by radially-inwardly located support means, microfine fibres in said cylinder thereof each having a diameter from about 0.5 to about 10 microns, said cylinder of microfine fibres having a thickness of about 0.05 to about 4 mm and a density of about 0.05 to about 0.3 g/cc, said cylinder of microfine fibres having a tendency to become clogged against further cigarette smoke passage therethrough by tar filtered from cigarette smoke passing therethrough,

an axial cigarette smoke path radially inwardly of said hollow cylinder of microfine fibres having a lower resistance to cigarette smoke flow therethrough than said outer annular cylinder of smoke filter material, and

tobacco smoke flow path directing means located at one end of said filter element for directing cigarette smoke from a cigarette to which the filter element is attached, only into said outer annular cylinder of cigarette smoke filter material,

whereby cigarette smoke from the cigarette passes to the smoker along a cigarette smoke flow path of fixed length and cigarette smoke from the cigarette during smoking of the cigarette is caused to pass through a progressively longer flow path through said outer cylinder before passing through said inner cylinder into said axial cigarette smoke path as a progressively increased proportion of said inner cylinder becomes incapable of effecting filtration as a result of said clogging, thereby removing a progressively greater proportion of filterable materials, including tar, from the cigarette smoke as the cigarette is smoked.

5,509,430

BICOMPONENT FIBERS AND TOBACCO SMOKE FILTERS FORMED THEREFROM

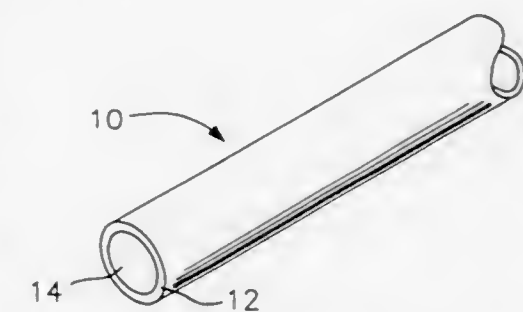
Richard M. Berger, Midlothian, Va., assignor to American Filtrona Corporation, Richmond, Va.

Filed Dec. 14, 1993, Ser. No. 166,009

Int. Cl.⁶ A24D 3/06

U.S. Cl. 131—341

45 Claims



5,509,429

UNIFORM TAR DELIVERY PROFILE FILTER

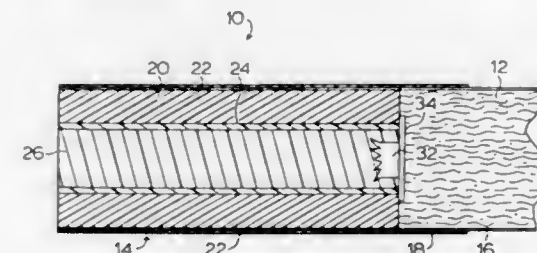
Warren A. Brackmann, Mississauga, Canada, assignor to Kothmans, Benson & Hedges Inc., North York, Canada
Continuation of Ser. No. 275,324, Jul. 14, 1994, abandoned, which is a continuation of Ser. No. 76,843, Jun. 15, 1993, abandoned, which is a continuation of Ser. No. 752,595, Oct. 31, 1991, abandoned. This application Jan. 9, 1995, Ser. No. 370,570

Claims priority, application United Kingdom, Mar. 2, 1989, 8904752; Apr. 27, 1989, 8909660

Int. Cl.⁶ A24D 3/04

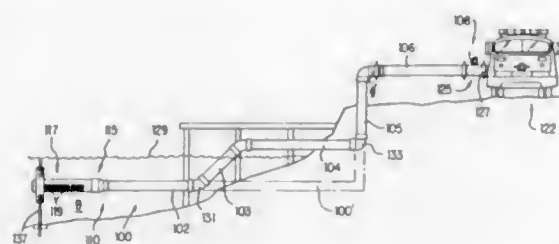
U.S. Cl. 131—339

6 Claims



1. A cigarette smoke filter element, comprising:

- a tobacco smoke filter means comprising a substantially self-sustaining substantially cylindrical element of fibrous material comprising continuous fibers bonded to each other at spaced points of contact to define a tortuous interstitial path for passage of smoke therethrough, at least a major part of said fibers being bicomponent fibers comprising a core of a thermoplastic material substantially totally surrounded by a sheath of a polymer selected from the group consisting of cellulose acetate, ethylene-vinyl acetate



a body of water having a surface level and an unsubmerged end located elevationally above said body of water, comprising the step of:

- filling said pipe with fluid to displace air therein;
- preventing said fluid from entering said body through said submerged end by placement of a check valve within said hydrant pipe;
- applying a demand pressure to the pipe proximate said unsubmerged end thereof to begin drawing water through said pipe from said body;
- removing said demand pressure when drawing of the water is completely finished; and
- draining the fluid in said pipe to approximately the same elevation as said surface level of said body of water.

5,509,438

AIR VALVE ADAPTER

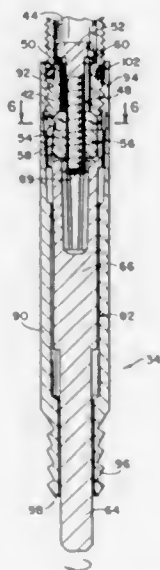
George H. Leonard, Darien, Conn., and Martin T. Connolly, New York, N.Y., assignors to Spinegy Inc., Wilton, Conn.

Filed Jun. 8, 1994, Ser. No. 254,649

Int. Cl.⁶ B60C 29/00; F16K 15/20; 31/46

U.S. Cl. 137—231

12 Claims



1. An air valve adapter enabling operational access to a remotely located valve stem means of a bicycle inner tube which would not otherwise be accessible, said adapter comprising:

- an elongated cylindrical body extending between first and second ends and having a longitudinal axis;
- gripper means adjacent said second end selectively attachable to the remotely located valve stem means for releasably engaging an outer peripheral surface thereof, said gripper means including a plurality of resilient cantilevered gripping fingers integral with said elongated body extending from circumferentially spaced locations at said second end in directions generally parallel to said longitudinal axis, said gripping fingers extending to gripper ends distant from said second end; and

gripper operating means adjacent said first end, when attached to the remotely located valve stem means, for actuating the valve stem means for movement between a first locked position to prevent flow of air into and out of the inner tube and a second position distant from said first position to enable the valve stem means to move to an open position enabling flow of air into and out of the inner tube.

5,509,439

ELECTROMAGNETICALLY CONTROLLED OPERATING DEVICE IN PARTICULAR FOR VALVES AND ELECTROHYDRAULIC APPLICATIONS

Paolo Tantardini, Milan, Italy, assignor to Atos S.p.A., Sesto Calende, Italy

Continuation of Ser. No. 998,685, Dec. 30, 1992, abandoned.

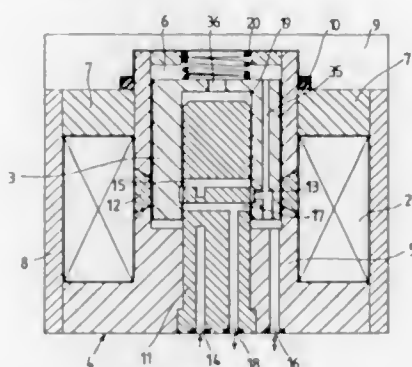
This application Jul. 8, 1994, Ser. No. 272,305

Claims priority, application Italy, May 28, 1992, MI91A1312

Int. Cl.⁶ F15B 13/044

U.S. Cl. 137—269

12 Claims



1. An electromagnetically controlled operating device for controlling the passage of a fluid therethrough comprising:

- a housing made from a magnetic material, said housing having a first passage adapted to carry fluid therein, said first passage opening to one end of said operating device;
- a coil disposed within said housing for generating a magnetic field;
- a fixed guide disposed within said housing and having a second passage add a third passage extending therein for carrying fluid therethrough, said second passage and said third passage opening to said one end of said operating device adjacent to said first passage, said second passage having a longitudinal portion extending along a length of said fixed guide and a transverse portion extending transversely relative to the longitudinal portion, said third passage adapted to be connected to a discharge receptacle;

- a cup-shaped armature made from a magnetic material and having a conduit therein, said armature being movable in response to application of said magnetic field along said fixed guide so that said conduit can be positioned to selectively obstruct and permit communication between said first passage in said housing and said second passage within said fixed guide so as to control the travel of said fluid between said first and second passages;

said movable cup-shaped armature having a tubular portion with a substantially closed radially outer surface, an open end for receiving said fixed guide, and a radially inwardly extending portion extending radially inwardly from an end of said tubular portion opposite from said open end.

5,509,440

DEVICE FOR CUTTING A PIPE IN ORDER TO STOP A FLUID FLOW

Elie Cantaloube, and Yves Cantaloube, both of Laissac, France, assignors to Societe Civile d'Invention Pour la Gestion des Brevets Cantaloube, Laissac, France

PCT No. PCT/FR92/00792, § 371 Date Feb. 9, 1994, § 102(e)

Date Feb. 9, 1994, PCT Pub. No. WO93/04312, PCT Pub.

Date Mar. 4, 1993

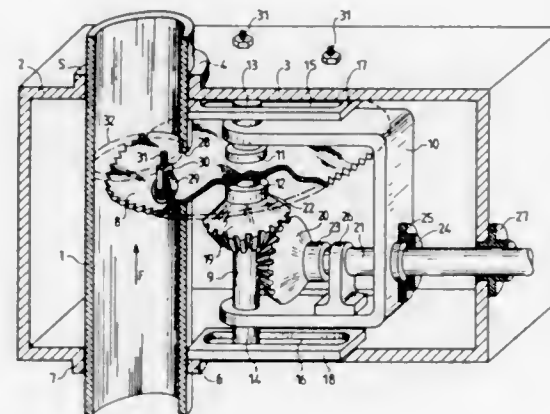
PCT Filed Aug. 13, 1992, Ser. No. 193,156

Claims priority, application France, Aug. 13, 1991, 91 10290

Int. Cl.⁶ F16L 55/10; 55/18

U.S. Cl. 137—318

5 Claims



1. Device for cutting a pipe transporting circulating fluid in order to stop the circulation at any point, comprising a casing capable of being sealingly mounted on said pipe, said casing containing at least one circular saw blade driven in rotation and in translation so as to saw the pipe transversely and divide the circulating fluid into an upstream side and a downstream side, said saw blade constituting a stop surface to said circulation along the plane of a section sawn by the saw blade, said saw blade having teeth disposed on the upstream side of said fluid circulating in the pipe, while on the downstream side said saw blade having a substantially plane downstream surface adapted under the effect of pressure to be sealingly applied on the sawn section of the pipe at the downstream side and thereby ensure fluid tightness between the upstream and downstream sides, and support elements operatively mounted on the downstream side, and in contact with the plane downstream surface of the saw blade to maintain said blade against hydrostatic forces of the fluid circulating in the pipe during the sawing operation.

5,509,441

REACTION INJECTION MOLDED VALVE

Bruce M. Platusich, Bristol, Ind., assignor to Nibco Inc., Elkhart, Ind.

Division of Ser. No. 103,919, Aug. 5, 1993, Pat. No. 5,409,654.

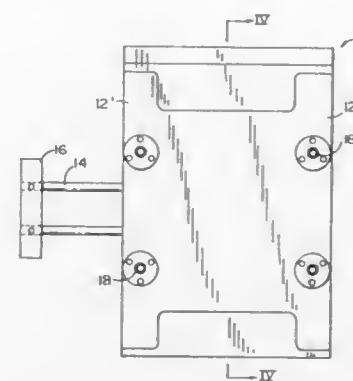
This application Oct. 24, 1994, Ser. No. 327,913

Int. Cl.⁶ F16L 7/00

U.S. Cl. 137—375

9 Claims

- A valve comprising:
 - a valve skeleton;
 - said skeleton comprising a valve body portion, a neck portion, and an actuator plate portion;
 - said valve body portion having a plurality of radially outwardly extending skeletal lugs; and
 - polymer encapsulating said skeleton, and said polymer having outwardly protruding integral flange members extending between at least some of said lugs.



5,509,442

MUD SAVER VALVE

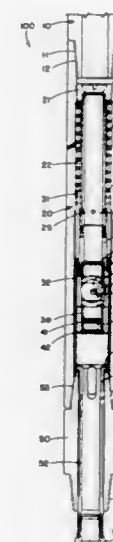
Jackson R. Claycomb, 8215 Debbie Gay, Houston, Harris County, Tex. 77040

Filed Mar. 28, 1995, Ser. No. 412,296

Int. Cl.⁶ E21B 21/10

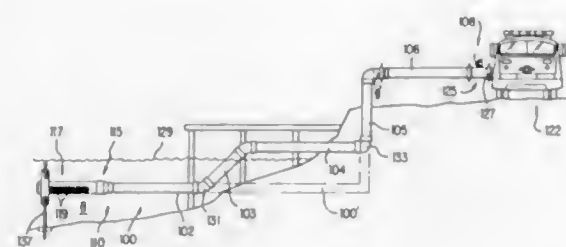
U.S. Cl. 137—494

26 Claims



1. A mud saver valve for controlling flow of drilling fluid through a drill string, the mud saver valve comprising:

- a housing removably attachable to the drill string;
- a ball closure rotatably disposed within the housing, the ball closure having a body, a flow channel therethrough, a first body side and a second body side opposite the first body side, a first lug projecting from the first body side and a second lug projecting from the second body side;
- a sleeve assembly movably disposed within the housing, the sleeve assembly having an outer surface and an inner surface, a first actuator and a second actuator projecting from the inner surface, the first and second actuators co-operating with the first and the second lugs of the ball closure to rotate the ball closure between open and closed positions;
- biasing means disposed within the housing, acting upon the sleeve assembly; and
- means for responding to fluid pressure conditions in the drill string, whereby the ball closure is movable to an open position.



a body of water having a surface level and an unsubmerged end located elevationally above said body of water, comprising the step of:

- filling said pipe with fluid to displace air therewithin;
- preventing said fluid from entering said body through said submerged end by placement of a check valve within said hydrant pipe;
- applying a demand pressure to the pipe proximate said unsubmerged end thereof to begin drawing water through said pipe from said body;
- removing said demand pressure when drawing of the water is completely finished; and
- draining the fluid in said pipe to approximately the same elevation as said surface level of said body of water.

5,509,438

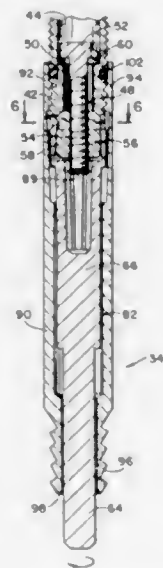
AIR VALVE ADAPTER

George H. Leonard, Darien, Conn., and Martin T. Connolly, New York, N.Y., assignors to Splnergy Inc., Wilton, Conn.

Filed Jun. 8, 1994, Ser. No. 254,649
Int. Cl.⁶ B60C 29/00; F16K 15/20; 31/46

U.S. Cl. 137—231

12 Claims



1. An air valve adapter enabling operational access to a remotely located valve stem means of a bicycle inner tube which would not otherwise be accessible, said adapter comprising:

- an elongated cylindrical body extending between first and second ends and having a longitudinal axis;
- gripper means adjacent said second end selectively attachable to the remotely located valve stem means for releasably engaging an outer peripheral surface thereof, said gripper means including a plurality of resilient cantilevered gripping fingers integral with said elongated body extending from circumferentially spaced locations at said second end in directions generally parallel to said longitudinal axis, said gripping fingers extending to gripper ends distant from said second end; and

gripper operating means adjacent said first end, when attached to the remotely located valve stem means, for actuating the valve stem means for movement between a first locked position to prevent flow of air into and out of the inner tube and a second position distant from said first position to enable the valve stem means to move to an open position enabling flow of air into and out of the inner tube.

5,509,439

ELECTROMAGNETICALLY CONTROLLED OPERATING DEVICE IN PARTICULAR FOR VALVES AND ELECTROHYDRAULIC APPLICATIONS

Paolo Tantardini, Milan, Italy, assignor to Atos S.p.A., Sesto Calende, Italy

Continuation of Ser. No. 998,685, Dec. 30, 1992, abandoned.

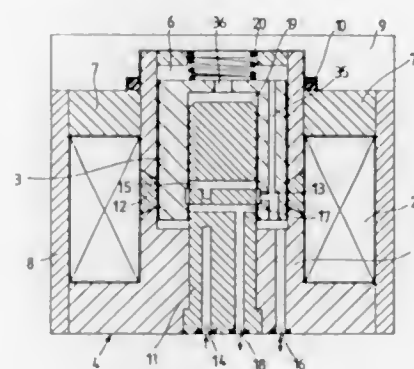
This application Jul. 8, 1994, Ser. No. 272,305

Claims priority, application Italy, May 28, 1992, MI91A1312

Int. Cl.⁶ F15B 13/044

U.S. Cl. 137—269

12 Claims



1. An electromagnetically controlled operating device for controlling the passage of a fluid therethrough comprising:

- a housing made from a magnetic material, said housing having a first passage adapted to carry fluid therein, said first passage opening to one end of said operating device;
- a coil disposed within said housing for generating a magnetic field;
- a fixed guide disposed within said housing and having a second passage add a third passage extending therein for carrying fluid therethrough, said second passage and said third passage opening to said one end of said operating device adjacent to said first passage, said second passage having a longitudinal portion extending along a length of said fixed guide and a transverse portion extending transversely relative to the longitudinal portion, said third passage adapted to be connected to a discharge receptacle;
- a cup-shaped armature made from a magnetic material and having a conduit therein, said armature being movable in response to application of said magnetic field along said fixed guide so that said conduit can be positioned to selectively obstruct and permit communication between said first passage in said housing and said second passage within said fixed guide so as to control the travel of said fluid between said first and second passages, said movable cup-shaped armature having a tubular portion with a substantially closed radially outer surface, an open end for receiving said fixed guide, and a radially inwardly extending portion extending radially inwardly from an end of said tubular portion opposite from said open end.

5,509,440

DEVICE FOR CUTTING A PIPE IN ORDER TO STOP A FLUID FLOW

Elie Cantaloube, and Yves Cantaloube, both of Laissac, France, assignors to Societe Civile d'Invention Pour la Gestion des Brevets Cantaloube, Laissac, France

PCT No. PCT/FR92/00792, § 371 Date Feb. 9, 1994, § 102(e) Date Feb. 9, 1994, PCT Pub. No. WO93/04312, PCT Pub. Date Mar. 4, 1993

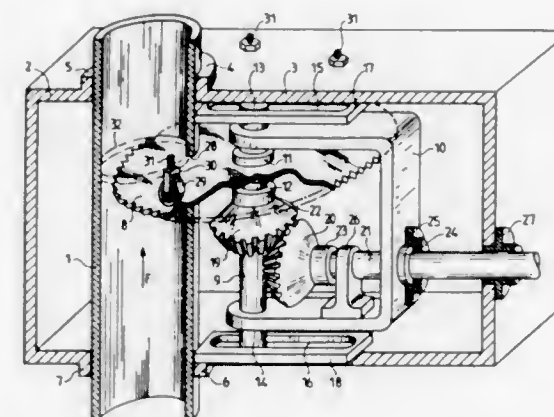
PCT Filed Aug. 13, 1992, Ser. No. 193,156

Claims priority, application France, Aug. 13, 1991, 91 10290

Int. Cl.⁶ F16L 55/10; 55/18

U.S. Cl. 137—318

5 Claims



1. Device for cutting a pipe transporting circulating fluid in order to stop the circulation at any point, comprising a casing capable of being sealingly mounted on said pipe, said casing containing at least one circular saw blade driven in rotation and in translation so as to saw the pipe transversely and divide the circulating fluid into an upstream side and a downstream side, said saw blade constituting a stop surface to said circulation along the plane of a section sawn by the saw blade, said saw blade having teeth disposed on the upstream side of said fluid circulating in the pipe, while on the downstream side said saw blade having a substantially plane downstream surface adapted under the effect of pressure to be sealingly applied on the sawn section of the pipe at the downstream side and thereby ensure fluid tightness between the upstream and downstream sides, and support elements operatively mounted on the downstream side, and in contact with the plane downstream surface of the saw blade to maintain said blade against hydrostatic forces of the fluid circulating in the pipe during the sawing operation.

5,509,441

REACTION INJECTION MOLDED VALVE

Bruce M. Platusich, Bristol, Ind., assignor to Nibco Inc., Elkhart, Ind.

Division of Ser. No. 103,919, Aug. 5, 1993, Pat. No. 5,409,654.

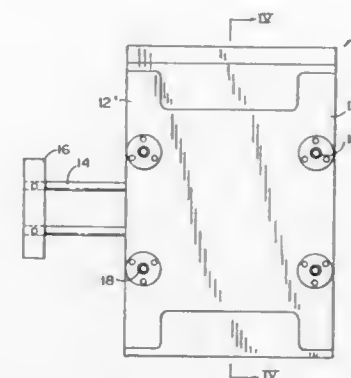
This application Oct. 24, 1994, Ser. No. 327,913

Int. Cl.⁶ F16L 7/00

U.S. Cl. 137—375

9 Claims

- A valve comprising:
 - a valve skeleton;
 - said skeleton comprising a valve body portion, a neck portion, and an actuator plate portion;
 - said valve body portion having a plurality of radially outwardly extending skeletal lugs; and
 - polymer encapsulating said skeleton, and said polymer having outwardly protruding integral flange members extending between at least some of said lugs.



5,509,442

MUD SAVER VALVE

Jackson R. Claycomb, 8215 Debbie Gay, Houston, Harris County, Tex. 77040

Filed Mar. 28, 1995, Ser. No. 412,296

Int. Cl.⁶ E21B 21/10

U.S. Cl. 137—494

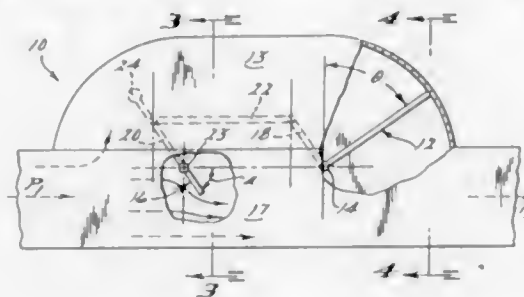
26 Claims



1. A mud saver valve for controlling flow of drilling fluid through a drill string, the mud saver valve comprising:

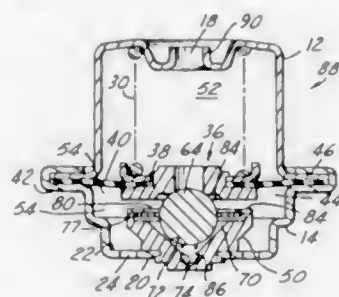
- a housing removably attachable to the drill string;
- a ball closure rotatably disposed within the housing, the ball closure having a body, a flow channel therethrough, a first body side and a second body side opposite the first body side, a first lug projecting from the first body side and a second lug projecting from the second body side;
- a sleeve assembly movably disposed within the housing, the sleeve assembly having an outer surface and an inner surface, a first actuator and a second actuator projecting from the inner surface, the first and second actuators co-operating with the first and the second lugs of the ball closure to rotate the ball closure between open and closed positions;
- biasing means disposed within the housing, acting upon the sleeve assembly; and
- means for responding to fluid pressure conditions in the drill string, whereby the ball closure is movable to an open position.

5,509,443
PRESSURE REGULATOR FOR INDUSTRIAL PROCESS EXHAUST SYSTEM
 Stephen J. Russ, Farmington Hills, Mich., assignor to Salem Engelhard, South Lyon, Mich.
 Filed Jul. 8, 1994, Ser. No. 272,789
 Int. Cl. G05D 7/01
 U.S. Cl. 137—499 3 Claims



1. A pressure regulation system for an industrial process system connected to a pollution control system comprising:
 - a elongated process emission duct connecting the industrial process equipment to said pollution control equipment;
 - a regulator blade in said duct pivoted for rotation about an axis transverse thereto;
 - a discrete sensor duct extending parallel to said process emission duct of relatively smaller cross section, said sensor duct having an inlet and an outlet connected to said emission duct at longitudinally spaced locations on said emissions duct for conducting fluid laterally into and out of said sensor duct, said sensor duct having an arcuate section for the acceptance of a rotatable sensor blade;
 - a sensor blade in said sensor duct between the inlet and outlet thereof and pivoted for rotation relative to said sensor duct about the axis of generation of the arcuate section in said sensor duct so as to substantially close said sensor duct at all times whereby a relatively small amount of process emission flow is directed at said sensor blade at minimum approach velocity and the pressure differential thereacross is independent of blade angle; and
 - a linkage connecting said sensor and regulator blades whereby rotation of said sensor blade effects rotation of said regulator blade to vary the cross-sectional area of said emissions duct inversely to a change in the pressure differential across said sensor blade.

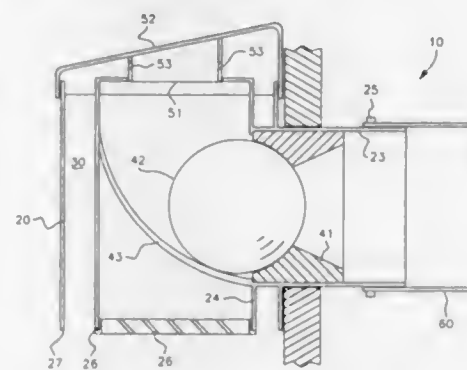
5,509,444
FLOW THROUGH PRESSURE REGULATOR
 Barry S. Robinson, Williamsburg; Jan L. Bennett, Newport News, and Christopher T. Vannoy, Williamsburg, all of Va., assignors to Siemens Automotive Corporation, Auburn Hills, Mich.
 Filed Mar. 30, 1995, Ser. No. 413,648
 Int. Cl. G05D 16/08
 U.S. Cl. 137—508 8 Claims



1. A flow through fuel pressure regulator comprising:

- a valve actuator housing having a conical shaped chamber formed therein extending from an enclosed bore to formable edges at the extreme of said chamber for forming a cylindrical shaped pocket opposite the bore;
- first bias means located in the enclosed bore and extending into said pocket;
- ball retainer means having a washer shaped member with a central aperture containing a ball valve member, said ball valve member restricted by the circumferential edges of said central aperture from moving in one direction and said washer member with said ball valve member located therein being secured in said pocket formed in said valve actuator housing, the outer diameter of said washer shaped member being smaller than the inner diameter of said pocket and the depth of said pocket being greater than the thickness of said washer shaped member;
- a first cup shaped cover means enclosed at one end forming an inner chamber and having at least one inlet opening in the enclosed end; said valve actuator housing secured to the enclosed end of said first cover means and clear of said at least one inlet opening thereby allowing fuel to flow into said inner chamber, said first cover means having a circumferential flange extending radially outward of the open end of said cover means;
- a valve seat member having an axially extending passageway extending from a valve seat to an axially opposite surface;
- a diaphragm having a central aperture for locating and securing said valve seat member;
- second bias means bearing against said valve seat member, said second bias means operative to locate said valve seat on said ball valve member; and
- a second cup shaped cover means enclosed at one end and having a central aperture in said closed end and extending in an axial direction away from said enclosed end forming a second chamber, said second cover means having a circumferential flange radially extending from the open end of said second cover means, said flange for positioning and securing said diaphragm against said flange of said first cover means to provide an unitary member.

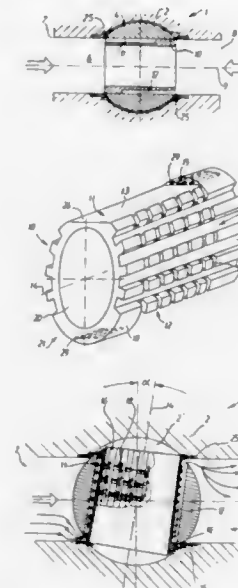
5,509,445
CHECK VALVE FOR A DISCHARGE AIR DUCT
 Léon-Pierre Couet, Quebec, Canada, assignor to Jean-Marc Lamoureux, Quebec, Canada
 Filed Jun. 30, 1995, Ser. No. 481,260
 Claims priority, application Canada, Nov. 1, 1993, 2,102,168
 Int. Cl. F16K 15/04
 U.S. Cl. 137—533.11 3 Claims



1. A valve for a domestic discharge air duct (60), the valve (10) comprising:
 - a housing (20) provided with an air inlet (23), an air outlet (24) and a means (25) for connecting the air inlet (23) to an end of the conduit (60);
 - a shoulder (41) located inside the housing (20) and in front of the air inlet (23);

- a ball (42) movable between a first position where the ball (42) is leaning by gravity against the shoulder (41) in a substantially hermetical manner, and a second position where the ball (42) is removed from the shoulder (41) and above the first position;
 - a guide (43) set inside the housing (20) for guiding the ball (42) between the first and the second position; and
 - a seat (51) on which the ball (42) is leaning against in the second position;
- the valve (10) being characterized in that the ball (42) and the shoulder (41) are made of an insulating material, the ball (42) being moved towards the second position due to a pressure differential created by a passage (30) connecting the top of the seat (51) to an area surrounding the air outlet (24).

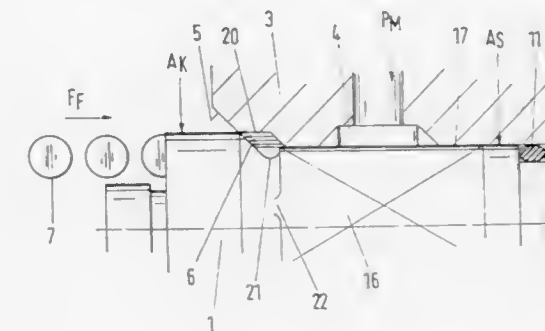
5,509,446
BALL VALVE OR PLUG VALVE PROVIDED WITH AN INSERT
 Roger Bey, Illzach, France, assignor to Rotatrol AG, Cham, Switzerland
 Continuation of Ser. No. 204,200, Jun. 22, 1994, abandoned.
 This application May 17, 1995, Ser. No. 443,396
 Claims priority, application France, Jul. 3, 1992, 92 08412
 Int. Cl. F16K 47/04
 U.S. Cl. 137—625.32 28 Claims



1. A valve comprising:
 - a housing having an inlet and an outlet, and a flow passage extending from said inlet to said outlet;
 - a closure member disposed in said housing, said closure member movable between open and closed positions, wherein in said closed position said closure member blocks said flow passage;
 - a valve stem connected to said closure member for moving said closure member between said open and closed positions, said valve stem having an axis extending perpendicular to said flow passage;
 - an insert member connected to said closure member, said insert member including an insert flow passage extending there-through such that said inlet and said outlet of said housing are in communication by way of said insert flow passage when said closure member is in said open position, and when said closure member is in said closed position at least a majority of flow through said valve passes through said insert flow passage;
 - said insert member including an inlet chamber portion disposed on an exterior of said insert member, said inlet chamber portion having an opening disposed on an inlet side of said insert member when said closure member is in the open

- position and wherein said inlet chamber portion is disposed such that during movement of said closure member from said closed position to said open position flow initially enters said opening of said inlet chamber portion prior to flow entering said insert flow passage;
- said insert member further including an outlet chamber portion disposed on an exterior of said insert member, said outlet chamber portion having an opening disposed on an outlet side of said insert member when said closure member is in said open position; and
- wherein said inlet chamber portion and said outlet chamber portion communicate with each other along exterior surfaces of said insert member, and wherein said exterior surfaces are exterior surfaces of a wall of said insert member, and further wherein said wall separates said inlet chamber portion and said outlet chamber portion from said insert flow passage.

5,509,447
2/2 DIRECTIONAL SEAT VALVE
 Brian Kane, Budenheim, Germany, assignor to Mannesmann Aktiengesellschaft, Düsseldorf, Germany
 Filed Jun. 28, 1994, Ser. No. 267,774
 Claims priority, application Germany, Jun. 28, 1993, 43 21 832.6
 Int. Cl. F16K 1/38
 U.S. Cl. 137—625.34 9 Claims



1. A 2/2 directional seat valve with direct control comprising:
 - a housing, said housing defining a housing bore and comprising a seating surface located therein, said housing having a pressure medium inlet perpendicular to the housing bore;
 - a seat piston slidably installed in the housing bore, said seat piston having a first end and a second end, said seat piston comprising a conical surface at the second end thereof, the conical surface and the seating surface being configured to releasably engage with each other, said seat piston having a reduced cross-sectional area in a region of the pressure medium inlet;
 - means for forming a leakproof seal between said seat piston and said housing bore in the vicinity of the first end of the seat piston;
 - a closing spring arranged within said housing so that one end of said closing spring bears against said housing and the other end of said closing spring bears on said seat piston;
 - wherein said seat piston comprises a high-strength carbon-fiber-reinforced plastic and a piston guide for guiding said seat piston, the piston guide extends along a portion of said seat piston to a location adjacent the conical surface, and said housing comprises a material selected from the group consisting of light metal and a light metal alloy, said seat piston and said housing define three recesses therebetween and the piston guide comprises three arms placed 60 degrees apart with the recesses between the arms, and extend axially over the region of the pressure medium inlet.

5,509,448

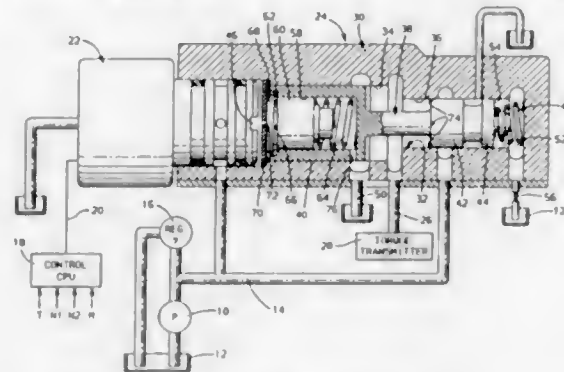
CONTROL VALVE WITH INTEGRAL ACCUMULATOR
 Thomas H. Wilson, Indianapolis, and Phillip F. McCauley, Zionville, both of Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Nov. 15, 1994, Ser. No. 339,625

Int. Cl.⁶ F15B 13/044

U.S. Cl. 137—625.64

2 Claims



1. A valve and torque transmitter comprising:
 a solenoid controlled valve means for providing a fluid control pressure;
 a valve bore having first and second bore portions of different diameters;
 a valve spool slidably disposed in said valve bore having first and second valve portions having diameters complementary to the first and second bore portions respectively;
 an outlet passage communicating between the bore, the valve spool and the torque transmitter;
 a wall closing one end of the valve bore adjacent the first bore portion;
 a first chamber disposed adjacent the second bore portion in fluid communication with the fluid control pressure provided by the solenoid valve means;
 an accumulator means including a cavity formed in the second valve portion and a piston disposed in the cavity for establishing a controlled pressure rise in the first chamber;
 a second chamber formed between the first valve portion and the wall;
 and first flow restriction means disposed between said solenoid valve means and said first chamber and second flow restriction means disposed adjacent the second chamber for independently controlling flow rates to and from said first and second chamber.

5,509,449

CONTROL OF FLUIDS

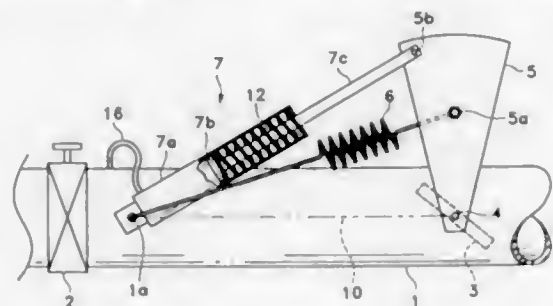
Dennis C. Kincaid, Hansen, Id., assignor to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Apr. 3, 1995, Ser. No. 415,835

Int. Cl.⁶ G05D 16/08

U.S. Cl. 137—505.22

12 Claims



1. Pressurized irrigation apparatus for supplying pressurized water through an irrigation conduit operating on variable topography comprising

- (a) a rotatable butterfly disk within said irrigation conduit to open and close said irrigation conduit to water flow; said disk having an axis of rotation;
 (b) lever means connected to said axis of rotation; said lever means having spaced apart first and second pivot points thereon;
 (c) first and second axes spaced from said lever means that are fixed with respect to said irrigation conduit during operation of said apparatus; wherein said first and second axes are spaced from one another;
 (d) a spring,
 wherein one end of said spring is connected to said first axis, wherein a first imaginary base line passes through said first axis and through said disk's axis of rotation;
 wherein the other end of said spring is connected to said first pivot point on said lever means, wherein a first imaginary radial line passes from said disk's axis of rotation to said first pivot point;
 wherein a first angle is defined, as measured in the direction of disk closure, from said first imaginary base line to said first imaginary radial line;
 wherein said spring urges said disk toward opening;
 (e) a hydraulic assembly comprising a piston and cylinder, wherein one end of said assembly is connected to said second axis, wherein a second imaginary base line passes through said second axis and through said disk's axis of rotation;
 wherein the outer end of said assembly is connected to said second pivot point on said lever means, wherein a second imaginary radial line passes from said disk's axis of rotation to said second pivot point;
 wherein a second angle is defined, as measured in the direction of disk closure, from said second imaginary base line to said second imaginary radial line, wherein said second angle is substantially 20°–30° less than said first angle;
 wherein an increase in pressure in said hydraulic assembly urges said disk toward closure; and
 (f) a tube connected between said assembly and irrigation conduit; wherein the connection to said irrigation conduit is downstream from said disk; wherein said tube supplies water as actuating fluid from said irrigation conduit to said assembly.

5,509,450

WEFT YARN FEEDING DEVICE HAVING A ROTATING RETAINER

Lars H. G. Tholander, Ulricehamn, Sweden, assignor to IRO AB, Ulricehamn, Sweden

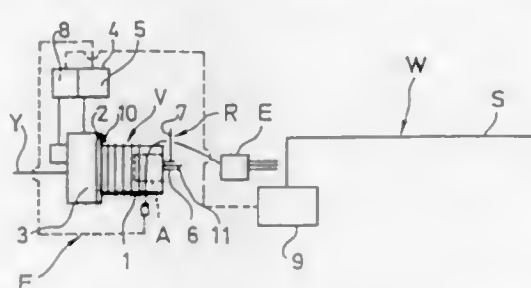
Filed Jan. 26, 1995, Ser. No. 351,236

Claims priority, application Germany, Jun. 12, 1992, 42 19 306.0

Int. Cl.⁶ D03D 47/36

U.S. Cl. 139—452

11 Claims



1. A device for feeding weft yarns to a weaving machine provided with a weft insertion device, said device comprising a prewinder which includes a storage drum for storing a weft yarn supply, a winding mechanism for replenishing the weft yarn supply,

5,509,452

VAPOR CONTROLLED FUEL DISPENSING NOZZLE ATTACHMENT

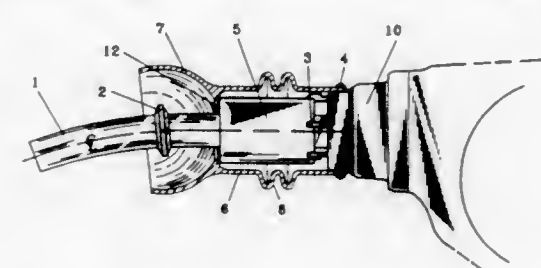
Robert F. Tammer, West Orange, N.J., assignor to Exxon Research and Engineering Company, Florham Park, N.J.

Filed Aug. 12, 1994, Ser. No. 289,724

Int. Cl.⁶ B67D 5/32

U.S. Cl. 141—207

6 Claims



ply, and a controlled retainer which is adapted to be driven in the circumferential direction of the storage drum by a rotary drive means such that the retainer carries out a circulatory movement, said controlled retainer extending at least temporarily through a circulatory path of a withdrawal point of the weft yarn which is adapted to be unwound overhead from the storage drum by means of said weft insertion device, wherein the retainer is a generally radially extending pointer which is adapted to be rotated coaxially about a storage drum axis and has little mass, and when viewed in the direction of circulation of the withdrawal point, the retainer continuously extends through the circulatory path ahead of the weft yarn, the rotary drive means of the retainer being connected to a control device with which a circulatory speed profile of the retainer is controlled while supervising the angular position of the weft insertion in the weaving machine.

5,509,451

VACUUM FILL SYSTEM

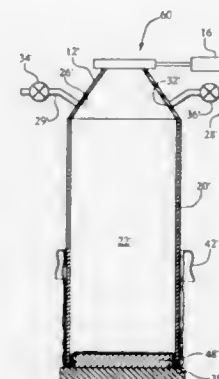
Norwin C. Derby, Sherman, Tex., assignor to B.A.G. Corporation, Dallas, Tex.

Continuation of Ser. No. 185,035, Dec. 13, 1993, Pat. No. 5,447,183, which is a continuation of Ser. No. 896,599, Jun. 10, 1992, abandoned, which is a continuation-in-part of Ser. No. 643,704, Jan. 22, 1991, abandoned, which is a continuation of Ser. No. 407,901, Sep. 15, 1989, abandoned. This application Mar. 24, 1995, Ser. No. 409,751

Int. Cl.⁶ B65B 1/26

U.S. Cl. 141—67

31 Claims



1. A vacuum fill system for deaerating and compacting flowable material for storage and transportation in a flexible bulk container, the flexible bulk container having a bottom and sidewall, said vacuum fill system comprising:

- a base for supporting the flexible bulk container wherein the base is positioned below the flexible bulk container;
 a hollow chamber having a sidewall, a top wall, and an open bottom, said hollow chamber being inserted in the flexible bulk container such that the open bottom of the hollow chamber contacts the bottom of the flexible bulk container;
 means for creating a vacuum connected to the hollow chamber, said means for creating a vacuum drawing a vacuum from the inside of the flexible bulk container after the hollow chamber is inserted inside the flexible bulk container thereby deaerating the flowable material inside the flexible bulk container; and
 means for returning the chamber contents to atmospheric pressure substantially instantaneously to compact the deaerated material.

5,509,453

APPARATUS FOR REMOVING TREES

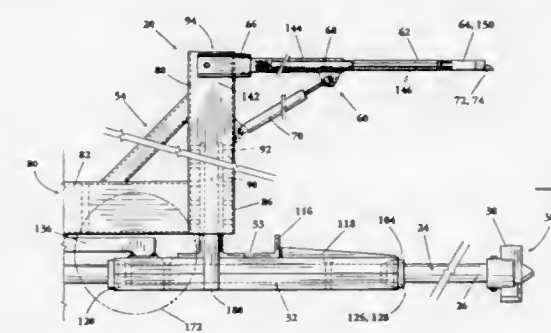
Foy Crockett, Rte. 1, Box 193, Hugo, Okla. 74743-9725

Filed Apr. 3, 1995, Ser. No. 415,560

Int. Cl.⁶ A01G 23/08

U.S. Cl. 144—34 R

17 Claims



1. Apparatus for cutting trees, brush, and other forestry, comprising:

- a plurality of rotatable shafts having a first end and a second end;
 a plurality of cutting bits, at least one cutting bit being connected at the first end of each shaft, each cutting bit having a cutting diameter larger than the diameter of the shaft to which the bit is connected, each cutting bit comprising:
 radially extending cutting blades, the blades of adjacent bits overlapping so that the bits cut a continuous, unbroken swath and sever the forestry above the shafts in one passage of the bits through the forestry;

a shaft housing connected to the shafts, for rotatably supporting the shafts with the rotational axes of the shafts juxtaposed; and
a rotary power source for rotating the shafts; and
wherein the cutting blades are further defined as extending radially from the shafts beyond the adjacent surfaces of the shaft housing so that the shaft housing may enter the swath cut by the bits.

5,509,454

WORKPIECE TRIMMERS

Massimo A. Giacometti, Via Resegone 39, Valmadrera (Como) 22049, Italy

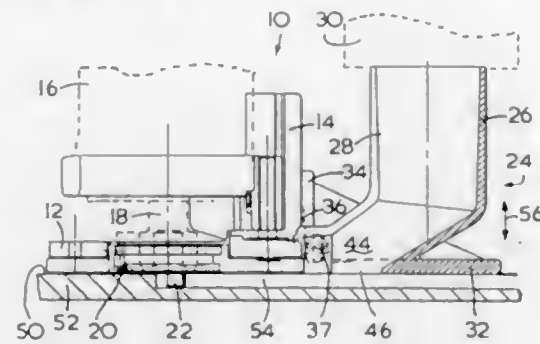
Filed Mar. 2, 1995, Ser. No. 397,442

Claims priority, application United Kingdom, Mar. 2, 1994, 9403997

Int. Cl.⁶ B23C 9/00; B27G 19/00

U.S. Cl. 144—252 R

17 Claims



1. A workpiece trimmer power tool including collector means for collecting waste material generated by the trimmer tool in use, a base, the collector means is positionable adjacent to a side of the base to permit the tool to be used against a face of a workpiece for trimming the face, and means for elevating the base above the level of the face of the workpiece to provide a passage for collecting the waste material.

5,509,455

AIRCRAFT TIRE INCLUDING REINFORCEMENT INSERTS

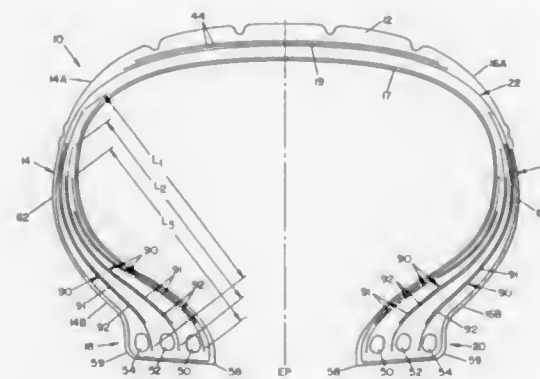
John T. Warchol, Poland; Raymond W. Millmiller, Akron, and Gordon B. Bryant, Hudson, all of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Apr. 12, 1994, Ser. No. 226,531

Int. Cl.⁶ B60C 9/00; 9/06; 9/08; 15/05

U.S. Cl. 152—545

17 Claims



1. An aircraft tire having a tread pattern, a pair of sidewall portions, a pair of spaced apart bead portions having at least one

substantially inextensible bead core disposed side by side and spaced apart axially, and a plurality of carcass plies extending circumferentially about the tire from bead portion to bead portion, each ply having a ply side extending between the bead cores of opposite bead portions, the improvement comprising:

at least two circumferentially extending reinforcement inserts, at least one reinforcement insert on each side of the tire, the reinforcement inserts extending from the bead portions and terminating in a radially upper portion of the sidewalls, each reinforcement insert having a pair of axially adjacent cord reinforced members, each insert being interposed between a pair of carcass plies on the ply side.

5,509,456

INFLATION APPARATUS FOR TUBELESS TIRE

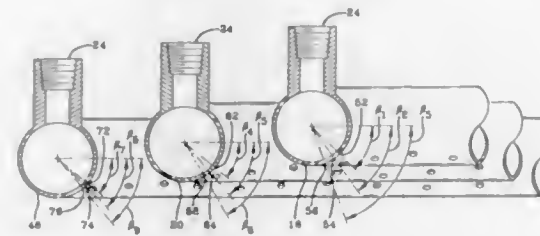
Mark L. Bonko, Uniontown; Loran C. Lopp, Jr., Wadsworth, both of Ohio, and Sandy Ochoa, Alamogordo, N.M., assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Apr. 18, 1994, Ser. No. 229,474

Int. Cl.⁶ B60C 25/00

U.S. Cl. 157—1

19 Claims



1. An apparatus for inflating tubeless tires on a wheel, said apparatus comprising:

a first annular manifold generally lying in a first center plane, the manifold having an inlet and a plurality of outlets therein, the outlets being arranged into a first row and a second row, each of the outlets of the first row having a centerline making a first angle between 40° and 50° with the first center plane, each of the outlets of the second row having a centerline making a second angle between 50° and 60° with the first center plane.

5,509,457

SECTIONAL DOOR AND PANEL THEREFOR

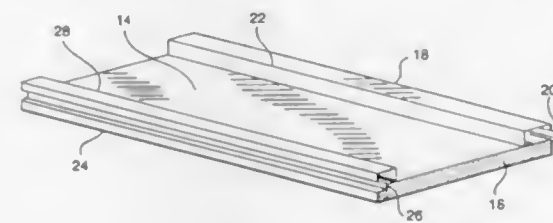
John F. Jellá, Tempe, Ariz., assignor to Holmes-Halley Industries, Los Angeles, Calif.

Continuation-in-part of Ser. No. 4,958, Dec. 30, 1992, abandoned. This application Mar. 22, 1995, Ser. No. 408,709

Int. Cl.⁶ E06B 3/12

U.S. Cl. 160—201

30 Claims



1. A sectional door panel comprising:

a front panel;
a rear panel located behind said front panel;
an upper edge extending from said front panel;
a raised tongue formed across the length of said upper edge;
a lower edge extending from said front panel;

a concave groove formed across the length of said lower edge, wherein said raised tongue of a first sectional door panel is engagable with said concave groove of a second sectional door panel; and
a means for locating said rear panel such that the plane defined by said rear panel intersects said raised tongue and said concave groove

5,509,458

VACUUM CASTING APPARATUS AND METHOD USING THE SAME

Hiroshi Onuma, Mooka; Takashi Mimata, Fukuoka, and Kimio Kubo, Tochigi, all of Japan, assignors to Hitachi Metals, Ltd., Japan

PCT No. PCT/JP94/00393, § 371 Date Jan. 19, 1995, § 102(e) Date Jan. 19, 1995, PCT Pub. No. WO94/20240, PCT Pub. Date Sep. 15, 1994

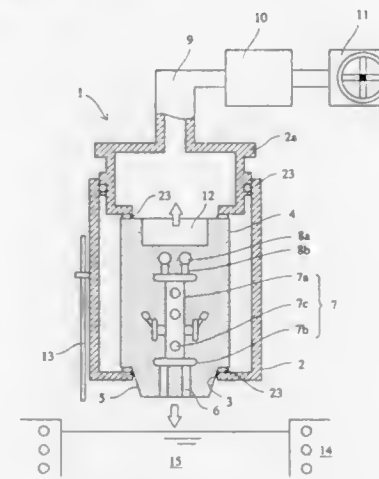
PCT Filed Mar. 11, 1994, Ser. No. 331,547

Claims priority, application Japan, Mar. 12, 1993, 5-052060; Jun. 29, 1993, 5-158676; Jun. 29, 1993, 5-158677; Oct. 19, 1993, 5-260554

Int. Cl.⁶ B22D 18/06

U.S. Cl. 164—63

27 Claims



1. A vacuum casting apparatus comprising:

(a) a vacuum vessel having at least one opening at the bottom thereof;
(b) a mold disposed in said vacuum vessel and having a runner and a mold cavity communicating with said runner, said runner having an opening under said opening of said vacuum vessel; and
(c) a vacuum means communicating with said vacuum vessel; wherein a suction recess having an opening on the top surface of said mold is disposed in a vicinity of a portion of said mold cavity which is most distant from said opening of said runner and which is lastly filled with a melt of casting material, and wherein said suction recess is so disposed that a distance between the bottom of said suction recess and said portion of said mold cavity is smaller than a distance between the outer surface of said mold and any other portions of said mold cavity, thereby rapidly filling said mold cavity with said melt.

8. A vacuum casting method comprising the steps of:
(a) disposing a mold having a runner and a mold cavity communicating with said runner in a vacuum vessel having at least one opening at the bottom thereof so that an opening of said runner is positioned under said opening of said vacuum vessel;
(b) disposing a suction recess having an opening on the top surface of said mold in a vicinity of a portion of said mold cavity which is most distant from said opening of said runner and which is lastly filled with a melt of casting material so that a distance between the bottom of said suction recess and

said portion of said mold cavity is smaller than a distance between the outer surface of said mold and any other portions of said mold cavity; and

(c) evacuating said mold by operating a vacuum means connected to said vacuum vessel thereby rapidly filling said mold cavity with said melt.

5,509,459

PRESSURE CAST ALUMINA TILE REINFORCED ALUMINUM ALLOY ARMOR AND PROCESS FOR PRODUCING THE SAME

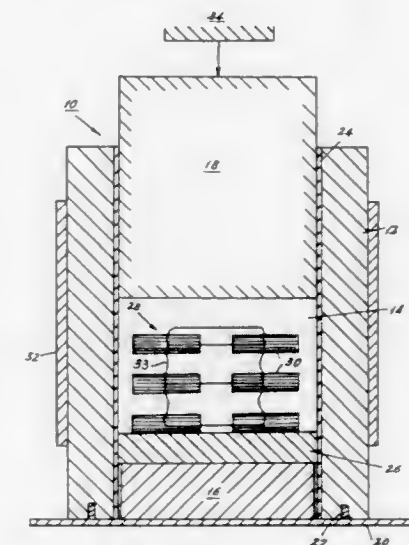
Amarnath P. Divecha, Falls Church; Subhash D. Karmarkar, Great Falls, both of Va.; Scott M. Hoover, Burtonsville; James M. Kerr, Bethesda, both of Md., and William A. Ferrando, Arlington, Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sep. 28, 1994, Ser. No. 313,955

Int. Cl.⁶ B22D 19/00

U.S. Cl. 164—98

9 Claims



1. A process of forming a billet of pressure cast, tile reinforced metal armor, comprising the steps of:

inserting a disc into a mold assembly, the mold assembly including a base plate, a die with an inner cavity disposed on the base plate, a plug disposed on the base plate within the die cavity, and a punch movably disposed within the die cavity, the disc being inserted in the mold assembly over the plug; inserting a tile preform over the disc in the mold assembly; heating the mold assembly and the tile preform contained therein to a first predetermined temperature; heating the punch to a second predetermined temperature; introducing a sufficient quantity of molten metal into the mold assembly to cover the tile preform; immediately driving the heated punch into the die cavity to apply pressure to the molten metal; allowing the molten metal to cool below the solidus temperature of the metal to form a billet of tile reinforced metal armor within the mold assembly; and removing the billet from the mold assembly.

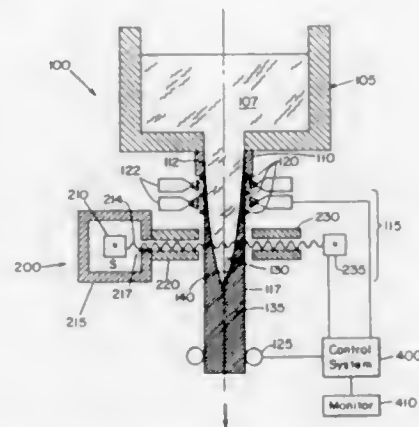
5,509,460
SOLID/LIQUID INTERFACE DETECTION IN
CONTINUOUS CASTING PROCESSES BY γ -RAY
ATTENUATION

Jung-Hoon Chun, Sudbury; Richard C. Lanza, Brookline, and Nannaji Saka, Cambridge, all of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Aug. 25, 1994, Ser. No. 296,342
 Int. Cl.⁶ B22D 11/20; 11/22; 11/16

U.S. Cl. 164—454

34 Claims



1. In a continuous casting machine including a source of molten material, a continuous casting mold for casting the molten material, and a cooling zone, downstream of the continuous casting mold for cooling and solidifying material extruding from the mold, a device for imaging a liquid material/solid material interface in the partially solidified material comprising:

- a radiation source generating electromagnetic radiation for penetrating the partially solidified material;
- at least one detector for detecting the electromagnetic radiation passing through the partially solidified material, and determining at least two-dimensional images of the liquid material/solid material interface by detecting levels of electromagnetic radiation penetrating the partially solidified material along different paths through partially solidified material and combining the detected levels of radiation to reconstruct the at least two dimensional images.

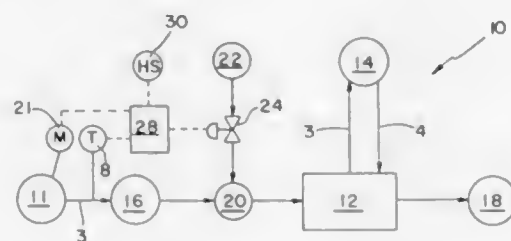
5,509,461
GAS-GAS HEATER PROTECTION SYSTEM AND
METHOD

Paul J. Williams, Franklin Township, Ohio, assignor to The Babcock & Wilcox Company, New Orleans, La.

Filed Dec. 2, 1993, Ser. No. 161,107
 Int. Cl.⁶ F23L 15/02

U.S. Cl. 165—8

8 Claims



1. A system for protecting a gas-gas heater made of a material, the heater for receiving hot, raw flue gas from an air heater and cooling same, the cooled raw flue gas being provided to a desulfurization plant for cleaning the flue gas and a cooled, clean flue gas

being provided back to the gas-gas heater for heating after being cleaned in the desulfurization plant, the system comprising:

- a hot, raw flue gas path from the air heater to the gas-gas heater, the hot, raw flue gas having a gas temperature;
- quench means communicating with the hot, raw flue gas path at a location downstream of the air heater and upstream of the gas-gas heater for providing rapid cooling of the hot, raw flue gas entering the gas-gas heater; and
- control means communicating with the hot, raw flue gas path and the quench means, the control means having a variable, pre-set temperature value, the pre-set temperature value being a temperature value at which the material of the gas-gas heater can be damaged by the gas temperature of the hot, raw flue gas, the control means monitoring the hot, raw flue gas path at a location downstream of the air heater and upstream of the quench means for detecting when the gas temperature of the hot, raw flue gas leaving the air heater is greater than the pre-set temperature value and activating the quench means for rapidly cooling the hot, raw flue gas entering the gas-gas heater until the monitored gas temperature is less than the pre-set temperature value.

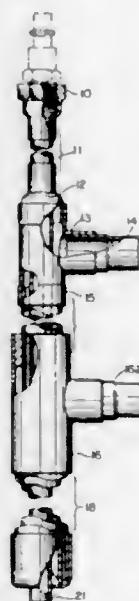
5,509,462
GROUND SOURCE COOLING SYSTEM

Michael Demko, Houston; David Blumentritt, and Robin Zapalac, both of Pearland, all of Tex., assignors to Ground Air, Inc., Houston, Tex.

Filed May 16, 1994, Ser. No. 243,573
 Int. Cl.⁶ F28D 7/12; F25D 23/12

U.S. Cl. 165—45

17 Claims



1. A system for providing ground source cooling for refrigerant coolants, comprising:

- means for effecting heat exchange of a coolant from a refrigeration unit, said means including at least one tube disposed in an outside environment below ground level and surrounded by soil at a predetermined level so that soil at subsurface temperatures is in contact with at least a portion of said at least one tube, wherein said at least one tube is formed as a triple concentric pipe comprising an innermost pipe for acting as a water injection channel, a second pipe for acting as said refrigerant supply outlet pipe, said second pipe immediately surrounding said innermost pipe, and a third and outermost pipe for acting as said refrigerant supply inlet pipe, said third pipe immediately surrounding said second pipe.

5,509,463
SADDLE TYPE HEAT EXCHANGER

James K. Callaway, Sr.; James K. Callaway, Jr., and Danny W. Callaway, all of 8815 Emmott Rd., Houston, Tex. 77040

Continuation of Ser. No. 943,054, Sep. 10, 1992, abandoned, which is a continuation of Ser. No. 741,998, Aug. 8, 1991, abandoned, which is a continuation-in-part of Ser. No. 297,758, Jan. 17, 1989, Pat. No. 5,038,853. This application

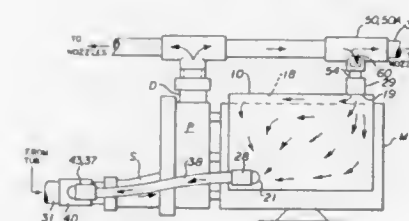
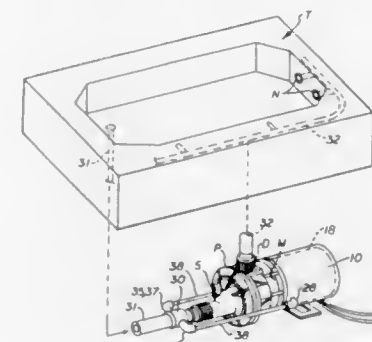
Jun. 13, 1995, Ser. No. 489,707

The portion of the term of this patent subsequent to Aug. 13, 2008, has been disclaimed.

Int. Cl.⁶ F28F 7/00; H02K 9/00; 9/02; F04B 17/00

U.S. Cl. 165—46

22 Claims



6. A heat exchanger for use with a motor driven fluid pump of the type having a low pressure intake port and a high pressure discharge port, wherein the pump motor has an outwardly curved upper surface, said heat exchanger comprising:

- an arcuate heat exchange jacket formed of resilient plastic material;
- said jacket having a hollow enclosed cavity surrounded by an arcuate curved inner wall having a diameter approximately the same as the pump motor outwardly curved upper surface, an outer wall in spaced relation to said inner wall, end walls at each end, and parallel laterally spaced longitudinal bottom walls, said walls joined together to form a unitary structure;
- said jacket configured to subtend the curved upper surface of the pump motor when installed thereon to maintain heat exchange relationship between the pump motor and a fluid within said cavity with said parallel laterally spaced longitudinal bottom walls of said heat exchange jacket disposed in laterally opposed parallel relation adjacent a horizontal axis extending through the mid section of the pump motor;
- a fluid inlet on said jacket in fluid communication with said cavity and connected with the pump for directing a portion of the pumped fluid into said cavity; and
- at least one fluid outlet on said jacket in fluid communication with said cavity and connected with the existing pump intake port for directing fluid from said cavity to the pump intake port;
- said fluid inlet and said at least one fluid outlet connected in fluid communication with the pump to create a pressure differential within said jacket cavity between said fluid inlet and said at least one fluid outlet to introduce fluid into said cavity and draw fluid from said cavity and recirculate it through the pump.

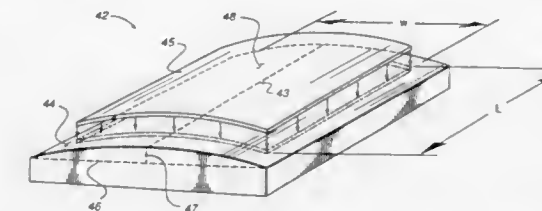
5,509,464
METHOD AND APPARATUS FOR COOLING
RECTANGULAR SUBSTRATES

Norman Turner, Mountain View; John White, Hayward, and Alfred Mak, Union City, all of Calif., assignors to Applied Materials, Inc., Santa Clara, Calif.

Filed Jul. 30, 1993, Ser. No. 99,878
 Int. Cl.⁶ F28F 7/00

U.S. Cl. 165—80.2

20 Claims



1. A method for cooling a rectangular glass substrate, comprising the steps of:

- positioning said substrate with a substrate surface proximate to a rectangular pedestal having a convex cooling surface, said convex pedestal cooling surface curving downwardly from a pedestal center line; and
 - conforming said substrate to said cooling surface while providing a coolant medium under pressure between said substrate surface and said pedestal surface;
- wherein said pedestal cooling surface has a downward curvature that is greater than the amount of substrate bending which would result from the amount of pressure which is to be applied by said coolant medium on said substrate surface; and wherein said downward curvature is sufficient to bend said substrate, such that said substrate surface is brought into an intimate conforming relationship with said pedestal surface, and such that voids between said substrate surface and said cooling surface are minimized.

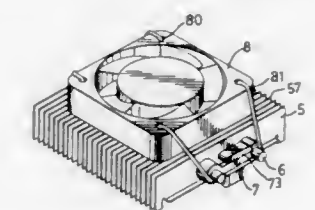
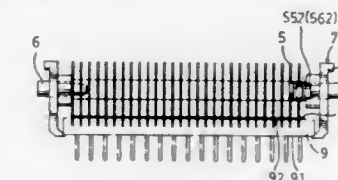
5,509,465
HEAT-DISSIPATING DEVICE FOR A CENTRAL
PROCESSING UNIT CHIP

Yaw-Huey Lai, Taipei, Taiwan, assignor to Biol Corporation, Taipei, Taiwan

Filed Mar. 10, 1995, Ser. No. 401,832
 Int. Cl.⁶ F28F 7/00; H05K 7/20

U.S. Cl. 165—80.3

4 Claims



1. A heat-dissipating device for a central processing unit chip, the heat-dissipating device comprising:

- a plurality of heat-dissipating fins, each of said fins having at least one through-hole, a lower edge, and a flange connected perpendicularly to said lower edge;
- at least one rod member passing through said through-hole of said fins so that said fins can be stacked together and spaced

apart from one another by said flanges, with said lower edges of said fins being co-planar; and
two connecting members connected detachably and respectively to two outermost fins, two ends of said rod member passing respectively through said connecting members, each of said connecting members having a clamping portion which clamps onto a lower face of said central processing unit chip so that an upper face of said central processing unit chip can abut said lower edges of said fins.

5,509,466

CONDENSER WITH DRAINAGE MEMBER FOR REDUCING THE VOLUME OF LIQUID IN THE RESERVOIR

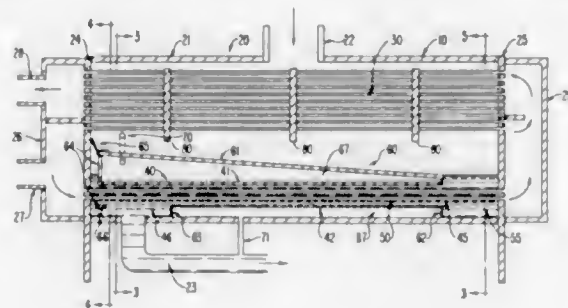
William F. McQuade, Mechanicsburg; Keith E. Starner, and Mark A. Adams, both of York, all of Pa., assignors to York International Corporation, York, Pa.

Filed Nov. 10, 1994, Ser. No. 338,809

Int. Cl.⁶ F28B 1/02

U.S. Cl. 165—113

12 Claims



1. A condenser comprising:
a condenser shell having a reservoir portion;
a vapor inlet through which vapor enters the condenser shell;
condenser tubes for cooling vapor flowing over the condenser tubes to cause the vapor to condense to a liquid and flow into the reservoir portion;
subcooler tubes for cooling liquid in the reservoir portion;
a subcooler compartment for housing the subcooler tubes, the subcooler compartment having an entrance through which the liquid within the reservoir portion flows into the subcooler compartment and over the subcooler tubes; and
a drainage member for forming a void in the reservoir portion and having an upper surface inclined relative to a horizontal plane for directing the liquid from the condenser tubes toward the entrance to the subcooler compartment.

5,509,467

HEAT EXCHANGER TUBE STRAINER

Wesley R. Gibbs, Bronte, Tex., assignor to Champion Clam Traps, Inc., Bronte, Tex.

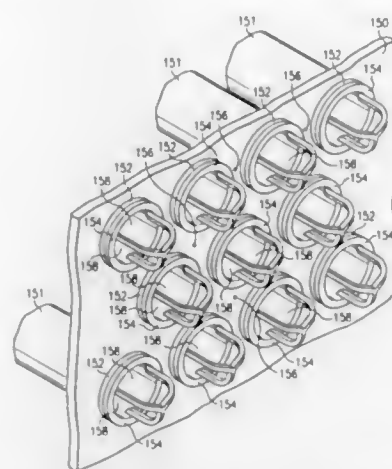
Filed Jun. 28, 1994, Ser. No. 267,573

Int. Cl.⁶ F28F 19/01

U.S. Cl. 165—119

6 Claims

1. A strainer for use with a water inlet for a heat exchanger tube, said strainer comprising:
a. a base having a wall defining a cylindrical passageway with an axis, said base having a first end and a second end;
b. said first end of the base having an anchor for inserting into the water inlet of said heat exchanger tube;
c. a stop attached to the second end of the base extending outwardly from said wall perpendicularly to the axis of said passageway, said stop having a first side facing toward said base;
d. at least three trap bars extending from the second end of said base in an inwardly curved path extending to and joined at a



common point located at a distance 0.2 to 0.8 diameters of said base from the first side of said stop, thereby defining three or more flow openings therethrough, whereby water flowing into the water inlet of said heat exchanger tube must first pass through at least one of said flow openings; and
e. said trap bars having no connection to any other member except at the second end of said base and at said common point.

5,509,468

ASSEMBLY FOR DISSIPATING THERMAL ENERGY CONTAINED IN AN ELECTRICAL CIRCUIT ELEMENT AND ASSOCIATED METHOD THEREFOR

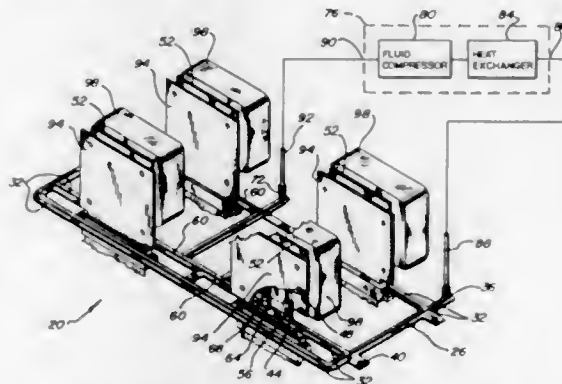
Roger Lopez, Louisville, Colo., assignor to Storage Technology Corporation, Louisville, Colo.

Filed Dec. 23, 1993, Ser. No. 173,495

Int. Cl.⁶ F28F 9/26

U.S. Cl. 165—144

15 Claims

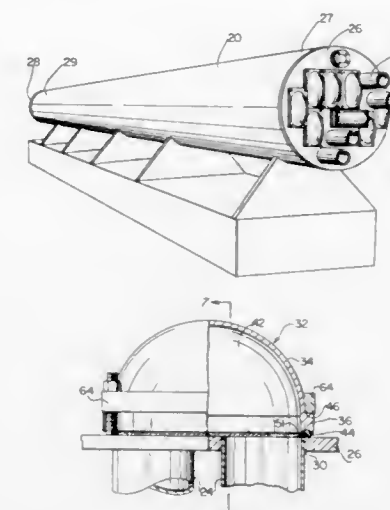


1. An assembly for dissipating thermal energy within an electrical circuit element that includes a first electrical connector, said circuit element being physically mounted on a substrate to electrically cooperate therewith by operation of a second electrical connector that is carried by said substrate and is mateable with said first electrical connector, said assembly comprising:
a cooling plate member positioned proximate to said circuit element and physically moveable as a unit with said circuit element;
a fluid conduit formed to extend through said plate member, said fluid conduit having a fluid inflow end and a fluid outflow end;
a fluid manifold positioned on said substrate, said fluid manifold having a fluid inflow portion and a fluid outflow portion;
first normally closed and manually openable fluid flow coupler means for coupling said inflow end of said fluid conduit to said inflow portion of said manifold, said first coupler means having a first member physically associated with said first

electrical connector element and having a second member physically associated with said second electrical connector;
second normally closed and manually openable fluid flow coupler means for coupling said outflow end of said fluid conduit to said outflow portion of said manifold, said second first coupler means having a first member physically associated with said first electrical connector and having a second member physically associated with said second electrical connector;

said first and second coupler means operating such that when said circuit element is mounted on said substrate said first and second members of said first and second coupler means are concomitantly coupled and said first and second coupler means are concomitantly opened to facilitate fluid flow there-through; and

a supply of cooling fluid connected to said manifold, said supply of cooling fluid operating to supply cooling fluid to said inflow portion of said manifold when said circuit element is mounted on said substrate.



5,509,469

INTERRUPTED FIN FOR HEAT EXCHANGER

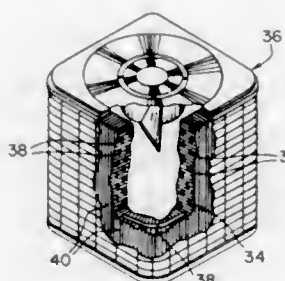
Charles B. Obosu, Nashville, Tenn., assignor to Inter-City Products Corporation (USA), LaVergne, Tenn.

Filed Apr. 19, 1994, Ser. No. 229,628

Int. Cl.⁶ F28F 1/32

U.S. Cl. 165—151

26 Claims



1. A heat exchanger comprising:
at least one heat exchanger coil with a plurality of tubes, said tubes for containing a circulating refrigerant fluid; and
a generally planar fin including a plurality of collars each of which define an aperture, said apertures engaging said tubes, said fin including a plurality of louvers, said louvers disposed between adjacent ones of said collars, said louvers extending at an angle with respect to the plane of said fin, said fin including a flat raised rib extending out of and generally parallel to the plane of said fin between adjacent ones of said collars.

5,509,470

MOLDED OR CAST SHORT RADIUS RETURN BENDS FOR HORIZONTAL SHELL AND TUBE VESSEL

Gregory T. Bass, Clayton, N.C., assignor to Morris & Associates, Garner, N.C.

Filed Apr. 1, 1994, Ser. No. 221,599

Int. Cl.⁶ F28F 9/26

U.S. Cl. 165—158

2 Claims

1. A heat exchanger comprising:
an elongated shell surrounding an axial cavity with said elongated shell having first and second ends;
a plurality of tubes contained within said axial cavity with each of said tubes having first and second tube ends;
first and second tube sheets connected to said elongated shell at said first and second ends, respectively, and each having a plurality of apertures of predetermined diameter therethrough

for receiving said first and second tube ends spaced apart at a predetermined centerline-to-centerline distance; and
a plurality of substantially U-shaped tube end connectors each having a U-shaped portion and a rim portion connected to said U-shaped portion and surrounding an opening to a chamber defined within said U-shaped portion, wherein each of said tube end connectors is demountably fastened to an associated tube sheet with said opening facing and overlapping two of said apertures and having a width approximately equal to said predetermined diameter of said apertures and a length approximately equal to said predetermined diameter of said apertures plus said predetermined centerline-to-centerline distance between said apertures;

a gasket;
and said tube end connector rim portions including a gasket groove for supporting said gasket;
each of said rim portions having a shoulder portion opposite from said gasket groove; and
said heat exchanger further including a clamp member surrounding said tube end connector and engaging said shoulder portion, and fastening means connecting said clamp member to said associated tube sheet for drawing said tube end connector toward said associated tube sheet.

5,509,471

DISTRIBUTION PATTERN OF A PLATE HEAT EXCHANGER

Leif Hallgren, Lund, Sweden, assignor to Alfa Laval Thermal AB, Lund, Sweden

PCT No. PCT/SE93/00027, § 371 Date Oct. 19, 1994, § 102(e) Date Oct. 19, 1994, PCT Pub. No. WO93/14363, PCT Pub. Date Jul. 22, 1993

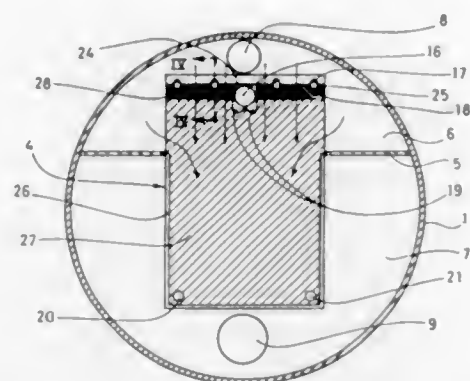
PCT Filed Jan. 20, 1993, Ser. No. 256,610

Claims priority, application Sweden, Jan. 21, 1992, 9200166 Int. Cl.⁶ F28F 3/10; B01D 1/22

U.S. Cl. 165—167

9 Claims

1. Plate heat exchanger for evaporation of a liquid, comprising a number of vertically oriented and against each other abutting thin heat transfer plates (4), provided with a pressed corrugation pattern in the form of ridges and grooves, and between the heat transfer plates (4) arranged gaskets (13, 14, 16, 25), defining a plurality of plate interspaces, each second plate interspace delimiting a flow space for said liquid and the plate interspaces adjacent each second plate interspace delimiting flow spaces for a heating fluid, in each of the flow spaces for the liquid there being several inlet openings (18) horizontally distributed across the width of the heat transfer plates for supply of said liquid, characterized in that adjacent heat transfer plates have opposite located horizontally extended portions (28), which show a corrugation pattern having essentially less pressing depth than the remaining part of the corrugation pattern of



the heat transfer plates, that the ridges in said portions (28) of two adjacent heat transfer plates (4) are crosswise arranged and that the corrugation patterns are so designed that the heat transfer plates (4) in said portions (28), via the crosswise arranged ridges, abut against each other in the flow space for said liquid, but are essentially separated from each other in the flow space for the heating fluid.

5,509,472

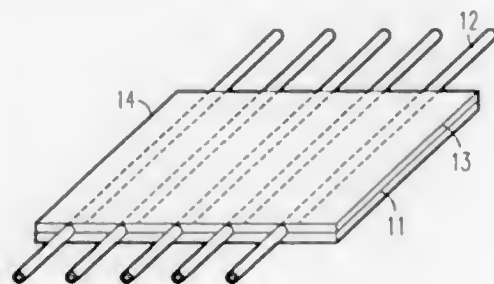
HEAT-RESISTING PLATE HAVING A COOLING STRUCTURE AND METHOD OF MANUFACTURING IT
Masataka Tamura, Yutaka Ishiwata, and Yoshiyasu Itoh, all of Kanagawa, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Nov. 16, 1992, Ser. No. 977,166

Claims priority, application Japan, Nov. 14, 1991, 3-298831
Int. Cl.⁶ F28F 3/12

U.S. Cl. 165—171

8 Claims



1. Heat-resisting plate for use in high temperature portions of equipment exposed to high temperature, comprising:

a plate-shaped metallic substrate having a prescribed thickness, this metallic substrate formed of a metal selected from the group consisting of Ti, Cr, Co, Ni, Cu, Fe, Zr, Nb, Mo, Ta, and W, and alloys thereof;

cooling pipes arranged with prescribed spacing on at least one face of said metallic substrate, for the passage of cooling water; and

a thermal spray layer of the same material as that of the metallic substrate formed on said at least one face of said metallic substrate and on said cooling pipes with a thickness greater than a protrusion of said cooling pipes from said at least one face of said substrate such as to embed said cooling pipes between said thermal spray layer and said substrate.

5,509,473

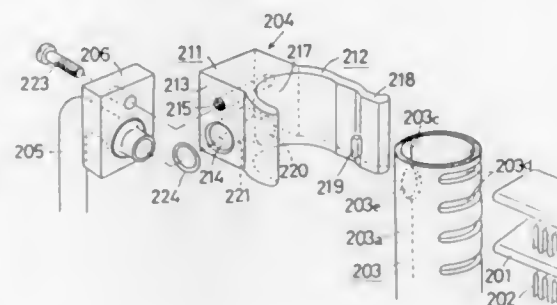
HEAT EXCHANGER

Toshinori Tokutake, Oyamashi, Japan, assignor to Showa Aluminum Corporation, Japan
Continuation of Ser. No. 105,020, Aug. 10, 1993, Pat. No. 5,379,834, which is a division of Ser. No. 889,471, May 27, 1992, Pat. No. 5,240,068. This application Nov. 1, 1994, Ser. No. 332,915

Claims priority, application Japan, May 31, 1991, 3-128948
Int. Cl.⁶ F28F 9/04

U.S. Cl. 165—178

14 Claims



1. A heat exchanger comprising:

a first header;

a second header spaced a predetermined distance from the first header and extending in parallel with the first header;

a plurality of flat tubes each having both ends connected to the first and second headers in fluid connection therewith;

fins each interposed between the adjacent flat tubes;

a connecting member adjoined to at least one of the headers so as to connect an external piping to the header in fluid communication therewith;

the connecting member comprising:

a block-shaped joint body having a surface for flange-connection;

a surrounding body integral with the block-shaped joint body and fittable sideways on the header;

the surrounding body having a header-surrounding portion, an extension extending therefrom towards the tubes and contacting side surfaces thereof;

wherein the header-surrounding portion covers slightly more than a semicircle of the header so that the connecting member remains self-retained on the header; and

wherein the block-shaped joint body has a coolant-flow opening on the surface for flange-connection, and the header-surrounding portion has an inner curved surface in contact with the header and has a coolant-flow opening on the inner curved surface, with the openings being in fluid communication with one another by a coolant passage, and with the opening on the inner curved surface being aligned with an opening formed through a peripheral portion of the header.

5,509,474

TEMPERATURE LOGGING FOR FLOW OUTSIDE CASING OF WELLS

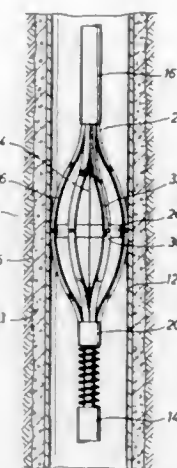
Claude E. Cooke, Jr., 8720 Memorial Dr., Houston, Tex. 77024
Continuation-in-part of Ser. No. 89,047, Jul. 9, 1993, Pat. No. 5,353,873. This application Oct. 11, 1994, Ser. No. 321,135
Int. Cl.⁶ E21B 49/10

U.S. Cl. 166—64

20 Claims

1. A method for detecting flow of a fluid at a selected location outside a casing of a well comprising:

placing a plurality of stationary temperature sensors having means for deflecting flow away from the sensors in contact with the inside wall of the casing at the selected location, the sensors being spaced apart and in proximity to a plane transverse to the axis of the casing; and measuring differences in temperature of the casing wall to detect flow of fluid outside the casing.



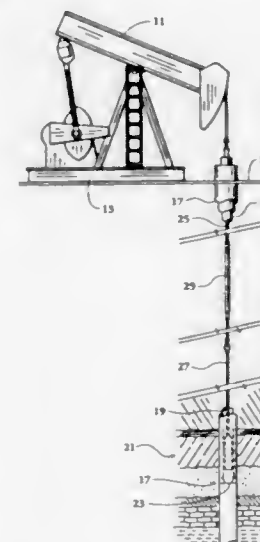
5,509,475

DOWNHOLE STRESS ABSORBER

Gary W. Lewis, R.R. 1, Box 398-B1, Bartlesville, Okla. 74003
Filed Apr. 13, 1995, Ser. No. 421,233
Int. Cl.⁶ E21B 43/00

U.S. Cl. 166—68

23 Claims



1. A downhole sucker rod string stress absorber comprising:

a plunger connected by a shaft to an upper portion of the sucker rod string;

a secondary stress absorber disposed between said plunger and a lower portion of the sucker rod string;

a primary stress absorber slidably mounted on said shaft above said plunger; and means rigidly fixed in relation to said lower portion of said string and slidably mounted on said rod for partially compressing said primary and secondary stress absorbers with said plunger therebetween.

5,509,476

SHORT WELLHEAD PLUG

James D. Vick, Jr., Dallas, Tex., assignor to Halliburton Company, Houston, Tex.

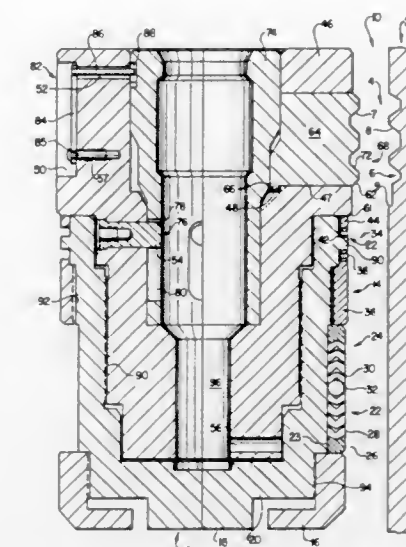
Filed Mar. 7, 1994, Ser. No. 207,000

Int. Cl.⁶ E21B 33/03

U.S. Cl. 166—75.13

13 Claims

1. A wellhead plug assembly, comprising:



a plug body comprising a cap plug threadedly connected to a key retainer housing by a housing/cap thread connection; seal means positioned upon an exterior surface of said plug body for sealing engagement with an interior surface of a wellhead bore;

anchor means positioned at said exterior surface of said plug body and adjacent to said seal means for locking engagement with the wellhead bore;

said seal means and said anchor means being arranged in longitudinal series;

said anchor means having exterior contoured profiles for face-to-face mating engagement with contoured nipples of the wellhead bore;

said housing/cap thread connection being tandemly and radially interiorly positioned to said seal means;

an expander sleeve positioned within the plug body for actuating said anchor means into locking engagement with the wellhead;

said expander sleeve connected to said plug body by a motion limiting connection;

said motion limiting connection being radially interiorly positioned to said seal means and said profiles of said anchor means;

a length extending means comprising said seal means and said anchor means, as each are located in longitudinal series, one to the other, and at the exterior surface of the plug body;

said motion limiting connection being tandemly positioned to said length extending means;

said wellhead plug assembly, said seal means, and said anchor means each having a longitudinal length; and

said seal means and said anchor means combined longitudinal lengths providing a majority of said wellhead plug assembly's longitudinal length.

5,509,477

BOREHOLE VENTILATION SEALCOVER

Dino Ryan, Marathon, Canada, assignor to Victor Marcinkowski, Sault Ste Marie, Canada

Filed Apr. 27, 1995, Ser. No. 429,555

Int. Cl.⁶ E21B 33/02

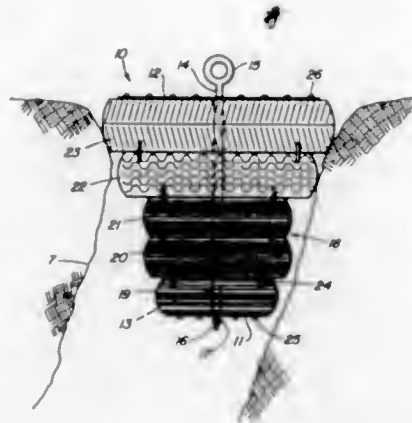
U.S. Cl. 166—76.1

7 Claims

1. A bore hole cover comprising: a plurality of hollow ring members of selected diameters having substantially parallel opposed sides arranged in overlying planar coaxial relationship in order of increasing diameter;

a pair of substantially rigid disc members arranged in planar spaced coaxial relationship on respective opposite sides of said coaxially arranged ring members;

a tubular spacer member mounted coaxially between said disc members; and



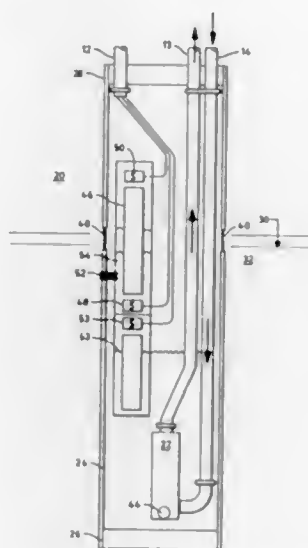
rod means coaxially arranged in said tubular spacer member.

5,509,479
SUBTERRANEAN REMEDIATION PUMP AND PROCESS FOR USE

Phillips C. Emmons, 1314 12th St., Huntington, W. Va. 25701
Filed Sep. 8, 1994, Ser. No. 302,310
Int. Cl.⁶ E21B 43/38

U.S. Cl. 166—265

10 Claims



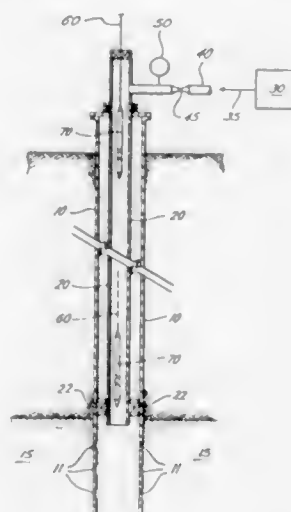
5,509,478
METHOD OF DETERMINING THE QUALITY OF STEAM FOR STIMULATING HYDROCARBON PRODUCTION

James R. Stoy, Missouri City, Tex., assignor to Texaco Inc., White Plains, N.Y.

Filed May 8, 1995, Ser. No. 436,665

Int. Cl.⁶ E21B 47/00

U.S. Cl. 166—250,06



4 Claims

1. In a process for the removal of liquid hydrocarbons floating in a hydrocarbon layer to form an interface with a lower water layer below ground, by pumping from a borehole extending through said hydrocarbon layer, the improvement comprising in combination:

- providing sensing means for determining the interface between the hydrocarbon layer and the water layer in said borehole, said sensing means sending signals indicative of whether it is located above or below the hydrocarbon layer/water interface for transmitting;
- providing lifting means for moving said sensing means up or down within said borehole until said sensing means is at said interface;
- pumping from a point within said borehole above said interface by pumping means suspended from lifting means whereby said pumping means is maintained in communication with said hydrocarbon layer by said lifting means varying the elevation of said pumping means within said borehole in response to signals received from said sensing means indicative of the elevation of said interface;
- providing oleophilic membrane means on the inlet of said pumping means to reduce pumping of water.

5,509,480
CHEMICAL CUTTER AND METHOD FOR HIGH TEMPERATURE TUBULAR GOODS

Jamie B. Terrell, and Donna K. Terrell, both of 1916 Christopher Dr., Ft. Worth, Tex. 76140

Continuation-in-part of Ser. No. 899,632, Jun. 16, 1992, Pat. No. 5,320,174. This application Jun. 13, 1994, Ser. No. 259,255

Int. Cl.⁶ E21B 29/02

U.S. Cl. 166—297

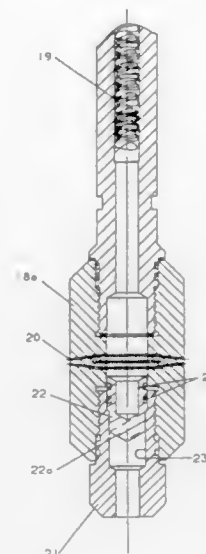
28 Claims

24. In a method of cutting tubular well goods at a downhole location within a well extending into the earth from a well head, the steps comprising:

- inserting into said well a chemical cutting tool having a chemical section containing a chemical cutting agent adapted to interact with a corrosion resistant tubular member in said well to form a cut in said tubular member and further having a cutting section adapted to receive said cutting agent from said chemical section;

1. A method of determining quality of pressurized steam flowing through a conduit, which conduit includes an upstream end and a downstream end in direct fluid communication with a subterranean formation, which method includes the steps of:

- at the upstream end, measuring a steam mass flow rate (M), measuring a steam pressure (P₁) and a steam temperature (T₁) and determining a steam quality (X₁) therefrom;
- positioning a turbine meter proximate the upstream end, measuring an angular velocity (ω₁) indication of volume flow rate, and measuring a steam pressure (P₁);
- positioning the turbine meter at the downstream end, measuring an angular velocity (ω₂) indication of volume flow rate, and measuring a steam pressure (P₂);
- determining steam quality (X₂) at the downstream end as a function of (X₁) and the measurements P₁, P₂, ω₁, ω₂, and M.



- lowering said chemical cutting tool through said well to a desired location within said tubular member at which said cut is to be made;
- discharging said cutting agent from said chemical section into contact with an ignitor material to effect an exothermic pre-reaction of said chemical cutting agent, said ignitor material being formed in a permeable accumulation of a promoter component formed of a material which is reactive with said cutting agent in an exothermic reaction at a first temperature and an ignitor component formed of a metal interposed with said promoter component and which is reactive with said cutting agent in an exothermic reaction at a second temperature higher than first temperature;
- dispensing said pre-ignited chemical cutting agent from said cutting tool in a plurality of jet streams emanating from a plurality of cutting ports in the cutting section of said tool and into the contact with the inner surface of said tubular member to effect a cut in said tubular member.

5,509,481
METHOD OF PERFORATING INCLUDING AN AUTOMATIC RELEASE APPARATUS SUSPENDING BY WIRELINE OR COILED TUBING IN A WELLBORE FOR PERFORATING A LONG LENGTH INTERVAL OF THE WELLBORE IN A SINGLE RUN USING A GUN STRING LONGER THAN A WELLHEAD LUBRICATOR

Klaus B. Huber, and Joe C. Hromas, both of Sugarland, Tex., assignors to Schlumberger Technology Corporation, Houston, Tex.

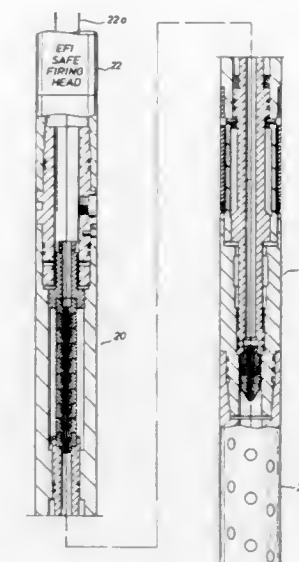
Continuation-in-part of Ser. No. 220,983, Mar. 30, 1994, Pat. No. 5,429,192, which is a continuation-in-part of Ser. No. 57,948, May 5, 1993, Pat. No. 5,366,013, which is a continuation-in-part of Ser. No. 955,816, Oct. 2, 1992, Pat. No. 5,318,126, which is a continuation of Ser. No. 858,400, Mar. 26, 1992, abandoned. This application Jul. 5, 1994, Ser. No. 270,949

Int. Cl.⁶ E21B 43/116

U.S. Cl. 166—297

12 Claims

- A method of perforating a wellbore, comprising the steps of:
 - suspending a gun string from a conveyor and lowering said conveyor and said gun string into said wellbore, said gun string including a first part, a second part including a perforating gun adapted to detonate, and a detonating cord adapted for conducting a detonation wave;
 - conducting said detonation wave in said detonating cord;



- prior to the detonation of said perforating gun, initiating a release of said second part of said gun string from said first part of said gun string, the initiating step including the steps of,
 - conducting said detonation wave in said detonating cord through a frangible member, and shattering said frangible member when said detonation wave passes through said frangible member;
 - detonating said perforating gun; and
 - releasing said second part of said gun string from said first part of said gun string.

5,509,482
PERFORATION TRIGGER BYPASS ASSEMBLY AND METHOD

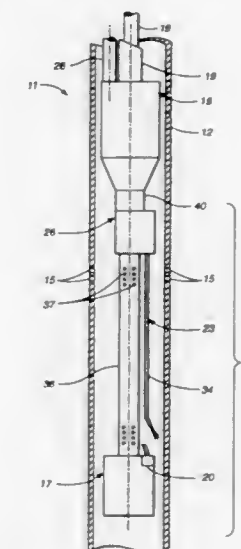
David B. Dillon, Aliso Viejo, and David O'Mara, Canyon Country, both of Calif., assignors to Trico Industries, Inc., Huntington Park, Calif.

Filed Sep. 26, 1994, Ser. No. 312,405

Int. Cl.⁶ E21B 29/02; 29/08; 43/11

U.S. Cl. 166—297

21 Claims



- A method of preventing discharge of a pumped fluid, from a fluid line coupled to a tubular completion, back into a formation upon perforation of a down-hole completion assembly comprising the step of:

after perforation of said down-hole completion assembly using a perforation gun positioned down-hole from said tubular completion, blocking a bypass conduit assembly, providing fluid communication between said tubular completion and said perforation gun for triggering thereof, to prevent communication of pumped fluid from said fluid line into said formation in the event of severing of a portion of said bypass conduit assembly during detonation of said perforation gun.

5,509,483
METHOD AND APPARATUS FOR ANCHORING A WELL SCREEN ON A PERFORATED MANDREL OF STAINLESS STEEL

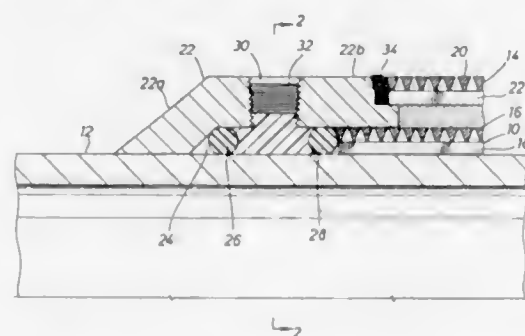
Lawrence J. Graen, Kingwood, Tex., assignor to Houston Well Screen Company, Houston, Tex.

Filed Dec. 1, 1994, Ser. No. 347,796

Int. Cl.⁶ E21B 43/08

U.S. Cl. 166—382

7 Claims



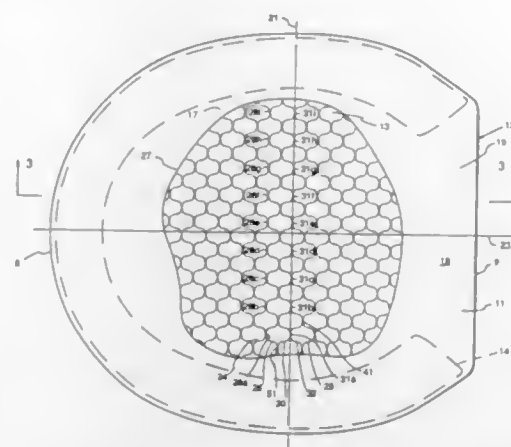
5. A method of anchoring a well screen on a perforated tubular mandrel to hold the well screen from longitudinal movement relative to the mandrel comprising the steps of positioning the well screen on the mandrel, locating cup-shaped members having a base and a cylindrical wall on the mandrel at opposite ends of the screen with the walls of the cup-shaped members extending partly over the ends of the screen to provide annular cavities between the walls of the cups and the mandrel, filling the annular space with liquid epoxy, and heating the epoxy the required amount to cure the epoxy and cause the epoxy to adhere to the walls of the cups and the mandrel to hold the cups and the screen from longitudinal movement relative to the mandrel.

5,509,484
HORSESHOE IMPACT PAD
Curtis L. Landl, and Susan L. Wilson, both of Sunnyvale, Calif., assignors to Supracor Systems, Inc., Sunnyvale, Calif.
Filed Jan. 10, 1995, Ser. No. 370,970
Int. Cl.⁶ A01L 7/02

U.S. Cl. 168—14

26 Claims

1. A shock-absorbing impact pad for horses, comprising:
 - a) a first facing sheet of resilient material;
 - b) a second facing sheet of resilient material; and
 - c) a generally oval-shaped panel being truncated along one end to have an outer perimeter configured to correspond to the hoofprint of a horse, said panel being made of a resilient material and including a honeycomb-configured core having
 - i) a plurality of strips of resilient thermoplastic material being bonded together such that the bonds between adjacent strips are at regular intervals and form bond rows regularly spaced in the direction transverse to said bond rows, with the bonds in a bond row being longitudinally offset relative to the bonds in an adjacent bond row, said strips forming cell walls defining a plurality of strips of contiguous regular shaped cells, said core having a first face formed by a first extremity of said cell walls and a second face formed by a



- second extremity of said cell walls, said first face being bonded to said first facing sheet, and said second face being bonded to said second facing sheet,
- ii) said core comprising a first region and at least one other region, said first region of said core having a plurality of strips of thermoplastic material having a first stiffness characteristic, said other region of said core having a plurality of strips of thermoplastic material having a second stiffness characteristic, and
- iii) whereby when placed between a horseshoe and horse's hoof the pad tends to absorb a substantial part of the shock energy that would otherwise be transmitted to the hoof.

5,509,485
FIRE SUPPRESSANT
Guillermo Almagro, 5414 Jersey Ave. S., Gulfport, Fla. 33707
Filed Mar. 4, 1994, Ser. No. 206,524
Int. Cl.⁶ A62C 1/00

U.S. Cl. 169—46

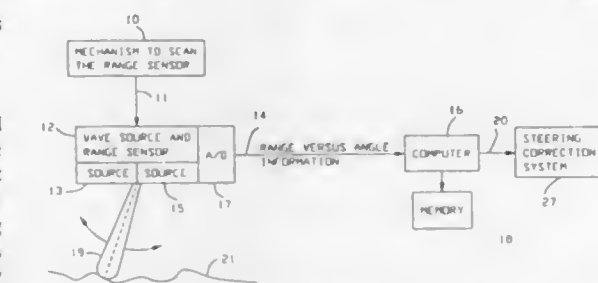
6 Claims

1. A method of suppressing fires comprising applying an effective amount of a fire suppressant composition comprising a fine particulate gelatinous phosphatic clay slime to a flammable material environment, wherein the phosphatic clay slime is prepared to a concentration of about 1.5 to 3.5 percent solids.

5,509,486
METHOD OF STEERING AN AGRICULTURAL VEHICLE
David P. Anderson, Burnsville, Minn., assignor to Loral Corporation, New York, N.Y.
Filed Aug. 12, 1994, Ser. No. 289,606
Int. Cl.⁶ A01B 63/00

U.S. Cl. 172—6

3 Claims



1. A method for controlling an agricultural vehicle comprising: scanning a beam of wave energy through a scanning angle over a growing crop, receiving an analog signal from said growing crop, converting said analog signal to a digitized signal,

analyzing the characteristics of said digitized signal to obtain information on the range of said growing crops from said agricultural vehicle and the angle of the scanning beam at a plurality of defined scan intervals, converting said range information to height data at each scan interval, extracting periodicity information from said height data, computing a steering error for said agricultural vehicle from said periodicity information after each sweep, and utilizing said steering error to control the direction of movement of said agricultural vehicle.

5,509,487
CORING APPARATUS
Raymond J. Dufty, 466 Brisbane Road, Arundel, Gold Coast, Queensland, 4214, Australia, and Ronald S. Kaye, 5 Bunbird Avenue, Paradise Point, Gold Coast, Queensland, 4216, Australia

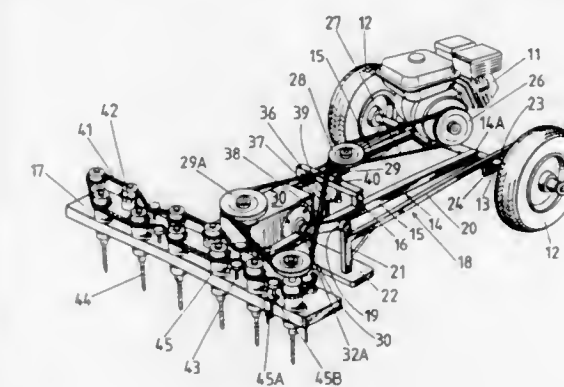
PCT No. PCT/AU93/00139, § 371 Date Oct. 3, 1994, § 102(e) Date Oct. 3, 1994, PCT Pub. No. WO93/19580, PCT Pub. Date Oct. 14, 1993

PCT Filed Apr. 1, 1993, Ser. No. 313,155

Claims priority, application Australia, Apr. 1, 1992, PL1638 Int. Cl.⁶ A01B 45/02

U.S. Cl. 172—21

14 Claims



1. Coring apparatus including
 - a coring support having a plurality of vertically aligned drilling members for coring a ground surface;
 - means for causing rotational movement of the drilling members during vertically reciprocatory movement thereof from an operative position when the ground surface is penetrated by the drilling members to an inoperative position when the drilling members are clear of the ground surface;
 - a mobile chassis frame having an axle connecting a pair of ground engaging wheels, crank means pivotally attached to said chassis frame, a movable frame component pivotally attached to said crank means adjacent one end thereof and being slidably attached to said axle adjacent another end thereof whereby said movable frame component is caused to move in a reciprocable fashion in a substantially horizontal plane relative to said mobile chassis frame by movement of said crank means; and
 - foot means supported by the movable frame component, said foot means being spaced from the drilling members and which foot means contacts the ground surface when the drilling members are in the operative position.

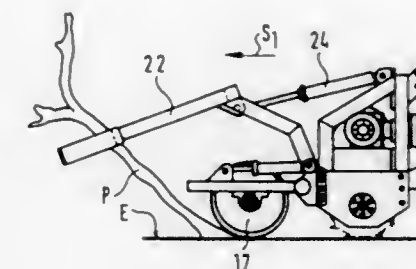
5,509,488
DEVICE AND METHOD FOR CLEARING TREES/ BUSHES AND TILLING SOIL
Tuomo Meriläinen, Sotkamo, Finland, assignor to Suokone Oy, Vuokatti, Finland

Filed Sep. 13, 1994, Ser. No. 305,207

Claims priority, application Finland, Sep. 15, 1993, 934044 Int. Cl.⁶ A01B 33/16

U.S. Cl. 172—63

18 Claims



1. Cutter device including a frame and a cutter drum coupled to said frame and having cutter blades which work soil and wood material, comprising
 - a displaceable tamping drum,
 - a tamping drum frame on which said tamping drum is mounted for rotation,
 - first displacement means for displacing said tamping drum frame and therefore said tamping drum rotatably mounted thereto relative to said frame of the cutter device,
 - a felling arm arranged above said tamping drum and coupled to said frame of the cutter device, and
 - second displacement means for displacing said felling arm, said second displacement means comprising an actuator coupled to said felling arm and displacing said felling arm outward from said frame of the cutter device to tilt wood material in a path of the cutter device to a suitable angle of inlet into engagement with said tamping drum, said tamping drum pressing the wood material against a ground surface such that the wood material enters into contact with said cutter blades of said cutter drum.

5,509,489
FASTENER TOOL HANDLE ADAPTER
Henry C. Lower, Jr., 255 Harbor Ct., Winter Garden, Fla. 34787

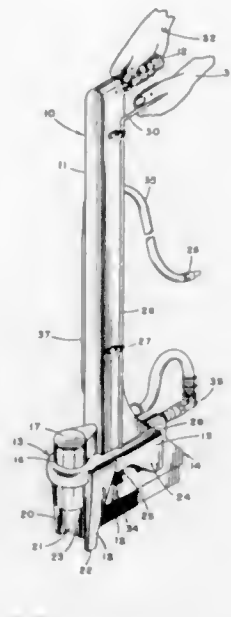
Filed Sep. 19, 1994, Ser. No. 308,419

Int. Cl.⁶ B23B 45/04

U.S. Cl. 173—170

9 Claims

1. A fastener tool handle adapter removably attachable to a fastener tool of the type having a firing head and a handle and a trigger located adjacent to the handle comprising:
 - an elongated arm having two ends and having a handle on one end thereof and a fastener tool attaching portion on the other end thereof;
 - said elongated arm fastener tool attaching portion being shaped to fit over a fastener tool for attachment thereto with a plurality of attaching members and said tool attaching portion having a pair of legs positioned along said fastener tool firing head and shaped to shield said firing head; and
 - a trigger arm rotatably and slidably attached to said elongated arm and having a trigger pull member on one end thereof shaped to rotate beneath the fastener tool trigger by the rotation of said trigger arm and to actuate said fastener tool by sliding said trigger arm and trigger pull member against said fastener tool trigger whereby a fastener tool can be adapted to be operated remotely.



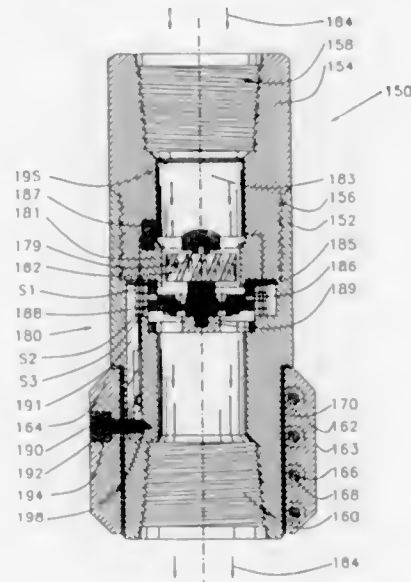
5,509,490

EMF SACRIFICIAL ANODE SUB AND METHOD TO DETER BIT BALLING

William C. Paske, Fort Bend County; Paul E. Rodney, and Ronald D. Ormsby, both of Harris County, all of Tex., assignors to Harold Technology, Inc., Houston, Tex.
Continuation-in-part of Ser. No. 60,182, May 7, 1993, Pat. No. 5,330,016. This application Jul. 15, 1994, Ser. No. 275,893

Int. Cl.⁶ E21B 7/00

U.S. Cl. 175—57



17. A method for preventing mud interference to a select portion of a drill string while drilling through a formation with a drilling rig, the method comprising the following steps:

- pumping drilling fluid through said drill string in a flow path passing through said drill string and continuing outside said drill string along an annulus surrounding said drill string to return upwardly in a direction toward said drilling rig;
- selecting a first portion of said drill string where mud build-up is selected to be avoided, said first portion of said drill string having a small axial length, relative to an overall axial length of said drill string;
- selecting an electrode portion of said drill string where mud build-up is to be promoted in comparison with said first

portion, said electrode portion being further selected to have a location proximate said first portion; and
impressing an electrical potential between said first portion of said drill string and said electrode portion so that said electrode portion is raised to a more positive electric potential relative to said first portion to promote mud build-up at said electrode portion relative to said first portion of said drill string.

5,509,491

DUAL-MOTOR ELECTRIC DRIVE SYSTEM FOR VEHICLES

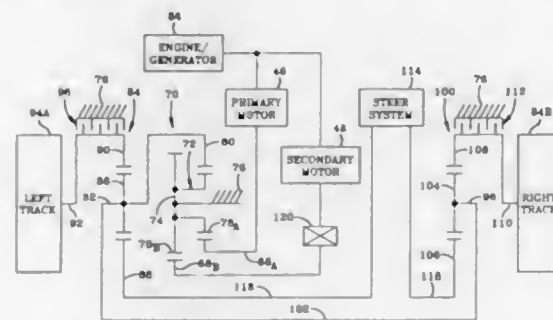
Arthur Hall, III, Cicero, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Apr. 18, 1994, Ser. No. 229,032

Int. Cl.⁶ B62D 55/00; B60K 6/00

U.S. Cl. 180—9.44

13 Claims



23 Claims

1. An electric drive system for propelling a track-laying vehicle through both a low speed range and a high speed range to a desired maximum vehicle speed, said drive system comprising:
first and second electric propulsion motors capable of delivering independent propulsion forces;
said first and second electric propulsion motors each having a maximum speed;
left and right drive tracks;
a final drive system for transferring propulsion forces to the drive tracks;
a predetermined transition speed less than the maximum vehicle speed delineating the transition from the low speed range to the high speed range of the vehicle;
a first drive ratio is provided between said first propulsion motor and said final drive system;
said first drive ratio assures that said first propulsion motor reaches its maximum speed when said vehicle is at its maximum speed;
a second drive ratio is provided between said second propulsion motor and said final drive system;
said second drive ratio assures that said second propulsion motor reaches its maximum speed at approximately said transition speed;
the relationship of said first and second drive ratios effecting multiplication of the output torque from said second propulsion motor to said final drive system at speeds lower than said transition speed;
said first propulsion motor operatively connected to said final drive system to provide the desired maximum vehicle speed;
and,
means to engage said second propulsion motor to said final drive system to provide the output torque from said second propulsion motor to said final drive when torque in addition to that supplied by said first propulsion motor is required at speeds below said transition speed;
means to disengage said second propulsion motor from said final drive system at said transition speed when the output torque from said first propulsion motor is sufficient for said final drive system to propel the vehicle in the high speed range.

5,509,492

DRIVE INCLUDING AN EXTERNAL ROTOR MOTOR FOR A VEHICLE WHEEL

Bernd Pfannschmidt, Rosstal, Germany, assignor to Siemens Aktiengesellschaft, München, Germany

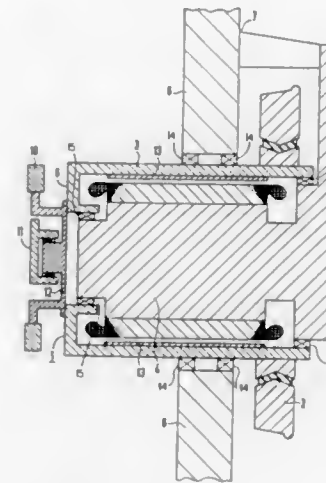
Filed Oct. 14, 1993, Ser. No. 137,311

Claims priority, application Germany, Oct. 15, 1992, 42 34 831.5

Int. Cl.⁶ B60K 7/00

U.S. Cl. 180—65.5

14 Claims



1. A drive with an external drive rotor motor for a wheel of a vehicle, comprising:

- an external rotor designed as a wheel support rotatably mounted radially outward on a running gear link of the vehicle, the running gear link surrounding the external rotor; and
- stator laminations nonrotatably mounted on the running gear link, the stator laminations mounted in the external rotor and connected by a torque support with the running gear link.

5,509,493

CONTROL DEVICE FOR STEERING-RACK EQUIPPED AUXILIARY POWER STEERING

Armin Lang, Schwäbisch Gmünd, and Helmut Knödler, Lorch, both of, Germany, assignors to ZF Friedrichshafen AG, Germany

PCT No. PCT/EP93/00248, § 371 Date Aug. 5, 1994, § 102(e) Date Aug. 5, 1994, PCT Pub. No. WO93/15947, PCT Pub. Date Aug. 19, 1993

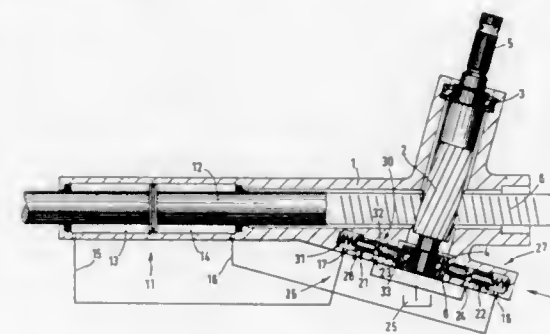
PCT Filed Feb. 4, 1993, Ser. No. 284,493

Claims priority, application Germany, Feb. 6, 1992, 42 03 335.7

Int. Cl.⁶ B62D 5/22

U.S. Cl. 180—132

6 Claims



1. Steering-rack-equipped auxiliary power steering suitable for use in motor vehicles including a steering housing, a pinion having an axis which is connected to a manual steering wheel spindle and

positioned rotatably in the steering housing, a steering rack mounted for axial movement in the steering housing and positioned in engagement with the pinion by a spring-loaded thrust piece, a control device responsive to the movement of the pinion, and a servomotor operated by the control device and associated with the steering rack to provide auxiliary power support to the steering rack, wherein the improvement comprises: providing a fixed bearing and a movable bearing in the steering housing, swingably positioning the pinion in the fixed bearing and the movable bearing such that rotation of the pinion causes movement of the movable bearing, wherein the control device includes two control seat valves mounted in said steering housing, each control seat valve having an axis which is substantially perpendicular to the axis of the pinion, and wherein the movable bearing is operably engaged with the control seat valves such that the movement of the movable bearing opens and closes the control seat valves to operate the servomotor.

5,509,494

AUXILIARY POWER STEERING

Armin Lang, Schwäbisch Gmünd, Germany, assignor to ZF Friedrichshafen AG, Altemann, Germany

Continuation of Ser. No. 193,036, Feb. 4, 1994, abandoned.

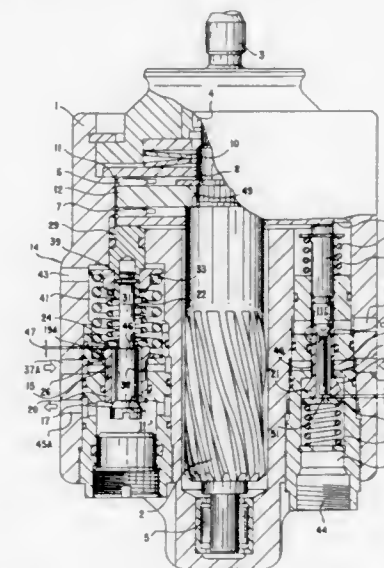
This application Jun. 7, 1995, Ser. No. 475,095

Claims priority, application Germany, Aug. 6, 1991, 41 26 020.1

Int. Cl.⁶ B62D 5/06

U.S. Cl. 180—132

9 Claims



1. An auxiliary power steering usable in motor vehicles for providing power steering which requires a substantially constant force on the steering wheel for activation, the auxiliary power steering having a steering valve assembly with a housing for providing fluid to a servomotor, said steering valve assembly comprising:

- a pinion arranged in an axial direction in the housing;
- first and second plungers located in said housing and mounted for movement in the axial direction from a neutral position to an activated position;
- first and second axially movable discs positioned axially concentric with said first and second plungers, respectively;
- first and second pressure springs each fixed at a first end in said housing with a second end positioned to exert pressure in the axial direction on said first and second plungers, respectively, to cause movement of said plungers from the neutral position to the activated positions responsive to rotation of said pinion;
- a third pressure spring fixed at a first end in said housing and having a second end attached to the first axially movable disc

for exerting pressure thereon in the axial direction opposite the direction of the pressure exerted by the first pressure spring;

first and second inlet-seat valves located in said housing and provided with inlet valve seats and first and second outlet-seat valves located in said housing, said first inlet-seat valve and said first outlet-seat valve having a first closing body associated therewith, and said second inlet-seat valve and said second outlet-seat valve having a second closing body associated therewith;

each of said first and second closing bodies having a first end which forms an outlet valve seat and a second end positioned in abutment with said first and second axially movable discs, respectively, when said first and second plungers are in the neutral position, each of said closing bodies being provided with a feed chamber in fluid communication with said inlet-seat valve, each of said feed chambers including a protruding contact surface at the end thereof closest to the second end of each closing body which is adapted to rest on each of said inlet valve seats, respectively, when said plungers are in the neutral position, and said closing bodies being mounted for axial movement in said housing; and

said first and second plungers each including an activation surface and a closing surface, each of said activation surfaces being positioned to engage the axially movable discs upon axial movement of said plungers, and each of said closing surfaces being positioned to abut said outlet valve seats of said closing bodies upon axial movement of said plungers beyond the point where said first and second activation surfaces engage respective axially moveable discs, to thereby close said outlet-seat valves and cause axial movement of said closing bodies whereby said first inlet-seat valve is opened when the first plunger is in the activated position and the second inlet-seat valve is opened when the second plunger is in the activated position.

5,509,495

DRIVE ASSEMBLY FOR MOTOR VEHICLES

Kim Hayemann, Weissach; Rolf Silvers von, Ruteshelm; Ulrich Layher, Sershelm; Clemens Mutter, Keltern-Weiler, and Bernd Wacker, Weissach, all of, Germany, assignors to Dr. Ing. h.c.F. Porsche AG, Weissach, Germany

PCT No. PCT/EP91/02297, § 371 Date Jul. 30, 1993, § 102(e) Date Jul. 30, 1993, PCT Pub. No. WO92/13734, PCT Pub. Date Aug. 20, 1992

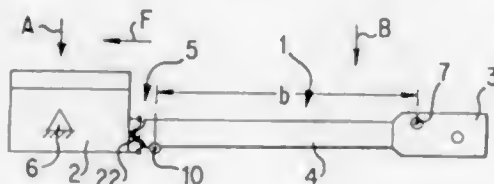
PCT Filed Dec. 3, 1991, Ser. No. 94,124

Claims priority, application WIPO, Jan. 30, 1991, PCT/EP91/00167; Germany, Sep. 19, 1991, 41 31 163.9

Int. Cl.⁶ B60K 20/00

U.S. Cl. 180—291

8 Claims



1. A drive assembly for a motor vehicle having a vehicle body, comprising:

- a forward engine supported in engine support bearings on a vehicle body, so as to be movable in respective vibration excited vertical and horizontal directions,
- a rearward drive unit supported at said vehicle body by at least one elastic drive unit support bearing,
- a central support tube extending between the drive unit and the engine, said support tube being rigidly connected with the drive unit and being movably connected with the engine by way of a flexible tube connection joint, and

a drive shaft extending inside the support tube between an engine output shaft and the drive unit, said drive shaft and engine output shaft being drivingly connected by a torque-transmitting joint located at and inside the flexible tube connection joint,

wherein the torque transmitting joint and flexible tube connection joint provide for vibration uncoupling of the engine and drive unit by elastically supporting relative angular movement of the engine and support tube in respective vertical and horizontal vibration excitation directions of movement of the engine with respect to the drive unit; and

wherein the flexible tube connecting joint comprises a flexible disk bundle arranged between a neck of an engine power block and a face of the central support tube, said flexible disk bundle being connected by way of separate fastening points with the central support tube and with the neck of the engine power block.

5,509,496

LAWN AND GARDEN TRACTOR HYDROSTATIC FOOT CONTROL SYSTEM

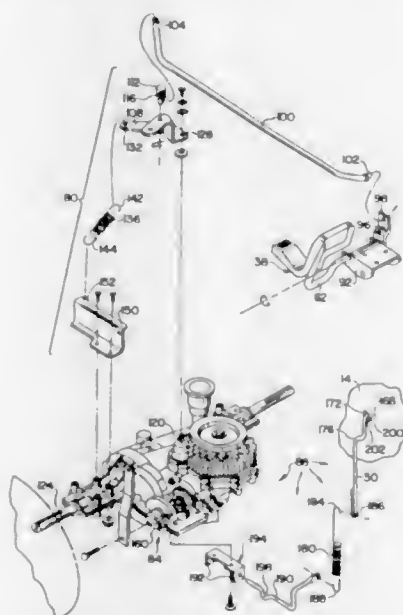
Donald G. Erickson, Antioch; Joseph P. Deschamps, Franklin; Lindell R. Flynn, Old Hickory; John A. Burns, Franklin, and Richard D. Williams, Brentwood, all of Tenn., assignors to Murray, Inc., Brentwood, Tenn.

Filed Jun. 7, 1994, Ser. No. 255,966

Int. Cl.⁶ B60K 17/00

U.S. Cl. 180—307

19 Claims



1. A mechanism for controlling the direction and speed of an off-road vehicle having a frame, an operator seat, a steering wheel, an engine and a variable speed transmission coupled for driving at least one of a plurality of ground wheels, said mechanism comprising:

- a floor plate carried by the vehicle and adapted to support the heel portion of an operator's foot;
- a pedal operatively connected to said variable speed transmission and pivotally mounted for movement between a forward zone for controlling the forward speed of said vehicle, a neutral zone wherein said vehicle is in neutral, and a reverse zone for controlling the reverse speed of said vehicle;
- said pedal having first and second portions generally inclined with respect to one another and each adapted for engagement by a forward portion of said individual's foot so that engagement of said first portion with a predetermined amount of force moves said pedal into said forward zone of movement,

and engagement of said second portion with a predetermined amount of force moves said pedal into said reverse zone of movement;

said pedal being arranged relative to said floor plate in a manner which enables said individual to selectively access said first and second portions with the forward portion of said foot by pivoting said heel on said floor plate; and

said pedal having said second portion thereof disposed laterally outboard of a side edge of said floor plate and having at least a portion of said first portion thereof disposed laterally inboard of said side edge of said floor plate.

5,509,497

STEERABLE WHEEL DRIVE ASSEMBLY

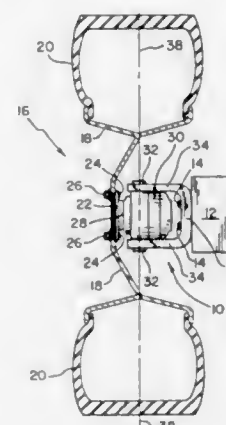
James E. Smith, Lafayette, Ind., assignor to Fluidrive, Inc., Brookston, Ind.

Filed Apr. 7, 1994, Ser. No. 224,032

Int. Cl.⁶ B60K 7/00

U.S. Cl. 180—308

21 Claims



1. A steering wheel drive assembly for a vehicle comprising: a fluid drive motor having a wheel shaft extending out therefrom for attachment to a wheel;

wherein said drive motor includes a bearing assembly, a piston drive assembly and a fluid distribution assembly for delivering fluid to said piston drive assembly, said distribution assembly located between said bearing and piston drive assemblies; and,

pivot attachment means for mounting said drive motor to said vehicle and allowing pivotal motion of said drive motor about an axis of rotation extending through said distribution assembly.

5,509,498

CABLE SUPPORT FOR WORKMEN ON ROOFS

Sumiko Higaki, 3209 Adelaide Way, Belmont, Calif. 94002; Tadashi Nakazawa, 455 Santiago Ave., El Granada, Calif. 94018, and Melchor Bacani, 567 Heathcliff Dr., Pacifica, Calif. 94044

Filed Dec. 16, 1994, Ser. No. 357,339

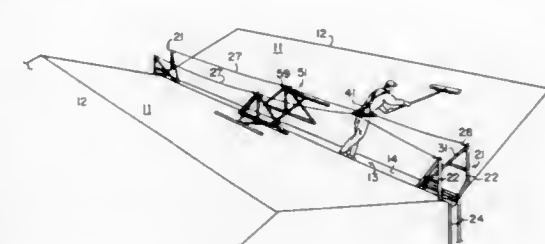
Int. Cl.⁶ E04H 17/00

U.S. Cl. 182—45

12 Claims

1. A support for a workman walking on a narrow building walkway extending longitudinally along the bottom edge of a slanted roof of a building comprising

a first bracket at a first end of said walkway, a second bracket at a second end of said walkway opposite said first end, means for fixing said first bracket to a first end of said building, means for fixing said second bracket to a second end of said building,



each said bracket having vertical, laterally spaced upright first and second members on opposite sides of said walkway and extending above said walkway,

a first cable attached to the upper end of a first member of said first bracket and the upper end of a first member of said second bracket and a second cable attached to the upper end of a second member of said first bracket and the upper end of a second member of said second bracket,

each said bracket comprising midportions at the lower ends of said members slanted parallel to said roof and extending toward said walkway and lower vertical members at the inner ends of said midportions extending down along an end of said building, said lower vertical members comprising said means for fixing said bracket.

5,509,499

PORTABLE HUNTER'S LADDER

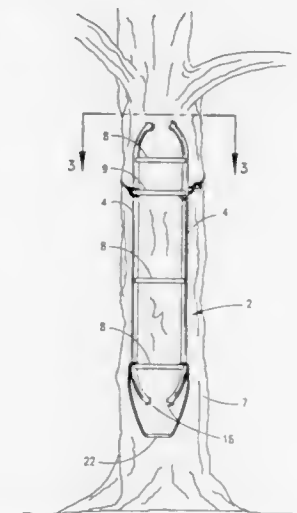
L. Wayne Prejean, Ville Platte, La., assignor to R. L. Prejean Family Trust, Ville Platte, La.

Continuation-in-part of Ser. No. 93,006, Jul. 19, 1993, abandoned. This application Aug. 25, 1994, Ser. No. 297,245

Int. Cl.⁶ E06C 1/10

U.S. Cl. 182—93

6 Claims



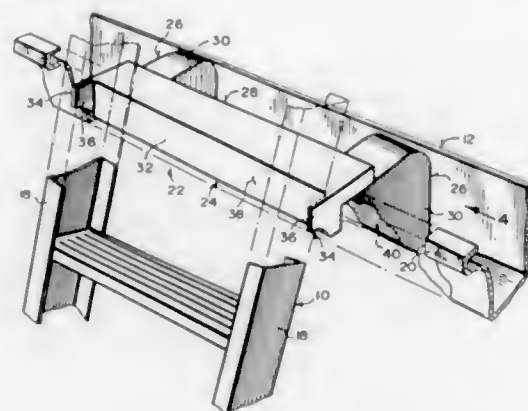
1. A portable hunting ladder for use in climbing trees comprising:

- a) a pair of elongated tubular side rails of substantially equal length, each bent in a generally "C" shape, and whereas said elongated tubular side rails are held in a spaced apart, substantially parallel relationship at a distance larger than a typical hunter's boot and less than twice such width, with their ends rotated at oblique angles towards each other, by;
- b) a plurality of spaced apart, ladder rungs, interconnecting said side rails along their length; and
- c) a flexible means for tightly encircling a tree, with said flexible means affixed to said side rails, located generally between said ladder's mid-point and next adjacent rung, thereby supporting said tree ladder when suspended from a tree, said flexible means being placed in substantial tension at such time as said tree has been encircled and weight exerted on said ladder rungs.

5,509,500
GUTTER GUARD PROTECTOR AND ANTI-SLIP LADDER DEVICE
 Joseph Delagera, 139 West Ave., Hicksville, N.Y. 11801
 Filed Oct. 11, 1994, Ser. No. 320,697
 Int. Cl.⁶ E04G 3/00

U.S. Cl. 182—107

1 Claim



1. A gutter guard protector and anti-slip ladder device in combination with a gutter for a roof on a building comprising means insertable into the gutter for preventing the top portions of the side rails of the ladder from crushing the front segment of the gutter when placed against it, said insertable means including a crossbar extending parallel to said gutter having an L-shaped configuration on one side straddling a top outer edge of said gutter and a pair of inserts located at and attached to opposite ends of said crossbar extending into and terminating in and resting unattached to and readily removable on the bottom of said gutter, said inserts joined to said crossbar at a lower surface of a horizontal leg of said L-shaped configuration which runs along the top outer edge of said gutter, said inserts being spaced from each other and not joined together within said gutter, said crossbar having an outwardly facing vertical surface for receiving the side rails of said ladder along the top edge of said vertical surface on said crossbar and a pair of forward facing flanges at opposite ends of said crossbar to prevent the side rails of said ladder from sliding off the side of said crossbar, the crossbar and said inserts closely fitting the outer edge of said gutter within the space formed by said L-shape and outer ends of said inserts.

5,509,501
DEVICE FOR METERED DELIVERY OF A LIQUID OR VISCOUS SUBSTANCE TO A POINT OF CONSUMPTION
 Eric V. Damme, 16 Dreve Des Pins, B-1420 Braine L'Alleud, Belgium
 Filed Nov. 9, 1994, Ser. No. 336,586

Claims priority, application Germany, May 10, 1992, 42 14 827.8

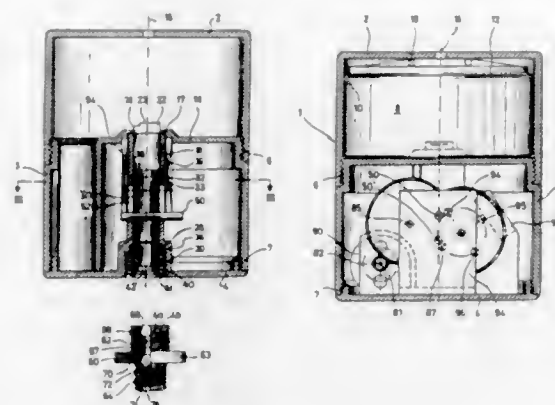
Int. Cl.⁶ F16N 27/00

U.S. Cl. 184—7.4

23 Claims

1. A device for metered delivery of one of a liquid substance and a viscous substance to a consumption point, said device comprising:

a container for receiving an amount of the one of a liquid substance and a viscous substance;
 delivery means comprising a chamber for receiving said container, and a displacement element displaceable between first and second positions for enabling flow of the one substance from said container to the consumption point;
 drive means for displacing said displaceable element between the first and second positions;
 connection means, which is separate from said delivery means and is securable to the consumption point for communicating said delivery means with the consumption point, said connection means including an indicator indicating a predetermined

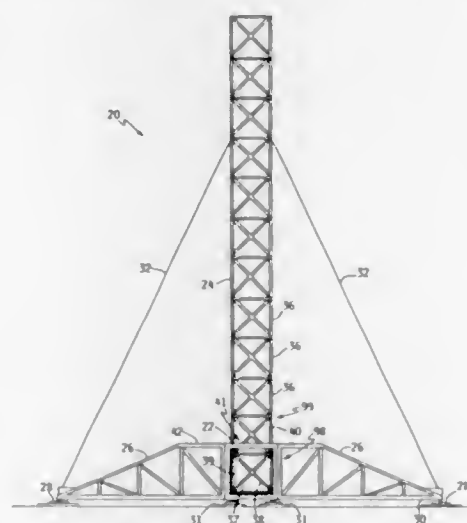


amount of the one substance to be delivered to the consumption point in a unit of time; and control means for controlling operation of said drive means, in accordance with information provided by said indicator, so that the predetermined amount of the one substance is delivered to the consumption point in the unit of time.

5,509,502
CONSTRUCTION ELEVATOR
 Bryan J. Beaulieu, Burnsville, Minn., assignor to Skyline Displays, Inc., Burnsville, Minn.
 Filed May 4, 1994, Ser. No. 237,859
 Int. Cl.⁶ B66B 9/16

U.S. Cl. 187—242

12 Claims



1. An elevator apparatus comprising:

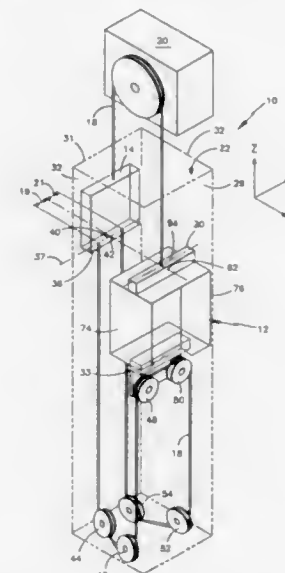
a) a base unit having an open interior, an open front, an open top and a tower support surface;
 b) a vertical tower extending upwardly through the open top of the base unit, the tower comprised of a plurality of vertically stacked tower sections of a uniform height, the tower sections connectable and disconnectable to each other, each section sized to pass through the open front of the base unit; and
 c) an elevating means attached to the base unit for raising and lowering the vertical tower, comprising a threaded vertical shaft rotatably mounted in the base unit, a drive nut engaged on the vertical shaft, and a rotation means for rotating the vertical shaft, the elevating means removably engageable with the vertical tower by way of engagement with individual tower sections and movable a vertical distance at least the height of a tower section, whereby the tower may be raised for insertion and connection of additional tower sections through the open front effecting raising of the tower; and

d) a releasable attachment means for securing the vertical tower in the raised position to the base unit.

5,509,503
METHOD FOR REDUCING ROPE SWAY IN ELEVATORS
 John K. Salmon, South Windsor, Conn., assignor to Otis Elevator Company, Farmington, Conn.
 Filed May 26, 1994, Ser. No. 249,559
 Int. Cl.⁶ B66B 11/08

U.S. Cl. 187—266

18 Claims



9. A method for controlling rope sway in an elevator, comprising the steps of:

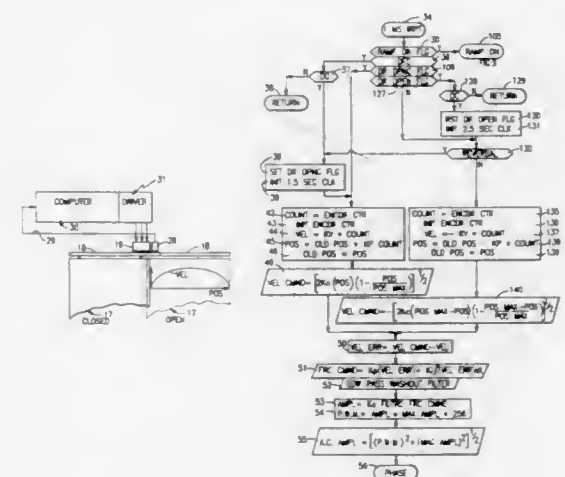
providing a car for travel in a hoistway, said hoistway having a pit and pair of opposed walls extending vertically upward from said pit, wherein said car includes:
 a bottom;
 a center of gravity having an x and a y coordinate; and
 a first and second sheave mounted on said bottom; providing a counterweight for traveling between said hoistway walls, wherein said car and said counterweight are connected to one another by a plurality of compensating ropes, said ropes having a first end and a second end;
 providing a pair of compensating rope sheaves, fixed in said pit; attaching said first end of said compensating ropes to said counterweight;
 extending said ropes from said counterweight to and around one of said compensating rope sheave, then to and around said first sheave attached to said car, then to and around said second sheave attached to said car, then to and around the other of said compensating rope sheaves, then extending up to said counterweight;
 attaching said second ends of said compensating ropes to said counterweight;
 wherein said first sheave is attached to said bottom a distance away from said x coordinate of said car, and said second sheave is attached to said bottom a distance away from said x coordinate of said car, equal to said distance said first sheave is away from said x coordinate, on the opposite side of said x coordinate as said first sheave;
 wherein said distance said sheaves are attached away from said x coordinate is great enough such that oscillation of said ropes will cause said ropes to contact said wall adjacent to said ropes and thereby dampen the motion of said oscillation.

5,509,504
VELOCITY REGULATED, OPEN CURRENT LOOP, VARIABLE VOLTAGE, VARIABLE FREQUENCY, LINEAR INDUCTION MOTOR DRIVE FOR AN ELEVATOR CAR DOOR

Thomas M. McHugh, Farmington; David W. Barrett, East Hartland; Edward E. Ahigian, West Hartford; Jerome F. Jaminet, South Windsor; Thomas He, Unionville; Richard E. Peruggi, Glastonbury; Thomas M. Kowalczyk, Farmington, and Richard E. Kulak, Bristol, all of Conn., assignors to Otis Elevator Company, Farmington, Conn.
 Filed Apr. 6, 1994, Ser. No. 223,920
 Int. Cl.⁶ B66B 13/14

U.S. Cl. 187—316

4 Claims



1. A method of driving a linear induction motor, the secondary of which is connected to an elevator car door, comprising: cyclically, in each of a series of fixed unit time periods
 a) providing a given number of electrical pulses per unit distance of elevator door travel;
 b) determining the number of pulses provided in said step a);
 c) accumulating the count of pulses determined in said step b) to provide a position signal;
 d) determining average velocity over said unit time period from the number of pulses determined to have been accumulated in said step b);
 e) providing a velocity command as a function of position utilizing the position provided in step c);
 f) providing a velocity error as the difference between the velocity command generated in step e) and the average velocity determined in said step d);
 g) generating a force command as a proportional and integral function of said velocity error;
 h) determining a predetermined desired phase as a function of said force command;
 i) determining the phase differential experienced by the secondary of said linear induction motor as a consequence of the velocity determined in said step d);
 j) providing a total phase signal in response to the summation of phases provided in said steps h) and i);
 k) providing a pulse width signal as a function of the vector sum of a predetermined magnetizing current and said force command, times the sine of said total phase signal; and
 l) repetitively in a second series of time periods, connecting an invariant DC voltage to a winding of said linear induction motor primary having the same polarity as the sign of the sine of said total phase signal for a length of time determined by said pulse width signal.

5,509,505

ARRANGEMENT FOR DETECTING ELEVATOR CAR POSITION

Rudolph Steger, West Hartford; Chester J. Slabinski, New Hartford, and Michael Garfinkel, West Hartford, all of Conn., assignors to Otis Elevator Company, Farmington, Conn.

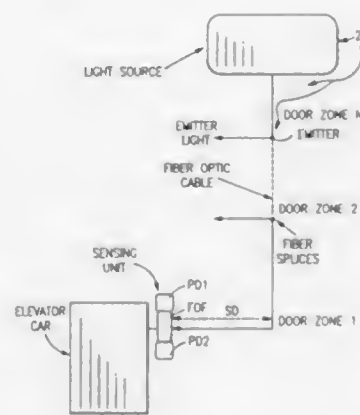
Continuation of Ser. No. 129,570, Sep. 29, 1993, abandoned.

This application Jan. 13, 1995, Ser. No. 372,709

Int. Cl.⁶ B66B 3/00; G01B 11/14

U.S. Cl. 187—394

4 Claims



1. An arrangement for sensing elevator car position, comprising: an elevator car movable in a first direction and in a second direction opposite said first direction; a stationary light transmitter unit; a movable light receiver unit for receiving light from said stationary light transmitter unit, said light receiver unit being attached to said elevator car so that said receiver unit is movable with said elevator car in said first direction and in said second direction, said movable light receiver unit including a first optical sensor, a second optical sensor and an optical cable optically connecting said first optical sensor to said second optical sensor, said optical cable being oriented in a direction which is parallel to said first and said second directions, wherein said optical cable is a fluorescent optical fiber cable which can transmit light internally in an infrared spectrum, said stationary light transmitter unit includes a light emitter for emitting light having a wavelength of approximately 6600 angstroms connected to a means for causing said light emitter to pulse said light at a specific frequency, said light receiver unit is electronically connected to an electronic computer, said electronic computer includes a memory containing instructions for ascertaining a position of said elevator car relative to a landing, and wherein said instructions include comparing a first electrical signal against a second electrical signal, said first electrical signal corresponding to an intensity of light energy detected by said first optical sensor and said second electrical signal corresponding to an intensity of light energy detected by said second optical sensor.

5,509,506

CASTOR BRAKE ASSEMBLY

Christopher B. Jones, Christchurch, England, assignor to The Revvo Castor Company Limited, Dorset, England

Filed Feb. 1, 1995, Ser. No. 382,397

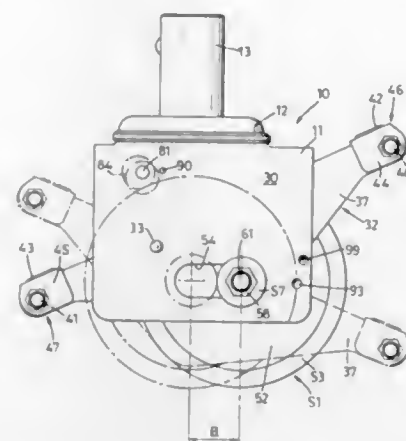
Claims priority, application United Kingdom, Feb. 4, 1994, 9402136; Feb. 17, 1994, 9403035; Oct. 26, 1994, 9421576

Int. Cl.⁶ B60B 33/00

U.S. Cl. 188—1.12

11 Claims

1. A castor assembly comprising: a housing; a swivel enabling the housing to rotate about a vertical axis;



- a cam located adjacent the swivel and constrained to rotate about a horizontal axis; and
- a wheel carrier pivotally secured to the housing by means of a horizontal pivot offset from said vertical axis, the wheel carrier having a wheel mounted thereon so as to be rotatable about a horizontal axis and being capable of pivoting movement to cause the wheel to move into and out of a locked position wherein in said locked position the cam is brakingly engaged with a periphery of the wheel to prevent a rotation thereof about said horizontal axis and with the swivel to prevent rotation of the housing about the vertical axis, wherein said cam, said swivel, said wheel and said wheel carrier comprise a means for rotationally wedging said cam between said swivel and said wheel periphery during movement of said wheel carrier into said locked position.

5,509,507

MULTI-DISC BRAKES

Trevor C. Wells, Leamington Spa, and Anthony J. Waring, Nuneaton, both of England, assignors to Dunlop Limited a British Company, United Kingdom

Continuation of Ser. No. 956,869, Oct. 2, 1992, Pat. No.

5,323,880, which is a continuation of Ser. No. 617,556, Nov.

26, 1990, abandoned, which is a division of Ser. No. 360,159,

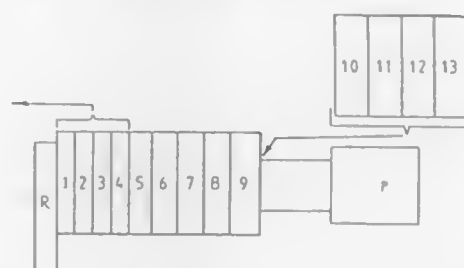
Jun. 1, 1989, Pat. No. 4,977,985. This application May 17,

1994, Ser. No. 245,111

Int. Cl.⁶ F16D 55/36; 65/10

U.S. Cl. 188—71.5

3 Claims



1. A multi-disc brake comprising a stack of interleaved rotor and stator discs disposed in an axially aligned relationship between a thrust device and a reaction member, said thrust device being operable to create axial brake applying pressure on the stack and thereby generate friction between rubbing faces of adjacent rotor and stator discs wherein the discs are comprised by a first group of adjacent rotor and stator discs and a second group of adjacent rotor and stator discs with the two groups in an axially-aligned relationship, only one disc of each group contacting a disc of the other group for generating friction therebetween, each wear surface of a disc of the first group which confronts a wear surface of an

adjacent disc of the first group being thicker than each wear surface of a disc of the second group which confronts a wear surface of an adjacent disc of the second group whereby at an intermediate overhaul time after a predetermined number of brake applications, each wear surface of a disc of the first group which confronts a wear surface of an adjacent disc of the first group is only partly worn away and each wear surface of a disc of the second group which confronts a wear surface of an adjacent disc of the second group is substantially fully worn away, each group having an end disc which confronts an end disc of the other group and confronting wear surfaces of said end discs being either both only partly worn away or both substantially fully worn away at said intermediate overhaul time and wherein the discs are made from carbon-carbon composite material, said material providing the frictional surfaces of the discs and their structural integrity.

5,509,508

UNITARY CLIP AND SHIM DEVICE FOR BRAKE PAD OR THE LIKE

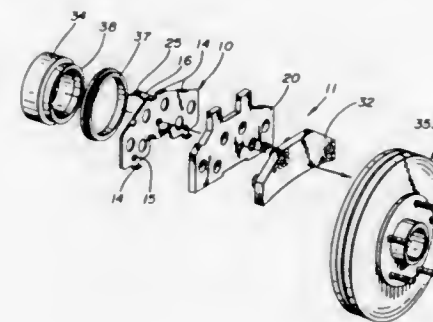
Michael D. Evans, Gates Mills, Ohio, assignor to Kateco, Inc., Cleveland, Ohio

Filed May 5, 1994, Ser. No. 238,652

Int. Cl.⁶ F16D 65/40

U.S. Cl. 188—73.38

12 Claims



1. A device for use with a disc brake pad, the disc brake pad having a backing plate and being actuated by a hydraulic piston, the device comprising clip means for engaging said piston, shim means for insulating the backing plate from said piston, and at least one alignment pin extending from the backing plate, said shim means having a main body portion, at least one alignment aperture in said main body portion corresponding in position with said at least one alignment pin so that said at least one alignment pin may be received in said at least one alignment aperture, said clip means and said shim means being integrated as a one-piece unit.

5,509,509

PROPORTIONAL CONTROL OF A PERMANENT MAGNET BRAKE

Ned E. Dammeyer, New Bremen, and John R. Harman, Versailles, both of Ohio, assignors to Crown Equipment Corporation, New Bremen, Ohio

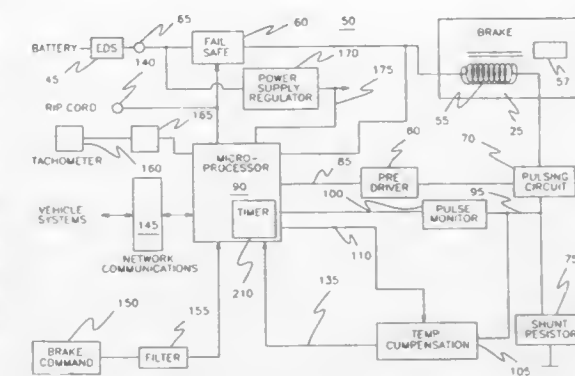
Continuation-in-part of Ser. No. 116,976, Sep. 7, 1993, abandoned. This application Nov. 22, 1994, Ser. No. 343,372

Int. Cl.⁶ B60L 7/00

U.S. Cl. 188—164

19 Claims

1. A brake control apparatus for controlling the application of braking torque to a permanent magnet brake of the type having a permanent magnet to create a magnetic flux path for applying a maximum braking torque and an electromagnet to provide a magnetic flux path in opposition to the permanent magnet to release completely said braking torque, the improvement comprising means for generating a braking command signal which varies continuously in relation to the amount of braking desired from zero braking to maximum braking,



circuit means responsive to said braking command signal for controlling the amount of power applied to said electromagnet whereby the braking torque may be controlled in direct proportion to the amount of braking torque desired, said circuit means including

means for applying a first predetermined amount of power to said electromagnet when no braking torque is desired, which first predetermined amount of power causes the magnetic flux produced by said permanent magnet to be counteracted by a magnetic flux of opposite polarity from said electromagnet, and

means for modifying the amount of power applied to said electromagnet by a continuously variable amount thereby to change the effective magnetic flux generated by said electromagnet as said braking command signal increases from zero braking until maximum braking torque is obtained.

5,509,510

COMPOSITE DISC BRAKE ROTOR AND METHOD FOR PRODUCING SAME

Mark K. Ihm, Mt. Clemens, Mich., assignor to Kelsey-Hayes Company, Romulus, Mich.

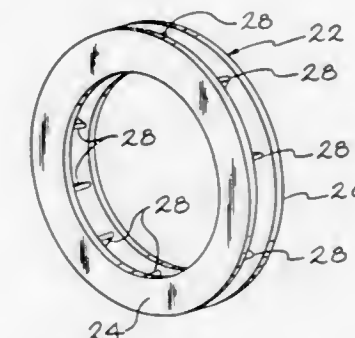
Continuation of Ser. No. 85,712, Jun. 30, 1993, abandoned.

This application Dec. 14, 1994, Ser. No. 356,031

Int. Cl.⁶ F16D 65/10

U.S. Cl. 188—219 X L

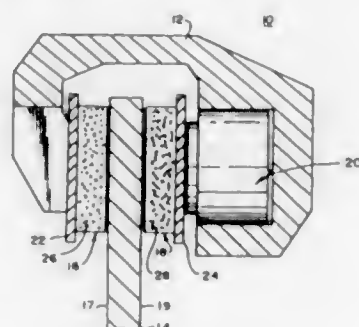
9 Claims



1. A solid composite disc brake rotor comprising: a generally annular rotor insert formed from a first material, said rotor insert including a pair of brake friction plates which are disposed in spaced apart relationship, said brake friction plates including inner surfaces and generally parallel outer surfaces which define a pair of brake friction surfaces adapted to be frictionally engaged by a pair of brake pads of a disc brake assembly; a plurality of circumferential spacing elements disposed and extending only between the inner surfaces of said pair of brake friction plates for maintaining said brake friction plates in said spaced apart relationship, a plurality of interspaces being defined between said circumferential spacing elements; and

a rotor body formed from a second material, said rotor body including a mounting surface and an annular portion, said annular portion extending directly through said interspaces and completely filling and occupying said interspaces to secure said rotor insert to said rotor body.

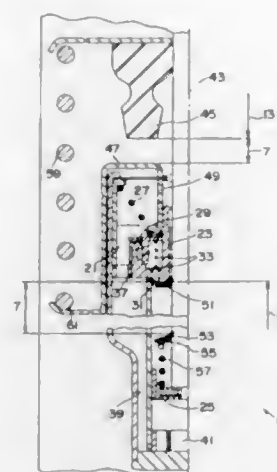
5,509,511
HYBRID BRAKE ASSEMBLY WITH FRICTION PADS OF DIFFERENT COMPOSITIONS
John P. Kwolek, Cross Junction, Va., assignor to Pneumo Abex Corporation, Hampton, N.H.
Filed Jan. 24, 1994, Ser. No. 185,124
Int. Cl.⁶ F16D 69/00
U.S. Cl. 188—251 A 6 Claims



1. In a vehicular wheel brake assembly, in combination:
a first friction-generating friction pad assembly having a metallic backing plate element and a resin-bonded metallic friction pad element joined to the backing plate element;
a second friction-generating friction pad assembly having a metallic backing plate element and a resin-bonded non-asbestos, non-metallic friction pad element joined to the backing plate element; and
means for simultaneously activating said first and second friction pad assemblies to generate friction at the surfaces of said resin-bonded metallic friction pad element and said resin-bonded non-asbestos, non-metallic friction pad element.

5,509,512
SHOCK ABSORBER WITH ADJUSTABLE DAMPING WITH CONTROLLED DAMPING CHARACTERISTICS
Manfred Grundel, Niederwerrn, Germany, assignor to Fichtel & Sachs AG, Schweinfurt, Germany
Filed Feb. 17, 1994, Ser. No. 197,690
Claims priority, application Germany, Feb. 17, 1993, 43 04 701.7; Feb. 3, 1994, 44 03 196.3
Int. Cl.⁶ B60G 17/06; F16F 9/46
U.S. Cl. 188—284 1 Claim

1. A shock absorber in a motor vehicle, such a motor vehicle including: a vehicle body; a chassis supporting said vehicle body, said chassis comprising at least two axles and at least two pairs of wheels, each said at least two pairs of wheels being mounted on a corresponding one of said axles, a suspension connected between a corresponding one of said axles and said vehicle body, the suspension being movable through an entire stroke range, said entire stroke range extending between an upper limit, wherein the corresponding axle between an upper limit, wherein the corresponding axle is disposed in closest vertical proximity to a point of reference on said vehicle body, and a lower limit, wherein the corresponding axle is disposed at a maximum vertical distance from said point of reference on said vehicle body, wherein said shock absorber is for being connected between one of the wheels and the vehicle body and is for being oriented generally in parallel with respect to the suspension; said shock absorber comprising:



a sealed cylinder defining a chamber therein, said cylinder containing a damping fluid;
a piston rod sealingly protecting into said cylinder and being axially displaceable with respect to said cylinder;
a piston being attached to said piston rod, said piston rod being slidably disposed within said cylinder to sealingly divide said chamber into first and second chambers;
means for permitting flow of damping fluid between said first and second chambers;
said piston being displaceable through an entire stroke range, said entire stroke range generally corresponding to the entire stroke range of the suspension;
said piston being displaceable through a first stroke range and a second stroke range, said first stroke range being different from said second stroke range;
means for damping the movement of said piston as a function of the displacement of said piston;
said damping means comprising:
first damping means for providing a first damping force function when said piston is being displaced through said first stroke range;
second damping means for providing a second damping force function when said piston is being displaced through said second stroke range;
said first damping force function varying as a first function of the displacement of said piston; and
said second damping force function varying as a second function of the displacement of said piston, said second function being different from said first function;
means for effecting a change in damping between said first damping force function and said second damping force function in relation to at least one position of said piston within a substantial portion of said entire stroke range of said piston;
said first stroke range is directly adjacent said second stroke range such that, when the displacement of said piston goes through one of said at least one position, the change in damping between said first damping force function and said second damping force function is effected;
said piston is additionally displaceable through a third stroke range said third stroke range being different from said first stroke range and said second stroke range;
said damping means further comprises third damping means for providing a third damping force function when said piston is displaced through said third stroke range;
said third damping force function varies as a third function of the displacement of said piston, said third function being different from said first function;
said shock absorber comprises means for effecting a change in damping between said first damping force function and said third damping force function in relation to at least one position of the suspension within a substantial portion of the entire stroke range of the suspension;
said third stroke range is directly adjacent said first stroke range, such that, when the displacement of said piston goes through

one of said at least one position relating to the change in damping between said first damping force function and said third damping force function, the change in damping between said first damping force function and said third damping force function is effected;
said second damping force function is greater with respect to the displacement of said piston than is said first damping force function;
said third damping force function is greater with respect to the displacement of said piston than is said first damping force function;
said means for permitting flow of damping fluid between said first and second chambers comprises flow passage means, said flow passage means being configured for providing fluid communication between said first and second chambers;
said second damping means comprises means for constricting the flow of damping fluid through said flow passage means as a function at least of the stroke of said piston within said second stroke range to provide said second damping force function;
said third damping means comprises means for constricting the flow of damping fluid through said flow passage means as a function at least of the stroke of said piston within said second stroke range to provide said second damping force function;
said at least one position relating to the change in damping between said first damping force function and said second damping force function comprises a transition point of the displacement of said piston between said first stroke range and said second stroke range;
said at least one position relating to the change in damping between said first damping force function and said third damping force function comprises a transition point of the displacement of said piston between said first stroke range and said third stroke range;
said transition point between said first stroke range and said second stroke range defining a first limit of said first stroke range;
said transition point between said first stroke range and said third stroke range defining a second limit of said first stroke range;
said first limit and said second limit being disposed about a quiescent point of said shock absorber;
said first damping means is configured such that said first damping force function is strongly degressive with respect to at least the velocity of said piston, such that, for increased velocity of said piston, the rate of increase of damping strongly decreases;
said second damping means is configured such that said second damping force function is progressive, above a given velocity of said piston, with respect to the velocity of said piston, such that, above said given velocity of said piston, for increased velocity of said piston, the rate of increase of damping increases;
said third damping means is configured such that said third damping force function is progressive, above a given velocity of said piston, with respect to the velocity of said piston, such that, above said given velocity of said piston, for increased velocity of said piston, the rate of increase of damping increases;
said shock absorber having a central longitudinal axis defined through said sealed cylinder, the central longitudinal axis defining a longitudinal direction of the shock absorber;
said first stroke range extending along the longitudinal direction for less than about 10 millimeters;
said first damping force function, said second damping force function and said third damping force function each combining to produce a general damping force characteristic curve of damping force as a function of displacement of said piston over substantially the entire stroke range of the suspension;
the area under said general damping force characteristic curve being at least as great as that for a shock absorber with a

damping force which varies as only one function of displacement of said piston over substantially the entire stroke range of the suspension;
said first damping force function having a maximum stroke velocity, in a compression direction of said piston, of about two meters per second;
said shock absorber comprising a guide for guiding longitudinal displacement of said piston rod;
said flow passage means comprising:
an intermediate chamber;
an inlet passage for directing the damping fluid into said intermediate chamber;
an outlet passage for directing the damping fluid out from said intermediate chamber;
said constricting means of said second damping means comprising:
a valve disc, said valve disc being positioned adjacent said outlet passage and being displaceable with respect to said outlet passage to at least partly close at least a portion of said outlet passage;
said outlet passage being positioned at an end of said intermediate chamber such that, both during compression and decompression strokes of said piston, damping fluid flows out from said intermediate chamber past said valve disc;
pin means for supporting said valve seat with respect to said outlet passage, said pin means being oriented generally parallel to the longitudinal axis of said shock absorber;
said pin means having a first end portion and a second end portion;
said shock absorber comprising end plate means disposed at an end of said shock absorber, said end plate means being oriented generally perpendicular with respect to the longitudinal axis of said shock absorber, said end plate means defining one end of said sealed cylinder;
said first end portion of said pin means being braced against said end plate means of said shock absorber;
said second end portion of said pin means being braced against a portion of said valve seat to hold said valve seat in position relative to said outlet passage; said first damping means comprising:
an advance opening disc and a slotted disc disposed adjacent one another, said advance opening disc and said slotted disc establishing an advance opening cross section of said inlet passage;
said inlet passage having a first end and a second end, said second end being disposed adjacent said intermediate chamber, said advance opening disc and said slotted disc being disposed at said second end of said inlet passage;
valve spring means for biasing said advance opening disc towards said slotted disc and said second end of said inlet passage, and for providing a low damping force when said piston is being displaced through said first stroke range;
said second damping means comprising a pressure pad for pressing on said end plate means of said shock absorber upon displacement of said piston from said first stroke range into said second stroke range;
said end plate means being configured for axially displacing said pin means simultaneously with the pressing of said pressure pad on said end plate means;
said pin means being configured to displace said disc means as a function of contact of said end plate means with said pressure pad, to consequently constrict the flow of damping medium past said valve disc through said outlet passage and increase damping as function of the stroke of said piston within said second stroke range;
said constricting means of said third damping means comprising spring plate means for engaging with said inlet passage upon displacement of said piston from said first stroke range into said third stroke range;
said spring plate means being configured for constricting said inlet passage as a function of the stroke of said piston within said third stroke range to consequently constrict the flow of damping medium through said inlet passage and increase damping as a function of the stroke of said piston within said third stroke range;

an intermediate chamber housing for housing said intermediate chamber therewithin, said inflow passage being disposed through said intermediate chamber housing;

said first stroke range corresponding to non-contact of said end plate means with said pressure pad and non-contact of said spring plate means with said intermediate chamber housing;

said second damping means being disposed within said guide;

said second damping means being load-dependent;

said first damping means being load-independent;

said second damping means having means for being actuated by a suspension spring of a suspension;

said shock absorber further comprises fourth damping means;

said fourth damping means being disposed in said piston;

said fourth damping means having means for providing a fourth damping function for being additively superimposed at least on said first and second damping functions;

said fourth damping means comprises a pressure relief valve for a decompression direction of said piston;

said cylinder has an essentially constant cross-section;

said cylinder comprises an equalization chamber;

said outlet passage for directing fluid into said equalization chamber;

said outlet passage and said equalization chamber meeting at a connection region;

a gas pocket, disposed inside said equalization chamber, for ensuring that the connection region of said outlet passage and said equalization chamber is always filled with damping medium, so that no foaming effects can occur;

said slotted disc having at least one slot disposed therein for admitting damping fluid from said inlet passage to said intermediate chamber;

said advance opening disc being separate from said slotted disc;

said shock absorber being load-controlled;

said shock absorber having a flange portion, at an external portion of said shock absorber, for accommodating an end of the suspension spring; and

the suspension spring being configured for predetermining an initial damping force by transferring an initial load to said shock absorber by way of said flange portion.

5,509,513

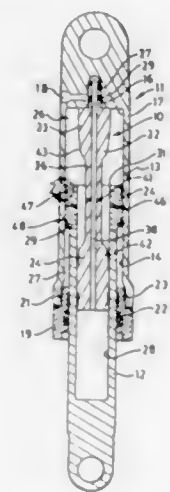
BIDIRECTIONAL SNUBBER FOR A HYDRAULIC SUSPENSION CYLINDER

Mark J. Kiesel, Dunlap, IL, assignor to Caterpillar Inc., Peoria, IL.

Filed Oct. 17, 1994, Ser. No. 323,642
Int. Cl. F16F 9/48

U.S. Cl. 188—289

9 Claims



1. A bidirectional end-of-stroke snubber for a suspension cylinder having a tubular casing having an access port and open and closed ends, a closure cap sealably fitted in the open end of the

casing and having a bore extending therethrough, a piston rod slidably extending through the bore in the cap, a piston attached to the piston rod and being slidably disposed within the casing to define head end and rod end chambers on opposite sides thereof comprising:

- an axially extending bore in the piston rod opening into the head end chamber;
- a radial passage in the piston rod communicating the bore in the piston rod with the rod end chamber;
- an elongate snubber element coaxially disposed within the casing and having first and second flow regulating end portions separated by a reduced diameter stem, a passage extending axially therethrough and being in continuous communication with the access port, and a radial port in the stem communicating with the passage, the first end portion being secured to the closed end of the casing and disposed to gradually block fluid flow between the head end chamber and the bore of the piston rod as the piston approaches its retracted end-of-stroke position, the second end portion being disposed to gradually block fluid flow through the radial passage in the piston rod as the piston approaches its extended end-of-stroke position; and
- means to connect the snubber element to the closed end of the casing.

5,509,514

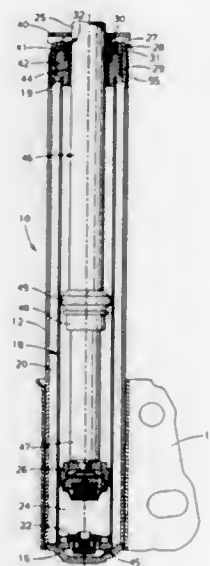
GAS CHARGING OF SUSPENSION DAMPER

Michael D. Allen, Tipp City; Claude H. Cheatham, West Carrollton; Scott D. MC Coy, Kettering, all of Ohio; Ignacio J. Membrillera, Cadiz, Spain; Robert R. Miles, Spring Valley, Ohio; Leonard A. Mullen, Dayton, Ohio; Robert A. Neal, Miamisburgh, Ohio; and Jeffrey S. Stukenborg, Bellbrook, Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Apr. 14, 1995, Ser. No. 422,395
Int. Cl. F16F 9/06; 9/36

U.S. Cl. 188—322.17

7 Claims



1. A damper amenable to gas charging comprising:

- a piston;
- a rod connected to the piston;
- a first cylindrical tube slidably carrying the piston and in cooperation with the rod, defining an internal chamber;
- a second cylindrical tube positioned about the first cylindrical tube defining a reservoir therebetween;
- a rod guide engaging the first cylindrical tube having a rod opening through which the rod extends and a passage in communication with the reservoir;

a seal cover engaging the second cylindrical tube and having a circular opening through which the rod extends; and

a seal with a rigid support that is fixed in place and carries an elastomeric element that is deflectable upon an application of a charging pressure about the seal cover and self-sealing upon the equalization of pressure between the charging pressure applied about the seal cover and an internal pressure within the damper, the seal being captured between the rod guide and the seal cover and including a primary leg engaging the rod, the primary leg having an extension engaging the rod guide wherein the internal pressure within the damper communicates through the passage assisting in maintaining the extension sealingly against the rod guide and assisting in biasing the primary leg against the rod, and including a charging leg sealingly engaging the seal cover and the rod guide, and including a scraper lip engaging the rod outside the primary lip;

wherein the charging leg includes an annular static sealing face with a slot and is rigidly trapped in position between the seal cover and the rigid support and includes a secondary deflectable sealing lip wherein when the charging pressure is applied about the seal cover a gas charge is introduced into the damper through the slot of the static sealing face, past the deflectable sealing lip and through the passage of the rod guide.

5,509,515

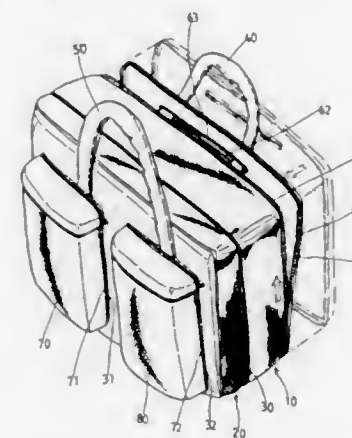
COMBINATION HANDBAG

I-Hong Guo, No. 19, Alley 18, Lane 130, Sec3, Min-Sheng E. Rd., Taipei, Taiwan

Filed Apr. 13, 1995, Ser. No. 421,844
Int. Cl. A45C 5/06; 13/28

U.S. Cl. 190—110

5 Claims



1. A combination handbag comprising:

- a) a first bag assembly including a rear bag unit and a front bag unit, and a slide fastener for detachably securing the rear and front bag units together;
- b) the rear bag unit including a back panel provided with a zipper tape extending around a border thereof and a top handle;
- c) the front bag unit including a front panel provided with a top handle; and
- d) a compartment flap including a zipper tape around a border thereof for detachably securing the compartment flap to the zipper tape of the back panel, an elongated slot formed in the

compartment flap for receiving the top handle on the back panel therethrough when the compartment flap is secured to the back panel, and a slide fastener mounted to the elongate slot for opening and closing the slot.

5,509,516

VISCOUS FLUID COUPLING

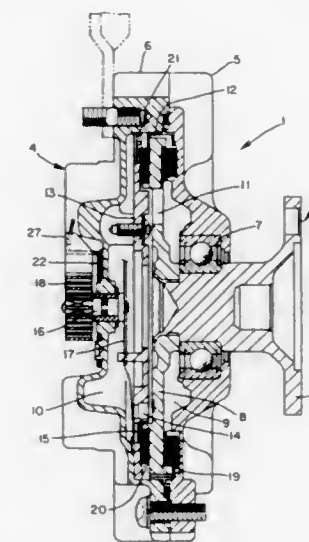
Tsunekazu Yamauchi, Aichi, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Aug. 19, 1994, Ser. No. 292,768

Claims priority, application Japan, Aug. 20, 1993, 5-206337
Int. Cl. F16D 35/02

U.S. Cl. 192—58.682

6 Claims



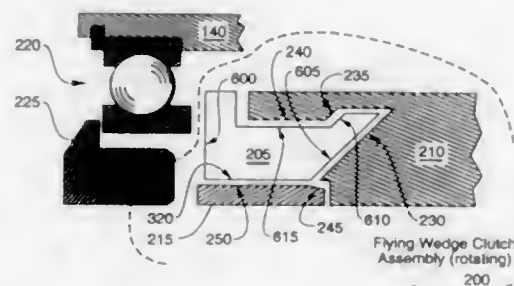
1. A viscous fluid coupling comprising:

- an input member having a rotatable shaft and a rotatable disc-shaped rotor secured to the shaft;
- an output member rotatable with respect to an axis of the shaft and having a casing rotatably supported on the shaft and a cover secured at its outer periphery to the casing to define a hollow interior space, the rotor being housed in the hollow interior space;
- a partition plate positioned in the hollow interior space between the cover and the rotor for dividing the hollow interior space into a working chamber and a fluid storage chamber, the partition plate secured to the cover and having apertures for allowing the viscous fluid to flow from the storage chamber to the working chamber;
- a valve plate for closing and opening the apertures formed in the partition plate and secured on a rod which is supported on the cover;
- a temperature responsive bi-metal spiral spring element secured to the rod for actuating the valve plate to a position to open the apertures formed in the partition plate and a position to close the apertures formed in the partition plate;
- a labyrinth device provided at least between the rotatable rotor and the casing for transferring rotation of the rotor to the casing; and
- a holder plate secured to the cover and having an axially extending flange portion and a radially outwardly extending portion integral therewith;
- the bi-metal spiral spring element having a radially extending portion at its outer periphery and a tip end portion thereof, the radially extending portion of the spiral spring element being inserted in slots formed in the flange portion and the radially outwardly extending portion, and the tip end portion being welded to the radially outwardly extending portion.

5,509,517
FLYING WEDGE (CENTRIPETAL RETRACTOR) ASSEMBLY
 Roger E. Berenson, Redondo Beach; William C. Bowling, Jr., Simi; Brian W. Lariviere, Calabasas, and Maynard L. Stangeland, Thousand Oaks, all of Calif., assignors to Rockwell International Corporation, Seal Beach, Calif.
 Filed Jul. 15, 1994, Ser. No. 275,477
 Int. Cl.⁶ F16D 13/06

U.S. Cl. 192—65

7 Claims

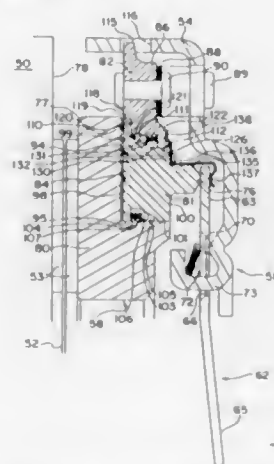


1. A clutch assembly, comprising:
 a ring assembly including a retainer member;
 a radially expandable wedge member, said wedge member cooperatively configured with said retainer member to be axially moveable relative to said retainer member in response to rotation of said wedge member; and
 a preload ring member, said preload ring member cooperatively configured to be substantially stationary with respect to said retainer member and further to preload said wedge member.

5,509,518
DIAPHRAGM CLUTCH ASSEMBLY WITH WEAR COMPENSATOR
 Alexander Zelikov, Farmington, Mich., assignor to Valeo Clutches and Transmissions, Inc., Hampton, Va.
 Filed Apr. 21, 1994, Ser. No. 230,844
 Int. Cl.⁶ F16D 13/75

U.S. Cl. 192—70.25

12 Claims



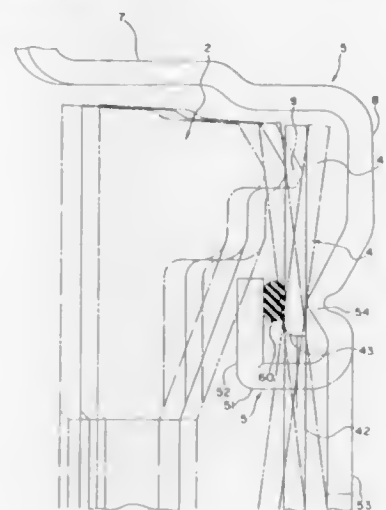
12. A cover assembly for a diaphragm spring clutch comprising an generally annular cover member, a pressure plate having a friction surface on one side thereof for engagement with friction linings of a clutch disc, connection means connecting the pressure plate to the cover member for rotation therewith whilst permitting axial displacement relative thereto; generally annular fulcrum means on said pressure plate disposed on the side thereof opposite to said friction surface; a diaphragm spring disposed between said cover member and said pressure plate fulcrum means, said diaphragm spring having an outer peripheral portion in the form of a Belleville washer and being operable to apply an elastic clamping

load to said pressure plate, and an inner portion divided into fingers for engagement with clutch release means; wherein said cover assembly incorporates a self-adjusting mechanism operable in use to compensate for wear of said clutch disc; wherein said pressure plate comprises a generally annular pressure plate body formed with said friction surface; a generally annular fulcrum member having an outer peripheral wall comprising said pressure plate fulcrum received within a circular recess formed in the outer periphery of said annular pressure plate body on the side opposite the friction surface and being axially moveable with respect to said pressure plate body; an annular control member supported by the outer peripheral wall of said fulcrum member and adapted to control said relative axial movement of said fulcrum member and being axially displaceable with respect to said pressure plate body and said fulcrum member on wear of said clutch disc thereby to permit corresponding movement of said fulcrum member axially away from said friction surface; means for moving said fulcrum member axially away from said friction surface during declutching; and one-way connection means disposed between said fulcrum member and said pressure plate body operable to prevent return movement of said fulcrum member relative to said pressure plate body in a direction towards said friction surface.

5,509,519
DIAPHRAGM CLUTCH MECHANISM OF THE PUSH-OFF TYPE, ESPECIALLY FOR MOTOR VEHICLES
 Jacques Thirion de Briel, Colombes, France, assignor to Valeo, Paris, France
 PCT No. PCT/FR93/01267, § 371 Date Sep. 8, 1994, § 102(e) Date Sep. 8, 1994, PCT Pub. No. WO94/13971, PCT Pub. Date Jun. 23, 1994
 PCT Filed Dec. 17, 1993, Ser. No. 284,489
 Claims priority, application France, Dec. 17, 1992, 9215248
 Int. Cl.⁶ F16D 13/71

U.S. Cl. 192—70.27

6 Claims



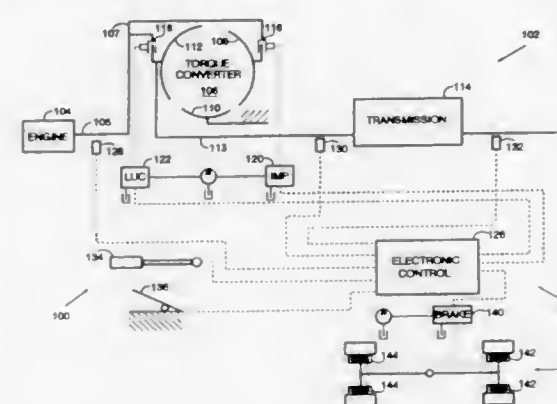
1. A clutch mechanism comprising an annular cover plate (3) which is secured to a reaction plate (100), at least one annular pressure plate (2) coupled in rotation to the cover plate (3) and mounted for axial movement with respect to the coverplate, and an annular diaphragm (4) which, bearing on the cover plate (3), works axially on the pressure plate (2) in a direction for which said plate (2) is displaced away from the cover plate (3) for contact with friction pads (107) of a friction plate (102), wherein the diaphragm (4) has a peripheral portion defining a Belleville ring (41) and a central portion which is divided into radial fingers (42), said peripheral portion (41) being mounted for deflection on the cover plate (3) by assembly means (5) which mount the diaphragm (4) deflectably on the cover plate (3), and which include retaining members (51) joined to the cover plate (3), and primary (54, 61) and secondary (60) annular abutments disposed on said side of the

diaphragm (4), with the primary abutment adjacent to the cover plate (3), while the radial fingers (42) are manoeuvred in a thrust mode by a declutching member (105), characterized in that the secondary abutment (60) is defined by a ring of elastic material being hard and adherent after being deposited.

5,509,520
ELECTROHYDRAULIC CONTROL DEVICE FOR A DRIVE TRAIN OF A MACHINE
 William C. Evans, Metamora; Daniel E. Henderson, Washington; Robert A. Herold, Peoria Heights, and Noel J. Rytter, Peoria, all of Ill., assignors to Caterpillar Inc., Peoria, Ill.
 Filed Jun. 15, 1994, Ser. No. 260,426
 Int. Cl.⁶ B60K 41/28; F16H 47/06

U.S. Cl. 192—3.23

14 Claims



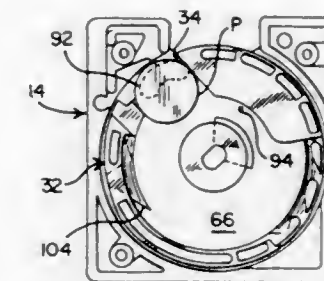
1. An electrohydraulic control device for a drive train of a machine including an engine, a transmission, a torque converter having a rotating housing and an impeller element, and an impeller clutch for connecting the impeller element to the rotating housing, wherein torque converter is drivingly connected between the engine and the transmission; comprising:
 an impeller clutch electrohydraulic valve for producing fluid flow to the impeller clutch to controllably engage and disengage the impeller clutch;
 a torque converter speed sensor for sensing the output speed of the torque converter and responsively producing a torque converter speed signal; and
 control means for receiving the measured torque converter speed signal, determining a desired torque converter speed signal, producing an error speed signal in response to a difference between the measured and desired torque converter speed signals, and controllably actuating the electrohydraulic valve to cause the speed error signal to approach zero.

5,509,521
COIN MECHANISM FOR VENDING MACHINE FOR HANDLING MAGNETIC COINS
 Richard K. Bolen, Champaign, Ill., assignor to Northwestern Corporation, Morris, Ill.
 Continuation-in-part of Ser. No. 749,437, Aug. 23, 1991, Pat. No. 5,339,937. This application Nov. 24, 1993, Ser. No. 158,253
 Int. Cl.⁶ G07F 11/44

U.S. Cl. 194—292

18 Claims

11. A method of operating a coin receiving mechanism in a bulk vending machine comprising the steps of:
 receiving a coin in an initial position in a slot of the coin receiving mechanism;
 supporting the coin in the initial position;
 moving the coin from the initial position to a second position at which the coin is unsupported;

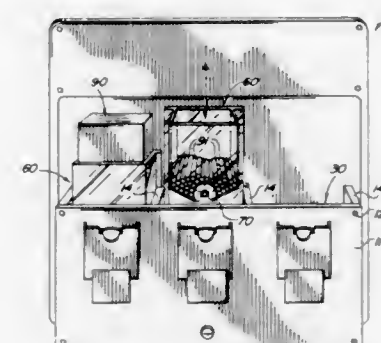


- applying a magnetic force toward in the coin in the second position;
 expelling a coin from the slot if the coin is not retained by the magnetic force; and
 accepting the coin for permitting dispensing of products if the coin is retained by the magnetic force in the second position.

5,509,522
QUICK RELEASE HOPPER AND IMPROVED CYLINDRICAL DISPENSING MEMBER FOR INDIVIDUAL CIGARETTE VENDING MACHINE
 Ronald W. Laidlaw, 8790 E. Lupine Dr., Scottsdale, Ariz. 85260
 Continuation-in-part of Ser. No. 138,685, Oct. 18, 1993, Pat. No. 5,450,980, which is a continuation-in-part of Ser. No. 967,788, Oct. 28, 1992, Pat. No. 5,351,856. This application May 11, 1994, Ser. No. 240,833
 Int. Cl.⁶ G07F 11/44

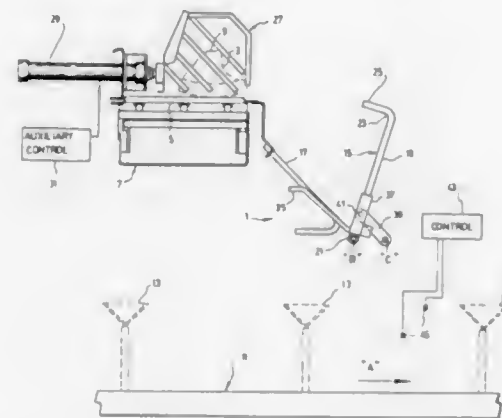
U.S. Cl. 194—350

9 Claims



1. In a cigarette vending machine having:
 a compartment for receiving a hopper for holding a plurality of cigarettes;
 a rotatable dispensing member mounted to a bottom end of the hopper for receiving the cigarettes from the hopper and dispensing them individually from the compartment;
 wherein the improvement comprises:
 the hopper being a quick release type wherein the compartment has a pair of grooves for slidably receiving hopper portions therein;
 a coin mechanism partially mounted in the compartment and coupled to the dispensing member for generally locking rotation of the dispensing member and for allowing the dispensing member to be rotated once when a required number of coins are inserted into the mechanism;
 wherein the hopper has at its bottom a hopper slot; and
 wherein the rotatable dispensing member has at one end a dispensing member slot that is aligned with the hopper slot for slidably receiving the inboard end of the coin mechanism allowing the insertion and removal of the hopper respectively into and from the compartment.

5,509,523
APPARATUS FOR POSITIONING A PIECE OF MEAT ONTO THE SADDLE OF A TRIMMING CONVEYOR
 Yvon Dufour; Jean-Guy Roy, both of Saint-Anselme, and Yvon St-Onge, Sainte-Foy, all of, Canada, assignors to G.-E. Leb-lanc Inc., Saint-Anselme, Canada
 Filed Sep. 15, 1994, Ser. No. 306,606
 Claims priority, application Canada, Aug. 9, 1994, 2129792
 Int. Cl.⁶ B65G 47/24
 U.S. Cl. 198—403 7 Claims



1. An apparatus for transferring while turning upside down a piece of meat from a supply surface on which said piece of meat is in one position to a receiving conveyor extending below said supply surface and on which a plurality of saddles are mounted at regular intervals, each saddle being sized and shaped to receive said piece of meat in another upside down position and hold it in said other position while it moves along together with said conveyor, said apparatus comprising:

an L-shaped rack for receiving said piece of meat from said supply surface, said rack comprising a receiving surface having one edge adjacent to said supply surface and rotatable about an axis extending in substantially the same plane as said supply surface, said receiving surface also having a second edge parallel to said axis and from which extends a stopping surface, said receiving and stopping surfaces together defining the L-shape of said rack;

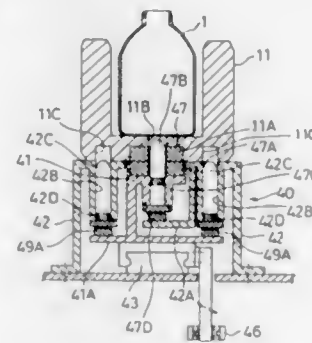
actuating means for pivoting said rack about said axis between a stopping position in which its receiving surface extends upwardly and transversally to said supply surface and thus closes the same, and a delivering position in which said receiving surface extends downwardly from said supply surface towards said receiving conveyor and thus acts as an extension of said supply surface on which said piece of meat may slide to reach said saddles, said stopping surface of said rack in said delivering position extending upwardly and thus preventing said piece of meat from falling out of said receiving surface which is long enough to extend past said saddles, said receiving and stopping surfaces being shaped to let said saddles pass and collect said piece of meat when the receiving conveyor is moving;

an inverting member mounted onto said rack and pivotably movable therewith between said stopping and delivering positions, said inverting member projecting away from said rack in the same direction as said stopping surface and being shaped and positioned in such a manner as to extend in the same plane or under said supply surface when the rack is in its stopping position in order to collect the piece of meat that is on said supply surface, and then to cause it to turn upside down onto the receiving surface while the rack is rotating down into its delivering position; and

control means connected to the actuating means for synchronizing the rotation of the rack as a function of the speed of the receiving conveyor and the position of the saddles along the same so that, when said rack is in its delivering position, the piece of meat from the supply surface is turned upside down,

slid down along the receiving surface of said rack, and ready to be collected by one of said saddles.

5,509,524
ARTICLE TRANSPORTATION PROCESSING SYSTEM
 Toshiyuki Ohmori; Shigemi Hatanaka, both of Chiba; Yasuhiro Honma, Saltama; Hiroaki Kobayashi; Eiichi Saito, both of Chiba, and Ichiro Hamano, Ishikawa, all of, Japan, assignors to Kao Corporation and Shibuya Kogyo Co., Ltd., Tokyo, Japan
 Division of Ser. No. 954,901, Sep. 30, 1992, Pat. No. 5,337,796.
 This application Jan. 11, 1994, Ser. No. 180,934
 Claims priority, application Japan, Sep. 30, 1991, 3-276476; Sep. 30, 1991, 3-276479; Sep. 30, 1991, 3-276480; May 15, 1992, 4-148509
 Int. Cl.⁶ B65G 29/00
 U.S. Cl. 198—465.1 3 Claims

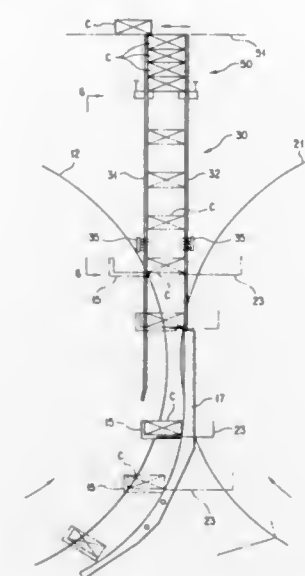


1. An article positioning apparatus for positioning an article on a supporting base, comprising:

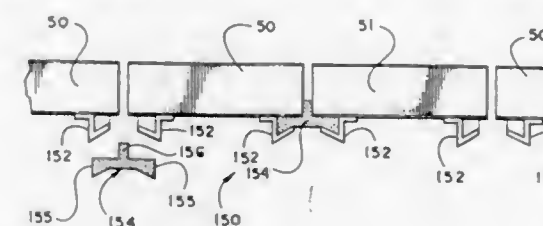
a magnetic drawing means including a magnet provided around a positioning center of said supporting base and a magnet mounted on said article side for magnetically drawing said article onto said supporting base; and
 a magnetic coupling means for coupling said supporting base and said articles by means of a positioning pin driven by a magnetic drawing force or a magnetic repulsing force.

5,509,525
APPARATUS FOR TAKING OUT AND ALIGNING ARTICLES TRANSPORTED THERETO
 Tomoichi Watanabe, Tokyo, Japan, assignor to Japan Tobacco Inc., Tokyo, Japan
 Filed Jan. 17, 1995, Ser. No. 372,999
 Claims priority, application Japan, Jan. 18, 1994, 6-003756
 Int. Cl.⁶ B65G 29/00
 U.S. Cl. 198—474.1 6 Claims

1. An apparatus for taking out articles, which are delivered thereto in a manner such that the articles are held on heads arranged around a rotating body rotating within a vertical plane, and aligning the articles in contact with one another, comprising:
 a transfer drum and a takeout drum arranged diametrically adjacent to each other and rotatable synchronously in opposite directions within a vertical plane;
 a transfer arm located at the peripheral portion of the transfer drum and rockable within the vertical plane and a takeout arm located at the peripheral portion of the takeout drum and rockable within the vertical plane, the transfer arm and the takeout arm being adapted to rock so as to face each other as the arms pass by a peripheral region in which the drums are situated close to each other, whereby the articles are moved straight upward in a manner such that the articles are held by means of the transfer arm and the takeout arm;
 a takeout conveyor mechanism extending upward from the peripheral region in which the transfer drum and the takeout



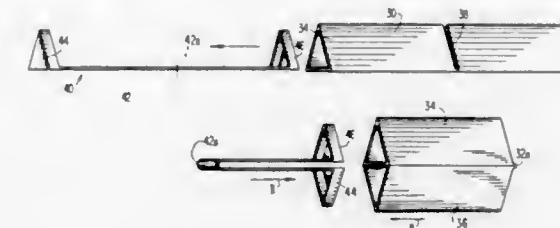
5,509,526
DUAL LEVEL TILTING TRAY PACKAGE SORTING APPARATUS
 Henri Bonnet, Atlanta, Ga., assignor to United Parcel Service of America, Inc., Atlanta, Ga.
 Division of Ser. No. 154,207, Nov. 17, 1993, Pat. No. 5,433,311. This application Mar. 1, 1995, Ser. No. 396,973
 Int. Cl.⁶ B65G 17/06
 U.S. Cl. 198—850 10 Claims



1. An apparatus for transporting objects, comprising:

a track;
 a plurality of carriages mounted for movement along said track;
 a linkage connecting adjacent carriages, said linkage comprising:
 a bracket attached to each of said adjacent carriages, shaped to define a pocket; and
 a link member comprising:
 a pair of ends positioned in said pockets;
 an elongate member extending between said ends and configured, when in an extended position, to limit the amount of separation between said adjacent carriages; and
 a cushioning member attached to said elongate member and adapted to extend between end surfaces of said carriages when said elongate member is in said extended position; and
 a drive mechanism operable to cause said carriages to move along said track.

5,509,527
CONVERTIBLE PENCIL BOX
 Arthur J. Wang, 300 E. 40th St. Apt. 22-D, New York, N.Y. 10016
 Filed Jan. 4, 1995, Ser. No. 368,380
 Int. Cl.⁶ B65D 85/28
 U.S. Cl. 206—45.12 4 Claims



1. A container for elongate members, particularly pencils, crayons, and ball point pens, comprising:

an axially-straight tubular member providing an outer cover for a group of said elongate members;
 a continuous axially-straight planar wall comprising one axially extending wall of said tubular member;
 axially and peripherally extending side walls of said tubular member interconnecting opposite axially extending lateral sides of said planar wall to provide said axially-straight tubular member;

a line of weakening extending transversely of said tubular member at a position intermediate opposite axial ends of said tubular member, said transverse line of weakening extending continuously transversely of each said axially extending peripheral side walls;

whereby, said axially extending peripheral side walls can be manually separated at said line of weakening to provide two interconnected sections of said axially-straight tubular member interconnected by said continuous axially-straight planar wall, then permitting reverse folding of said axially-straight planar wall at the juncture of said respective sections of said tubular member to provide a holder for said elongate members;

further including an axially-straight slide member receivable within said tubular member providing a slide tray having an axially-straight planar wall for supporting said elongate members

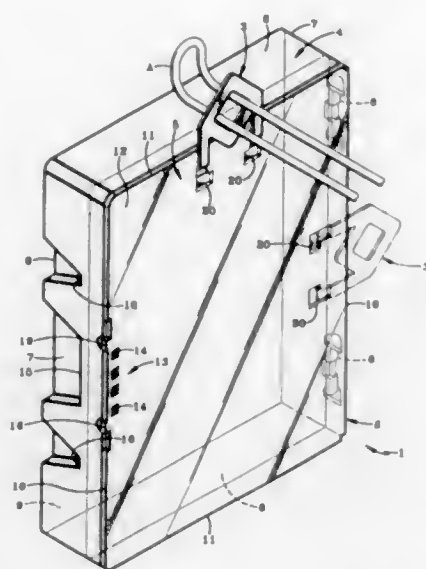
end members of said slide tray providing end closures for said axially-straight tubular member and of complimentary outer periphery to the cross-section of said tubular member; and,
 a fold line in said axially-straight planar wall of said slide member extending transversely of said planar wall at a position corresponding with the fold line of said axially-straight planar wall of said tubular member;

whereby, said axially-straight planar wall of said slide tray can be reversely folded upon itself to permit interfitting of said ends of said slide tray within said respective sections of said reversely folded tubular member.

5,509,528
DISPLAY PACKAGE
 James T. Weisburn, Massillon, Ohio, assignor to Alpha Enterprises, Inc., North Canton, Ohio
 Filed Nov. 16, 1994, Ser. No. 340,545
 Int. Cl.⁶ B65D 25/22
 U.S. Cl. 206—45.24 19 Claims

1. A display package for holding an article, said display package comprising:

a display box having a side and an end;
 a hanger formed with a pair of legs removably attached to the display box;
 mounting means including a pair of recesses formed in the display box adjacent one of the side and end for removably



mounting the hanger to the display box adjacent said one of the side and end by said recesses accepting the legs of the hanger; and

each of the hanger legs having a stepped shoulder engageable with a nub formed adjacent each of the recesses for retaining the hanger on the display box.

5. A display package for holding an article, said display package comprising:

a display box having a side and an end;
a hanger removably attached to the display box, said hanger being formed with a diamond-shaped body having diagonally opposite corners and a pair of mounting legs extending from said corners; and

mounting means formed in the display box adjacent one of the side and end for removably mounting the hanger to the display box adjacent said one of the side and end.

6. A display package for holding an article, said display package comprising:

a display box having a side and an end;
a hanger removably attached to the display box;
mounting means formed in the display box adjacent both the side and end for selectively removably mounting the hanger to the display box adjacent said side and end, said hanger being formed with at least one mounting leg having a foot extending substantially perpendicular to said leg; and

the mounting means including a recess having a flange extending over a portion of said recess for accepting the mounting leg of the hanger therein and for receiving the foot of the mounting leg of the hanger under said flange.

17. A display package for holding an article, said display package comprising:

a display box having a side and an end;
a hanger removably attached to the display box, said hanger being formed with at least one mounting leg;

mounting means formed in the display box positioned adjacent both the side and the end for removably mounting the hanger to the display box adjacent said one of the side and end, said mounting means including a recess for accepting the mounting leg of the hanger;

a flange extending over a portion of the recess for receiving a foot of the mounting leg of the hanger thereunder; and
said retaining means further including a nub formed on and extending outwardly from the flange, with the mounting leg of the hanger frictionally engaging the nub to retain the hanger on the display box.

18. A display package for holding an article therein; said package including

a base;
a lid movably mounted on the base between open and closed positions;

means for securing the lid in the closed position;

hanger means for selectively removably mounting on one of the base and lid for suspending the package on a support; and
a pair of mounting means formed on one or both of the base and lid and oriented 90° from each other for selectively removably receiving the hanger means for selectively suspending the package in two display positions oriented 90° with respect to each other on the support.

5,509,529

SOAP BAR HOLDER

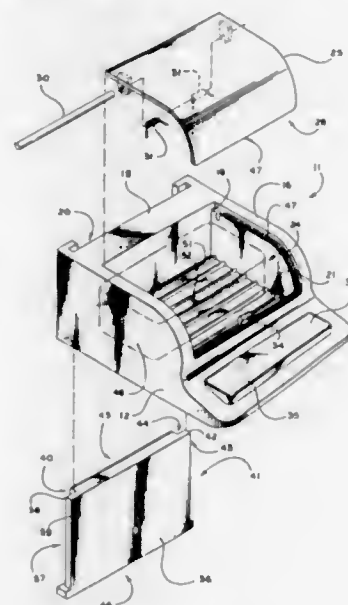
Kenneth H. Kelley, 4155 U.S. 41, North, Byron, Ga. 31008

Filed Feb. 16, 1995, Ser. No. 398,405

Int. Cl. A47K 5/00

U.S. Cl. 206—77.1

8 Claims



1. A soap bar holder comprising:

an enclosure having a first side wall, a second side wall, a back wall, and a base, the enclosure having an opening defined by the first side wall, second side wall, and the back wall, the first side wall and second side wall having a recessed portion;
a lid, the lid being pivotally connected to the enclosure and sized to cover the opening in the enclosure, and the lid having an inner surface, and a hook, the lid being seated in the recessed portion of the first and second side walls;

a pin, the pin pivotally connecting the lid to the enclosure;
at least one coil spring, the coil spring fitting around the pin, the coil spring having a front extension and a back extension, the front extension being adjacent to the inner surface of the lid and the back extension being adjacent to the back wall of the enclosure;

a latch, the latch located at the base of the enclosure and the latch engaging with the hook on the lid; and

a release button, the release button disengaging the hook on the lid from the latch on the base.

5,509,530

COMPARTMENTALIZED DENTAL AMALGAM MIXING CAPSULE

Michael S. Wilson, Minden, Nev., assignor to Wykle Research, Inc., Carson City, Nev.

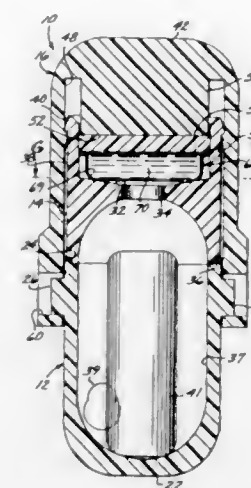
Filed Jul. 20, 1995, Ser. No. 504,575

Int. Cl. B65D 25/08; 81/32

U.S. Cl. 206—220

16 Claims

1. A compartmentalized dental amalgam mixing capsule comprising:



5,509,531

GOLF BAG SECTIONING DEVICE

Timothy M. Patrick, and Steven Aungst, both of 386 Palos Verdes Blvd., S. Redondo Beach, Calif. 90277

Filed Jan. 17, 1995, Ser. No. 372,929

Int. Cl. A63B 55/00

U.S. Cl. 206—315.6

5 Claims



an upstanding elongated receptacle having a cylindrical interior chamber for receipt of an alloy therein and formed with a closed bottom end and an open top end and at least one lock pin projecting laterally outwardly from said outer wall;
an annular flange in the upper portion of said chamber and formed with a central communication opening;

a rupturable pillow of a predetermined length on said flange and containing mercury therein;

an elongated cylindrical cap formed with a closed top end and an open bottom end to be telescopically received over said open top end of said receptacle and formed with an elongated groove slidably receiving said lock pin and angling axially upwardly in one circumferential direction so that rotation of said cap in the direction opposite said one direction will draw said cap axially from a first position to a second position, said cap including a piston device carried from said top end and projecting axially downwardly therefrom to terminate in a hammer end to, when said cap is in said first position, overlie said pillow and as said cap is shifted from said first to said second position, drive said hammer end downward toward said flange a distance sufficient to rupture said pillow.

9. A compartmentalized dental amalgam mixing capsule comprising:

an elongated receptacle formed with a peripheral wall defining a cylindrical interior chamber for receipt of an alloy therein and formed with a closed bottom end, an open top end and at least one lock pin projecting laterally outwardly from said wall;
an indicator disposed on said outer wall;
an interior annular flange in the upper portion of said chamber and formed with a central opening;

a rupturable pillow of a predetermined axial length on said flange and containing mercury therein;

an elongated cylindrical cap formed with a closed top end and an open bottom end to be telescopically received over said open top end of said receptacle and axially movable from a first position to a second position, said cap being formed with a window configured to be aligned with said indicator for visual indication of said indicator therethrough, and said cap further including a piston device connected to said top end and projecting axially downwardly therefrom to terminate in a hammer end to, when said cap is in said first position, overlie said pillow, and as said cap is shifted from said first to said second position, drive said hammer surface downward toward said flange a distance sufficient to rupture said pillow and to displace said indicator relative said window to indicate said second position.

1. A golf bag sectioning device, comprising,
a first tube paced from a second tube, the first tube having a first telescoping leg extensible and retractable therefrom, with the second tube having a second telescoping leg extensible and retractable therefrom,

a first clamp member is secured to the first tube and to the second tube, with a second clamp member secured to the first telescoping leg and the second telescoping leg, wherein the first clamp member and the second clamp member are arranged for securement to an entrance rim of a golf bag, wherein the first clamp member and the second clamp member each have a first web spaced from a second discontinuous web, with a connecting web securing the first web and the second web together, wherein the first clamp member and the second clamp member are each provided with a clamping channel for receiving the entrance rim of the golf bag.

5,509,532

FOLDABLE DISPLAY CARD FOR BUTTERFLY-MOLDED ITEM

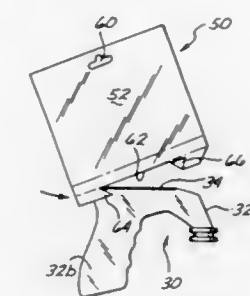
Harvey Brody, Costa Mesa, Calif., assignor to Delshar Industries, Inc., Santa Ana, Calif.

Continuation-in-part of Ser. No. 253,369, Jun. 3, 1994, abandoned. This application Jan. 26, 1995, Ser. No. 378,623

Int. Cl. A45C 11/26

U.S. Cl. 206—349

33 Claims



12. An improved display card for holding an item attached to the card for display, of the type including a flat surface defining a top edge and a bottom edge, wherein the item is a butterfly-molded item having an integral hinge joining a pair of molded item halves that are foldable along the hinge, wherein the improvement comprises:

a pair of opposed, inwardly-pointed attachment fingers defined by a notch in the card that interrupts the bottom edge, the fingers being contiguous with the bottom edge, one of the fingers being a foldable finger that is foldable along an angled

crease between a folded position directed away from the notch and an extended position directed toward the other finger, whereby, when the foldable finger is in its extended position, the fingers are disposed and oriented so as to be capable of being captured between the item halves under the integral hinge, with a portion of the item fitting in the notch when the item is folded with the fingers disposed between the item halves.

5,509,533

PACKAGE FOR STORING AND DISPLAYING A PLURALITY OF BOX-SHAPED ARTICLES, MORE PARTICULARLY DATA CARRIERS SUCH AS FLOPPY DISKS AND THE LIKE

Hendrik Veenstra, Zwartwatersweg 160, Assen, Netherlands
PCT No. PCT/NL93/00106, § 371 Date Jan. 25, 1994, § 102(e)
Date Jan. 25, 1994, PCT Pub. No. WO93/24931, PCT Pub.
Date Dec. 9, 1993

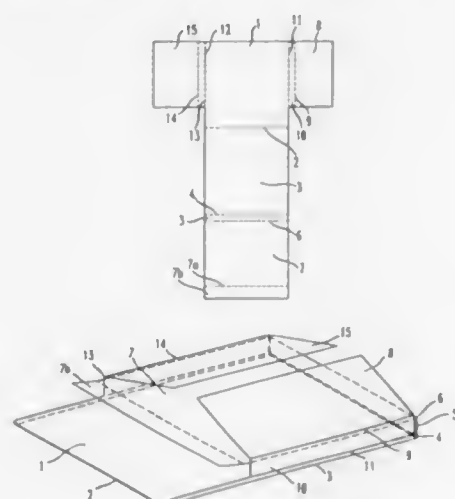
PCT Filed May 25, 1993, Ser. No. 182,163

Claims priority, application Netherlands, May 26, 1992,
9200931

Int. Cl.⁶ B65D 85/00

U.S. Cl. 206—425

15 Claims



1. A package for storing and displaying a plurality of box-shaped articles the package comprising a plurality of sheaths, with one sheath for receiving each box-shaped article, each of said sheaths comprising:

- an insertion opening;
- a back face part having a first longitudinal side which forms a first edge of the insertion opening;
- a top wall part having a longitudinal edge which forms a second edge of the insertion opening and recedes relative to the first longitudinal side;
- and
- a coupling part, attached to said back face part at the first longitudinal side thereof and extending behind the back face part relative to the top wall part from the first longitudinal side of the back face part towards a second, opposite longitudinal side of the back face part, the coupling part extending under the top wall part of the subjacent sheath of said plurality of sheaths, wherein the top wall part is hingedly attached to a longitudinal side of the back face part, said longitudinal side extending transversely to said first longitudinal side, and the coupling part extends to said second longitudinal side of the back face part, where a fold-back part is connected to the coupling part by a hinge part, the fold-back part extending in the direction of said first longitudinal side of the back face part under the top wall part, so that the back face part and the coupling part form a closed loop around the top wall part of the subjacent sheath.

5,509,534

TWO-PIECE DUNNAGE FOR USE IN A CONTAINER

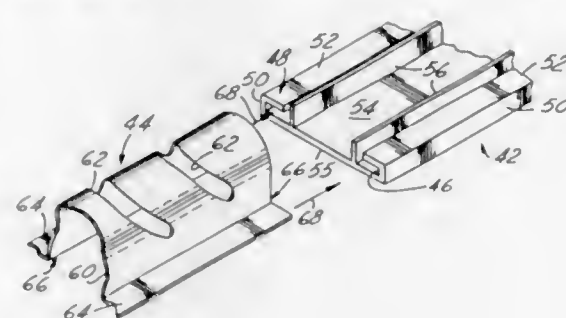
Phillip Taravella, Grosse Pointe Shores; Ronald S. Domanski, St. Clair Shores; Kevin Burchett, Sterling Heights; Edward J. Blahr, and Joseph G. Shippell, both of New Baltimore, all of Mich., assignors to Anchor Bay Packaging Corporation, St. Clair Shores, Mich.

Filed Sep. 27, 1994, Ser. No. 313,413

Int. Cl.⁶ B65D 81/02; 85/30

U.S. Cl. 206—587

7 Claims



1. A dunnage for use within a container for cushioning or spacing an item within the container during shipping or storage, comprising:

- a first elongated base member made from a plastic material and which is essentially flat and rigid and of generally rectangular configuration when viewed from the top, said first elongated base member having a top surface, a bottom surface and a pair of longitudinal edges;

said first elongated base member having a pair of ends and at said longitudinal edges upwardly extending sidewalls which are parallel to one another, said sidewalls at their upper edges having inwardly turned longitudinally extending top walls which are parallel to and are spaced from said top surface to define a pair of longitudinally extending parallel slots which extend from one end of said first elongated base member to the other end thereof; and

a second elongated support member having a pair of ends, a pair of longitudinal edges and being made from a plastic material, said second elongated support member being flexible and having a centrally located raised portion extending from one end thereof to the other end and having at the longitudinal edges thereof a pair of elongated outwardly turned longitudinally extending flanges;

said second elongated support member being slidably and removably coupled to said first elongated base member by inserting one end of said second elongated support member into one end of said first elongated base member and sliding said second elongated base member towards the other end of said first elongated base member where said flanges extend into and lengthwise of said slots to form said dunnage for use within a container;

said longitudinally extending flanges of the second elongated support member being in abutting engagement with the sidewalls of said first elongated base member;

said top surface of said first elongated base member being provided with a pair of upstanding abutting elements which are spaced inwardly from said slots and extend from one end of said first elongated base member to the other end thereof to provide lateral support for said raised portion of the second elongated support member.

5,509,535

FLOTATION APPARATUS

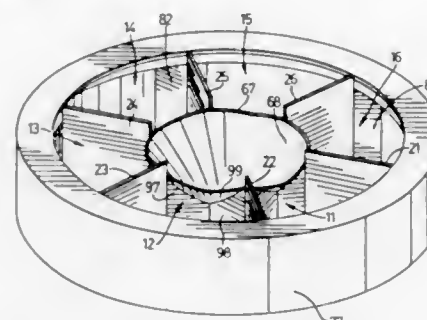
John C. Schneider, Acton, Canada, assignor to Hydrochem Developments Ltd., Brampton, Canada

Filed Jul. 12, 1994, Ser. No. 273,682

Int. Cl.⁶ B03D 1/16; 1/20; 1/24

U.S. Cl. 209—169

9 Claims



1. A flotation apparatus for the separation of solid particles suspended as a slurry in a fluid medium, comprising:

an annular array of flotation cells which are in serial fluid flow communication from a first inflow cell to a final outflow cell so that a particle slurry may flow sequentially through the apparatus, the first cell having fluid inlet means for introducing a feed slurry containing floatable particles into the apparatus and the final cell having fluid outlet means for removing processed slurry from the apparatus;

centrally positioned within the annular array of cells is an overflow receiving means which is in overflow fluid flow communication with each cell for accepting a particle laden froth generated in each cell;

air inlet means positioned in a lower region of each cell for introducing compressed air into each cell;

mechanical agitation means for each cell; and

internal surfaces located in each cell which are shaped and oriented to provide in conjunction with inflowing compressed air and mechanical agitation an upright circular fluid flow in each cell toward the overflow receiving means.

5,509,536

METHOD AND APPARATUS FOR THE SORTING OF FIBER SUSPENSIONS

Wolfgang Mannes, Günzburg-Reisensburg, Germany, assignor to Sulzer-Escher Wyss GmbH, Ravensburg, Germany

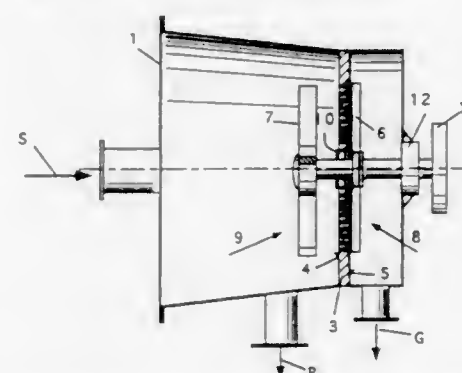
Filed Mar. 15, 1994, Ser. No. 213,604

Claims priority, application Germany, Mar. 16, 1993, 43 08 225.4

Int. Cl.⁶ B07B 1/04

U.S. Cl. 209—273

14 Claims



1. Method for the sorting of fiber suspensions, in particular for the removal of impurities from an aqueous suspension containing used paper, in a sieve apparatus by the holding back of solid

material by virtue of their size on the inlet side of a dividing element which is provided with openings and allows water and fiber material to pass through to the outlet side, wherein a clogging of the sieve apparatus is prevented by clearing means which are moveable near to the flow outlets of the openings and produce hydraulic pressure pulses, characterized in that

additional clearing means disposed on the inlet side in the region of the openings is operated less intensively than the clearing means disposed on the outlet side.

5,509,537

SORTING MACHINE EJECTION SYSTEM

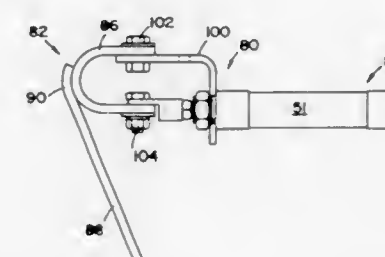
James E. Crismon, and Jerry W. Brum, both of Modesto, Calif., assignors to ESM International Inc., Houston, Tex.

Filed May 26, 1994, Ser. No. 249,863

Int. Cl.⁶ B07C 5/00

U.S. Cl. 209—577

12 Claims



1. An ejector for an electronic sorting machine having a detector for the detection of the presence of ejectable products in a product stream and generating an actuator signal in response to the detection of an ejectable product, said ejector for removing the ejectable products from the product stream in response to the receipt of the actuator signal, comprising

an ejector finger including

a flexible elongate base member having a first end and a second end, said first end fixedly attached with respect to the product stream, and

a contactor made of a material rigid enough to remove the ejectable products from the product stream when brought into ejector contact therewith, said contactor being connected intermediate the ends of said base member; and

an actuator connected to said second end of said base member movably operated upon the receipt of the actuator signal for flexing said base member to move said contactor for removal of the ejectable products from the product stream.

5,509,538

PAPERLESS ORDER PICKING SYSTEM

Jeffrey D. Spindler, Ann Arbor; Kenneth E. Burkhalter, Jr., Chelsea, both of Mich., and Alfred W. Iversen, Upper Montclair, N.J., assignors to Amphion Inc., Ann Arbor, Mich.

Filed Jun. 3, 1993, Ser. No. 71,897

Int. Cl.⁶ B07C 7/04; B65G 1/00

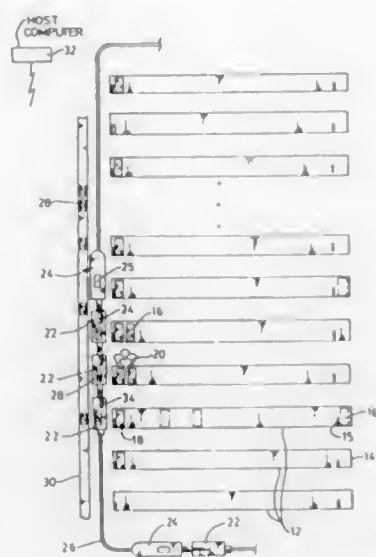
U.S. Cl. 209—630

25 Claims

1. A paperless, self-contained partial case picking system for efficient distribution of goods to customer stores, comprising:

flow rack means onto which goods are loaded in pre-sorted batches to be transported to a pick face where they are distributed by workers among containers bound for customer stores;

one or more mobile, independently-driven put station arrays comprising interconnected arrays of cars defining container-supporting put stations, each mobile put station array moving along a predefined path along the length of the pick face in a series of independent move cycles;



worker-prompting display/interface (ODU) means carried by each put station, the ODU means including display means defining a pick zone for a worker comprising one or more batches of goods to be serviced by a worker, a put zone comprising one or more put stations assigned to receive goods from the batches in the pick zone, and a distribution of goods from each batch in the pick zone among each container in the put zone for each of one or more pick cycles, and operator input means to record the distribution of goods per pick cycle; and

computer means carried by each mobile put station array, the computer means in communication with the ODU means on each car, the computer means controlling the movement of the mobile put station array in a series of move cycles of variable length along the pick face, the computer means further varying the pick and put zones for each worker servicing the array, as needed, for each move cycle.

5,509,539

METHOD FOR PREPARING INJECTION MOLDING COMPOUND PELLETS TO REMOVE MOLDING COMPOUND DUST AND BROKEN PELLETS

Troung Hoang, Sacramento; James Vitale, Jr., Loomis; James Chinn, Sacramento; Gary Knabashigawa, Fair Oaks; Ion Dobre, and Avelard Crisostomo, both of North Highlands, all of Calif., assignors to NEC Electronics Incorporated, Mountain View, Calif.

Filed Dec. 21, 1993, Ser. No. 171,142

Int. Cl.⁶ B07C 5/04

U.S. Cl. 209—634

7 Claims

1. A method of processing molding compound pellets, to remove molding compound dust and broken pellets, comprising the steps of:

- loading a plurality of pellets, which are contaminated by molding compound dust and broken pellets, into a container perforated by a plurality of distributed openings;
- transferring the loaded container to a position within a vacuum chamber; and
- applying a vacuum source to the vacuum chamber to draw air through the vacuum chamber so that molding compound dust and broken pellets are removed from the perforated container through the distributed openings.

5,509,540 DISPLAY HOLDER FOR BALLOONS, FLOWERS OR THE LIKE

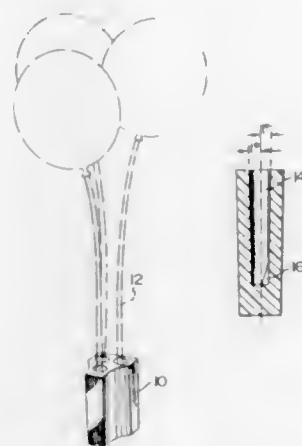
Carl Pomerantz, 567 Lakeshore Blvd., Beaconsfield, Montreal Que., Canada

Filed Sep. 22, 1994, Ser. No. 310,328

Int. Cl.⁶ A47F 7/00

U.S. Cl. 211—13

20 Claims



1. A holder for balloons, flowers or the like on sticks, comprising:

- a holder element having
- a mounting surface adapted to be securely attached to a vertical support structure by
- attachment means located on said mounting surface;
- at least one receptacle of predetermined depth adapted to tightly hold a lower portion of the stick by
- a secure means located within said receptacle, said secure means adapted to securely hold said stick of various diameters, wherein said secure means is provided by means of tapering of said receptacle downwardly from an entrance towards a bottom portion, and wherein said receptacle becomes progressively tighter as said stick is further inserted inside of said receptacle;
- wherein a longitudinal centerline of said receptacle is tilted away from said mounting surface to provide less displacement and reduction of bending moment of an upper end of said stick having attached balloon or flower, which in turn allows reduction of the peeling force applied to said attachment means.

5,509,541

BRACKET CONSTRUCTION

Milton J. Merl, 50 Wilcox Rd., Stonington, Conn. 06830

Filed Jun. 14, 1994, Ser. No. 259,464

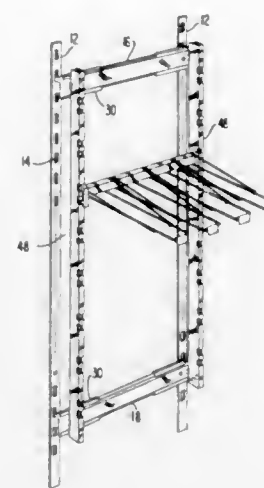
Int. Cl.⁶ A47H 1/00; 2/00; 7/00; 13/00

U.S. Cl. 211—103

10 Claims

1. An improved bracket construction for the storage and display of cylindrically and dish-packaged products, comprising:

- a pair of horizontal hanging bars adapted to mount to vertical gondola standards;
- a plurality of vertical uprights affixed to said hanging bars; and
- at least one cradle assembly mounted to said vertical uprights, said cradle assembly adapted and dimensioned to support cylindrically and dish-packaged products thereon in an edge-wise orientation, said cradle assembly comprising a horizontal bar mountable to said vertical uprights and at least one product cradle extending forwardly from the horizontal bar comprising a U-shaped element having a front transverse portion and a pair of legs mounted to a bottom of said horizontal bar and a support wire extending from each of said legs to a top of said horizontal bar outwardly of the mount of the respective leg to said horizontal bar.



5,509,543

CEILING FIXTURE DISPLAY APPARATUS

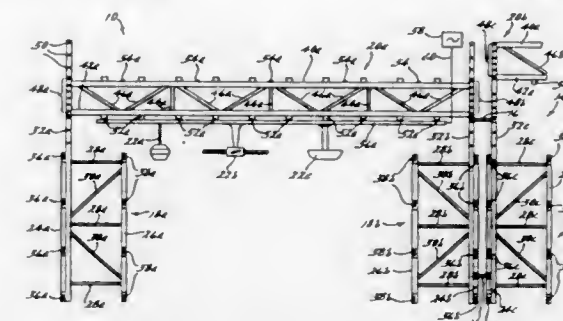
Carlton D. Weaver, Goodells, and Richard W. Eastman, Marysville, both of Mich., assignors to Eugene Welding Company, Marysville, Mich.

Filed Apr. 13, 1994, Ser. No. 227,110

Int. Cl.⁶ A47F 7/00

U.S. Cl. 211—189

15 Claims



5,509,542 APPARATUS FOR RETAINING HANGERS

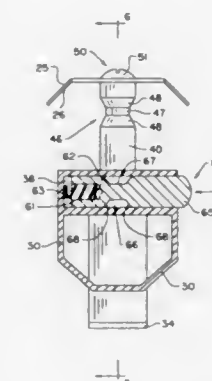
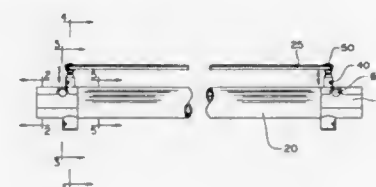
Richard H. Simmerman, Palatino, and Leonard B. J. Woloszyk, Mt. Prospect, both of Ill., assignors to Richard H. Simmerman, Palatino, Ill.

Filed Jan. 24, 1995, Ser. No. 377,444

Int. Cl.⁶ A47F 5/00

U.S. Cl. 211—124

26 Claims



1. In an apparatus for retaining hook-shaped members, the apparatus having an elongated hanger member, the improvement comprising:

- a housing mounted with respect to the hanger member, a pin slidably mounted with respect to said housing, an elongated retaining member;
- securement means for securing said retaining member with respect to said pin so that said retaining member follows sliding movement of said pin with respect to said housing;
- first bias means for urging said pin into an open position; and
- actuating means for operating said pin between said open position and a locked position, said actuating means comprising a lock member slidably mounted with respect to said housing, second bias means for urging said lock member toward an engage position, and engagement means for positioning said lock member in said engage position when said pin is in said locked position and for positioning said lock member in a release position when said pin is out of said locked position.

5,509,544 RACK APPARATUS FOR DRYING MULTIPLE RIGID, PAINTED OBJECTS

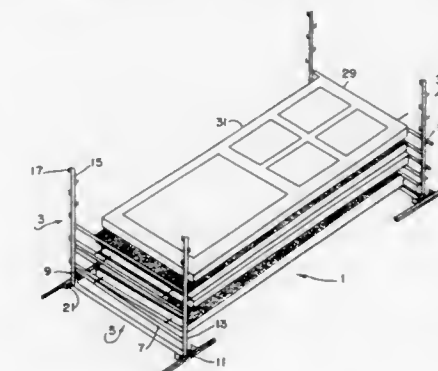
Harry C. Osborn, Erie, Pa., assignor to HOBBO Manufacturing Company Incorporated, Erie, Pa.

Filed Oct. 19, 1994, Ser. No. 325,080

Int. Cl.⁶ A47B 47/00

U.S. Cl. 211—190

17 Claims



1. A rack apparatus for drying multiple rigid, painted objects, the rack apparatus comprising first and second rack assemblies, each rack assembly further comprising a base; a left vertical bar and a right vertical bar connected to the base; a horizontal handle, with a

left end and a right end, the left end connected to the left vertical bar and the right end connected to the right vertical bar; a first vertical post and a second vertical post, the first vertical post detachably secured to the right vertical bar, and the second vertical post detachably secured to the left vertical bar; multiple hooks, with an equal number of hooks attached to the first post and to the second post; and multiple horizontal poles, each pole supported by more than one hook.

(d) a cantilever spring formed as an integral part of the drawbar located proximal from the coupler body;
(e) a magnetically-actuated post pivotally secured to the drawbar which extends downward from the drawbar, and
(f) the pivotally mounted coupler knuckle is pivotally secured to the second end of the drawbar such that it is in constant interaction with the cantilever spring to urge the coupler knuckle to a closed or coupled position.

5,509,545

VALET FOR WOMEN'S CLOTHING

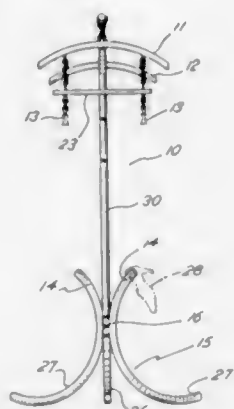
Cheri L. Banke, Woodridge, Ill., assignor to Mon Cheri, Inc., Woodridge, Ill.

Filed Apr. 12, 1994, Ser. No. 226,491

Int. Cl.⁶ A47B 43/00

U.S. Cl. 211—205

7 Claims



1. A valet comprising an upper portion and a lower portion, said upper portion having a front support and a rear support, said front support having a first clothes hanger assembly and a purse holder, said rear support having a second clothes hanger assembly and a skirt attachment having at least two clips, and said lower portion having attached supporting legs and a shoe rack.

5,509,546

MAGNETICALLY-ACTUATED COUPLER FOR MODEL RAILROAD CARS

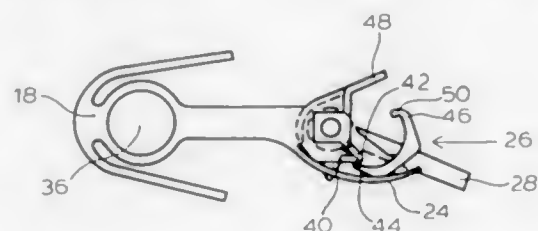
Robert H. Staat, 3600 Chamberlain La., Unit 342, Louisville, Ky. 40241

Filed Aug. 19, 1994, Ser. No. 292,880

Int. Cl.⁶ B61G 3/04

U.S. Cl. 213—75 TC

5 Claims



1. A magnetically-actuated coupler assembly for a model railroad car comprising

- (a) a drawbar with first and second ends, capable of being pivotally mounted within a coupler pocket in the end of a model railroad car,
- (b) formed as an integral part of the first end of the drawbar is a leaf spring extending from the first end of the drawbar,
- (c) secured to the second end of the drawbar is a coupler head, wherein the coupler head contains a pair of stops which limit the movement of a pivotally mounted coupler knuckle;

5,509,547

COUPLING DEVICE

Franz Gaertner, Muehlweg 10, 97656 Unterelsbach, Germany

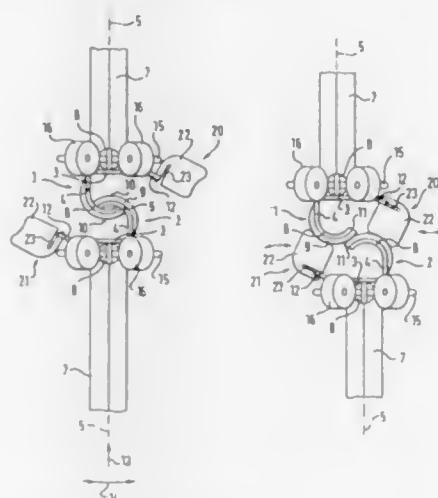
Filed Sep. 20, 1994, Ser. No. 309,036

Claims priority, application Germany, Ser. 21, 1993, 43 82 072.4

U.S. Cl. 213—75 R

Int. Cl.⁶ B65G 9/00

7 Claims



1. Coupling device for a conveyor device which in particular is used for suspended transport of clothing, whereby the conveyor device comprises a support rail that is suspended and on which are suspended support straps that are equipped with rollers and whereby the rollers brace themselves on a support rail and the support straps hang, and whereby the support straps carry stay pipes having a longitudinal axis (5) and are arranged between adjacent stay pipe ends which may engage each other, comprising: coupling elements (1,2) each of which comprising a strip-shaped thin material and provided with a forward extending support web (4) and an arched web (6) which is located adjacent the support web (4), whereby the arched web (6) has an arc that is directed inward towards the axis (5) and a curve (10) whose maximum is positioned between the axis (5) and the support web (4);

blocking devices (20,21,40,41,50,51) for selectively blocking a coupling connection between the coupling elements adapted for mounting on adjacent stay pipes (7), each said blocking device including a blocking block (22,42,53) which is adapted for mounting on one of said adjacent stay pipes and assigned to block one of said coupling elements (1,2) adapted for mounting on the other one of said adjacent stay pipes (7), whereby each said blocking block (22,42,53) includes a blocking position in which when the adjacent stay pipes (7) approaches each other for engagement, said blocking block would impact against said one of said coupling elements (1,2) before any coupling engagement would occur between the coupling elements, and a release position in which the blocking block (22,42,53) does not engage any one of said coupling elements (1,2) when the adjacent stay pipes approach each other for engagement; and the blocking blocks (22,42,53) are constructed to snap into their blocking and release positions.

5,509,548

COUPLING HEAD HOUSING OF A CENTRAL BUFFER COUPLING

Joachim Kreher, Braunschweig, Germany, assignor to Scharfenbergkupplung GmbH, Salzgitter, Germany

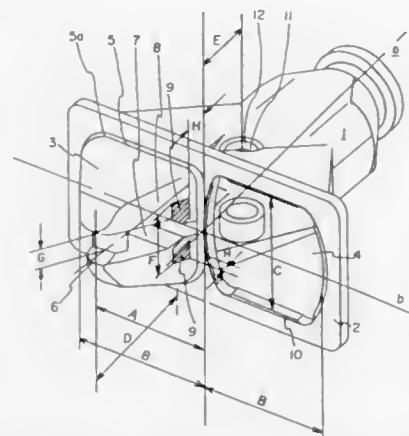
Filed Dec. 30, 1994, Ser. No. 366,609

Claims priority, application Germany, Jan. 28, 1994, 44 02 530.0

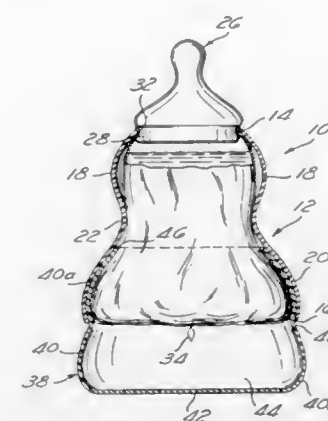
Int. Cl.⁶ B61G 7/06; 3/00

U.S. Cl. 213—77

7 Claims



1. A coupling head housing of a central buffer coupling for rail vehicles, the coupling head housing having a coupling lock and an articulated coupling ring, the coupling head housing comprising: a vertical front surface; a centering projection, located on one side of said front surface, said centering projection having an inner lateral surface facing a vertical central longitudinal plane of the coupling head housing and having an outer lateral surface, said outer lateral surface defining an oblique inner guide surface, said inner guide surface vertical central longitudinal plane as well as said outer lateral surface taper into an elongated, vertically extending, cam-like cone tip; a funnel extending into an inside of said coupling head housing, said funnel being symmetrical to said centering projection, said funnel being provided on another side of said front surface for receiving a centering projection of an opposite coupling head of a same design, so that guides are formed by said inner guide surface of said projecting centering projection for coupling an opposite coupling head housing, said cone tip and a corresponding deepening portion of said funnel being displaced toward a vertical central longitudinal plane a of the coupling head housing, so that a distance A from said cone tip to said vertical central longitudinal plane a and a distance A from said deepening portion to said vertical central longitudinal plane a is approximately 2/3 of a horizontal distance B between said vertical central longitudinal plane a and an opposite side of said centering projection and a horizontal distance B between said vertical central longitudinal plane a and an opposite side of said funnel deepening portion; a height C of said centering projection and a height of an opening of said funnel corresponding to said height C are less than 1 cm smaller than said horizontal distance B; an amount of projection D of said centering projection in front of said front surface is approximately 0.65 times said height C, and a fulcrum point of the coupling lock is located at a distance E, which is approximately 0.47 times said height C, from said front surface in said vertical central longitudinal plane a of said coupling head.



a hollow exterior housing having open top and bottom ends, a generally bulbous upper portion defining the top end, a generally bulbous lower portion defining the bottom end, and a central portion formed between the upper and lower portions, wherein the maximum width of the upper portion exceeds the maximum width of the central portion, and the maximum width of the lower portion exceeds the maximum width of the upper portion; and a disposable insert member selectively insertable into the housing, said insert member comprising: a nipple portion configured to be releasably attachable to the upper portion of the housing; and a sack portion extending from said nipple portion and defining an opening which allows the sack portion to be filled with a liquid; said nipple portion protruding from the top end of the housing and said sack portion residing within said housing when said nipple portion is attached thereto.

5,509,550

CHILD RESISTANT CAP WITH AUTOMATIC RELEASE KEY

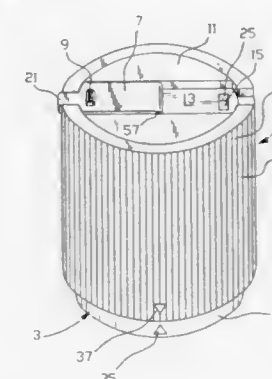
Stuart W. DeJonge, Easton, Pa., assignor to Primary Delivery Systems, Inc., Easton, Pa.

Filed Jan. 5, 1995, Ser. No. 368,985

Int. Cl.⁶ B65D 55/02; A61J 1/00

U.S. Cl. 215—204

16 Claims



1. A child resistant cap device for containers having a threaded neck opening, which comprises:

- (a) an inner cap having a sidewall and a top, each of said sidewall and top having an inside and an outside, said sidewall having threads on its inside for threading to a container having a threaded neck opening, said sidewall having on its outside, one of a male attaching means and a female attaching means for receiving and attaching an outer cap onto said inner cap so as to be rotatably fixed thereon, said top of said inner cap having a release key engagement on its outside, said outside of said inner cap having one of one way ratchets and

5,509,549

BABY BOTTLE ASSEMBLY

Daria X. Marandola, 13 Sierra Vista, Laguna Niguel, Calif. 92677

Filed Dec. 30, 1994, Ser. No. 366,680

Int. Cl.⁶ A61J 9/00; 9/06; 9/08; 11/00

U.S. Cl. 215—11.3

15 Claims

1. An infant bottle assembly, comprising:

ratchet blocks, to permit engagement of an outer cap for rotating said inner cap and an outer cap in a single, closing direction and preventing engagement of an outer cap and said inner cap for rotating said inner cap and an outer cap in a single, opposite, opening direction;

- (b) an outer cap having a sidewall and a top, each of said sidewall and top having an inside and an outside, said sidewall having on its inside the other of a male attaching means and a female attaching means for attaching said outer cap to said inner cap so as to be rotatably fixed thereon, said top of said outer cap having a release key attached thereto so as to be invertable by pivotal rotation of about 180°, said top of said outer cap also having a key orifice thereon so as to permit protrusion therethrough of said key to engage said release key engagement of said inner cap, said outside of said outer cap having the other of said one way ratchets and ratchet blocks, aligned with said one of either one way ratchets or ratchet blocks of said inner cap so as to permit engagement therewith, in a single, closing direction and so as to pass over one another in a single, opposite opening direction so as to permit closing but not opening of said inner cap; and,
- (c) a key bar having a release key thereon, being generally located on the outside of the top of said outer cap, and being attached to at least one of said top of said outer cap and said top of said inner cap so as to be invertable by pivotal rotation, so as to permit protrusion of said key of said key bar through said key orifice so as to be engageable with said key engagement of said inner cap so as to permit opening of said inner cap by rotation of said outer cap when said release key is engaged in said release key engagement.

5,509,551

BEVERAGE CONTAINER DISPENSING CAP

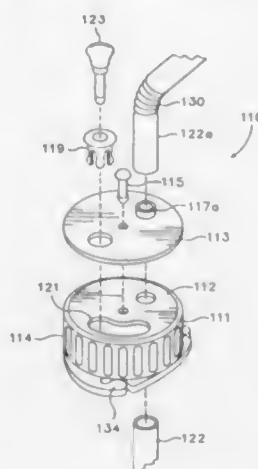
Robert C. Terrell, II, 10231 NE Tillamook, #203, Portland, Oreg. 97220

Filed Jul. 7, 1994, Ser. No. 271,179

Int. Cl.⁶ B65D 55/16

U.S. Cl. 215—229

4 Claims



1. A beverage container dispensing cap assembly for replacing a threaded cap of a beverage bottle, said assembly comprising:
- a cap removably attachable to a bottle of the type having an exterior threaded collar at an upper end thereof, said cap including a set of interior threads engagable with the bottle collar to form a watertight seal;
 - a venting aperture formed in said cap;
 - a dispensing aperture formed in said cap;
 - a cap top rotatably attached to the top of said cap;
 - a venting hole formed in said cap top, said venting hole being in alignment with said venting aperture when said cap top is rotated to either a first or a second position;
 - a dispensing hole formed in said cap top, said dispensing hole being in alignment with said dispensing aperture when said

cap top is rotated to said first position and being misaligned and substantially sealed when said cap top is in said second position;

- a first straw attachable to said cap top and being in communication with said dispensing hole when so attached; and
- a second straw attachable to said cap, said second straw extending into said bottle and being in communication with said dispensing aperture when so attached.

5,509,552

CAPSULE FOR BOTTLE NECK

Tatsuo Eguchi; Yoshitaka Tamura, both of 61-8, Sasatani, Yamaderacho, Kusatsu-shi, Shiga, 525, and Toshihiro Ueda, 14-114, Shimohozumi 4-chome, Ibaraki-shi, Osaka 567, all of Japan

Continuation of Ser. No. 208,104, Mar. 8, 1994, abandoned.

This application Jul. 12, 1995, Ser. No. 501,519

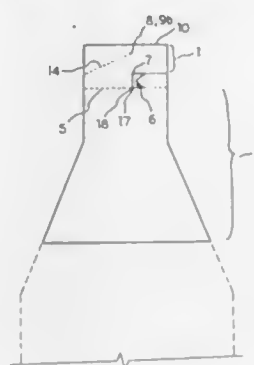
Claims priority, application Japan, Mar. 17, 1993, 5-019247

U

Int. Cl.⁶ B65D 41/32

U.S. Cl. 215—256

6 Claims



1. A capsule, comprising: a cap portion having a top; a skirt portion; weakening lines; and a pulling tab connected to the cap portion, the skirt portion and the weakening lines for removal of the cap portion from the skirt portion, wherein one of said weakening lines is provided with a tear-starting end and a tear-terminating end, and defines a longitudinally inclined part between said tear-starting end and said tear-terminating end, said inclined part satisfying the expression:

$$\{(L-Y)/X\} < 0.7,$$

where: $0 < X \leq R$; $0 \leq Y < L$; "L" indicates the shortest distance from said tear-starting end to the top of the cap portion; "Y" indicates the shortest distance from said tear-terminating end to the top of the cap portion; "X" indicates a distance in the circumferential direction from an inclination-starting point of said one of said weakening lines to an inclination-terminating point thereof; and "R" indicates a circumferential length of said other weakening line.

5,509,553

DIRECT ETCH PROCESSES FOR THE MANUFACTURE OF HIGH DENSITY MULTICHIP MODULES

Robert O. Hunter, Jr., Rancho Santa Fe; Adlai H. Smith, and Bruce B. McArthur, both of San Diego, all of Calif., assignors to Litel Instruments, San Diego, Calif.

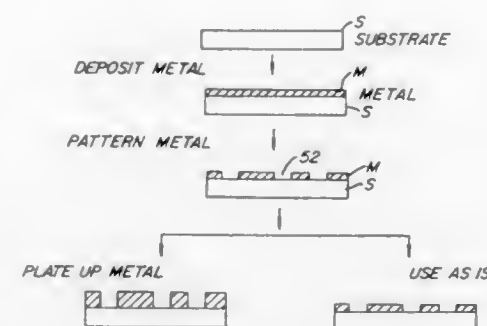
Filed Apr. 22, 1994, Ser. No. 231,704

Int. Cl.⁶ H01B 13/00

U.S. Cl. 216—13

50 Claims

1. A process for the manufacture of multichip modules of the deposited variety having metallic traces in a required circuit pattern comprising the steps of:



- providing a substrate;
- coating the substrate with metal;
 - coating metal with etch block;
 - patterning said etch block to expose said metal in a pattern for removal with remaining etch block overlying metallic traces in the required circuit pattern;
 - etching the exposed metal to leave etch block overlying metallic traces in the required circuit pattern;
 - stripping the remaining etch block overlying the blocked metal traces of the required circuit pattern;
 - coating the patterned metal with dielectric material; and,
 - patterning the dielectric material for forming vertical interconnects.

5,509,555

METHOD FOR PRODUCING AN ARTICLE BY PRESSURELESS REACTIVE INFILTRATION

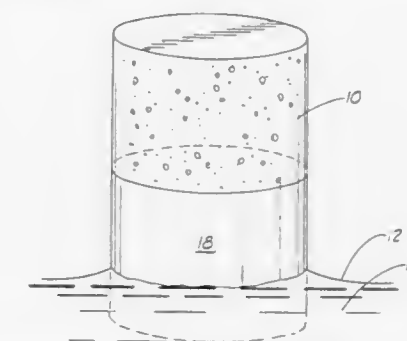
Yet-Ming Chiang, Framingham; Jong-Ren Lee, Cambridge, and Leszek Hozer, Boston, all of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Jun. 3, 1994, Ser. No. 254,369

Int. Cl.⁶ B31D 3/00

U.S. Cl. 216—56

40 Claims



1. A method for preparation of a composite comprising:
- (1) providing a porous preform;
 - (2) providing a liquid infiltrant alloy including at least two elements and further characterized by a liquid infiltrant alloy composition selected so that said liquid infiltrant alloy wets said preform and so that said liquid infiltrant alloy spontaneously infiltrates said preform;
 - (3) contacting said liquid infiltrant alloy with said preform so that a chemical reaction occurs whereby said liquid infiltrant alloy reacts with said preform to form a reacted preform; and
 - (4) cooling said reacted preform to form a solid composite.

5,509,554

SACRIFICIAL STRUCTURE MASKING METHOD FOR DISK DRIVE SLIDER ASSEMBLIES AND SLIDERS MADE THEREBY

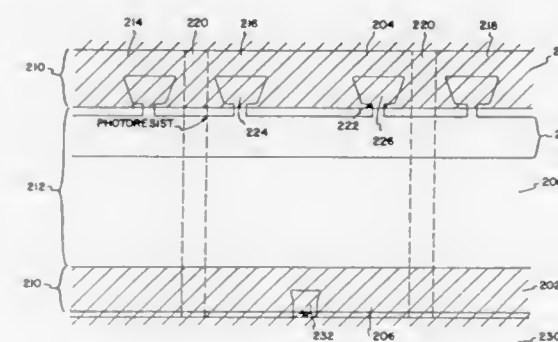
Laurence S. Samuelson, San Jose; Robin L. Almes, Sunnyvale, both of Calif., and Michael J. Murtagh, Ingelheim, Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 14, 1994, Ser. No. 339,005

Int. Cl.⁶ B44C 1/22

U.S. Cl. 216—22

22 Claims



1. A method for defining small features on a transducer carrying slider, comprising the steps of:
- exposing a mask, the mask having a larger sacrificial structure portion and a desired feature portion; and
 - removing a sacrificial structure formed by the sacrificial structure portion of the mask after the desired feature is formed.

5,509,556

PROCESS FOR FORMING APERTURES IN A METALLIC SHEET

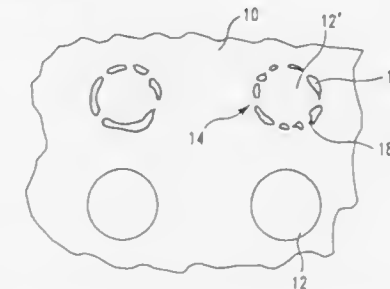
James G. Balz, Maybrook; Gregory M. Johnson, Poughkeepsie; Mark J. LaPlante, Walden, and David C. Long, Wappingers Falls, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 17, 1994, Ser. No. 340,991

Int. Cl.⁶ B31D 3/00; B44C 1/22; C23C 1/00

U.S. Cl. 216—56

24 Claims



1. A process of forming an aperture in a metallic sheet comprising the steps of:
- a) defining at least one feature in a sheet of metallic material;
 - b) laser drilling the at least one feature but not entirely removing it from the metallic sheet, the at least one feature being partially filled by metallic material which has melted and resolidified; and then
 - c) chemically etching the metallic sheet and the melted and resolidified metallic material wherein the etchant attacks and at least partially dissolves the melted and resolidified metallic material, weakening the bond of the melted and resolidified metallic material to the metallic sheet.

5,509,557

DEPOSITING A CONDUCTIVE METAL ONTO A SUBSTRATE

Lisa J. Jimarez, Newark Valley; William H. Lawrence, Greene; Vaya R. Markovitch, Endwell; Robert J. Owen, Binghamton, and Carlos J. Sambucetti, Croton-on-Hudson, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 24, 1994, Ser. No. 184,930

Int. Cl.⁶ B05D 3/04; C23F 1/00

U.S. Cl. 216—95

22 Claims

1. Process for depositing a conductive metal onto the surface of a dielectric substrate selected from the group consisting of thermosetting polymeric materials and thermoplastic polymeric materials which comprises:

- (a) obtaining a metal sheet having a roughened surface that has the following parameters:
 $R_a=0.05-0.08$ mil,
 $R_{max}=0.20-0.55$ mil,
 $S_m=1.00-3.00$ mil,
 $R_p=0.20-0.35$ mil, and
 surface area=0.90-1.20 square mils

wherein R_a is the average roughness and the arithmetic mean of the departures from horizontal mean line profile;

- R_{max} is the maximum peak-to-valley height;
 S_m is the mean spacing between high spots at the mean line;
 R_p is the maximum profile height from the mean line; and
 surface area is the area under the surface profile from each measurement using a Talysurf S-120 profilometer;
 (b) laminating said metal sheet to tile dielectric substrate surface by pressing the roughened surface of the metal sheet against the surface of the substrate;
 (c) removing the metal from the substrate;
 (d) then seeding said substrate surface to render it active for electroless plating thereon; and
 (e) plating a metal thereon from an electroless plating bath.

5,509,558

METAL OXIDE RESISTOR, POWER RESISTOR, AND POWER CIRCUIT BREAKER

Motomasa Imal, Chofu; Naoki Shutoh, Yokohama; Katsuyoshi Oh-Ishi, Kawasaki; Fumio Ueno, Yokohama; Hideo Ohkuma, Kawasaki; Yuji Katsumura, Kamakura; Masaki Kobayashi, Kawasaki, and Toshiyuki Takahashi, Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, and Toshiba Tungaloy Co., Ltd., both of Kawasaki, Japan

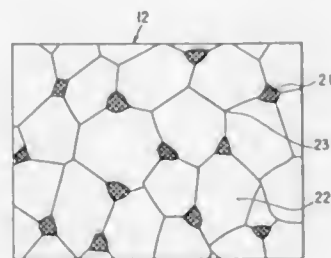
Filed Jul. 15, 1994, Ser. No. 275,523

Claims priority, application Japan, Jul. 16, 1993, 5-199052; Sep. 30, 1993, 5-245355

Int. Cl.⁶ H01H 33/16; H01C 7/10; H00

U.S. Cl. 218—143

30 Claims



1. A metal oxide resistor comprising:

- a sintered body in which carbon particles having an average grain size of not more than 1 μ m exist in a grain boundary of metal oxide particles in an amount of 0.05 to 3 wt %; and electrodes formed on at least two opposing surfaces of said sintered body.

5,509,559

CONTAINER FOR TRANSPORTATION

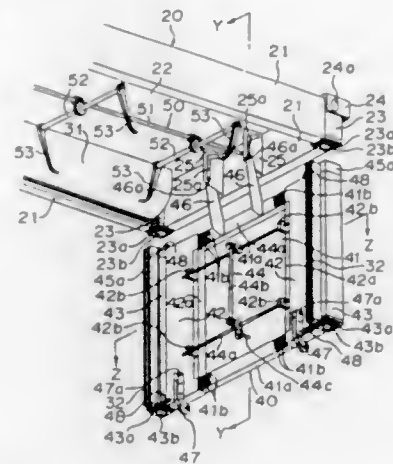
Hiroshi Okano, and Masanobu Iwatani, both of Kanazawa, Japan, assignors to Asahi Glass Company Ltd., Tokyo, Japan

Filed Feb. 22, 1994, Ser. No. 199,899

Claims priority, application Japan, Feb. 22, 1993, 5-032295 Int. Cl.⁶ B65D 6/22

U.S. Cl. 220—1.5

11 Claims



1. A container for transportation which comprises:

- a base portion,
 a ceiling portion,
 side wall members for forming left and right side walls and end plates for closing front and rear openings formed by the base portion, the ceiling portion and the left and right side walls, wherein

said end plates are connected to the ceiling portion, and each of the end plates extended in a respective plane and each of said end plates includes left and right sides, and further wherein each of said end plates includes columns at the left and right sides, and wherein said end plates each include a width extending from the left side to the right side, and each of said end plates is expandable and retractable in their respective planes to thereby provide retracted and expanded positions with said width reduced in said retracted position as compared with said expanded position, and wherein said ceiling portion receives said end plates in said retracted position.

5,509,560

GANGABLE PLASTIC BOX FOR ELECTRICAL OUTLETS

William L. Nash, 4069 NE. 8 Ave., Oakland Park, Fla. 33334

Filed Jun. 1, 1995, Ser. No. 457,020

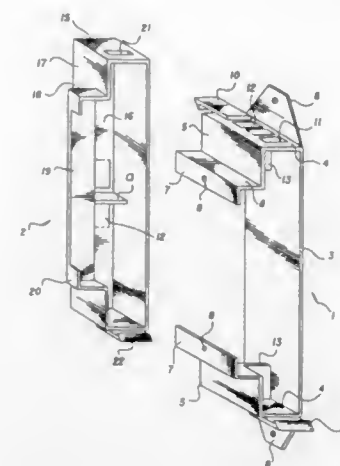
Int. Cl.⁶ H02G 3/08

U.S. Cl. 220—3.9

6 Claims

1. An electrical outlet box assembly, comprising:

- a main housing member and a lateral member adapted to be connected to said main housing member;
 said main housing member being formed of a generally flat, rectangular backplate with relatively longer sides and relatively shorter sides; a mounting tab connected to said backplate in a substantially coplanar relationship therewith; first sidewalls respectively formed on each of said relatively shorter sides of said backplate and orthogonally extending away from said backplate; drywall support surfaces respectively formed on each of said first sidewalls distally from said backplate and extending substantially parallel to said backplate; second side walls respectively formed on each of said support surfaces distally from and extending substantially parallel to said first sidewall; and support flanges respectively formed on each of said second sidewalls and having mounting holes formed therein for mounting an electrical device;



said lateral member having a backwall, first sidewalls, and additional walls corresponding to said main housing member such that, when said lateral member is placed laterally against one of said longer sides of said main housing member, said main housing member and said lateral member together define an electrical outlet box with a forward opening for receiving an electrical device;

each of said first sidewalls of said main housing component having a snap latch receiving slot formed therein diagonally across from one another as seen relative to said rectangular backplate, and a snap latch molded thereon diagonally across from one another and opposite said snap latch receiving slot; and

one of said first sidewalls of said lateral member having a snap latch formed thereon for mating with one of said snap latch receiving slots of said main housing component, and the other of said first sidewalls of said lateral member having a snap latch receiving slot formed therein for mating with one of said snap latches of said main housing member when said main housing member and said lateral member are placed against one another.

5,509,561

CONTAINERS AND METHOD OF MAKING SAME

Dan Kanterovitch, Petah Tikva, Israel, assignor to Scitex Corporation Ltd., Herzlia Bet, Israel

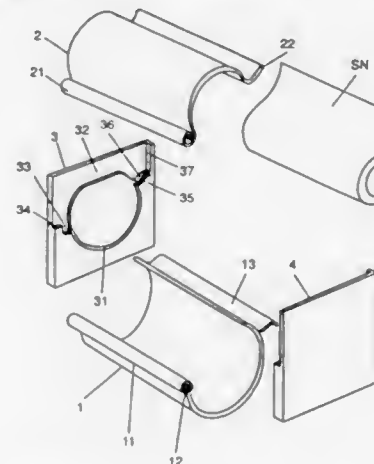
Filed Jan. 11, 1993, Ser. No. 3,047

Claims priority, application Israel, Mar. 19, 1992, 101296

Int. Cl.⁶ B65D 43/16

U.S. Cl. 220—428

12 Claims



1. A container including bottom, side and end walls and an open top closed by a pivotal lid, characterized in that:

said bottom and side walls are defined by a first longitudinally-extending channel member of semi-cylindrical configuration open at the top;

said pivotal lid is defined by a second longitudinally-extending channel member of complementary semi-cylindrical configuration open at the bottom and having one longitudinal edge pivotally mounted to one longitudinal edge of said first channel member;

said end walls are defined by a pair of end plates formed with semi-circular slots on their inner faces, inwardly of their outer peripheries, of complementary shape as said first channel member, and of a width equal to the thickness of said first channel member, said slots receiving the ends of said first channel member;

said end plates are also formed with recesses on their inner faces receiving the ends of said second channel member and of a configuration to permit said second channel member to pivot with respect to said first channel member;

and a longitudinal edge of the first channel member, opposite to said one edge thereof pivotally mounting the second channel member, is formed with a longitudinally-extending anchoring extension received within complementary-shaped anchoring slots formed in the inner faces of said end plates to firmly anchor the first channel member against movement with respect to said end plates.

5,509,562

FLOATING ROOF

Ronald P. Jolly, Magnolia, Tex., assignor to HMT, Inc., Houston, Tex.

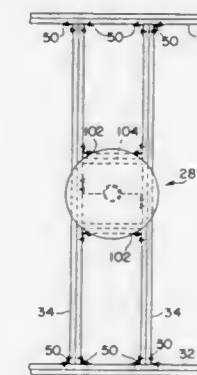
Division of Ser. No. 62,006, May 14, 1993. This application

Dec. 22, 1994, Ser. No. 362,220

Int. Cl.⁶ B65D 88/34

U.S. Cl. 220—216

8 Claims



1. A floating roof for use in a storage tank for a liquid product, comprising the combination of:

a roof frame having a plurality of girders and deck sheeting disposed over the plurality of girders, the plurality of girders including a first pair of generally parallel, spaced-apart girders and a second pair of generally parallel, spaced-apart girders extending between and forming generally right angles with the first pair of girders, the deck sheeting having an opening therein between the first pair of girders and between the second pair of girders;

a plurality of support angles mounted on the deck sheeting above the first pair of girders and the second pair of girders and forming a well in the roof frame; and
 an assembly mounted within the well.

5,509,563

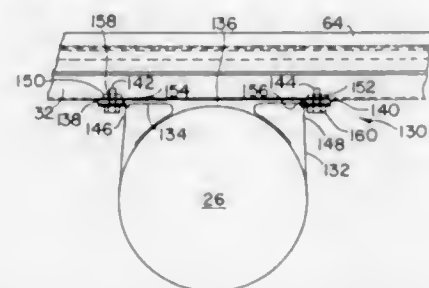
APPARATUS FOR COUPLING A PONTOON TO A FLOATING ROOF IN A STORAGE TANK FOR LIQUID PRODUCTS

Ronald P. Jolly, Magnolia, Tex., assignor to HMT, Inc., Houston, Tex.

Division of Ser. No. 62,006, May 14, 1993. This application Dec. 22, 1994, Ser. No. 362,219
Int. Cl.⁶ B65D 88/34

U.S. Cl. 220—221

5 Claims



1. An arrangement for coupling a pontoon to a floating roof in a storage tank for a liquid product, comprising a floating roof, a pontoon, a saddle coupled to the floating roof and being of continuous integral construction between opposite ends thereof and having an intermediate cradle portion for receiving the pontoon, and an elongated strap extending around the pontoon and having opposite ends coupled to the opposite ends of the saddle, the saddle being coupled to the floating roof by a mounting plate attached to the floating roof and the opposite ends of the elongated strap being bolted to the mounting plate through apertures in the opposite ends of the saddle.

5,509,564

VENTING DEVICE

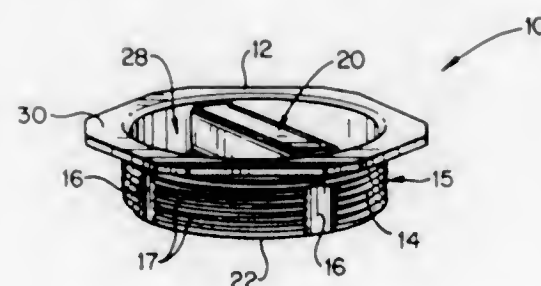
Robert D. Knoop, Beatrice, Nebr., assignor to Custom Metalcraft, Inc., Springfield, Mo.

Filed Jan. 25, 1994, Ser. No. 186,063

Int. Cl.⁶ B65D 51/16

U.S. Cl. 220—360

10 Claims



1. A bung plug venting device for a container, comprising: a head portion; and a threaded neck portion extending from said head portion for engagement with an opening in said container; said threaded neck portion having a recessed interior defined by an outer circumferential wall portion and including at least one slot located in the outer circumferential wall portion of said threaded neck portion, the depth of said at least one slot corresponding to the thickness of the threads on the threaded neck portion, said at least one slot extending from below the upper threads of said threaded neck portion axially downwardly to a position adjacent a bottom wall of said threaded neck portion and being separated from said recessed interior by said outer circumferential wall portion, whereby, upon rotation of said bung plug toward the open condition, said bung plug may then relieve internal pressure within said container.

container by allowing transfer of air or other gas to take place through said at least one slot without complete removal of said bung plug from said container.

5,509,565

FOAM CAP FOR EVAPORATIVE COOLERS

William D. Hoffman, P.O. Box 1626, Las Cruces, N.M. 88004

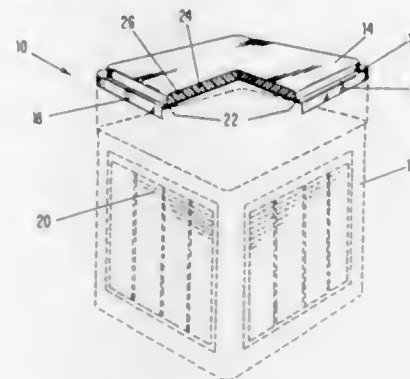
Continuation of Ser. No. 49,675, Apr. 16, 1993, abandoned.

This application Mar. 17, 1994, Ser. No. 210,731

Int. Cl.⁶ B65D 53/06

U.S. Cl. 220—378

3 Claims



1. An integral one-piece insulating cap in combination with an evaporative cooler, said cap comprising a shell portion of integrally molded construction, said shell portion comprising a top portion, a stepped portion and a mold portion; said stepped portion comprising means for mounting said insulating cap to said evaporative cooler comprising contact engagement to exterior siding of said evaporative cooler; said mold portion comprising a cavity for integrally molding thermal insulation therein and a liner comprising a mold cover; thermal insulation molded in situ in said mold portion and adhering to said mold portion; and wherein said stepped portion further comprises a periphery of said mold portion and wherein said shell portion further comprises ultraviolet inhibitors.

5,509,566

WATER HEATER CONSTRUCTION AND SEALING DEVICE THEREFOR

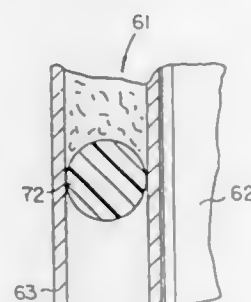
Thomas E. Nelson, Anchorage, Ky., assignor to Soltech, Inc., Shelbyville, Ky.

Continuation of Ser. No. 270,326, Jul. 5, 1994, Pat. No. 5,421,475, which is a continuation-in-part of Ser. No. 465,030, Jan. 16, 1990, Pat. No. 4,972,967, which is a continuation-in-part of Ser. No. 177,392, Apr. 4, 1988, abandoned. This application Oct. 14, 1994, Ser. No. 323,395

Int. Cl.⁶ B65D 90/00

U.S. Cl. 220—444

9 Claims



1. A water heater construction comprising: an inner water tank;

5,509,568

DRINK-THROUGH LID FOR DISPOSABLE CUP

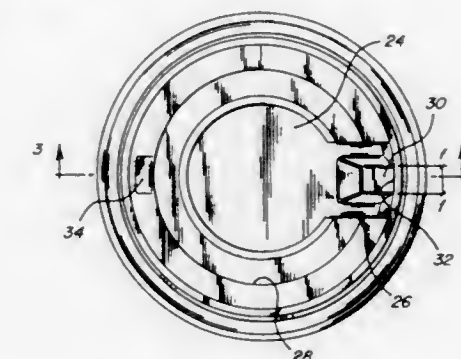
Jeffrey A. Warden, 23011 Park Pl., Southfield, Mich. 48034, and Anton I. Letica, 3212 Kenwood Dr., Rochester Hills, Mich. 48309

Continuation of Ser. No. 160,244, Dec. 2, 1993, Pat. No. 5,398,843. This application Dec. 9, 1994, Ser. No. 353,106
The portion of the term of this patent subsequent to Mar. 21, 2012, has been disclaimed.

Int. Cl.⁶ A47G 19/22; B65D 51/18

U.S. Cl. 220—711

4 Claims



1. A drink-through lid for beverage cups of the type having a circular lip comprising:

an annular rim portion adapted to conform to and sealingly engage the cup lip;

a raised crown portion contiguously inward of said annular rim, said crown portion having a continuous peripheral side wall and a top; and

drink-through aperture means providing an opening in said lid, said aperture means formed in said lid adjacent said side wall and comprising an integral structure which normally assumes a convex shape above the annular rim, but which is deformable into a concave shape above the annular rim and partially separated from the side wall immediately adjacent the side wall.

5,509,567

TANK CONNECTOR CONSTRUCTION

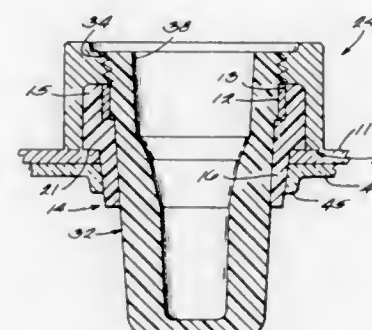
D. Kent Lindahl, Pleasant View, Tenn., assignor to State Industries, Inc., Ashland City, Tenn.

Filed Jun. 7, 1995, Ser. No. 465,671

Int. Cl.⁶ B65D 25/00

U.S. Cl. 220—465

10 Claims



8. A tank and tank connector therefor comprising: an outer steel tank having at least one opening therein; an inner tank of polymer material mounted inside said outer steel tank;

a tank connector assembly to facilitate a connection between the interior of said inner tank and the exterior of said outer tank, said tank connection assembly comprising:

a metal spud member having an internally threaded portion and a cylindrical wall portion;

a sub-assembly comprised of an insert member made from a polymer material and having an internal groove therein and an expandable band member positioned in said groove;

the sub-assembly of the insert member and expandable band member is positioned inside the cylindrical wall portion of said spud member; and

said expandable band being expanded in said groove of said insert member to produce a tight sealing contact between the insert member and the depending wall portion of said spud member.

5,509,569

AIRTIGHT FILLER NECK CAP

Takanari Hiranuma, and Kyokuichi Sato, both of Soja, Japan, assignors to OM Corporation, Okayama, Japan

Filed Dec. 13, 1994, Ser. No. 354,552

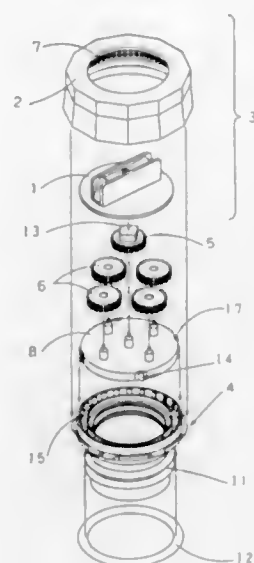
Claims priority, application Japan, Dec. 24, 1993, 5-327361

Int. Cl.⁶ B60K 15/035

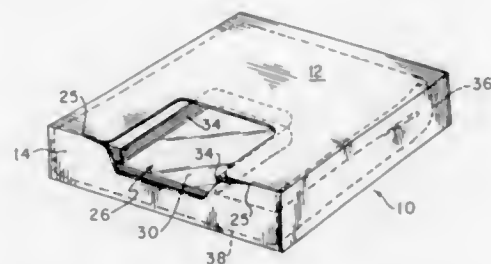
U.S. Cl. 220—746

5 Claims

1. A filler neck cap comprising an outer cap and an inner cap having a male screw thread formed on its outer periphery, wherein said outer cap includes a knob and a cover grip, said cover grip is engaged with a body of an automobile so as to be restrained from rotation, and said inner cap is rotated in association with the movement of the knob of the outer cap through a planetary gear mechanism, a carrier disk plate rotatably attached on an upper face of said inner cap and wherein said planetary gear mechanism comprises a sun gear, one or more planet gears and a ring gear, said sun gear connected to said knob is located on said carrier disk plate, said planet gears are rotatably connected to said carrier disk plate so that they engage with said sun gear, and said ring gear is formed integrally with the cover grip of the outer cap such that it engages with said planet gears.



5,509,570
DISPENSER OF PLASTIC BAGS
Robert B. DeMattels, 800 E. Washington, Colton, Calif. 92324
Division of Ser. No. 995,369, Dec. 23, 1992, Pat. No.
5,348,399. This application Sep. 19, 1994, Ser. No. 308,607
Int. Cl.⁶ B65H 1/04
U.S. Cl. 221—33 18 Claims

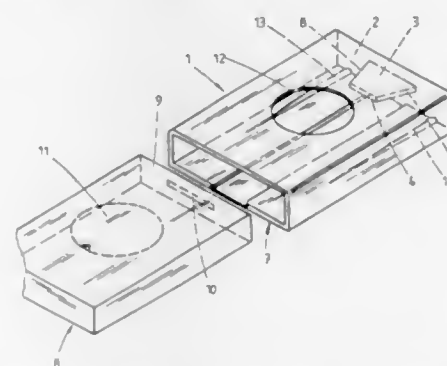


1. A dispenser useful for dispensing individual elements from a stack one at a time, each individual element having a mouth end and a tail end, the dispenser comprising:

a container having a body with top and front surfaces, said front surface being elongated between opposite end edges; and dispensing means for dispensing the individual elements from the stack one at a time from the container, said dispensing means including a cut-out opening extending between said top and front surfaces, said cut-out opening having a configuration in said top surface which allows for manual grasping of a top-most one of the individual elements contained within the container, said cut-out being defined in said front surface by a bottom edge and two side edges each extending upwardly and outwardly from a respective side of said bottom edge so as to be configured for channeling a top-most one of the individual elements along the side edges when being dispensed, said dispensing means also including two slits each extending outwardly in a direction toward a respective one of said end edges of said front surface and terminating spaced therefrom, said slits each having a lower edge extending upwardly and outwardly from a respective one of said two side edges to which is channeled the top-most one of the individual elements as a result of the channeling from the side edges, said slits having a configuration which allows dispensement of the individual elements one at a time through the slits and which may block a subsequent individual element from being dispensed at the same time through the slits if the subsequent

individual element clings to the top-most one of the individual elements during the dispensement.

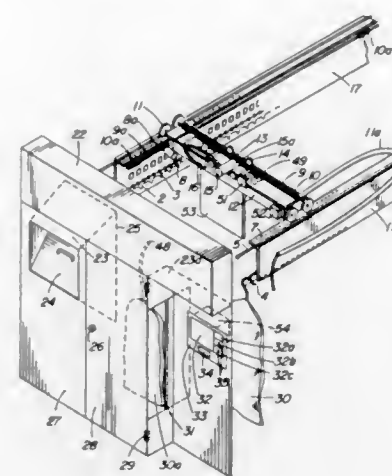
5,509,571
PLUG-IN DISPENSER FOR SANITARY-HYGIENE ITEMS
OR THE LIKE
Franz Weber, Erkrath, Germany, assignor to DRL Hygiene-Systeme GmbH, Erkrath, Germany
Filed Jul. 7, 1994, Ser. No. 271,427
Claims priority, application Germany, Jul. 14, 1993, 43 23 473.9
Int. Cl.⁶ B65H 1/04
U.S. Cl. 221—46 13 Claims



1. Dispenser for sanitary-hygiene items, comprising a box-type housing having an upper end wall connected to sidewalls extending to an open bottom oppositely disposed from the upper end wall and a container of a flexible material which is exchangeably arranged in the housing and contains the sanitary-hygiene items, the container being mounted in and removed from the housing by movement through the open bottom along a first direction, the housing upper end wall having at least one projection which projects in said first direction into the interior of said housing for puncturing engagement with the container, the container having predetermined breaking points in the region of the projection, at least one of the housing sidewalls having at least one rib extending into the housing to bias the container in a second direction extending laterally to the first direction to thereby cause proper engagement of the container by the projection at the breaking points.

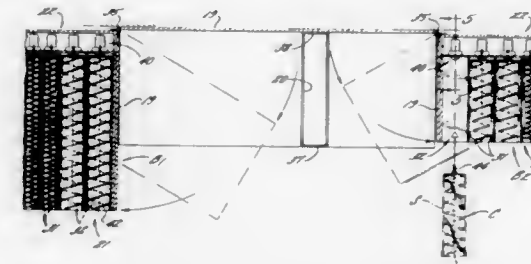
5,509,572
SELF SERVICE PICK UP AND DROP OFF MACHINE
J. Edward Curtis, Allans Mills, IRR4, Marmora, Ont, Canada
Filed Feb. 21, 1995, Ser. No. 393,923
Int. Cl.⁶ G07F 11/00
U.S. Cl. 221—76 11 Claims

1. A self service apparatus for receiving, storing and dispensing articles in response to signals generated by an authorized user, comprising enclosure means for securely storing said articles and provided with a signal activated drop off access means, caretaker access means signal activated article pick up means, and user activated signally means; drive means to move said pick up access means between a fully closed to a fully open position in response to signals generated by said user and including means to sense an obstruction in said pick up access means; first parallel rail means mounted in said enclosure means each provided with a plurality of storage locations at which articles ready for delivery to a user may be suspended in planes normal to the direction of the rails; gantry means mounted for movement along said first parallel rail means; carriage means mounted on said gantry means for movement between opposed said first parallel rails; said gantry means and said carriage means being arranged so that said carriage means may select, pick up and convey a selected article from any selected storage location to said article pick up access means in said plane



normal to the direction of the rails in response to a signal generated by said authorized user.

5,509,573
ASEPTIC DISPENSING SYSTEM
William J. Campoli, 16124 N. Point Rd., Huntersville, N.C. 28078
Filed Mar. 23, 1994, Ser. No. 216,683
Int. Cl.⁶ B65H 1/00
U.S. Cl. 221—133 28 Claims



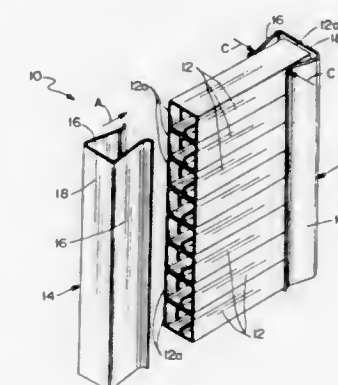
18. A modular system for maintaining and dispensing articles for dental, medical or like applications in an aseptic environment, said system comprising:

a cabinet having a bank of shelves, said bank having an open end and a closed end;
a dispensing chute adjacent the open end of said bank adapted to provide gravity feed of an article maintained in an aseptic condition, said dispensing chute further comprises a curtain extending over said open end of said bank of shelves thereby maintaining said articles in an aseptic condition;
a plurality of downwardly inclined shelves laterally disposed in said bank of said cabinet, said shelves being divided by a plurality of vertical dividers wherein said vertical dividers define feed slots in the shelves for receiving a cartridge filled with articles in an aseptic condition to be maintained and dispensed in an aseptic condition;
said cartridge comprising a detachable auger having an elongated helical coil with windings secured at a rear end to a circular plate including a drive shaft connected to said plate and operatively connectable to a drive unit and adapted to be angularly driven, said helical coil having sufficient spacing to receive an article between said windings, wherein said article is to be maintained in an aseptic condition, and said rear end means adapted to be angularly driven;
a plurality of drive means positioned at the interior of the closed end of said bank, each drive means being mounted to a support wall located interiorly of the closed end of the bank and adjacent each of said slots in the shelves;

means for feeding said articles in an aseptic condition toward said dispensing chute and discharging the leading article to drop by gravity, said means for feeding further comprises a removable auger feed contained within a protective sleeve; and

means for controlling the delivery of articles in an aseptic condition to the dispensing chute, said control means is a keypad having a plurality of keys such that one key is associated with one slot in one of the shelves in one of the banks of shelves, said keypad located on the outer surface of said cabinet; said keypad further comprising a clear replaceable film or sheet adapted to cover said keypad, thereby maintaining an aseptic condition.

5,509,574
PACKAGE AND DISPENSING SYSTEM
INCORPORATING STORAGE TUBES FOR ELECTRICAL CONNECTORS
William R. Lenz, Lockport, and Arvind Patel, Naperville, both of Ill., assignors to Molex Incorporated, Lisle, Ill.
Filed Aug. 25, 1994, Ser. No. 296,335
Int. Cl.⁶ B65H 1/06
U.S. Cl. 221—197 10 Claims



1. A package for storing and dispensing a plurality of electrical components stored in sliding end-to-end fashion in an array of laterally stacked tubes,

said array of stacked tubes including a first tube with an open component receiving end through which components may be loaded or dispensed, a second tube adjacent the first tube with an open component receiving end adjacent the open end of the first tube, wherein opposite outer walls of said array define two separate parallel planes, and

a selectively removable cover for preventing components from being dispensed from the open ends of the tubes, the improvement comprising:

said cover including an elongated U-shaped resilient end cap slidably engaged against the outer wall of the array of stacked tubes in a direction parallel to the longitudinal axis of the end cap covering the open ends thereof and maintaining the tubes in their lateral stacked array;

whereby, when the end cap is slidably disengaged in the direction parallel to the longitudinal axis of the end cap from the outer walls of one or more of the tubes in an array, those one or more tubes will be separated from the array and their open ends will be uncovered allowing the components within to be dispensed therefrom.

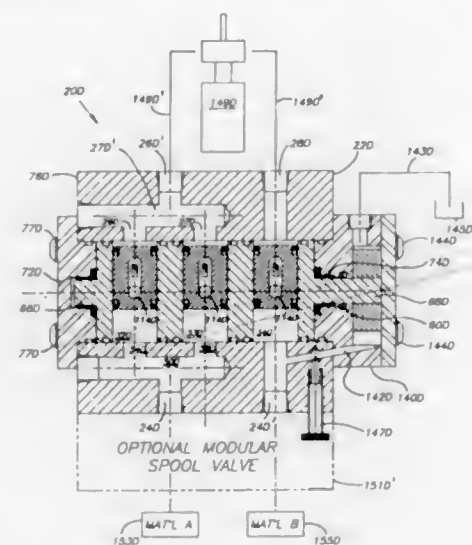
5,509,575

FLOW DIVIDER AND METHOD

Harold R. Gillette, Grand Rapids, Mich., assignor to Partnership of Gillette & Nagel, Grand Rapids, Mich.
Filed Jun. 30, 1994, Ser. No. 268,499
Int. Cl.⁶ G01F 11/00

U.S. Cl. 222-1

38 Claims



28. A method of dispensing liquid fluid comprising:
providing a housing including an inlet and an outlet, a spool rotatably positioned in the housing, the spool including a passageway for intermittently connecting the inlet to the outlet as the spool is rotated, and a floating piston located in the passageway;
supplying pressurized fluid having the viscosity of one of hydraulic fluid and water to the inlet;
dispensing a metered amount of said fluid from the outlet by rotating the spool so that the incoming pressurized fluid intermittently forces the piston to move thus dispensing fluid in the passageway; and
providing a motor operably connected to said spool for rotating the spool and operably connected to said inlet, and wherein said step of supplying includes supplying pressurized fluid to the inlet such that the motor is motivated by said pressurized fluid in said inlet.

5,509,576

ELECTRIC AUTOINFLATOR

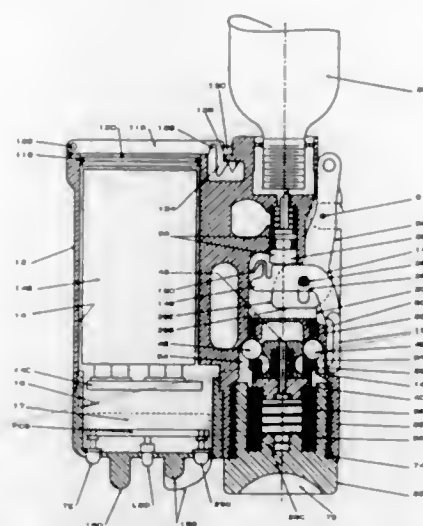
Jacek M. Weinheimer, Treasure Island; Michael T. Taylor, St. Petersburg, both of Fla., and Richard A. Boe, Fairfax, Va., assignors to Halkey-Roberts Corporation, St. Petersburg, Fla.

Continuation-in-part of Ser. No. 914,382, Jul. 14, 1992, Pat. No. 5,400,922. This application Jun. 14, 1993, Ser. No. 77,303
Int. Cl.⁶ B67B 7/00

U.S. Cl. 222-5

32 Claims

1. An autoinflator for automatically actuating a gas cartridge upon sensing of water, comprising in combination:
a body including a battery compartment for containing a battery and including a longitudinal bore for receiving the gas cartridge;
a fusible link actuator assembly positioned within said longitudinal bore of the body and including
an actuator housing including a blind link hole defining an opened rearward end, an actuator cap positioned over said opened end, and a retaining ball protruding from a side of said actuator housing which engages into a corresponding slot in said longitudinal bore to retain said actuator housing in a cocked position,



- a slidable link positioned within said blind link hole, said slidable link including an annular groove positioned about its circumference at a rearward portion thereof and including a taper positioned at a forward position thereof such that said retaining ball urges said slidable link forwardly,
a fusible link interconnecting said actuator cap and said slidable link for retaining said slidable link rearwardly in a cocked position within said blind link hole, and
means for fusing said fusible link upon being supplied electrical current thereto;
water-sensing circuit for sensing water and for supplying electrical current to said fusing means;
means for electrically connecting the battery to said water-sensing circuit for supplying electrical power thereto;
a firing pin operatively positioned within the longitudinal bore in alignment with the gas cartridge to pierce the same; and
a high-compression spring for forcibly urging said fusible link actuator assembly toward said firing pin such that, upon fusing of said fusible link, said slidable link moves forwardly within said blind link hole, whereupon said annular groove moves into alignment with said retaining ball allowing said retaining ball to move inwardly and disengage from said slot in said longitudinal bore, whereupon said actuator housing is urged forwardly by said high-compression spring in operative engagement with said firing pin, whereupon said firing pin pierces the gas cartridge.

5,509,577

FLUID STORAGE AND DISPENSING SYSTEM

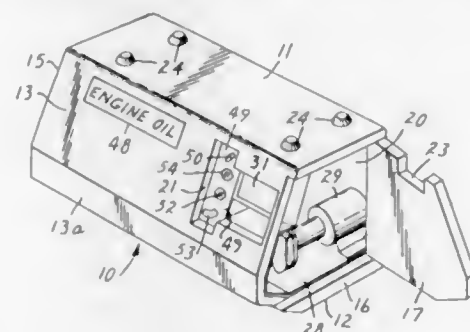
Robert D. Benson, White Bear Lake, Minn., assignor to Core Incorporated, White Bear Lake, Minn.

Filed May 2, 1994, Ser. No. 235,866
Int. Cl.⁶ B67D 5/08

U.S. Cl. 222-61

14 Claims

1. A stackable container for holding and dispensing fluid, comprising in combination a durable, corrosion-resistant polymeric



prising in combination a durable, corrosion-resistant polymeric

5,509,579

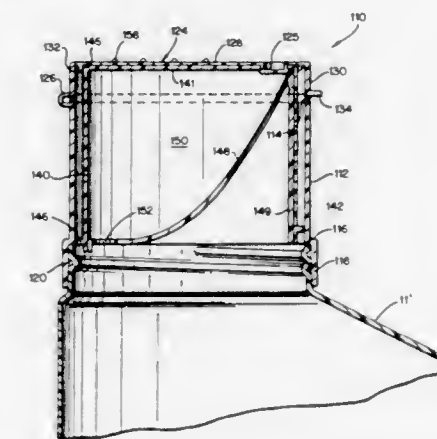
NO DRIP DISPENSING CAP

Edward S. Robbins, III, 2802 E. Avalon Ave., Muscle Shoals, Ala. 35661

Continuation-in-part of Ser. No. 76,132, Jun. 14, 1993, Pat. No. 5,411,186, which is a continuation-in-part of Ser. No. 288,896, Aug. 10, 1994, Pat. No. 5,509,582, which is a continuation of Ser. No. 47,086, Apr. 16, 1993, abandoned, which is a continuation-in-part of Ser. No. 237,336, May 3, 1994, Pat. No. 5,465,871, which is a continuation of Ser. No. 979,042, Nov. 19, 1992, abandoned. This application Mar. 31, 1994, Ser. No. 221,082
Int. Cl.⁶ B67D 1/16

U.S. Cl. 222-109

19 Claims



1. A dispenser cap for discharging measured amounts of liquid contents from a container comprising:
an outer cylindrical side wall having upper and lower portions, said lower portion provided with interior surface means for securing the cap to a container;
an inner cylindrical side wall spaced radially from said outer cylindrical side wall, to define an annular chamber therebetween, said inner cylindrical side wall at least partially defining a dispensing chamber and wherein said inner and outer cylindrical side walls are connected by an annular, inclined ramp surface extending between high and low points, a drain opening provided in said ramp surface at said low point;
a weir panel within said inner cylindrical side wall, configured to provide a weir opening between the container and the dispensing chamber; and
a recloseable top including an outer peripheral skirt adapted to be telescoped over and secured to said outer cylindrical side wall wherein said top is pivotally secured to said outer cylindrical side wall radially adjacent but axially spaced from said weir opening.

5,509,578

DISPENSING PUMP

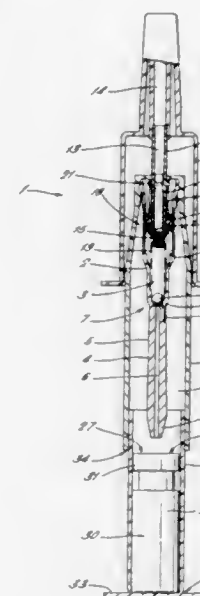
William Livingstone, Peterborough, United Kingdom, assignor to Bepak plc, Norfolk, United Kingdom

Filed Mar. 27, 1995, Ser. No. 410,519
Claims priority, application United Kingdom, Apr. 26, 1994, 9408276

Int. Cl.⁶ B67D 5/00

U.S. Cl. 222-82

15 Claims



1. A pump for use in dispensing liquid from a container defining a reservoir which is accessible via a container mouth closed by a seal, the pump comprising a body defining a chamber, a tubular inlet portion defining an inlet channel communicating with the chamber, an actuating stem defining a dispensing channel through which liquid is dispensed from the chamber in use, and a housing being connected to the body and comprising holding means operable to hold the container in use such that in a first position of the container relative to the body the inlet portion is external to the seal and in a second position of the container relative to the body the inlet portion extends through the seal into the reservoir whereby the inlet channel communicates with the reservoir, wherein the inlet portion projects into the reservoir in the second position of the container relative to the body to an extent sufficient to displace a volume of liquid sufficient to fill the inlet chamber and to occupy the pump channel.

5,509,580

CHILD RESISTANT CAP FOR SPRAYERS

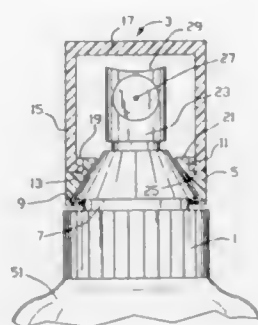
Kenneth P. Glynn, Raritan Township, Hunterdon County, N.J., assignor to Ideal Ideas, Inc., Flemington, N.J.

Continuation-in-part of Ser. No. 113,237, Aug. 30, 1993, Pat. No. 5,356,043. This application Oct. 14, 1994, Ser. No. 323,237
Int. Cl.⁶ B67B 5/00

U.S. Cl. 222-153.1

14 Claims

1. A spray dispenser device closure, which comprises:
(a) a main closure base for attachment to a container, said base having a top portion having a circular horizontal track thereon for attachment with an outer ring;
(b) an outer ring having a circular inside wall with a horizontal track thereon for attachment to the track of said base so as to connect said outer ring to said base so as to be horizontally and freely rotatable thereabout, said outer ring also having a top with an outwardly biased ledge for retaining an overcap.



and having at least one cut-out on said ledge to permit an overcap to be inserted onto and removed from said outer ring; (c) a spray mechanism attached to the top of said base and extending therethrough for insertion into a container; (d) an overcap having a circular bottom adapted to be inserted into said outer ring and over said spray mechanism, said bottom having at least one protrusion thereon which has a geometry of adequate size to freely move through said at least one cut out of said ledge of said outer ring and when said overcap is so inserted and rotated, of adequate size and geometry to prevent removal of said overcap from said outer ring, except when said at least one protrusion and said at least one cut out are in alignment; and, further wherein said outer ring ledge has an underside and said at least one protrusion of said overcap has a top wherein the underside of said ledge and the top side of said at least one protrusion are in frictional contact with one another when said overcap is inserted into said outer ring such that when one of said outer ring and said overcap are rotated, the other of said outer ring and said overcap rotates therewith, and wherein said frictional contact may be overcome manually by holding one of said outer ring and said overcap and rotating the other of said outer ring and said overcap.

5,509,581

CHEMICAL IRRITANT DISPENSER

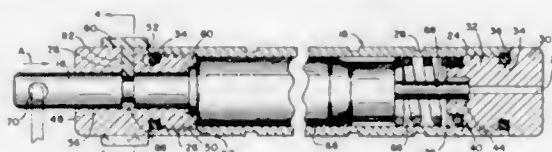
Kevin L. Parsons, Appleton, Wis., assignor to Armament Systems and Procedures, Appleton, Wis.

Filed Aug. 9, 1994, Ser. No. 287,852

Int. Cl.⁶ B67D 5/33

U.S. Cl. 222—153.13

15 Claims



1. A dispenser for a dispersible chemical in a pressurized aerosol canister having a selectively operable nozzle normally in a closed condition for retaining the pressurized chemical in the dispenser and operable to be opened for axially projecting the chemical, the dispenser comprising:

- a housing for the aerosol canister, the housing including a dispenser nozzle in a coaxial relationship with the canister nozzle for releasing and axially dispersing the pressurized chemical from the dispenser;
- an actuator in the housing in coaxial alignment with the canister nozzle and the dispenser nozzle, said actuator movable between a normally inactivated position and an activated position for selectively operating and opening the canister nozzle for releasing the pressurized chemical through the canister nozzle and the coaxial housing nozzle;
- a biasing element in the housing for normally urging the actuator into the inactivated position; and
- a safety lock associated with the actuator and moveable between a latched position wherein the safety lock is engaged

with the actuator for latching it in the inactivated position and an unlatched position wherein the safety lock is disengaged from the actuator, whereby the actuator is enabled to be moved against the biasing element for operating the canister nozzle.

5,509,582

DISPENSING CAP WITH INTERNAL MEASURING CHAMBER

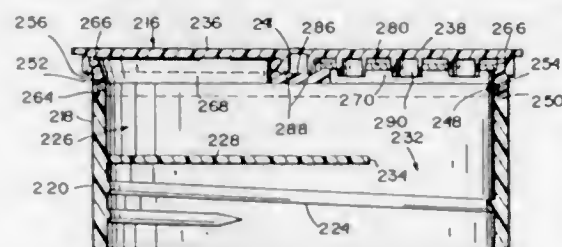
Edward S. Robbins, III, 2802 E. Avalon Ave., Muscle Shoals, Ala.

Continuation of Ser. No. 47,086, Apr. 16, 1993, abandoned, which is a continuation-in-part of Ser. No. 237,336, May 3, 1994, which is a continuation of Ser. No. 979,042, Nov. 19, 1992, abandoned. This application Aug. 10, 1994, Ser. No. 288,896

Int. Cl.⁶ B67D 5/38

U.S. Cl. 222—158

23 Claims



1. A measuring/dispensing cap adapted for attachment to an open upper end of a container the cap comprising: a substantially horizontal top and a peripheral skirt extending downwardly from said top, said skirt having means for removably attaching the cap to the container; a partition extending parallel to said top and separating said peripheral skirt into upper and lower sections, such that a substantially cylindrical measuring chamber is defined by said top, said upper section of said skirt and said partition; and wherein at least one of said top and upper section of said peripheral skirt is provided with volume indicators; said partition formed with a weir aperture therein on one side of a diametrical centerline extending across said cap, said weir aperture formed in a portion of said partition lying parallel with said substantially horizontal top, said aperture having a weir edge extending parallel to and laterally spaced from said centerline; said top including at least one dispensing door having a peripheral, arcuate depending flange frictionally engageable over a corresponding arcuate portion of an upper edge of said upper section of said skirt, said depending flange and said upper edge having cooperating means for enabling snap fit engagement therebetween, said dispensing door pivotally secured to said top by a first integral hinge having a hinge axis parallel to said centerline and said weir edge, and wherein a portion of the door opposite said hinge axis lies on the other side of said diametrical centerline.

5,509,583

APPARATUS FOR DISPENSING LIQUIDS FROM A BOTTLE

V. Chris Dolson, Rte. 1, Box 10, Joshua, Tex. 76058

Continuation of Ser. No. 353,112, Dec. 9, 1994, abandoned.

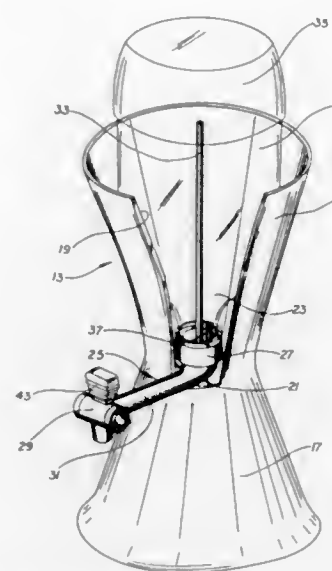
This application Sep. 8, 1995, Ser. No. 526,037

Int. Cl.⁶ B67D 5/06

U.S. Cl. 222—185.1

4 Claims

1. An apparatus for supporting a bottle of predetermined diameter above a flat support surface, and for dispensing liquids from an open-end of the bottle, wherein the apparatus comprises: a spigot having a connector attached to the open-end of the bottle, a valve, and a stem extending laterally from the connector to the valve; and



a free-standing stand for supporting the bottle in an inverted position for the connected spigot valve to dispense downwardly, the stand being of an integral construction having an upper section adjoined to a frusto-conical lower section with a lower edge of a diameter greater than the diameter of the bottle an open vertical slot in said upper section through which said stem extends, and a ledge defined by a lower edge of said slot at an intermediate height of said stand supporting said stem intermediate its length.

5,509,584

HEAD FOR DISPENSING A PRODUCT, PARTICULARLY A PASTY PRODUCT, AND DISPENSER EQUIPPED WITH THIS HEAD

Jean-Louis H. Gueret, Paris, France, assignor to L'Oreal, Paris, France

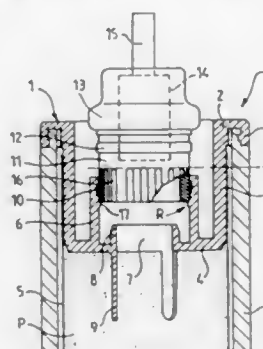
Filed Jun. 2, 1994, Ser. No. 253,178

Claims priority, application France, Jun. 7, 1993, 93 06764

Int. Cl.⁶ B67D 5/40; G01F 11/00

U.S. Cl. 222—321.7

8 Claims



1. Head for dispensing a product, comprising a nozzle piece adapted to be placed on a container (5, 105, 205) containing the product to be dispensed, this nozzle piece including a base (4, 104, 204) equipped with a sleeve (6, 106, 206) in which is fastened a component to which a pump (14, 114, 214) is linked, sealing means between the nozzle piece (2, 102, 202) and the component (11, 111, 211) in order to interact when this component has been fully seated on the sleeve of the nozzle piece, the nozzle piece (2, 102, 202) having retention means (R) capable of holding the component (11, 111, 211) in an only partially seated position in which the sealing means (8, 108, 208) between the component and nozzle piece do not yet interact, and passage means (16, 116, 216) between an outer surface of the component (11, 111, 211) and an

inner surface of the sleeve (6, 106, 206) in which the component is engaged in the partially seated position in order to maintain a communication between the inside of the container (5, 105, 205) and the outside in only the partially seated position.

5,509,585

CLOSURE UNIT

Elmar Mock, Biel, and Marcel Aeschlimann, Welschenrohr, both of, Switzerland, assignors to Tetra Laval Holdings & Finance S.A., Pully, Switzerland

PCT No. PCT/CH93/00128, § 371 Date Jan. 18, 1994, § 102(e) Date Jan. 18, 1994, PCT Pub. No. WO93/24376, PCT Pub. Date Dec. 9, 1993

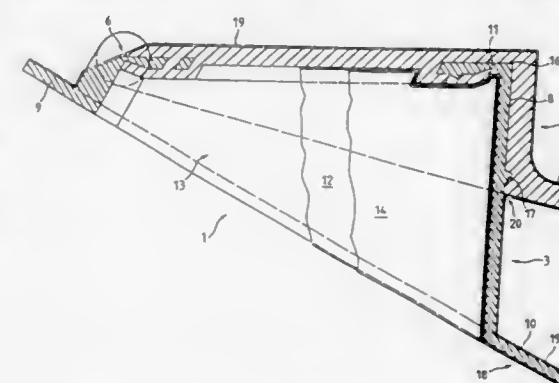
PCT Filed May 19, 1993, Ser. No. 182,106

Claims priority, application Switzerland, Jan. 6, 1992, 01 754/92

Int. Cl.⁶ B67B 5/00

U.S. Cl. 222—541.1

10 Claims



1. A closure unit made from thermoplastic material for subsequent attachment to a container (1) for the handling and storage of a flowable product comprising: a substantially tubular pouring part (3) having a wall defining an opening; an openable and reclosable closure part (5) closing said opening of said pouring part, and at least a first coating (12) extending continuously over both an inner surface of said openable and reclosable closure part and an interior surface of said wall defining said opening of said pouring part, said first coating protects the product against undesired influences.

5,509,586

BOW MAKING FORM

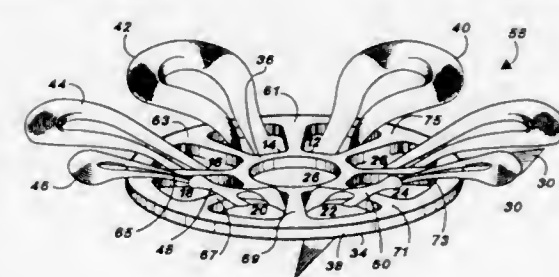
Mary A. Leiser, 5640 Riveredge Rd., Waunakee, Wis. 53597

Filed Mar. 28, 1994, Ser. No. 218,349

Int. Cl.⁶ A41H 43/00; D04D 7/10

U.S. Cl. 223—46

20 Claims



1. A form for making decorative bows from flexible bow material having a width and a length substantially greater than the width and including several length portions, the form comprising a top

face, a bottom face, a generally circular perimeter bounding the top face and the bottom face, and a central core with a central aperture extending from the top face to the bottom face, the form including a plurality of spaced peripheral openings extending from the top face to the bottom face at positions between the central aperture and the perimeter to define struts between the peripheral openings which extend radially from the central core to the perimeter, wherein the peripheral openings each have at least the same size as the central aperture and wherein the peripheral openings are tapered in a radial direction from the central core to the perimeter so as to be narrower adjacent the central aperture and wider adjacent the perimeter.

5,509,587

GARMENT HANGER

Stanley F. Guldson, Northport, and Roland G. Harmer, Centereach, both of N.Y., assignors to Spotless Plastics Pty. Ltd., Victoria, Australia

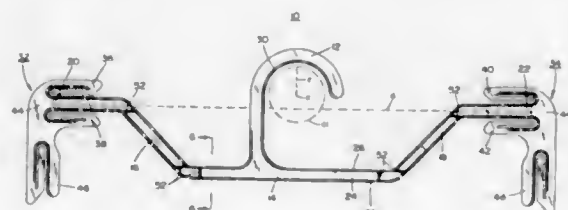
Continuation of Ser. No. 919,282, Jul. 24, 1992, which is a continuation-in-part of Ser. No. 870,697, Apr. 16, 1992, Pat. No. Des. 348,987, and a continuation-in-part of Ser. No. 870,696, Apr. 16, 1992, Pat. No. Des. 350,236. This application

Feb. 23, 1994, Ser. No. 200,822

Int. Cl.⁶ A47G 25/14

U.S. Cl. 223-91

16 Claims



13. A garment display system comprising a plastic hanger which includes:

- a hook member, said hook member defining at an upper portion thereof a curve having a radius and center of curvature for at least a portion thereof;
- a body member comprising first and second horizontally opposing extending inner arm portions with first and second parallel edges, said inner arm portions extending longitudinally from said hook member, said inner arm portions defining first and second ends at the ends remote from said hook member;
- first and second upswept outer arm portions with first and second parallel edges, said outer arm portions extending upwardly and outwardly from said first and second remote ends to provide a high rack to display ratio, with said first upswept outer arm portion attached to the first remote end of said first inner arm portion and said second upswept outer arm portion attached to the second remote end of said second inner arm portion, each of said upswept outer arm portions ending with a horizontally extending arm attached to a clip end portion

wherein said upswept outer arm portions position a garment retaining clip longitudinally on either side of said hook member at a height such that an axis drawn therebetween would intersect a circle defined around said center of curvature by said radius.

5,509,588

OUTFIT ORGANIZER COVER

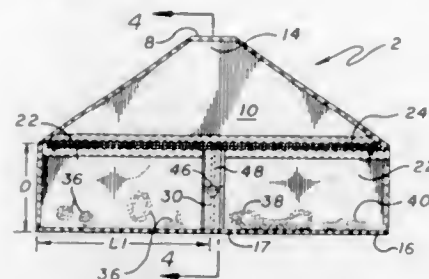
Cathy S. Kimball, 2055 Tumin Rd., La Habra Heights, Calif. 90631

Filed Nov. 28, 1994, Ser. No. 345,123

Int. Cl.⁶ A41D 27/22; B65D 85/18

U.S. Cl. 223-98

20 Claims



20. An outfit organizer cover used in conjunction with a hanger member and a garment, comprising:

- a triangular member having a first layer and a second layer, each layer having a top end and a bottom end;
- said first and second layers being attached together on all sides except for said top and bottom ends of said first and second layers of said triangular member;
- said bottom ends of said first and second layers being folded upwardly to form at least one pocket on each of said first and second layers respectively, the at least one pocket on each layer being attached to its layer along the pocket's entire circumference except for one side of each pocket which is open to form an opening for the pocket;
- means for closing the opening of said at least one pocket on said first and second layers, respectively; and
- a strap attached to one of said first and second layers and forming a loop thereon.

5,509,589

BACK PACK FOR HEAVY BULKY FOOTWEAR

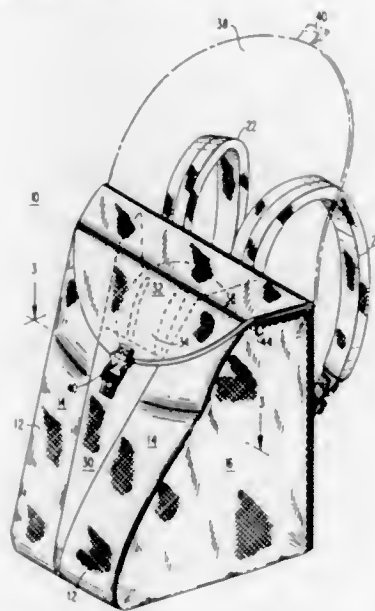
Eugene Kilot, New York, N.Y., assignor to Visual Impact Films Corporation, New York, N.Y.

Filed Jun. 9, 1994, Ser. No. 255,669

Int. Cl.⁶ A45F 3/04

U.S. Cl. 224-209

16 Claims



1. A backpack for carrying a pair of heavy, bulky footwear comprising:

- said backpack having a front and a back;
- a left and right side footwear compartment for holding said footwear; said footwear compartments having a predetermined size sufficient to receive one each of a pair of heavy, bulky footwear;
- each said footwear compartment having generally polygonal side walls having a top, bottom, a generally rectangular a back wall and a front wall;
- said left and right side footwear compartments angularly joined together at the front of said backpack to form a generally isosceles triangularly shaped space between the footwear compartments;
- said front walls of said footwear compartments defining a portion of the front of said backpack;
- said left and right footwear compartments having a width from twice the width of said footwear to approximately the same width as said footwear;
- a flat back wall connecting said right and left footwear compartments, said flat back wall joining said right and left side footwear compartments together;
- means to enclose the generally isosceles triangularly shaped space formed between said left and right side footwear compartments to form an interior compartment between the left and right side footwear compartments.

5,509,591

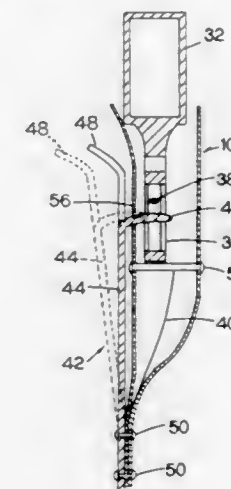
HOLSTER

John W. Carver, 400 Biltmore Dr., Ste. 530, Fenton, Mo. 63026
Continuation-in-part of Ser. No. 164,640, Dec. 7, 1993, which is a continuation of Ser. No. 818,787, Jan. 9, 1992, abandoned. This application Sep. 16, 1994, Ser. No. 307,934

Int. Cl.⁶ F41C 33/02

U.S. Cl. 224-244

17 Claims



5. An improved top opening and top removal holster for a semi-automatic or revolver weapon having a trigger mechanism and a trigger guard or similar enclosure for the trigger, the improvement comprising:

- a top opening and top removal holster having a support strap, a hammer strap comprising an extension and a strap, a security strap, and an aperture for receiving a weapon retaining projection;
- a retaining paddle member comprising the weapon retaining projection and a release extension for manually moving the weapon retaining projection from a weapon holding position to a weapon insertion or release position, the retaining paddle member having a portion attached to an exterior portion of the holster at an attachment point adjacent a weapon barrel when the weapon is in the holster; and
- a limiting means to limit insertion of the weapon into the holster, the limiting means comprising reinforced stitching in combination with the holster.

5,509,592

OUTBOARD MOTOR CARRIER FOR VEHICLES

Shawn E. Lipka, 122 W. High St., Ballston Spa, N.Y. 12020

Filed May 11, 1994, Ser. No. 240,567

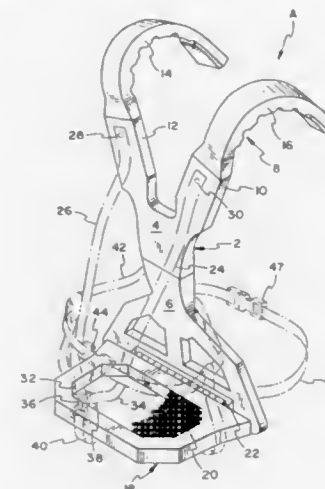
Int. Cl.⁶ B60R 9/048

U.S. Cl. 224-521

3 Claims

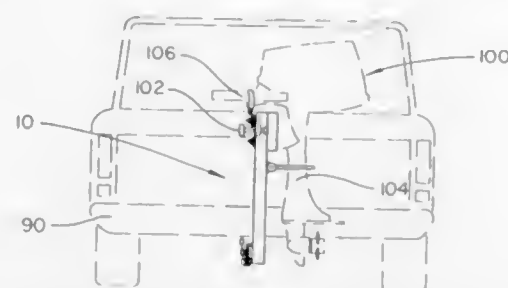
1. A new outboard motor carrier for vehicles for supporting a conventional small marine outboard motor for transport on a rack coupled to a conventional vehicular trailer hitch sleeve, the outboard motor carrier for vehicles comprising:

- an L-shaped support structure constructed of metal tubing having an elongated vertical member with a horizontal member projecting normal the bottom end thereof, the horizontal member being slidably removably engaged with the trailer hitch sleeve, the horizontal member having a plurality of



1. An infant carrier device adapted to be worn on the upper torso of a wearer to position the infant in front of the wearer comprising:

- a support frame having a first end, an opposite second end and a central member therebetween;



lateral bolt holes therethrough aligned with a plurality of bolt holes through the trailer hitch sleeve;
a bolt extending through each of the plurality of bolt holes whereby securing the carrier to the hitch, each bolt being secured with a nut;

attachment means for an upper safety chain, the upper safety chain attachment means comprising a bracket fixedly connected to the vertical member proximal the upper end thereof, the bracket having at least two ears each of which having a hole therethrough whereinto the ends of the upper chain may be connected;

attachment means for a lower safety chain, the lower safety chain attachment means comprising a metal loop integrally formed on the vertical member proximal the lower end thereof wherethrough the lower chain may extend;

motor receiving means whereinto the motor may be clamped using the motor's integral mount, the motor receiving means comprising a rectangular wooden plank fixedly connected cross-wise the vertical member at the top end thereof such that a boat transom is simulated, the plank being aligned parallel the horizontal member whereby a motor clamped to the plank will face transverse the transporting vehicle with the motor drive shaft housing lying generally collateral the vertical member;

locking means whereby the motor may be secured to the carrier for preventing unauthorized removal of the motor from the carrier, the locking means comprising: a U-shaped bar key-releasably connected to the vertical member, the U-shaped bar having an operative position wherein the bar is in surrounding relationship with the motor drive shaft housing, the open end of the bar being connected to the vertical member whereby securing the drive shaft housing to the vertical member, the U-shaped bar also having a release position wherein the open end of the bar is disconnected from the vertical member whereby releasing the motor drive shaft housing from the vertical member; and a key for releasing the U-shaped bar from the vertical member;

an upper safety chain whereby the motor may be redundantly releasably secured to the carrier to prevent loss of the motor in the event of motor mount failure, the upper chain having a first end fixedly connected to the upper safety chain attachment means, the upper chain being wrapped around an adjacent portion of a motor mounted on the carrier, the upper chain also having a second end removably connected to the upper safety chain attachment means whereby removably securing the upper chain in position, the upper chain being coated with resilient plastic to prevent marring the finish of the motor; and

a lower safety chain whereby the carrier may be redundantly secured to the trailer hitch for preventing loss of the carrier in the event of carrier hitch securement bolt failure and also for preventing unauthorized removal of the carrier from the hitch, the lower chain being coupled to the trailer hitch sleeve, the lower safety chain extending through the lower safety chain

attachment means, the lower chain having first and second ends secured together with a padlock.

5,509,593

COMBINED WET AND DRY SANITARY TISSUE DISPENSER

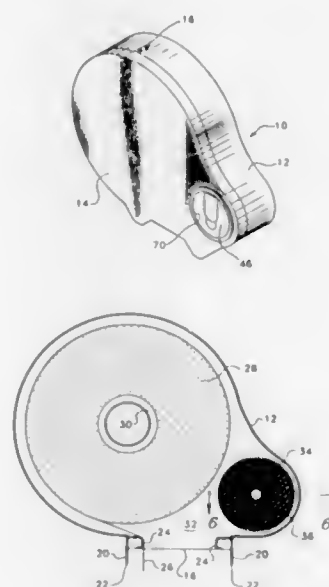
Nathan D. Bloch, Cherry Hill, and Edward J. O'Brien, Eastampton, both of N.J., assignors to Scott Paper Company, Delaware County, Pa.

Filed Jan. 18, 1994, Ser. No. 181,730

Int. Cl.⁶ A47K 10/32

U.S. Cl. 225—37

13 Claims



2. A combined dry sanitary tissue and prewetted personal hygiene wipes dispenser comprising:

(a) a housing including a rear housing section and a front housing section, said front housing section having a relative open position and a relative closed position in relation to said rear housing section, said front housing section removably connected to said rear housing section such that said front housing can be removed from said rear housing section to the open position to gain access to said roll of dry sanitary tissue and returned the closed position, said rear housing section including a rear wall, said rear housing section and said front housing section defining a primary compartment for receiving a roll of dry sanitary tissue when said front housing section is in the closed position, said primary compartment having an opening through which the dry sanitary tissue is dispensed;

(b) spindle means projecting from said rear wall for supporting the roll of dry sanitary tissue in said primary compartment;

(c) wall means projecting from said rear wall to form a second compartment for supporting a roll of prewetted personal hygiene wipes therein, said second compartment having an open distal end through which said personal hygiene wipes are dispensed;

(d) lid means for forming a liquid tight seal over said open distal end, said lid means engagable with and disengagable from said open distal end, said lid means including a dispensing port therethrough through which the prewetted hygiene wipes are dispensed, said lid means remaining engaged with said open distal end when said front housing section is in the closed position on said rear housing section.

5,509,594

DEVICE TO CONTROL THE FEEDING OF THE STRAP IN A STRAPPING MACHINE

Cesarino Maggioni, Borgomanero, Italy, assignor to Officina Meccanica Sestese S.p.A., Paruzzaro, Italy

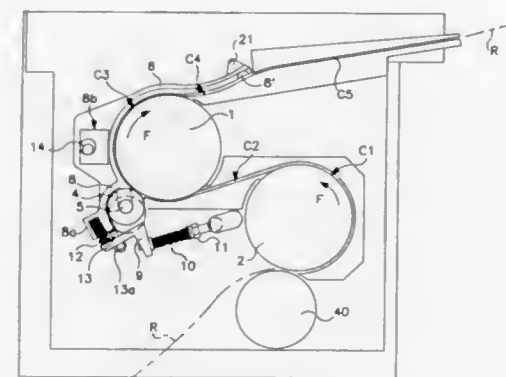
Filed Dec. 22, 1993, Ser. No. 171,414

Claims priority, application Italy, Dec. 23, 1992, M192A2956

Int. Cl.⁶ B65H 23/188; 20/36; B65B 13/22

U.S. Cl. 226—35

15 Claims



1. A device to control feeding of a strap in a strapping machine of the type wherein said strap (R) is guided on a periphery of at least one driving wheel (1) and at least one pressure wheel (4), said at least one pressure wheel (4) is provided to press said strap (R) against the periphery of said driving wheel (1) so as to secure proper feeding, said device comprising:

an arm (8) oscillating between a guiding position and an opening position;

wherein in said guiding position, said arm (8) at least partly surrounds the periphery of said driving wheel (1) so as to form a guiding channel (C3) for said strap (R);

said arm (8) being movable by said strap to its opening position, means responsive to movement of said arm (8) to its opening position for controlling the stopping of said driving wheel (1); and

said at least one pressure wheel (4) is associated with said oscillating arm (8) such that the at least one pressure wheel (4) is moved away from said driving wheel (1), so as to release a feeding pressure when said arm (8) is moved to its opening position.

5,509,595

STAPLING MECHANISM

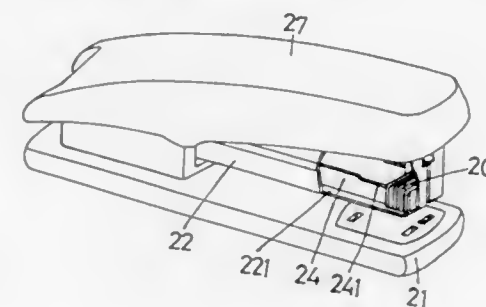
Hsi-Chiun Ho, No. 9, Section I, Guo Guang Road, Da Li City, Taichung, Taiwan

Filed Mar. 27, 1995, Ser. No. 410,689

Int. Cl.⁶ B25C 5/02

U.S. Cl. 227—119

1 Claim



1. A stapling mechanism comprising:

a base, a chute and a cover including a first end pivotally coupled together at a pivot shaft, said chute including a

bottom surface and including a second end, said cover including a second end arranged close to said second end of said chute,

a guide rail provided in said chute for slidably supporting staples thereon,

a pusher slidably engaged on said guide rail,

means for biasing said pusher to push said staples toward said second end of said chute,

a presser for engaging with said staples,

means for biasing said presser toward said staples for pressing said staples in place, and

drive plunger means provided in said second end of said cover for driving said staples located in said second end of said chute,

the improvement comprising:

said guide rail includes a first end located close to said pivot shaft and includes a second end having an upper surface for engaging with said staples, said upper surface of said second end of said guide rail includes a recess formed therein for allowing engagement of said staples with said bottom surface of said chute so as to suitably guide said staples and so as to prevent the inclination of said staples.

5,509,596

APPARATUS FOR APPLYING SURGICAL FASTENERS

David T. Green, Westport; Henry Bolanos, East Norwalk; Keith Ratcliff, Sandy Hook; Lisa W. Heaton, Norwalk, and Frank J. Viola, Sandy Hook, all of Conn., assignors to United States Surgical Corporation, Norwalk, Conn.

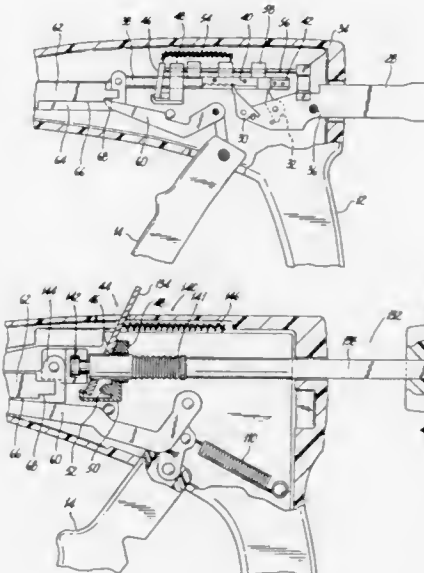
Continuation of Ser. No. 779,097, Oct. 18, 1991, abandoned.

This application Jan. 10, 1994, Ser. No. 179,776

Int. Cl.⁶ A61B 17/072

U.S. Cl. 227—176.1

45 Claims



1. An apparatus for applying surgical fasteners to body tissue, comprising:

tissue gripping means for positioning and gripping tissue to which said fasteners are to be applied; said gripping means including a first jaw member having a plurality of fasteners positioned thereon, and a second jaw member;

first advancing means spaced from said first jaw member for urging said first jaw member towards said second jaw member;

second advancing means spaced from said first jaw member for incrementally urging said first jaw member towards said second jaw member subsequent to urging by said first advancing means to grip tissue therebetween;

means for driving said fasteners into said tissue subsequent to positioning said jaw members in relation to each other by said first and second advancing means;

means for actuating said driving means; and
releasable retaining means for retaining said first and second advancing means to selectively position said first jaw member in relation to said second jaw member.

30. An apparatus for applying surgical fasteners to body tissue, comprising:

tissue gripping means for positioning and gripping tissue therebetween, said tissue gripping means including a first jaw member and a second jaw member, said first jaw member having a plurality of fasteners positioned thereon; and
advancing means for urging said first jaw member towards said second jaw member, said advancing means being operable through reciprocatingly pivotable movements of a portion of said advancing means, said portion being pivotable with respect to a longitudinal axis of said apparatus to cause incremental movement of said first jaw member towards said second jaw member.

5,509,597

APPARATUS AND METHOD FOR AUTOMATIC MONITORING AND CONTROL OF A SOLDERING PROCESS

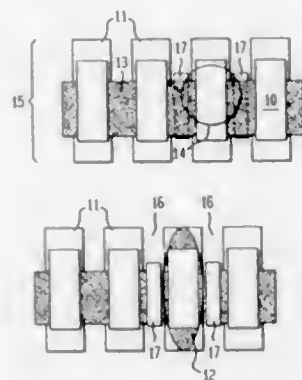
Paul Laferriere, Somerville, Mass., assignor to Panasonic Technologies, Inc., Secaucus, N.J.

Filed Oct. 17, 1994, Ser. No. 323,822

Int. Cl.⁶ H05K 3/34

U.S. Cl. 228—105

2 Claims



1. A method for soldering a first material to a second material using a laser comprising the steps of:

- applying solder paste over said first material;
- disposing said second material on said solder paste in alignment with said first material to form a sample;
- focusing a laser beam onto a predetermined location on said sample to segment said solder paste and form a solder joint between said first material and said second material;
- capturing optical images of at least one region-of-interest in said solder paste adjacent said solder joint during said soldering; and
- monitoring formation of said solder joint by repeatedly calculating pixel value sums in said region-of-interest from said optical images to determine whether said solder paste in said region-of-interest has segmented.

5,509,598

WAVE SOLDERING APPARATUS AND PROCESS

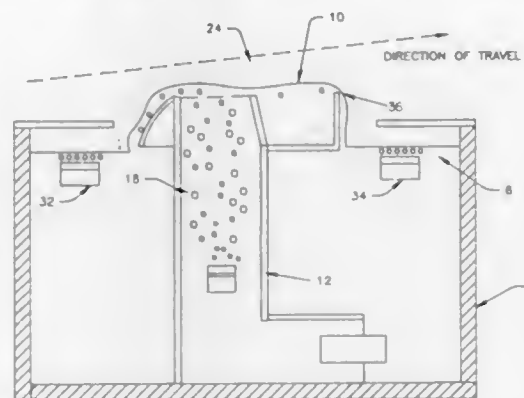
Harbhajan Nayar, Murray Hill, N.J.; Sean M. Adams, Bethlehem, Pa.; Neeraj Saxena, New Providence, and Bohdan A. Wasiczko, High Bridge, both of N.J., assignors to The BOC Group, Inc., Murray Hill, N.J.

Filed May 31, 1994, Ser. No. 251,055

Int. Cl.⁶ H05K 3/34

U.S. Cl. 228—180.1

29 Claims



1. A wave soldering process comprising:

- forming at least one solder wave;
- generating a flow of an effective amount of an inert gas through the solder wave to enable the formation of a low oxygen-containing atmosphere at least in the region immediately above the solder wave without substantially splattering the solder onto a substrate to be soldered; and
- passing the substrate to be soldered into contact with the solder wave within said low oxygen-containing atmosphere.

5,509,599

METHOD FOR SECURING A HYBRID CIRCUIT ON A PRINTED CIRCUIT BOARD

Hans-Bodo Laue, Altenbeken, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

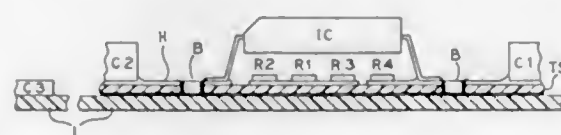
Filed Feb. 9, 1994, Ser. No. 194,018

Claims priority, application Germany, Feb. 26, 1993, 43 06 021.8; Jun. 16, 1993, 43 19 876.7

Int. Cl.⁶ B23K 31/02

U.S. Cl. 228—180.21

8 Claims



1. A method for fastening a hybrid circuit having a carrier substrate onto a printed circuit board, said carrier substrate having a surface with electrical components disposed thereon, comprising the steps of:

- locating through-contacted bores at slight spaces from one another on said carrier substrate;
- providing solder surfaces on said printed circuit board for electrically contacting said hybrid circuit;
- applying a paste solder onto said solder surfaces of said printed circuit board;
- placing said carrier substrate of said hybrid circuit having said through-contacted bores onto said solder surfaces of said printed circuit board; and
- placing said printed circuit board and said hybrid circuit in a furnace for soldering with said paste solder.

5,509,600

HOT PRESSURE WELDING OF HOT STEEL STOCK

Seiji Okada, Tounoshou; Yutaka Suzuki, Sakura; Kouichi Sakamoto, Kamisu; Hitoshi Teshigahara, Kusatsu; Takao Taka, Ikoma; Yasuto Fukada, Nishinomiya, and Masami Oki, Narashino, all of Japan, assignors to Sumitomo Metal Industries, Ltd., Osaka, Japan

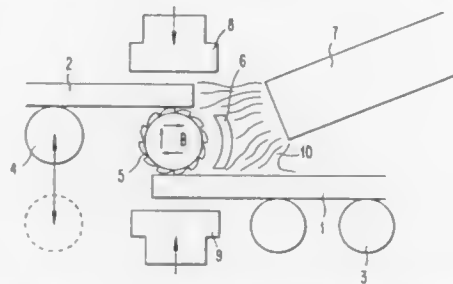
Filed May 27, 1994, Ser. No. 250,671

Claims priority, application Japan, May 27, 1993, 5-125613

Int. Cl.⁶ B23K 20/14

U.S. Cl. 228—205

26 Claims



1. A method of carrying out hot pressure welding of hot steel stock, comprising descaling the joining portions of the hot steel stock followed by pressure joining the portions, the descaling and pressure joining steps being carried out in a reducing atmosphere, the reducing atmosphere being obtained by combusting fuel and combustion air under conditions defined by the following formula:

$$P \geq 286m - 172$$

(1)

wherein, P is an oxygen enrichment ratio of oxygen in the combustion air (% by volume) and m is an oxygen ratio of oxygen combusted relative to an amount of oxygen required for complete combustion of the fuel.

5,509,601

INTERNAL PACKAGE SPACER/PROTECTOR

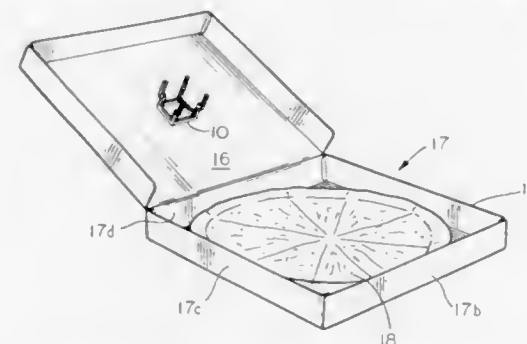
Ronald Drabick, 8680 Briggie Ave., East Sparta, Ohio 44626

Filed Aug. 28, 1995, Ser. No. 520,073

Int. Cl.⁶ B65D 5/50

U.S. Cl. 229—199

10 Claims



1. The combination of a package having a flexible cover, a food article contained within said package and spaced downwardly from said flexible cover, and a unitary molded plastic spacer/protector device for positioning between said flexible cover and said food article for supporting said cover and protecting said food article from damage by downward pressure on said cover, said spacer device comprising an upper body portion having an essentially planar upper surface and at least four leg portions extending downwardly therefrom for engaging the packaged article and with its planar upper surface adapted to contact the package cover to increase its load-carrying capacity without damaging the packaged food article.

5,509,602

SAVINGS BANK WITH MUSIC BELL

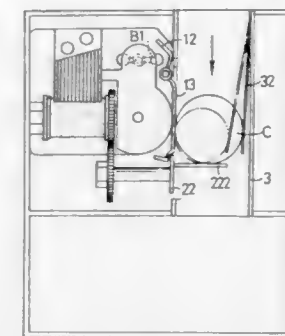
Jian H. Liu, No. 2, Alley 202, Kao Fen Rd., Hsin-Chu City, Taiwan

Filed Jul. 22, 1994, Ser. No. 277,304

Int. Cl.⁶ A45C 1/12

U.S. Cl. 232—7

13 Claims



1. A savings bank with a music bell having a fly wheel and a drive gear and operated by depositing a coin, the bank comprising:

- a housing;
- a guide rail mounted on said housing and defining a dropping path;
- a control stick with a stop and a contact end mounted near the side of the fly wheel on the music bell, so that in the free condition before a coin is deposited, the contact end is extended into the dropping path of the coin in the guide rail, and the stop prevents said fly wheel from rotating;
- said control stick being mounted such that said contact end could be pushed to rotate by a coin deposited in the guide rail, thereby disengaging the fly wheel from the confinement of the stop;
- a revolving shaft;
- a follower gear mounted on one end portion of said revolving shaft and driven by the drive gear of the music bell;
- a control lamella having a notch is mounted on the other end portion of said revolving shaft at a position relative to the locating end of the control stick so that when in the free condition said locating end is located at the end of the revolving shaft, and when said contact end is pushed to rotate by a coin, the locating end can move to the inside of the control lamella through the notch so that the control stick is limited to return to the original free position after the control lamella rotates; and
- a damper mounted on said control lamella so that it can be extended into the dropping path of the coin in the guide rail.

5,509,603

MAILBOX MOUNTING BRACKET

Thomas W. Hering, 26690 NW Meek Rd., Hillsboro, Oreg. 97124

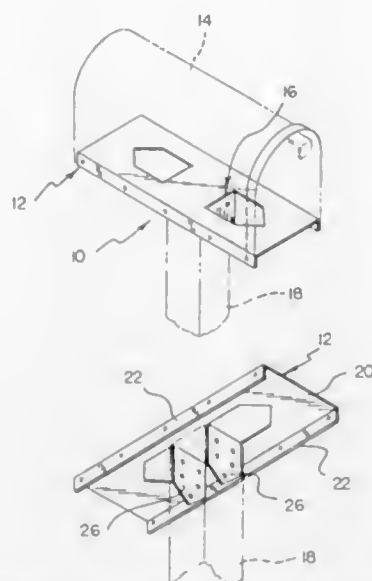
Filed Dec. 1, 1994, Ser. No. 347,672

Int. Cl.⁶ B65D 91/00

U.S. Cl. 232—39

2 Claims

1. A mailbox mounting bracket comprising:
 - a coupling means for coupling to a lower portion of a mailbox, the coupling means comprising a planar base plate sized to fit along a bottom of a mailbox to be mounted, the planar base plate including respectively opposed longitudinal side edges; and a pair of depending lateral side walls extending downwardly from the respectively opposed longitudinal side edges of the planar base plate, the depending lateral side walls including a plurality of mounting apertures directed there-through; and,
 - a mounting means secured to the coupling means for attaching to a supporting structure, the mounting means comprising a pair of spaced and substantially parallel oriented mounting tabs which project downwardly from the planar base plate, the



mounting tabs being coupled directly to the planar base plate and projecting orthogonally therefrom, the mounting tabs each being shaped so as to define substantially spaced and parallel lateral edges, and a pair of angled piercing edges which each intersect an individual one of the lateral edges, the angled piercing edges intersecting each other to define a piercing tip operable to engage and secure a pierceable substrate.

5,509,604

CHARGEABLE FAN HEATER

Woo S. Chung, Seoul, Rep. of Korea, assignor to Goldstar Co., Ltd., Seoul, Rep. of Korea

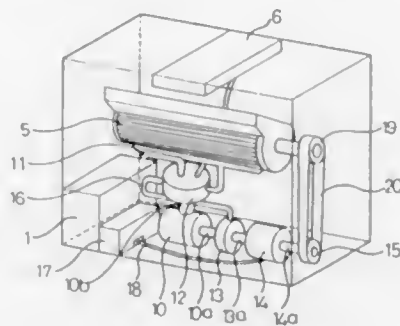
Filed Aug. 24, 1993, Ser. No. 111,329

Claims priority, application Rep. of Korea, Aug. 26, 1992, 1992-16111

Int. Cl.⁶ B60H 1/02; F24D 1/04

U.S. Cl. 237—12.1

5 Claims



1. A fan heater for at least one space comprising:
means for burning fuel to produce hot combustion gas;
means including a fan for moving a portion of the hot combustion gas to the space;
a Stirling engine powered by thermal energy from another portion of the hot combustion gas;
a shaft driven by the Stirling engine;
means including a motor-generator connected to said shaft for starting the Stirling engine and for generating electricity during normal operation of the fan heater after starting the Stirling engine;
means including a blower connected to said shaft for supplying necessary combustion air to said burning means;
means interconnecting said blower and said burning means and including a duct passing through a cooling part of the Stirling

engine for preheating the combustion air supplied to said burning means by said blower;
means including a battery for supplying electrical power to the motor-generator to start the Stirling engine and for supplying electrical power to charge the battery during normal operation of the fan heater; and
means for controlling said electrical power supplying means.

5,509,605

FILTERING STRAW

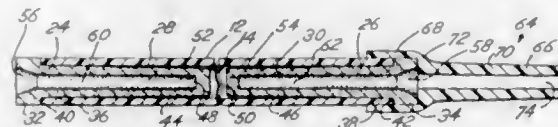
Gerry D. Cripe, Goshen, Ind., assignor to Hydro-Life, Inc., Bristol, Ind.

Filed Aug. 19, 1994, Ser. No. 293,497

Int. Cl.⁶ B01D 35/02; A47G 21/18

U.S. Cl. 239—33

10 Claims



1. A filtering straw for drawing liquid from a container comprising:

- a tube having a pair of ends, and
- a pair of filters, each of said filters being removably mounted on said tube, one of said filters including means for removing one type of impurity from said liquid, the other filter including means for removing another type of impurity from the liquid not removed by said one filter, each of said filters being mounted on a corresponding end of said tube and include a portion extending into said corresponding end of the tube, said portion of each filter having an outer circumferential liquid permeable surface cooperating with the inner circumferential surface of the tube to define an annular chamber.

5,509,606

INSTANT HOT WASH DEVICE

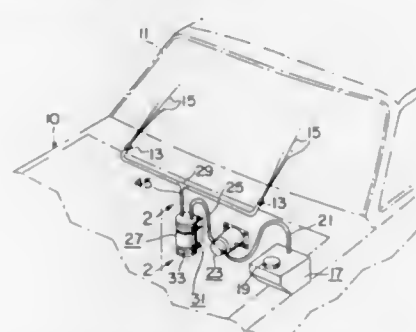
Howard K. Breithaupt, Chalfont, and Barry S. Haines, Harlestown, both of Pa., assignors to Koltech, Inc., Richland, Mich.

Filed Oct. 4, 1993, Ser. No. 131,476

Int. Cl.⁶ B60S 1/46

U.S. Cl. 239—130

9 Claims



1. In a washer fluid system in a vehicle, said system including a fluid reservoir having a discharge pump for transferring fluid from said reservoir through a transfer hose, at least one discharge nozzle aligned to receive fluid from said transfer hose to discharge said fluid onto a windshield of said vehicle, a heater device comprising:
a housing having an inlet to receive fluid from said transfer hose at a point downstream from said discharge pump and an outlet to discharge fluid to said transfer hose for discharge by said nozzle;

a container means in said housing for holding a quantity of fluid, said container means being operably connected to said inlet and said outlet for holding fluid to be heated;
heating element means in said container for heating fluid introduced from said inlet prior to discharge by said outlet;
temperature controller means for regulating the temperature of said fluid in said container to a predetermined maximum temperature above ambient temperature;
insulation means for insulating said container in said housing; and
bracket means for mounting said housing in said vehicle.

5,509,607

CONVERTIBLE MEDIA SOOTBLOWER LANCE TUBE

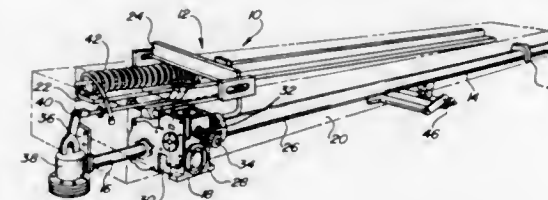
Joel H. Booher, Pickerington; Ceydet G. Koksai, and Ronald E. Sherrick, both of Lancaster, all of Ohio, assignors to The Babcock & Wilcox Company, New Orleans, La.

Filed Jun. 30, 1994, Ser. No. 269,067

Int. Cl.⁶ B08B 3/02

U.S. Cl. 239—289

27 Claims



1. A lance tube for a sootblower device for cleaning surfaces of a combustion device in which said lance tube is periodically advanced into and withdrawn from said combustion device, said lance tube having a hollow interior for conducting a fluid cleaning medium which is ejected from nozzles carried by said lance tube, said lance tube comprising:

- at least one first nozzle affixed to said lance tube,
- at least one second nozzle affixed to said lance tube, wherein said first and second nozzles have differing fluid flow characteristics, and
- fluid flow control means affixed to said lance tube having a plug seat mounted to said lance tube defining a longitudinal flow passageway within said lance tube hollow interior and interposed in a fluid flow path between said first and second nozzles and said plug seat having a transverse passageway, said fluid control means further having a removable plug adapted to be positioned in said plug seat transverse passageway and having a flow passageway whereby the resistance to flow of said cleaning medium through said fluid flow control means set by said plug flow passageway influences the relative flow rates of said cleaning medium discharged by said first and second nozzles.

5,509,608

LOW COST TRIGGER SPRAYER HAVING SPINNER WITH INTEGRAL ELASTOMERIC CHECK AND PRIMARY VALVES

Donald D. Foster, St. Charles, and Philip L. Nelson, Ellisville, both of Mo., assignors to Contico International, Inc., St. Louis, Mo.

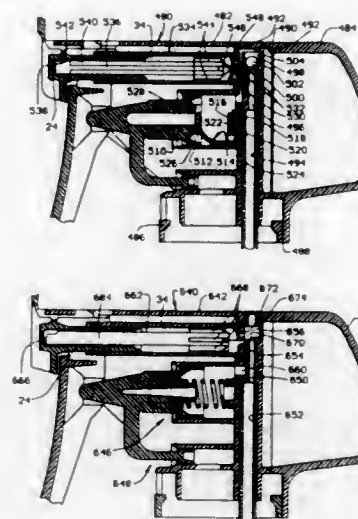
Division of Ser. No. 964,158, Oct. 21, 1992, Pat. No. 5,385,302, which is a continuation-in-part of Ser. No. 603,281, Oct. 25, 1990, Pat. No. 5,234,166. This application Jan. 12, 1995, Ser. No. 372,061

Int. Cl.⁶ B05B 1/34; 9/043

U.S. Cl. 239—333

20 Claims

1. A spinner for use in a trigger sprayer including a housing having a discharge cavity extending to an opening, the spinner comprising:



an elongate body extending between opposite front and rear ends, the body having a swirl chamber integrally formed at the front end; and
a flexible elastomeric valve element integrally formed with the spinner body, the spinner being adapted to be positioned within the trigger sprayer housing discharge cavity with the valve element overlying the cavity opening and defining a primary valve of the trigger sprayer.

5,509,609

SLUDGE LANCE NOZZLE

Frank Kamler, Ontario, Canada, assignor to The Babcock & Wilcox Company, New Orleans, La.

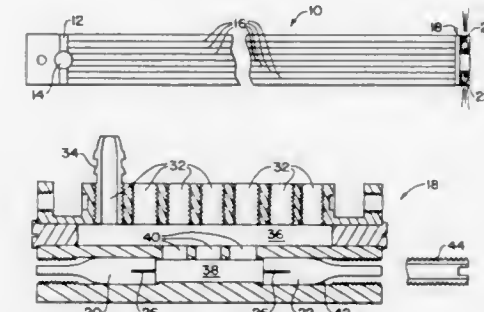
Continuation of Ser. No. 154,194, Nov. 17, 1993, abandoned.

This application Nov. 8, 1994, Ser. No. 335,922

Int. Cl.⁶ B08B 9/02

U.S. Cl. 239—461

6 Claims



1. An improved sludge lance nozzle, comprising:
a fluid inlet portion being circular and having a first length and diameter, said first length being approximately eight times said first diameter;
a fluid exhaust portion being circular and having a second length and diameter smaller than said first length and diameter;
a transition length between said fluid inlet portion and said fluid exhaust portion tapering said first diameter into said second diameter; and
a single flow straightener mounted inside said fluid inlet portion to minimize turbulence therein and improve the output of said fluid exhaust portion thereby, said flow straightener including a rectangular plate inserted along said first diameter of said fluid inlet portion, the improved sludge lance nozzle constructed to be located within a front manifold of a sludge lance assembly.

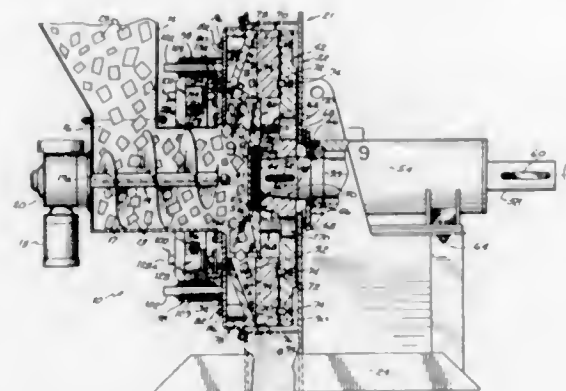
5,509,610

CENTRIFUGAL CHOPPING AND GRINDING APPARATUS

Edgar G. Gibbons, Cincinnati, Ohio; Ronald E. Gibbons, Crestview Hills, Ky., and Jimmie A. Henke, Aurora, Ind., assignors to Gibco, Inc., Cincinnati, Ohio
Filed Jan. 27, 1994, Ser. No. 187,219
Int. Cl.⁶ B02C 7/06; 7/12; 7/14

U.S. Cl. 241—37

45 Claims



1. Centrifugal grinding apparatus comprising:
a housing including an inlet and an outlet;
a first plate secured within said housing and including a plurality of generally radially extending ribs, each of said ribs having an outer edge surface;
a grinding plate mounted within said housing and including a roughened grinding surface directly opposed and adjacent to said outer edge surfaces of said ribs but spaced away from said outer edge surfaces of said ribs by a predetermined gap thereby generally defining grinding chamber segments between said ribs of said first plate and said grinding surface, said inlet and said outlet communicating with said grinding chamber segments;
wherein one of said first plate and said grinding plate is mounted for rotation within said housing and a motor is operatively coupled to said one plate for rotating said one plate during a grinding operation.

5,509,611

Patent Not Issued For This Number

5,509,612

PROCESS AND DEVICE FOR THE CONTINUOUS SHAPING OF PARTICULATE MATERIALS

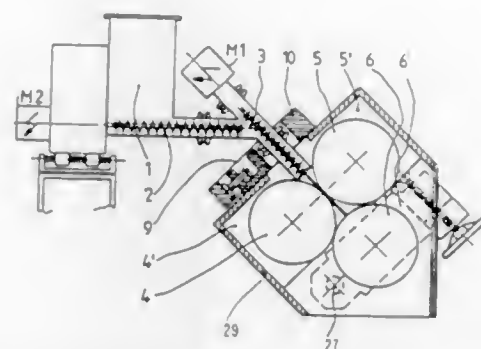
Paul Gerteis, Curtlbergstrasse 139, CH 8646 Wagen, Switzerland
Continuation of Ser. No. 941,067, Oct. 8, 1992, abandoned.
This application Dec. 5, 1994, Ser. No. 350,377
Claims priority, application Switzerland, Feb. 11, 1991, 410/91

Int. Cl.⁶ B02C 4/08

U.S. Cl. 241—101.4

11 Claims

1. A device for continuous mechanical shaping of a particulate material comprising a housing; a pressing roll pair forming a pressing space and enclosed in said housing, said pressing roll pair consisting of two pressing rolls, each of said pressing rolls having a rotation axis; a rotating element arranged in said housing adjacent said pressing roll pair and below said pressing roll pair; means for moving said pressing roll pair together with said rotating element relative said housing and perpendicular to one of the rotation axes of said pressing rolls and means for adjustably



spacing said pressing roll pair and rotating element relative to each other and in a direction perpendicular to said rotation axis of said pressing rolls.

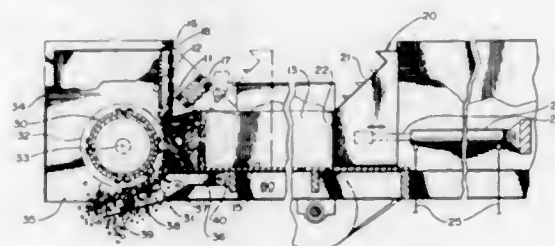
5,509,613

MATERIALS GRINDER

James H. Page, Bottineau, N. Dak., assignor to Rexworks, Inc., Milwaukee, Wis.
Continuation of Ser. No. 778,322, Nov. 17, 1991, Pat. No. 5,344,088. This application Jan. 7, 1994, Ser. No. 178,679
Int. Cl.⁶ B02C 1/08

U.S. Cl. 241—282

9 Claims



1. A materials grinder comprising:
a hopper for receiving materials to be ground, said hopper including an open top, a horizontal floor and an exit opening adjacent said floor;
a ram in said hopper operable to displace materials on the floor of said hopper toward and through said exit opening;
a rotatable materials grinding drum adjacent said exit in said hopper, said drum having a surface including a plurality of abrading bits;
a concave adjacent said materials grinding drum mounted for rotation around an axis parallel to the axis of said grinding drum;
a cutter bar on said concave disposed below said exit opening and said drum in cooperating relationship with said abrading bits; and
a displaceable support engaging and urging said concave toward said grinding drum and being displaceable to allow said concave to pivot away from said grinding drum when ungrindable material is encountered to allow the ungrindable material to pass between said cutter bar and said grinding drum.

5,509,614

BOBBIN SUPPLYING SYSTEM

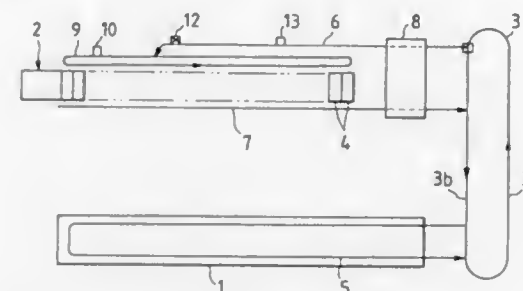
Kazuo Nishikawa, Kyoto, and Takashi Nakagawa, Uji, both of Japan, assignors to Murata Kikai Kabushiki Kaisha, Kyoto, Japan

Continuation of Ser. No. 62,955, May 14, 1993, abandoned.
This application May 1, 1995, Ser. No. 431,825
Claims priority, application Japan, May 22, 1992, 4-130633; Jul. 28, 1992, 4-201511

Int. Cl.⁶ B65H 54/02; D01H 9/10

U.S. Cl. 242—35.5 A

4 Claims



1. A bobbin supplying system, comprising:
at least one spinning frame,
at least one winder having at least one reserve line for storing a plurality of spinning bobbins on trays and at least one winding unit for discharging empty bobbins and for automatically taking in at least one of the plurality of spinning bobbins stored on the reserve line when an empty bobbin is discharged from the winding unit,
at least one conveying passage for conveying spinning bobbins from the spinning frame toward the winder,
at least one supply passage for conveying spinning bobbins from the conveying passage toward the winder, the at least one reserve line being in communication with the supply passage, detecting means for detecting the plurality of spinning bobbins stored in the reserve line, and
stopper means in communication with the detecting means for preventing introduction of spinning bobbins to the reserve line when the plurality of spinning bobbins stored in the reserve line exceeds a predetermined number.

5,509,615

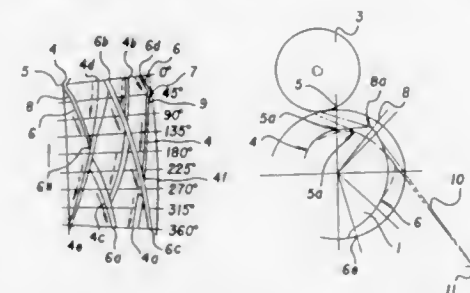
IRREGULAR PITCH GROOVED TRAVERSE DRUM HAVING SHIFTED YARD PATH TURNING POINTS

Naotsugu Ohtoko, Yao, and Takeshi Ohno, Shiki, both of Japan, assignors to Kabushiki Kaisha Mino Seisakusho, Yao, Japan

Filed Sep. 24, 1993, Ser. No. 125,847
Claims priority, application Japan, Sep. 30, 1992, 4-260956
Int. Cl.⁶ B65H 54/28

U.S. Cl. 242—43.2

12 Claims



1. A grooved traverse drum for use with a yarn winder for winding an individual yarn, said drum having a forwarding path and a returning path thereof formed in an external circumferential surface thereof and extending in the form of helicoidal groove in

inverse directions and connected to each other at turning points at opposite ends of said drum, so that as said drum rotates said yarn is traversely guided and is wound onto a bobbin rotating itself in contact with said drum, wherein said turning points of said forwarding groove and said returning groove are shifted from each other by from 18° up to a maximum of 90° in the rotating direction of said drum in the direction of increasing the number of turns of said forwarding path, and wherein deflection points are respectively formed at predetermined positions further in the rotating direction beyond said turning points so that said yarn being guided in said forwarding path and said returning path is deflected at the respective deflection points from directions in which said forwarding path and returning path turn at said turning points.

5,509,616

RETRACTABLE CHALK LINE DEVICE

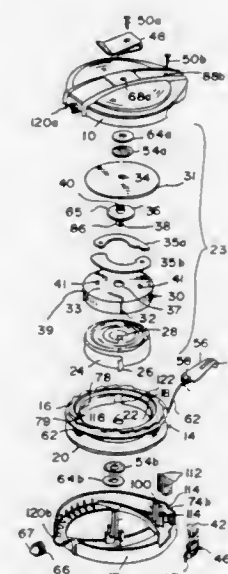
Leopoldo E. Millen, Jr., 3469 McNab Ave., Long Beach, Calif. 90808, and Joseph H. Weaver, 2319 Willow La., West Covina, Calif. 91790

Filed May 23, 1994, Ser. No. 247,570

Int. Cl.⁶ B44D 3/38; B65H 75/48

U.S. Cl. 242—381.5

10 Claims



1. An automatically retracting chalk line dispenser comprising:
a) a casing forming a reservoir for storing a quantity of chalk dust;
b) a spool assembly comprising a spool having string disposed within said casing such that the string contacts said chalk dust;
c) an automatic, centrifugal speed regulator assembly comprising:
1. at least one speed regulator arm, said at least one arm having a primary end and a secondary end;
2. regulator arm support means for supporting said speed regulator arm relative to said chalk line dispenser wherein said regulator arm support means rotates with said spool, said regulator arm support means for pivotally supporting said primary end, said regulator arm support means further supporting a spring for retracting a dispensed length of the string; and
3. an arbor having a friction contact disk portion, said arbor being attached to the casing so that relative rotation therebetween is prevented, said primary end of said regulator arm being adjacent to said arbor, wherein, when the spool is rotating at relatively low speeds the primary end of said regulator arm is not in contact with said arbor and when a predetermined spool speed is exceeded which pivots said arm so that said secondary end of arm is centrifugally

extended, said primary end contacts said friction contact disk portion, thereby, providing regulation of the speed of said spool; and,

- d) a spool control actuator for 1) controlling said spool in a neutral position for allowing dispensing or retraction of the string and for 2) controlling said spool in a lock position for restricting movement of the string.

5,509,617

ELASTIC YARN FEEDING APPARATUS

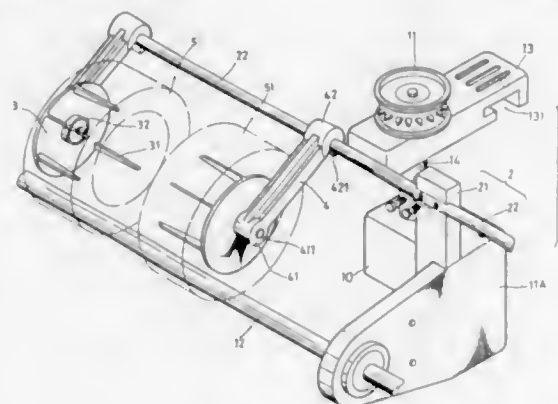
Jen H. Chen, 4FL, No. 27, Lane 160, Hsin Sheng S. Rd., Sec. 1, Taipei, Taiwan

Filed Jul. 1, 1994, Ser. No. 269,880

Claims priority, application China, Sep. 6, 1993, 93 2 23333.3
Int. Cl.⁶ B65H 49/34

U.S. Cl. 242—564.5

1 Claim



1. An apparatus for feeding a roll of yarn wound around a bobbin to a knitting machine comprising:

- (a) a bobbin mounting frame for mounting the yarn roll in operating position;
(b) at least one linkage bar, said linkage bar having
(1) a first end that supports a rotation center of said bobbin mounting frame, and
(2) a second end pivotally connected to a fixed horizontal bar, wherein the second end of said linkage bar is provided with a hook portion, said hook portion being pivotally mounted on said fixed horizontal bar such that said hook portion can be removed from said fixed horizontal bar by manual lifting; and
(c) a driving shaft positioned beneath said bobbin mounting frame such that the outer surface of the yarn roll contacts said driving shaft, said bobbin thereby being rotated when said driving shaft rotates.

5,509,618

AIR SHAFT

Mark E. Kleiman, Framingham, and Robert R. Bennett, Ashland, both of Mass., assignors to Klimex, Inc., Ashland, Mass.

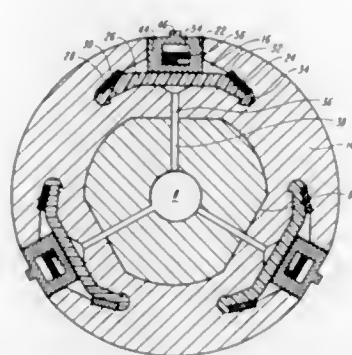
Filed Jun. 14, 1994, Ser. No. 259,622

Int. Cl.⁶ B65H 75/24

U.S. Cl. 242—571.2

6 Claims

1. An air shaft for engaging the interior of cores of large rolls of paper, plastic and other web materials, comprising a tubular axially extending, integral metal shaft, said shaft forming on its outer surface circumferentially spaced, parallel, axially extending grooves, each said groove defining a narrow, axially extending, outside opening, an axially extending, elastic, single-wall sheet strip located in each said groove, said strip having longitudinal edges captured in a fluid tight seal in said groove.



pressure means for providing fluid under pressure into said groove and to one side of each said sheet strip to expand said sheet strip radially outwardly, grippers, located in each said groove on the other side of said sheet strip for radial movement through said opening in response to the application of fluid pressure to said sheet strip to grip said core, and biasing means for retracting said grippers when said sheet strip is not under fluid pressure.

5,509,619

PRINTING EQUIPMENT ACCESSORY, ESPECIALLY FOR MAKING PROOF PRINTS

Volker Strüwe, Dietzenbach; Ladislaus Wojtanowitsch, Aschaffenburg; Gregor Gehr, Hallein/Rehhof, and Thomas Brötzner, Wals, all of Germany, assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

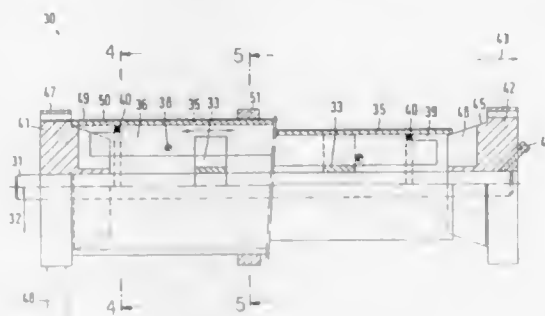
Filed Jan. 5, 1994, Ser. No. 177,870

Claims priority, application Germany, Jan. 15, 1993, 43 00 866.6

Int. Cl.⁶ B65H 75/24

U.S. Cl. 242—573.2

11 Claims



1. Apparatus for making proof prints, with at least two rollers forming a roller nip, through which is passed at least one function component of a film taken from a supply roll, the film having an auxiliary component in addition to the function component, and the function component is transferable in the nip onto a base, characterized in that

the auxiliary component of the film forms a coreless roll which is wound on a spindle with a variable outer diameter, friction rings are attached on a periphery of the spindle, and the spindle is supported in a vertical slot so that the friction rings contact the supply roll or drive rings attached thereto.

5,509,620

ROTATABLE REEL APPARATUS

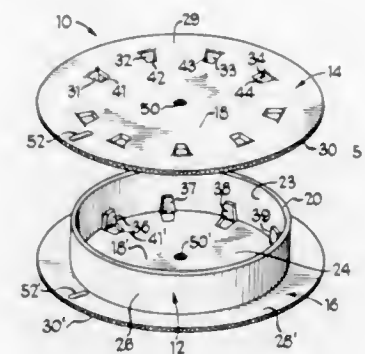
Mitchell S. Crews, Geneva, Ill., assignor to Stone Container Corporation, Chicago, Ill.

Filed May 12, 1993, Ser. No. 60,583

Int. Cl.⁶ B65H 75/14

U.S. Cl. 242—608

13 Claims



1. A rotatable reel apparatus for use in association with an axle for operably winding, storing, transporting and unwinding various windable materials said rotatable reel apparatus comprising:

core means for operably receiving and maintaining said windable material thereabout,

said core means having a top edge, a bottom edge opposite said top edge, an inner peripheral surface extending between said top and bottom edges, an interior region adjacently positioned to said inner peripheral surface, and an outer peripheral surface for operable contact with at least a portion of said windable material upon said receiving and maintaining thereof;

first and second platform means for precluding said windable material from inadvertently migrating beyond said top and bottom edges of said core means, each of said first and second platform means being operably attached adjacent to a corresponding one of said top and bottom edges of said core means so as to sandwich said core means, and in turn, said windable material positioned about said core means, therebetween, each of said first and second platform means being constructed from a corrugated paper material having an interior surface, an exterior surface opposite said interior surface, and an outer periphery greater than the outer peripheral surface of said core means;

each of said first and second platform means including a plurality of operably positioned core attachment flap means integrally formed in each of said first and second platform means and folded inwardly therefrom, for operably and restrainably securing each of said first and second platform means to at least a portion of at least one of said inner or outer peripheral surfaces of said core means, wherein at least one of said plurality of integrally formed and inwardly folded core attachment flap means in each of said first and second platform means are secured to said core means,

said plurality of integrally formed and inwardly folded core attachment flap means resulting in a plurality of spaced apart apertures in said first and second platform means wherein at least one of said plurality of spaced apart apertures is formed by the inward folding of the corresponding core attachment flaps means, and wherein each of said spaced apart apertures includes a proximal edge adjacent said at least one of said inner or outer peripheral surfaces of said core means and a distal edge, said distal edges serving to collectively define the outer periphery of a spindle region substantially concentrically oriented with respect to said corresponding first and second platform means;

spindle attachment means for cooperation with said axle, said spindle attachment means being operably and respectively positioned within each of said spindle regions in a substantially co-planar orientation with each of said first and second platform means at the centers thereof respectively.

said spindle attachment means of each of said spindle regions of each of said first and second platform means being operably aligned with each other and positioned adjacent said interior region of said core means so as to facilitate operable cooperation with, and rotation about, said axle.

5,509,621

MECHANISM FOR HIGH SPEED LINEAR PAYOUT OF MONO-FILAMENT STRAND

Scott B. Millett, Ridgecrest, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

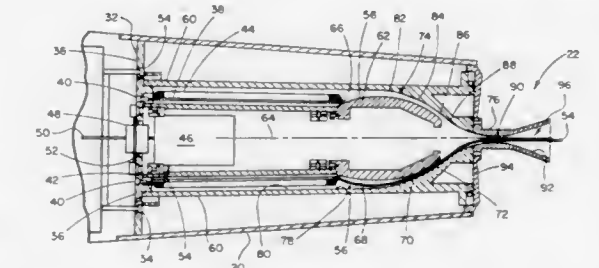
Continuation of Ser. No. 559,788, Jul. 30, 1990, abandoned.

This application Mar. 16, 1993, Ser. No. 48,255

Int. Cl.⁶ F41G 7/32; B65H 49/02

U.S. Cl. 244—3.12

23 Claims



1. A mechanism for guiding pay out of a monofilament strand, comprising:

a bobbin for receiving a mono-filament strand wound on the bobbin in a helix, the bobbin having a longitudinal axis; outer guide means including an inward facing guide surface for guiding the mono-filament as it leaves the bobbin, the outer guide means further including a mono-filament strand pay out outlet; and

inner guide means cooperating with the outer guide means and having an outward facing guide surface including a surface of revolution about the longitudinal bobbin axis for guiding the mono-filament strand as it leaves the bobbin between the inner guide means and the outer guide means, and through the pay out outlet, whereby the mono-filament strand pay out occurs such that the mono-filament strand does not contact or slide along any surface with a radius which would permit sharp bend radii in the mono-filament strand sufficiently to produce bending stresses and angular accelerations exceeding known material limits of the mono-filament strand, wherein the surface of revolution comprises:

an arc on the outward facing surface of the inner guide means extending into a recessed end of the bobbin at an end nearest the outlet, the end of the bobbin receiving the adjacent arc portion of the surface of revolution; and the arc extending to a tangent point on an imaginary line spaced from the outer surface of the outer layer of mono-filament strand wound on the bobbin.

5,509,622

PROTECTIVE COVER, RADIATION SHIELD AND TEST UNIT FOR HELICOPTER BLADE CRACK INDICATOR

Donald W. Blincow, Rancho Cucamonga; John J. Mahoney, San Bernardino, and Jerold H. McCormick, Alta Loma, all of Calif., assignors to General Nucleonics, Inc., Pomona, Calif.

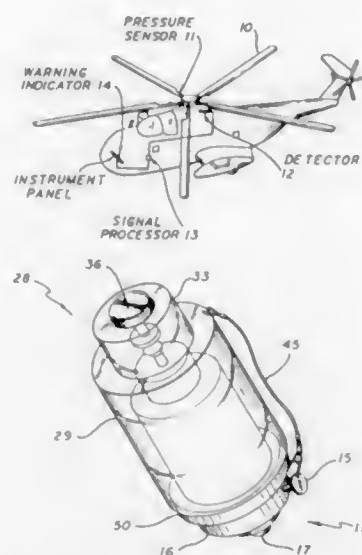
Filed Apr. 25, 1994, Ser. No. 232,662

Int. Cl.⁶ B64C 27/00

U.S. Cl. 244—17.11

6 Claims

1. In a cover for protecting and resetting a pressure sensor for use when the sensor is not in service, the sensor providing for indicating cracks in a hollow aircraft blade, the sensor having a



shaft carrying a radiation source, with the sensor shaft sliding in a sensor housing between a first position with the radiation source within the housing and a second position with the radiation source external of the housing,

the improvement in the cover comprising:

- a sleeve for slidably positioning around the sensor housing and removing from the sensor housing, said sleeve having an open end for engaging a stop of the sensor and having a closed end spaced from the sensor out of engagement with the sensor when said open end is engaging said sensor stop; and
- a plunger slidably mounted in said closed end of said sleeve and movable between an outer position and an inner position, said plunger and sleeve having interengaging means for retaining said plunger in said sleeve closed end, with said plunger out of engagement with the sensor shaft when in said outer position and engaging the sensor shaft when in said inner position to move the sensor shaft manually into the sensor and reset the sensor;

with said sleeve being of a material absorbing the radiation of the source.

5,509,623 FREE WING AIRCRAFT HAVING A FREE WING USED AS AN AIR BRAKE TO SHORTEN ROLL-OUT FOLLOWING TOUCHDOWN

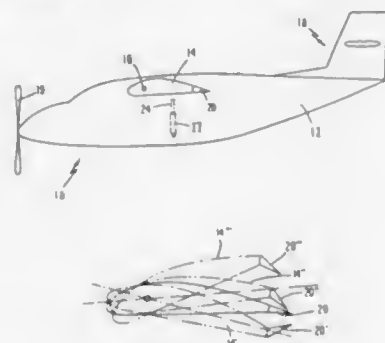
Hugh Schmittle, Westminster, Md., assignor to Freewing Aerial Robotics Corporation, College Park, Md.

Filed Jun. 15, 1994, Ser. No. 261,902

Int. Cl.⁶ B64C 3/38

U.S. Cl. 244—48

5 Claims



1. A free wing aircraft, comprising:

- (a) a fuselage;
- (b) a free wing connected to said fuselage for free pivotal movement within a predetermined angular range about a

spanwise axis for flight in a predetermined, generally horizontal direction in a free wing mode of aircraft operation;

- (c) a propulsion system carried by said fuselage for developing thrust and propelling the aircraft; and

- (d) means for deflecting said free wing, trailing edge up, while maintaining the free pivotal movement of the free wing so that said free wing is deflected downwardly beyond said predetermined angular range into a tilted position where it creates an aerodynamic braking effect to decrease air speed after landing.

5,509,624 LANDING APPARATUS FOR AIRSHIP AND THE LIKE

Masakatsu Takahashi, 4-6, Narihira-cho, Ashiya-shi, Hyogo 659, Japan, assignor to Masakatsu Takahashi, Hyogo, Japan

PCT No. PCT/JP92/00860, § 371 Date May 25, 1994, § 102(e)

Date May 25, 1994, PCT Pub. No. WO93/15953, PCT Pub.

Date Aug. 19, 1993

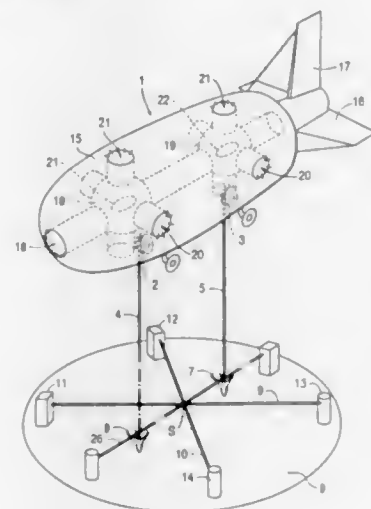
PCT Filed Jul. 6, 1992, Ser. No. 133,183

Claims priority, application Japan, Feb. 17, 1992, 4-069284

Int. Cl.⁶ B64B 1/66

U.S. Cl. 244—115

6 Claims



1. A landing apparatus for an airship or the like comprising:

- (a) a tugging hawser;
- (b) a windlass;
- (c) a mooring device;
- (d) at least two lashing ropes;

wherein said windlass is mounted on the lower part of said airship; wherein said hawser is coiled in the windlass and can be spooled out; wherein said mooring device is connected to said tugging hawser for engaging at least one of said lashing ropes during landing of said airship; and wherein said lashing ropes are horizontally extended above a landing space; and

- (e) separate means for fixing both ends of each of said lashing ropes above said landing space until said airship has completed landing.

5,509,625 ELECTRICAL BRUSH-WEAR INDICATOR

David A. Oullette, Farmington, and George D. Rogers, Jr.,

Enfield, both of Conn., assignors to United Technologies

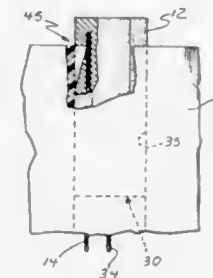
Corp., Windsor Locks, Conn.

Filed Dec. 21, 1993, Ser. No. 171,010

Int. Cl.⁶ B64D 15/12

U.S. Cl. 244—134 D

2 Claims



1. In a deicer system for aircraft propeller blades of the type having a rotating slip ring that contacts a non-rotating elongated electrical brush housed in a brush holder, the improvement comprising:

- a. the brush having a central longitudinal axis and two ends, wherein one of the brush ends is a tip end that extends, at least initially, beyond the brush holder to contact the rotating slip ring and the other brush end is an opposite end that does not contact the slip ring, wherein the opposite end is connected to a power source;
- b. a wire having at least one insulated end portion initially embedded in the brush, wherein the end portion is parallel to the longitudinal axis and has a wire tip that is set back initially from the tip end of the brush;
- c. an electrical warning device connected to the wire, wherein the warning device is activated by current transmitted from the brush through the wire, when the wire tip becomes exposed and stripped due to excessive end wear of the brush; and
- d. wherein the embedded end portion that is substantially parallel to the longitudinal axis is also offset therefrom, whereby part of the end portion becomes exposed and bare, upon excessive flank wear of the brush, to activate the warning device by dust from the worn brush, trapped in the holder adjacent the bare part of the wire, carrying electrical current from the brush to the bare part of the wire.

5,509,626 RAILROAD TRACK SWITCH

Andreas Fodor, Enzesfeld, Austria, assignor to Enzesfeld-Caro Metallwerke AG, Enzesfeld, Austria

Filed Nov. 21, 1994, Ser. No. 345,700

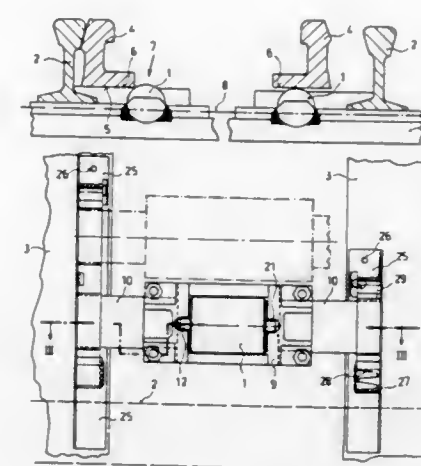
Claims priority, application Germany, Nov. 19, 1993, 93 17 723.2

Int. Cl.⁶ E01B 7/00

U.S. Cl. 246—453

15 Claims

1. A railroad track switch comprising first and second stock rails and first and second swingable tongue rails, the stock rails being removably and non-slidably affixed to foundation elements, support surfaces for the tongue rails for supporting the first and second tongue rails in positions abutting against the first and second stock rails respectively, at least one roll for each tongue rail disposed in a swing path of the tongue rail, the roll having a topmost point at a higher level than the support surface of the tongue rail, said roll when the tongue rail is in a position abutting against a respective one of the stock rails pressing against the tongue rail at a point below the topmost point of the roll and when the tongue rail is in a switched position away from the respective stock rail, the tongue rail is supported on said roll, further said roll is mounted so as to be spring-loadedly movable in the direction transverse to the plane of the tracks, the roll having a roll shaft disposed in a direction of



5,509,627 AUTOMOTIVE VEHICLE COMPONENT RETAINING ASSEMBLY

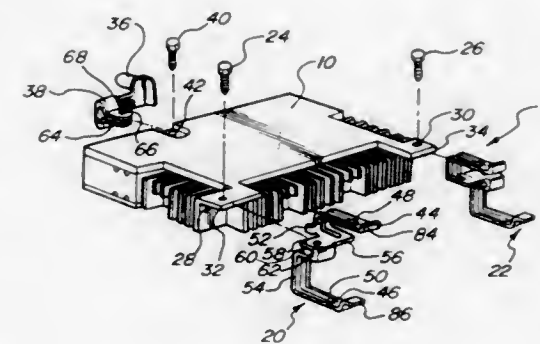
Michael B. Darrow, Northville, and John L. Aleva, Livonia, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Apr. 8, 1994, Ser. No. 225,104

Int. Cl.⁶ G12B 9/00

U.S. Cl. 248—27.1

10 Claims



1. A retaining assembly for mounting a component in a compartment formed in an automotive vehicle instrument panel upon insertion through an aperture having an upper edge and a lower edge, the retaining assembly comprising:

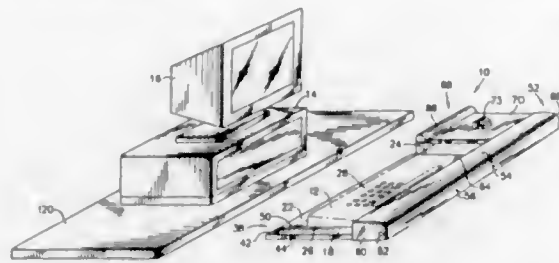
- at least one clip fixedly securable to the component and having a pair of vertically spaced latching tongues, one latching tongue engageable with the aperture upper edge and the other latching tongue engageable with the aperture lower edge in snap-fit relationship upon insertion of the component through the aperture into the compartment; and
- a locating pin fixedly securable to the component adapted to be received by a portion of the vehicle instrument panel within the compartment.

5,509,628

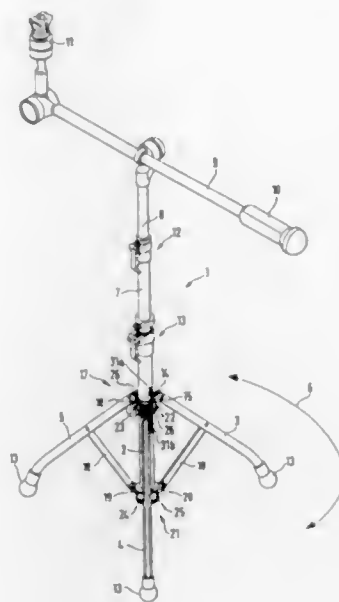
ERGONOMIC SUPPORT FOR KEYBOARD AND COMPUTER MOUSE PLATFORMBruce Noble, 201 Park Ave., Emerson, N.J. 07630
Filed Jun. 9, 1995, Ser. No. 489,302Int. Cl.⁶ B68G 5/00

U.S. Cl. 248—118

15 Claims



1. An ergonomic keyboard support device for a computer keyboard having a substantially planar key upper plane, comprising, a keyboard support having an operator-proximal keyboard support edge and a substantially planar keyboard support top surface, bar means for maintaining wrist and forearm support during keyboard operations, said bar means being connected to said keyboard support top surface across said operator-proximal keyboard support edge and having a substantially planar bar top surface, and platform means for holding a computer mouse and for writing by a keyboard operator and for maintaining wrist support during mouse operations, said platform means being movably positioned upon said planar keyboard support top surface, said platform means having a substantially planar platform top surface substantially in the same plane as said planar bar top surface.



5,509,630

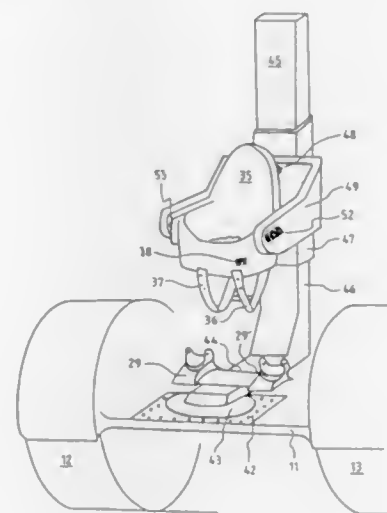
MOTOR VEHICLE FOR THE SHOOTING OF A FILM IN DIFFICULT AND HILLY GROUNDJean-Marc Bringuier, 6 rue, Lalande, 75014 Paris, France
PCT No. PCT/EP93/00143, § 371 Date Oct. 12, 1993, § 102(e)
Date Oct. 12, 1993, PCT Pub. No. WO93/16322, PCT Pub. Date Aug. 19, 1993

PCT Filed Feb. 11, 1993, Ser. No. 133,078

Claims priority, application France, Feb. 14, 1992, 92 01714
Int. Cl.⁶ F16M 11/00

U.S. Cl. 248—178.1

27 Claims



5,509,629

STAND

Werner Sassmannshausen, Bad Berleburg-Wingeshausen; Karl-Heinz Menzel, Bad Berleburg-Aue, and Anke Kleindienst, Bad Berleburg, all of, Germany, assignors to Sonor Johs. Link GmbH, Bad Berleburg, Germany

Filed Jan. 5, 1995, Ser. No. 369,527

Claims priority, application Germany, Jan. 5, 1994, 44 00 151.7

Int. Cl.⁶ F16M 11/38

U.S. Cl. 248—171

8 Claims

1. A stand for receiving and holding objects, particularly musical instruments and/or accessories, the stand comprising a center shaft and adjustable legs slidably mounted on the center shaft, wherein at least one of the legs is mounted so as to be swingable about the center shaft, the center shaft having a top and a bottom, further comprising a top sleeve at the top of the shaft and a bottom sleeve at the bottom of the shaft, each sleeve comprising a pair of sleeve members which are concentrically nested into one another.

1. A vehicle for transporting a camera operator comprising: a chassis; a mobile assembly mounted on said vehicle for receiving said camera operator, said mobile assembly having a vertical axis; means for supporting said mobile assembly in a plane parallel to said chassis, said support means providing pendular movement of said mobile assembly in two different, substantially horizontal directions; and means for pivoting said mobile assembly about said vertical axis independent of the horizontal attitude of said chassis.

5,509,631

THREE AXIS MOTION PLATFORM

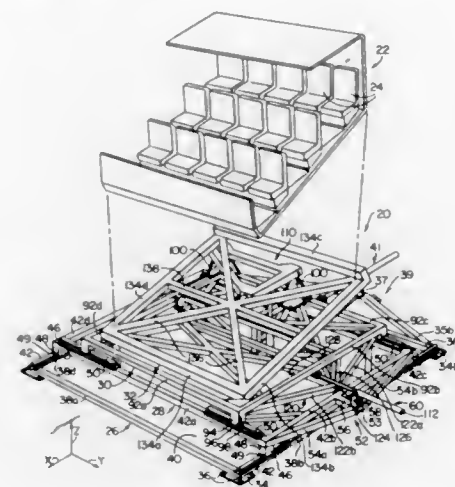
Thomas De Salvo, Ellcott City, Md., assignor to Ridefilm Corporation, South Lee, Mass.

Filed Oct. 1, 1993, Ser. No. 130,507

Int. Cl.⁶ A47G 29/00

U.S. Cl. 248—370

17 Claims



1. A motion platform that is displaceable along three axes comprising first, second and third carriage assemblies and means connected to each of said carriage assemblies for linearly displacing each of said carriages along a single planar axis, whereby said first carriage assembly is linearly displaceable along a first plane, said second carriage assembly is linearly displaceable along a second plane that intersects said first plane, and said third carriage assembly is linearly displaceable along a third plane that intersects at least one of said first and second planes wherein each of said carriage assemblies is comprised of a circumferential array of frame members that define a substantially planar parallelogram configuration having a substantially open central portion, said carriage assemblies being arranged in a nested array.

5,509,632

METHODS FOR FORMING HOOK FOR CHAIN LINK FENCE

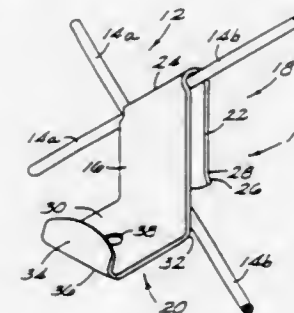
Larry D. Mesna, 32118 Hunsacker Way; Gregory C. Mesna, and Wendy L. Mesna, both of P.O. Box 2344, all of Running Springs, Calif. 92382

Continuation of Ser. No. 114,786, Aug. 30, 1993. This application Feb. 13, 1995, Ser. No. 387,573

Int. Cl.⁶ A47F 5/00

U.S. Cl. 248—301

7 Claims



1. A hook apparatus adapted to be used on a chain link fence comprising: a first vertically disposed element having two oppositely located end portions;

a second vertically disposed element integral with first said element and extending from the top one of said two oppositely located end portions of said first element and disposed with said first element in an L-shape before said first and second elements are folded relative to one another and disposed with said first element in a generally parallel configuration after being folded; said first and second elements being separated by about 3/16 of an inch in their folded disposition; a rounded fold portion connecting said first and second elements when said first and second elements are in their folded disposition, said fold portion being disposed at approximately 45 degrees relative to a vertical reference; a third element integral with said other elements and extending away from the bottom one of said two end portions of said first element for supporting an article to be suspended therefrom; a flap portion integral with said first, second and third elements and extending away from said second element at an acute angle to enhance engagement of a wire portion of the chain link fence with said rounded fold portion after said wire portion passes between said first and second elements; and said elements having a generally constant width except that said rounded fold portion has a reduced width.

5,509,633

REMOVABLE AND ADJUSTABLE CUP HOLDER FOR A VEHICLE

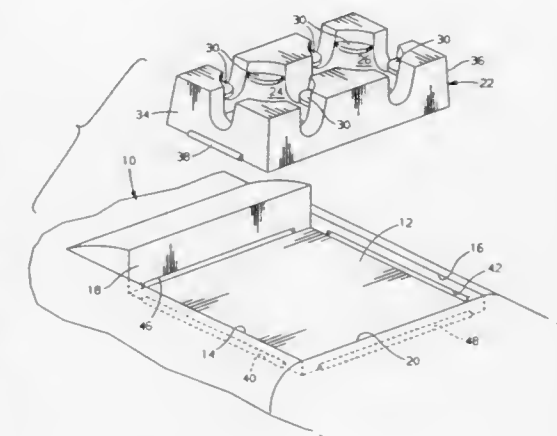
Thomas W. Ruster, Brighton, and Nancy K. MacBrien, Canton, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Dec. 19, 1994, Ser. No. 358,118

Int. Cl.⁶ A47K 1/08

U.S. Cl. 248—311.2

4 Claims

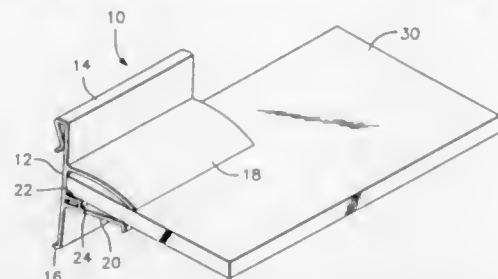


1. A cup holder for a vehicle comprising: a vehicle panel having a horizontal support surface and a pair of opposing spaced apart walls rising above the support surface and defining the dimensional extent of the support surface, and a block of compressible foam material adapted for placement on the support surface and having at least one cavity therein adapted to hold a cup, said block of foam having opposed end walls spaced apart to fit closely between the spaced apart walls of the vehicle panel whereby the block of foam material is held in place by the interaction of the respective end walls of the block and the vehicle panel, and the block is removable from the vehicle panel by compressing the foam block to effect disengagement of the spaced apart end walls of the foam block from the vehicle panel end walls.

5,509,634
SELF ADJUSTING GLASS SHELF LABEL HOLDER
 John Gebka, and Michael E. Brinkman, both of Coral Springs, Fla., assignors to Feme Ltd., Ft. Lauderdale, Fla.
 Filed Sep. 28, 1994, Ser. No. 313,830
 Int. Cl.⁶ A47G 1/10

U.S. Cl. 248—316.7

8 Claims



1. A label holder for attachment to a shelf comprising a label holder panel having a front surface for receiving a label and a rear surface having a pair of rearwardly extending resilient arms defining a grip therebetween in the form of a channel for clipping the holder onto the shelf, and a means for alternately gripping two different thicknesses of shelves, wherein said means comprises a step extending along a base portion of the channel in one corner thereof wherein the step has a first face extending from the label holder panel and a second face perpendicular to the first face extending from one of said arms.

5,509,635
FORMWORK WITH FORM PANELS AND CONNECTING MEANS

Kurt Jaruzel, Haslach, Germany, assignor to Paschal-Werk G. Maier GmbH, Stelnach, Germany

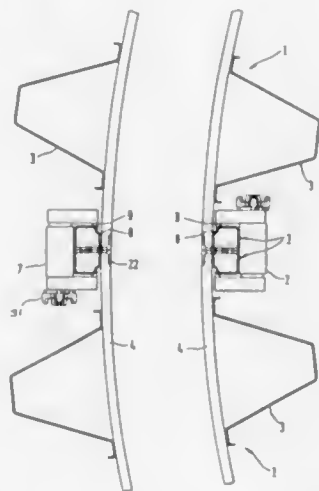
Filed Jun. 30, 1994, Ser. No. 269,872

Claims priority, application Germany, Jul. 5, 1993, 43 22 253.6

Int. Cl.⁶ G04G 11/06

U.S. Cl. 249—47

18 Claims



1. Formwork particularly for pouring concrete structures with form panels (1) and means for connecting the panels, comprising marginal sections (2) having a closed, hollow cross section provided along parallel edges of and located at right angles to a lining skin (4) of form panels (1), said marginal section comprising an abutment web (5) that extends longitudinally along an outermost edge of the form panel (1) and serves to be laid tightly against a corresponding abutment web (6) of a neighboring form panel, said marginal section further having a holding web (7) approximately parallel to the abutment web, said holding web having points of

applications adapted for the attachment of connecting clamps (7) which embrace the marginal sections (2) Of adjacent form panels (1), said abutment web (5) having perforations (10) therein for inserting connecting bolts (11), the perforations (10) being arranged side by side, in spaced relationship along the longitudinal direction of the abutment web (5), each perforation (10) being oblong in shape for receiving a connecting bolt (11) having at least one projection (12) jutting out radially from an end of the bolt, the projection being insertable with the connecting bolt (11) through the oblong perforation (10) and engaging behind an edge of the perforation (10) in a locking position when twisted in the perforation, the perforations (10) in the abutment web (5) having a spacing and size which corresponds with dimensions of similar perforations in flat marginal strips (13) of neighboring form panels (1), the bolt (11) having a counter-stop (14) spaced axially from the projection (12), said axial spacing corresponding to an overall thickness of marginal strip (13) plus abutment web (5).

5,509,636
RETAINER CLIP FOR REINFORCEMENT OF CONCRETE WALLS

Joseph A. Cotugno, 7360 Blacklick Eastern Rd., Pickerington, Ohio 43147

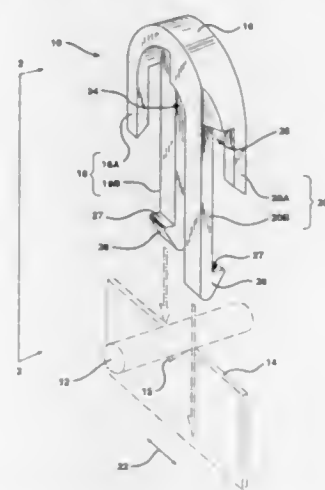
Continuation of Ser. No. 112,310, Aug. 27, 1993, abandoned.

This application Feb. 28, 1995, Ser. No. 396,349

Int. Cl.⁶ E04C 5/16

U.S. Cl. 249—91

18 Claims



1. A retainer clip assembly for retention of a reinforcing rod comprising a retainer clip and a notched form tie which has a generally rectangular cross section and a notch, said retainer clip comprising a one-piece body having:

a header; and
 first and second clips extending angularly from the header to clip ends, said clips spaced apart in a first direction, and defining therebetween a generally U-shaped opening sized to slidably receive a reinforcing rod extending lengthwise in a second direction lateral to said first direction and having a generally circular cross section; and

wherein each of said clips further comprises first and second prongs spaced apart in said second direction, at least two prongs of said clips further defining therebetween a narrow generally rectangular passage extending generally through the clips in the first direction, said passage intersecting at least a portion of said U-shaped opening and sized to receive and confine said notched form tie extending lengthwise in said first direction; and

wherein in each of said clips:

at least one of said prongs has flexibility to deflect and facilitate receipt of said notched form tie in said narrow generally rectangular passage by slidably inserting the form tie towards said header between the ends of said clips; and

at least one of said prongs has a catch positioned such that said clips confine said narrow generally rectangular notched form tie received in the narrow generally rectangular passage; and
 wherein, without clamping, said reinforcing rod and said form tie are restrained against substantial separation from each other, and, without clamping, said form tie is restrained against relative motion in the first direction when said reinforcing rod is received in said U-shaped opening between said notch in said form tie and said header.

5,509,637
ENGINE VALVE HYDRAULIC ACTUATOR HIGH SPEED SOLENOID CONTROL VALVE

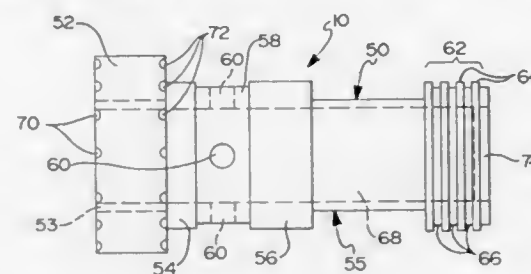
Mark L. Leonard, Canton, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Filed Oct. 12, 1994, Ser. No. 321,944

Int. Cl.⁶ F15B 13/044; F16K 13/06

U.S. Cl. 251—129.16

2 Claims



1. A control solenoid for an engine valve hydraulic actuation device comprising:

a housing forming a cavity, said housing made of a magnetically conductive material;

a magnetically conductive coil ring mounted within said cavity, said coil ring being tubular in shape and axially extending from said housing to form a coil pocket;

an electrical coil wound around said coil ring disposed within said coil pocket;

a spool valve having a magnetically active spool ring attached thereto for magnetic interaction with said electrical coil and said coil ring causing said spool valve to axially move to control the flow of a hydraulic oil, said spool ring comprised of a first face and a second face each having castellation channels formed therein for reducing oil film stiction forces;

a control unit electrically connected to said coil for generating an electrical signal in said coil to cause said coil to magnetically attract said spool ring;

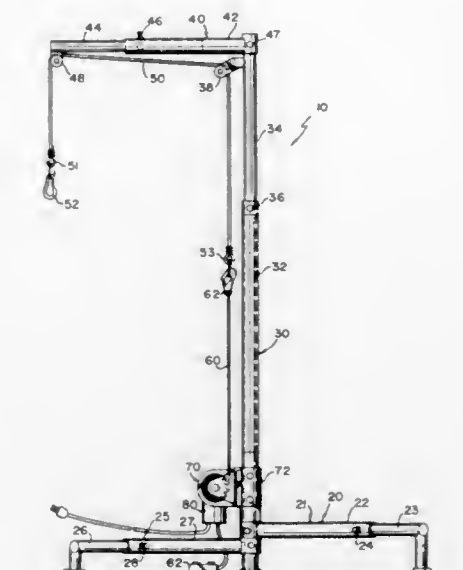
a return spring acting on said spool valve to oppose the magnetic forces generated by said electrical coil.

5,509,638
HOIST WITH AN ELASTIC CABLE
 Pedro Leon-Vieito, 2206 SW. 60 Ave., Miami, Fla. 33155
 Filed Nov. 7, 1994, Ser. No. 335,234
 Int. Cl.⁶ B66D 1/50; 1/12

U.S. Cl. 254—270

6 Claims

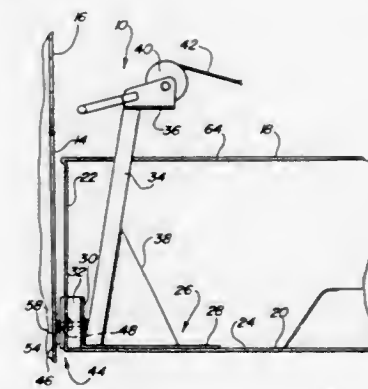
1. A device for lifting a load, comprising:
 A. elongated upright support means having upper and lower ends;
 B. elongated radially extending support means having first and second ends and said first end being mounted to said upper end;
 C. an elastic cable having first and second ends and the second end of said elastic cable being attached to said load;
 D. a non-elastic cable having first and second ends and the first end of said non-elastic cable being attached to the first end of said elastic cable; and



E. spool means for winding said second end of said non-elastic cable.

5,509,639
WINCH ASSEMBLIES
 Craig A. Ellis, 11402 Nora Dr., Fenton, Mich. 48430
 Filed Oct. 5, 1993, Ser. No. 132,041
 Int. Cl.⁶ B66D 3/00; 1/00; B60R 9/00; B65F 1/00
 U.S. Cl. 254—380

9 Claims



1. A winch assembly, comprising:
 a bracket including a base plate;
 a backing plate mounted to a substrate, said backing plate including fastening means for securing said bracket in a predetermined position over the substrate;
 a stanchion extending upwardly from said base plate, said stanchion including means for supporting the winch in an elevated free-standing position;

a blocking plate discrete from said stanchion and extending upwardly from said base plate; and means for maintaining the stanchion in an upright position.

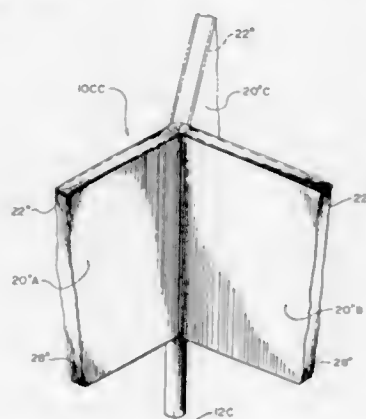
5,509,640

POST-AND-PANEL BUILDING WALLS

Dale E. Vesper, 5654 Oceanic Rd., Holiday, Fla. 34690
Continuation-in-part of Ser. No. 14,640, Feb. 8, 1993, Pat. No. 5,421,558, and a continuation-in-part of Ser. No. 912,895, Jul. 13, 1992, and a continuation-in-part of Ser. No. 835,241, Feb. 12, 1992, said Ser. No. 835,241 is a continuation-in-part of Ser. No. 455,061, Dec. 22, 1989, Pat. No. 5,129,628, which is a continuation-in-part of Ser. No. 178,261, Apr. 6, 1988, Pat. No. 5,184,808. This application Jan. 11, 1994, Ser. No. 179,848
Int. Cl.⁶ E04H 17/16

U.S. Cl. 256—31

16 Claims



1. A wall construction including tubular posts and intervening wall panels, the improvement comprising each of the wall panels comprising solid foam composition throughout with respective vertical side edges being recessed to receive substantially half of the respective adjacent tubular posts, at least one panel-reinforcing member extending the side-to-side distance between the vertical side edges of the wall panel, and end portions of the panel-reinforcing member being swaged into shape conforming to outlines of the tubular posts.

5,509,641

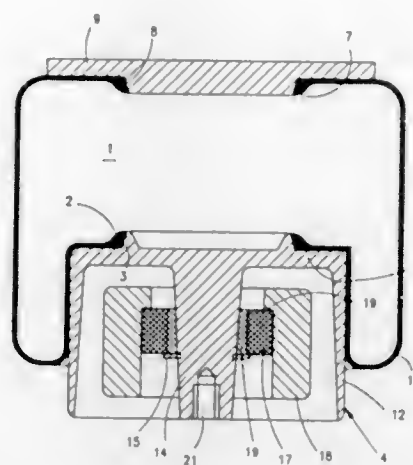
AIR SPRING WHICH INCLUDES A VIBRATION ABSORBING MASS

Hubertus Prinzer, Langenhagen, and Hubertus Gawinski, Lehrte, both of, Germany, assignors to Continental Aktiengesellschaft, Hanover, Germany
Filed Dec. 15, 1994, Ser. No. 356,522
Int. Cl.⁶ F16F 9/05

U.S. Cl. 267—64.19

6 Claims

1. An air spring for supporting a vehicle body on a vehicle component to which vibrations are imparted in a predetermined resonance frequency range, the air spring comprising: an air spring flexible member charged with pressurized air and having first and second ends; a first attachment part mounted on said vehicle body and a second attachment part mounted on said vehicle component; said first and second ends of said air spring flexible member being attached to said first and second attachment parts, respectively; vibration absorbing mass means elastically connected to said second attachment part for reducing said vibration in said resonance frequency range; said second attachment part being a roll-off piston mountable on said vehicle component;



said vibration absorbing mass means including a vibration absorbing mass; and, elastic means for elastically mounting said vibrations absorbing mass in said roll-off piston; said roll-off piston defining an enclosed space and having a support projection disposed therein and said support projection being disposed concentrically with respect to said roll-off piston; said elastic means being an elastomeric body mounted on said support projection; and, said vibration absorbing mass including an annularly-shaped vibration absorbing mass mounted on said elastomeric body.

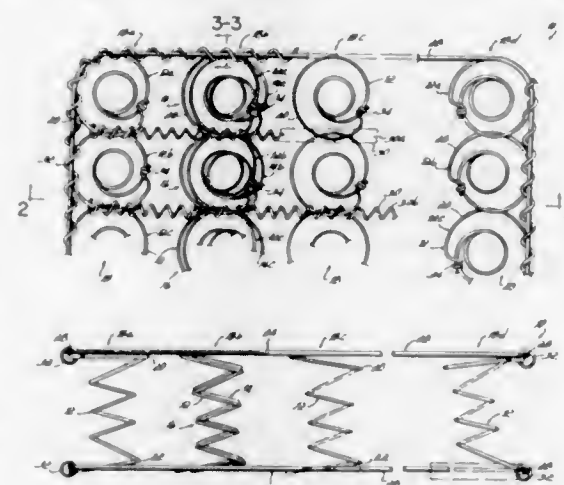
5,509,642

MATTRESS INNERSPRING STRUCTURE HAVING COAXIAL COIL UNITS

Thomas J. Wells, Carthage, Mo., assignor to L&P Property Management Company, Chicago, Ill.
Filed Mar. 20, 1995, Ser. No. 406,694
Int. Cl.⁶ F16F 3/00

U.S. Cl. 267—92

15 Claims



1. An innerspring structure for a mattress comprising: a plurality of adjacent outer coils extending generally parallel to one another and arranged in aligned rows, each outer coil having opposing end turns resting in top and bottom face surfaces of the innerspring structure; at least one inner coil extending between said top and bottom face surfaces and wound generally coaxially within one of said outer coils such that corresponding end turns of the inner and outer coils are adjacent one with the other at the top and bottom face surfaces; and a helical lacing wire wrapping together the adjacent end turns of the inner and outer coils and an end turn of an

adjacent outer coil and connecting the coaxial inner and outer coils with the adjacent outer coil at a face surface of the spring interior for creating a reinforced coil unit at a position in the innerspring structure, said reinforced coil unit having generally equal strength along its length to provide generally equal support to the top and bottom face surfaces of the innerspring structure when placed therein.

5,509,643

HYDRAULICALLY DAMPING BEARING BUSH

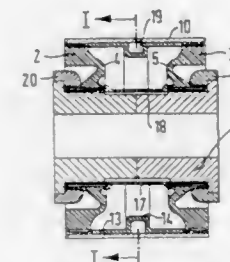
Udo Carstens, Pastetten, and Mathias Gugsch, München, both of, Germany, assignors to Metzeler Gimetall AG, Munich, Germany

Filed Feb. 18, 1994, Ser. No. 198,761

Int. Cl.⁶ F16M 1/00

U.S. Cl. 267—140.12

2 Claims



1. A hydraulically damping bearing bush, comprising: a hollow-cylindrical bearing core having ends with end surfaces; an outer tube having end surfaces; two elastomeric support springs having a space therebetween, said support springs being disposed between said bearing core and said outer tube at said end surfaces, and said support springs extending substantially radially and having inwardly curved wall portions; elastomeric radial support lugs extending horizontally on two sides between said bearing core and said outer tube, said support lugs dividing said space into upper and lower fluid-filled chambers; an annular channel through which said chambers communicate with one another; a cylindrical diaphragm-like elastomeric part extending between said two support springs along said bearing core; radially extending, bead-like stop rings disposed on said ends of said bearing core in the vicinity of said inwardly curving wall portions; and an additional channel extending between said support lugs and said outer tube, said additional channel having the form of a segment of a circle and having a limited length, a given diameter and reduced inlet and outlet openings, and a spherical mass being enclosed in said additional channel and having a diameter being slightly smaller than said given diameter.

5,509,644

MODIFIED T-SLOT ARRANGEMENT

Eddy Engibarov, c/o E.Z.E. Machine Company, 616 Onderdonk Ave., Ridgewood, N.Y. 11385

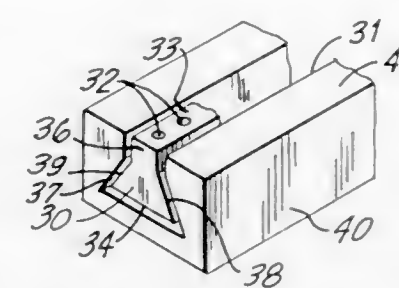
Filed Jan. 11, 1995, Ser. No. 371,165

Int. Cl.⁶ B23Q 3/02

U.S. Cl. 269—99

16 Claims

1. A modified T-slot arrangement for firmly holding objects to be fastened to a holding surface by a fastening force comprising a first mounting member adapted to be fastened to said object and having a neck portion with a substantially planar outer surface, arm portions and a foot portion, said arm portions having at least partial planar sections inclined with respect to said planar outer surface of said neck and with respect to said foot portion; a mating member



having an outer surface adapted to serve as said holding surface and inner surfaces adapted to receive said neck, arm and foot portions of said holding member therein in cooperative relationship, whereby when a fastening force is applied to said holding member through said object in a direction substantially perpendicular to said planar outer surface of said neck portion, said arm portions of said mounting member are urged against the respective cooperating surfaces of said mating member to firmly hold said object to said holding surface.

5,509,645

SHEET SORTER WITH HOLE PUNCHING ASSEMBLY

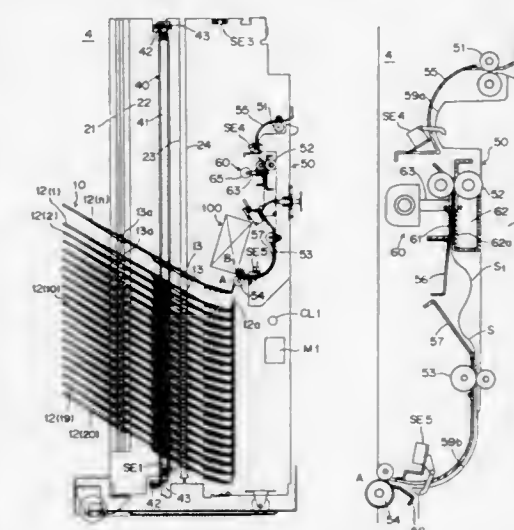
Tatsuya Shinno, Toyokawa, and Hiroki Yamashita, Okazaki, both of, Japan, assignors to Minolta Co., Ltd., Osaka, Japan

Filed Jan. 31, 1995, Ser. No. 381,079

Claims priority, application Japan, Feb. 1, 1994, 6-010664
Int. Cl.⁶ B65H 33/04; 9/04; B26D 7/14

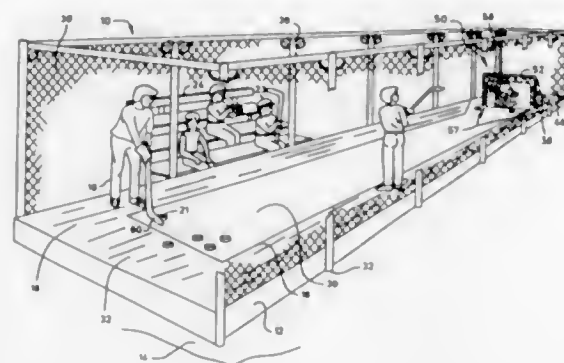
U.S. Cl. 270—58

12 Claims



1. A sheet containing machine which receives sheets ejected from an image forming machine and piles the sheets in a specified sheet piling place, said sheet containing machine comprising: punching means for punching a sheet; a first transport roller for transporting a sheet ejected from the image forming machine to the punching means; a second transport roller for transporting a sheet from the punching means toward the sheet piling place; and control means which makes a transporting speed of the first transport roller relatively different from that of the second transport roller when a trailing portion of a sheet passes through the first transport roller such that the sheet forms a curved portion between the first transport roller and the second transport roller.

10. A method of receiving sheets ejected from an image forming machine and piling the sheets in a specified sheet piling place, the method comprising the steps of:



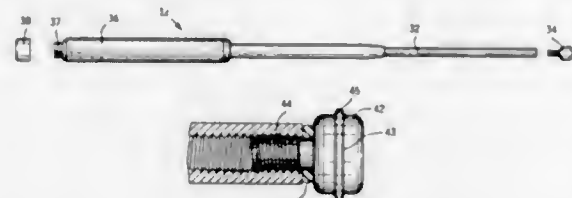
5,509,653

EXPANDABLE BATON WITH RESILIENT MEMBER MOUNTED IN TIP

Kevin L. Parsons, Appleton, Wis., assignor to Armament Systems and Procedures, Inc., Appleton, Wis.
Division of Ser. No. 129,901, Sep. 30, 1993, Pat. No. 5,407,197.
This application Sep. 29, 1994, Ser. No. 315,106
Int. Cl.⁶ F41B 15/02

U.S. Cl. 273—84 R

2 Claims



1. An expandable baton having a telescoping end and a handle, the telescoping end having an internally threaded bore for receiving a removable tip, the removable tip comprising, an upper section and a lower section, the lower section having a threaded shaft for threadably securing the tip to the baton and wherein the tip includes a fabric engaging element and the upper section further comprising a circumferential recess and the fabric engaging element mounted in the recess.

5,509,654

GAME MACHINE EMPLOYING METAL BODIES AS ITS MEDIA

Takatoshi Takemoto, and Kazunari Kawashima, both of Tokyo, Japan, assignors to Kabushiki Kaisha Ace Denken, Tokyo, Japan

Continuation of Ser. No. 910,024, Jul. 23, 1992, abandoned.

This application Feb. 7, 1994, Ser. No. 193,659

Claims priority, application Japan, Nov. 24, 1990, 2-320368

Int. Cl.⁶ A63F 7/02

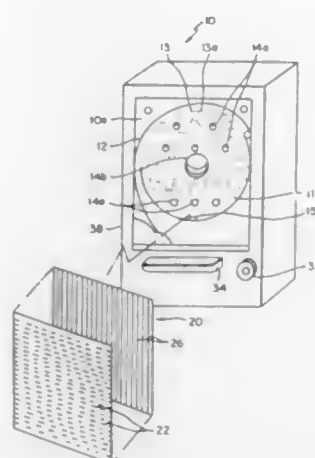
U.S. Cl. 273—121 B

12 Claims

1. A game machine employing metal bodies as its media, which game machine comprises:
a panel having a plane providing a game zone in which said metal bodies move;
a cover element covering said panel with a fixed distance therebetween providing a space for the movement of metal bodies;
a mounting frame in which said panel and said cover element are mounted;
a matrix sensor comprising sensing units arranged in a matrix on the cover element for detecting the metal bodies without touching them; and a signal processing means which drives the matrix sensor and detects the location of the metal bodies on the panel; wherein

1. A flipped ball game apparatus having a play field into which a ball is shot and moves leaving an indefinite trajectory, wherein a predetermined value can be provided to a player in accordance with the trajectory of the ball moving in the play field, said apparatus comprising:

ball shooting means for shooting a ball towards said play field;
a variable display apparatus including a plurality of variable display portions capable of varying a display state;
starting condition determining means for determining whether or not game starting condition necessary to start a game are satisfied;
ball shooting automatic control means for automatically driving and controlling said ball shooting means to automatically shoot a ball when said starting condition determining means determines that the game starting conditions are satisfied;



a portion of said signal processing means is connected to said sensing matrix outside said game zone within a space defined by the mounting frame having upper and lower portions with side portions connected thereto by corner portions.

5,509,655

FLIPPED BALL GAME APPARATUS

Shohachi Ugawa, Gunma, Japan, assignor to Kabushiki Kaisha Sankyo, Gunma, Japan

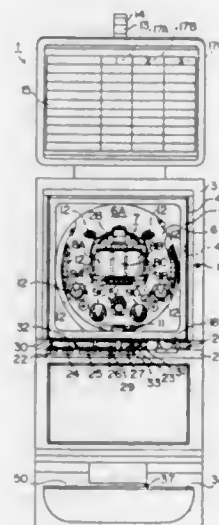
Filed Sep. 27, 1994, Ser. No. 312,738

Claims priority, application Japan, Sep. 30, 1993, 5-245233

Int. Cl.⁶ A63F 7/30

U.S. Cl. 273—121 B

39 Claims



variable display controlling means for controlling said variable display apparatus to draw and display a display result when said starting condition determining means determines that the game starting conditions are satisfied;

display result value providing means for providing a predetermined value to the player when the display result of said variable display apparatus is provided in a predetermined specific display state;

wherein said variable display controlling means comprises display timing controlling means for drawing and displaying asynchronously the display results of said plurality of display members after starting variation of display of said plurality of variable display portion; and

specific operation means for carrying out a specific operation appreciable by the player, different from that when not in said predetermined specific state, when in said predetermined specific state where the display result of the variable display portion, already having a display result drawn and displayed at a stage where a part of said plurality of variable display portions is still varying display, satisfies the conditions of attaining said predetermined specific display state.

5,509,656

ELECTRONIC MAZE PUZZLE

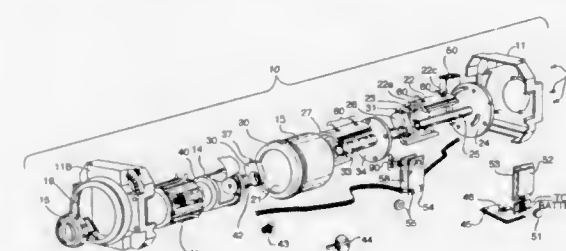
Howard H. Berger, Hermosa Beach; Gary T. Yamron, Redondo Beach, and Richard Perkins, Playa Del Rey, all of Calif., assignors to Image Design & Marketing, El Segundo, Calif.

Filed Oct. 25, 1993, Ser. No. 142,787

Int. Cl.⁶ A63F 9/06

U.S. Cl. 273—153 R

29 Claims



1. A maze puzzle comprising a puzzle body including a recess defining a generally cylindrical cavity in the body;
a maze pattern within said recess located on the cylindrical wall of the body;

said maze pattern comprising a series of interconnected grooves extending from a starting position generally toward the bottom of the recess to a final position groove generally toward the surface of the recess adjacent to the surface of said puzzle body but concealed therein;

said maze pattern including a plurality of paths with at least one of which extends from the starting point to the final groove and a plurality of other paths which extend from the starting point but do not provide a complete path to the final groove;
a plurality of electrical switch means each of said switch means associated with and located at concealed different locations in several of said grooves;

a power source connected to said switch means;

a signal generator powered by said power source through said electrical switch means;

an operator positioned in said recess including graspable means for rotating and extending the operator out of said recess in the process of solving the maze puzzle;

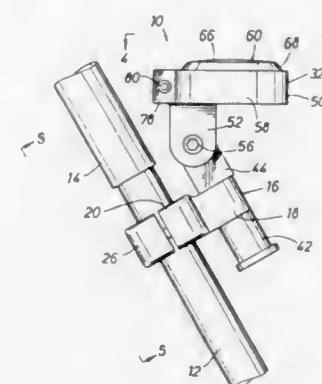
said operator including maze engaging means for traveling in the grooves of said maze pattern and operative in the region of said switch means for operating such switch means whereby said engaging means as it travels past a switch means powers said signal generator to provide a signal to the puzzle player related to the position of the switch means operated.

5,509,657

POSITION INDICATOR DEVICE FOR GOLF CLUBS

Joe M. Guthry, 10716 E. Timberwagon Cir., Woodlands, Tex. 77380
Filed Feb. 13, 1995, Ser. No. 387,314
Int. Cl.⁶ A63B 57/00; 69/36; G01C 9/28; 9/36
U.S. Cl. 273—162 B

16 Claims



1. A positioning and position indicating device for releasable attachment to the shaft of a golf club having a head defining a reference edge, comprising:

(a) a mounting base adapted to be supported on a shaft of a golf club and having a mounting block defining a non-circular orienting receptacle therein and having a clamping block adapted for receiving the shaft of the golf club and retaining said mounting block in substantially immovable relation with the shaft of the golf club;

(b) a positioning head support being disposed in releasable and oriented assembly with said mounting base and having non-circular mounting means being received in oriented assembly by said non-circular orienting receptacle;

(c) a positioning head being connected to said positioning head support and being selectively positionable relative thereto;

(d) means retaining said non-circular mounting means in releasable, substantially immovable assembly within said non-circular orienting receptacle and supporting said positioning head support in substantially immovable relation with said mounting base;

(e) a generally circular spirit level being provided on said positioning head and being located for inspection by a golfer holding the golf club in position for addressing a golf ball lying on the ground for determination of the position at which the golf club is being held, said spirit level having a closed chamber with fluid therein and an air bubble present within said fluid; and

(f) indicia means being present on said spirit level for orientation relative to said air bubble at various positions of the golf club shaft, said indicia means having reference marks identifying up, down, open and closed positions of the reference edge of the head of the golf club when said golf club is positioned to address a golf ball.

5,509,658

GOLF PUTTER WITH BALL RETRIEVAL DEVICE

Robert Youngblood, North Hills, Calif., assignor to James E. Freye, Chandler, Ariz.

Filed Nov. 4, 1994, Ser. No. 334,232

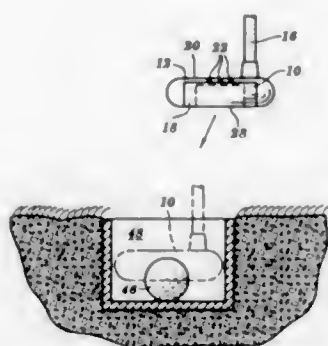
Int. Cl.⁶ A63B 53/04

U.S. Cl. 273—162 E

11 Claims

10. A golf putter with a ball retrieval element comprising:

a shaft;
a putter head attached to said shaft, said head having a front ball striking surface, a top surface and a bottom surface;
a receptacle in the putter head, said receptacle having an opening in said bottom surface whereby said receptacle is adapted to partially receive a golf ball, said receptacle tapering



inwardly from an inner circumference into the putter head toward the top surface of the head; and
a plurality of ridges on a portion of the receptacle which contacts the ball when the receptacle is placed over the ball, said ridges gripping the ball whereby the ball may be lifted and held partially within the receptacle.

5,509,659

GOLF CLUB HEAD WITH INTEGRALLY CAST SOLE PLATE

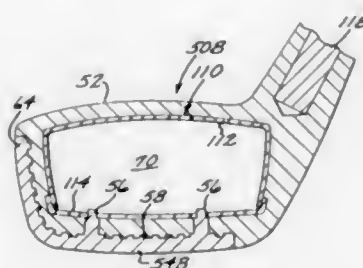
Lawrence Y. Igarashi, 30231 Tomas Rd., Rancho Santa Margarita, Calif. 92688

Division of Ser. No. 156,613, Nov. 23, 1993, Pat. No. 5,398,746. This application Jul. 25, 1994, Ser. No. 280,013

Int. Cl.⁶ H63B 53/04

U.S. Cl. 273—169

17 Claims



16. A wood-type golf club, comprising:

- a sole plate member constructed of a first material having a relatively high first specific weight density, said sole plate member having an exterior surface and an interior surface;
 - a club head shell member fabricated of a lightweight second material, said second material having a second specific weight density lower than said first specific weight density;
 - a cavity-defining structure disposed within said club head shell member and comprising: a first sheet metal member forming an inverted cupped configuration and a second sheet metal member covering an open cavity defined by said first sheet metal member, said second sheet metal member disposed adjacent said interior surface of said sole plate;
- wherein said sole plate member and said shell member are secured together in a unitary structure without the use of welding or fastener devices, and said club head has the characteristic of a low center of gravity.

5,509,660

GOLF CLUBS

John C. Elmer, 16 Patrick Duncan Road, Kloof, Kwa Zulu Natal, South Africa

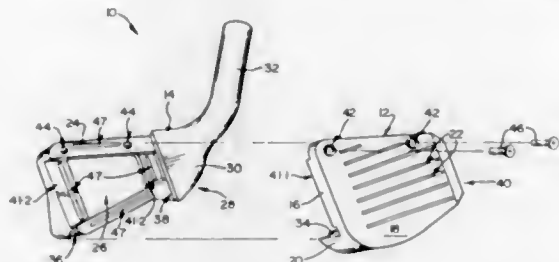
Filed Aug. 8, 1994, Ser. No. 288,272

Claims priority, application South Africa, Aug. 17, 1993, 93/6012

Int. Cl.⁶ A63B 53/04

U.S. Cl. 273—173

21 Claims



I. A golf club head for an iron-type golf club defining a striking face, a sole, a toe, a heel and a socket formation for receiving a golf club shaft, the golf club head comprising:

- a first body part that includes a first body segment defining the striking face of the golf club head and a second body segment extending integrally from the first body segment and defining the sole of the golf club head;
- a second body part removably located with respect to the first body part, the second body part including a frame, operatively located behind the first body segment of the first body part, the frame being perimeter weighted around a central region and providing perimeter weighting operatively behind the striking face defined by the first body segment of the first body part, and the socket formation of the golf club head extending integrally from the frame, the second body part being removably located with respect to the first body part by complementary locating formations defined by the first and second body parts respectively, the complementary locating formations permitting only displacement of the first body part with respect to the second body part along a line substantially parallel to the sole of the golf club head and in a direction away from the socket formation of the second body part; and securing means for releasably securing the first and second body parts together.

5,509,661

GEOMETRICAL SHAPE IDENTIFYING GAME

Ardith M. Parsley, 1549 Chillicothe St., Obetz, Ohio 43207

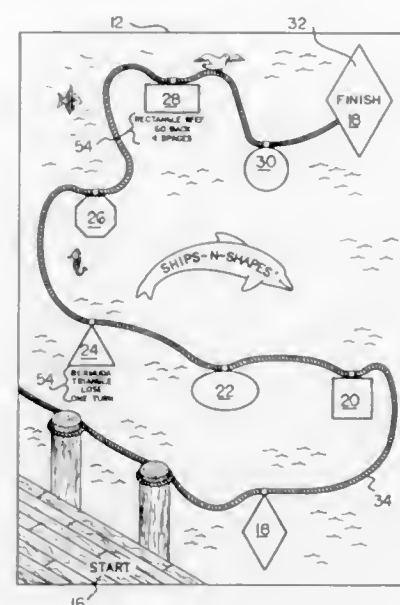
Filed Jan. 12, 1995, Ser. No. 371,860

Int. Cl.⁶ A63F 3/00

U.S. Cl. 273—249

3 Claims

- I. A method of playing a game comprising the steps of:
- (a) providing a geometrical shape identifying game comprising a game board having a plurality of areas printed thereon within which a game token can be selectively positioned by a player, the areas of the game board being shaped so as to define various geometrical shapes and include a starting area and a finish area, with the various geometrical shapes being serially oriented between the starting and finish areas, the geometrical



- shapes including a diamond shaped area, a square shaped area, an oval shaped area, a triangle shaped area, an octagon shaped area, a rectangle shaped area, and a circle shaped area, with the starting area being connected to the geometrical shaped areas and to the finish area by a guideline extending sequentially between the areas; and a deck of cards, the cards each including a shape printed thereon corresponding to one of the shaped areas of the game board;
- (b) providing a game token;
- (c) drawing one of the cards from the deck thereof;
- (d) positioning the game token on a correspondingly shaped area of the game board relative to the one of the card drawn from the deck, wherein the correspondingly shaped area of the game board must be adjacent to an area upon which the game token is residing.

5,509,662

METHOD OF PLAYING CHESS

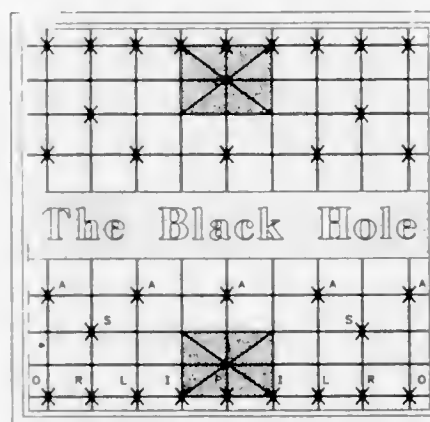
Blaise F. Santianni, 807 Glenview St., Philadelphia, Pa. 19111

Filed Jun. 16, 1995, Ser. No. 491,085

Int. Cl.⁶ A63F 3/02

U.S. Cl. 273—260

8 Claims



- 1. A method of playing a board game of logic and strategy comparable to chess in that it is played by opposing players on opposite sides of a board with playing pieces that are moved by the players in accordance with prescribed rules for both movement and capture in order to try to place the opponent in a condition of

checkmate or stalemate, said method comprising the steps of: (1) providing a rectangular playing board having a Black Hole in the shape of a central rectangle, the central long axis of which is coincident with a central axis of said rectangular playing board; (2) covering said board with nine vertical grid lines and ten horizontal gridlines wherein each of said horizontal grid lines extends from one side of said board to the opposite parallel side of said board and wherein the fifth and sixth of said horizontal grid lines constitute the long sides of said central rectangle and wherein each of said vertical grid lines extends to each long side of said central rectangle to form a playing board having two large rectangles separated by said central rectangle and wherein each large rectangle is comprised of a grid of lines intersecting at right angles thereby forming 45 grid points; (3) establishing in each of said large rectangles a restricted zone bounded by the fourth and sixth vertical grid lines and the first and third horizontal grid lines and having two diagonal lines connecting opposite corners of said restricted zone; (4) allocating a total number of at least thirty four playing pieces for said game; and dividing said thirty four playing pieces equally into two identical sets of seventeen playing pieces per player wherein each set of seventeen pieces is comprised of seven different types of pieces, with each player having a different color set of playing pieces; (5) designating each set of playing pieces to include one First type, two Second type, two Third type, five Fourth type, two Fifth type, two Sixth type, and three Seventh types; (6) formatting predetermined rules of movement for play wherein the First type and the Sixth type are permitted movement within said restricted zone only; (7) formatting predetermined rules of movement for play wherein each Fourth type is permitted movement through or across the Black Hole; (8) formatting predetermined rules of movement for play wherein prior to moving through the Black Hole each Fourth type is restricted to move forward one step at a time; (9) formatting predetermined rules of movement for play wherein after a Fourth type has moved through the Black Hole said Fourth type is permitted to move left, right, or forward one step at a time; (10) formatting predetermined rules of movement for play wherein a Fourth type is prohibited movement on its players next turn after said fourth type has moved through said Black Hole; (11) formatting predetermined rules of movement for play wherein each of the Second type, Fifth type, and Seventh type pieces is permitted movement across said Black Hole; (12) formatting predetermined rules of movement for play wherein each Third type is permitted movement up to the Black Hole but is prohibited from crossing the Black Hole; (13) formatting predetermined rules of movement for play wherein when play begins, one of each player's Seventh type of piece is inside the Black Hole and is constrained to the Black Hole until freed by a Fourth type which has advanced to the last row of its opponent's side of the board; (14) formatting predetermined rules of movement for play wherein after said Seventh type of step (13) has been freed, said Seventh type is permitted movement to an unoccupied space on the edge of the Black Hole and is also prohibited movement on its players next turn and said Fourth type of piece in step (13) is removed from the board; (15) formatting predetermined rules of movement for play wherein each Seventh type is permitted to capture a target piece only if a third piece lies between said Seventh type and said target piece; (16) formatting predetermined rules of movement for play wherein each Fifth type is permitted movement one gridpoint along either vertical or horizontal grid lines in any direction and then one additional grid point at a 45° or 225° angle to the original direction of motion; (17) formatting predetermined rules of movement for play wherein each Fifth type is permitted movement over another piece; (18) formatting predetermined rules of movement for play wherein each Fifth type is prohibited from movement to a permissible space if another piece is immediately in front, behind or on either side of said Fifth type; (19) formatting predetermined rules of movement for play wherein each Second type is permitted

1. A seal for a shaft in a housing, comprising:

- a radial shaft-sealing ring circumferentially surrounding the shaft;
- a sealing lip which seals against the surface of the shaft, said sealing lip being integral with and concentrically abutting said radial shaft-sealing ring, said sealing lip formed of an elastomeric material under radial pretensioning;
- an L-shaped first reinforcing ring concentric with and radially exterior to said radial shaft-sealing ring, said first reinforcing ring including a first leg pointing radially inward toward the shaft and a second leg pointing in a direction parallel to the shaft, such that said radial shaft-sealing ring is attached to said first leg;
- an outer ring abutting a partial extent of said second leg, said outer ring concentric with and interior to said second leg;
- an inner ring, said inner ring concentric with and abutting the shaft;
- a roller bearing located between said inner ring and said outer ring;
- a jacket formed of an elastomeric material, said jacket exterior, partially overlapping, and concentric with said second leg; and
- a second reinforcing ring comprising a flange that both points radially away from the shaft and that abuts a radial side of the housing, said second reinforcing ring partially overlapping and being concentric with said jacket such that said second reinforcing ring abuts the housing; and wherein

said jacket extends beyond said second reinforcing ring in the direction parallel to the shaft.

5,509,668

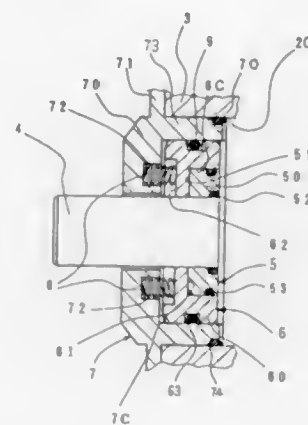
MECHANICAL SEAL FOR PRESSURIZED FLUID PUMPS
Toshinori Kurita; Eiji Kojima; Tadayuki Shimowada, and
Fujio Sato, all of Nakashima, Japan, assignors to Toyoda
Gosei Co., Ltd., Nishikasugai, Japan

Filed May 27, 1994, Ser. No. 250,775

Claims priority, application Japan, May 28, 1993, 5-151543
Int. Cl.⁶ F16J 15/34

U.S. Cl. 277—81 R

9 Claims



1. A mechanical seal for pressurized fluid pumps comprising:
a pump housing in which a drive shaft having an axis is rotatably mounted;
a rotary seal member extending about and fixed to said drive shaft and having a rotary contact surface, and an outer peripheral surface extending substantially parallel to said axis;
an axially movable seal member extending about said drive shaft and having a stationary contact surface facing and in contact with said rotary contact surface, said axially movable seal member including an outer flange extending axially away from said stationary contact surface, thereby defining a cylindrical cavity surrounding said stationary contact surface, said rotary seal member fitting within said cylindrical cavity; and
a spring member compressed between said housing and a side of said axially movable seal member opposite said stationary contact surface to provide a biasing force against said axially movable seal member toward said rotary seal member, wherein said axially extending outer flange overlies substantially the full extent of said outer peripheral surface of said rotary seal member.

5,509,669

GAS-PATH LEAKAGE SEAL FOR A GAS TURBINE
Christopher E. Wolfe, Schenectady; Osman S. Dine, Troy;
Bharat S. Bagepalli, Schenectady; Victor H. Correia, New
Lebanon, and Mahmut F. Aksit, Troy, all of N.Y., assignors to
General Electric Company, Schenectady, N.Y.

Filed Jun. 19, 1995, Ser. No. 491,757

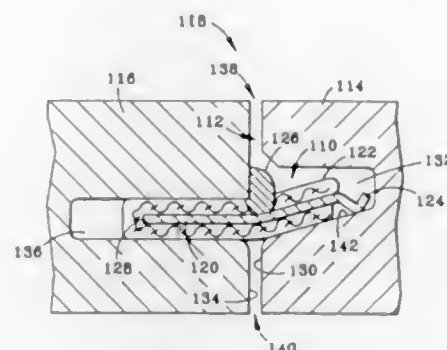
Int. Cl.⁶ F16J 15/12

U.S. Cl. 277—167.5

10 Claims

1. A gas-path leakage seal for generally sealing a gas-path leakage-gap between spaced-apart first and second members of a gas turbine, said seal comprising:

- a generally impermeate foil-layer assemblage generally impervious to gas, disposed in said gas-path leakage-gap, and having a first edge, wherein said foil-layer assemblage resiliently contacts said first member proximate said first edge; and
- a cloth-layer assemblage contacting said first and second members, wherein said cloth-layer assemblage generally enclosingly contacts said foil-layer assemblage leaving said first edge exposed.



5,509,670

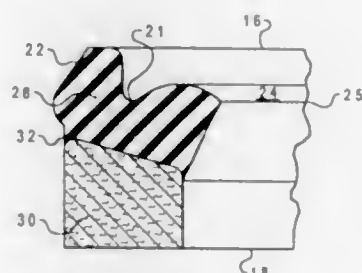
PACKING MEMBER WITH REDUCED FRICTION
Wallace Wheeler, Dallas, Tex., assignor to The Texacon Company, Mesquite, Tex.

Filed Oct. 28, 1994, Ser. No. 331,126

Int. Cl.⁶ F16J 9/08; 15/32; 15/48

U.S. Cl. 277—205

17 Claims



1. A packing member comprising:
an annular body comprising a relatively soft upper portion formed from an elastomeric polymeric material and a lower portion, said lower portion being harder than said upper portion said upper and lower portions being bonded together along an interface, the lower portion being formed from a fabric reinforced elastomeric polymeric material, the annular body further defining an annular axis;
said annular body having a circular outer wall and circular inner wall, with first and second end walls extending between the inner and outer walls;
said annular body further defining a groove extending axially into said annular body through said first end wall, the groove having a lower wall, the lower wall of said groove defining a plane perpendicular to said annular axis;
the upper portion of the annular body including radially inner and outer sealing lips formed adjacent to at least a portion of the groove, the outer sealing lip extending axially beyond the inner sealing lip;
the inner sealing lip further comprising a radially inner sealing edge positioned adjacent the plane defined by the lower wall of the groove the upper surface of the inner sealing lip having a generally semicylindrical configuration;
the inner sealing lip being inclined inwardly toward the annular axis for sealing engagement when in slidable contact with a separate moveable part; and
the outer sealing lip being inclined outwardly for sealing engagement when in contact with a separate surrounding part.

5,509,671

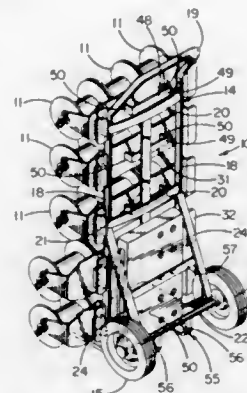
CART FOR CARRYING SPOOLS OF WIRE
William F. Campbell, 4003 Charles St., Rockford, Ill. 61108-6135

Filed Mar. 24, 1995, Ser. No. 410,103

Int. Cl.⁶ B65H 75/40; B62B 1/12

U.S. Cl. 280—47.19

6 Claims



1. A portable cart for carrying spools, said cart comprising a substantially vertical frame having two vertically extending side rails laterally spaced from one another, a plurality of wheels mounted on said frame for rotation relative to said frame, said wheels resting on the ground such that the cart is mobile, a pair of horizontally aligned support brackets secured to and extending from said side rails, and a rack having a laterally extending panel and having means connected to said panel for releasably supporting a plurality of spools, said supporting means being adapted to permit rotation of the spools relative to said panel, said rack further having two laterally spaced support members connected to said panel, said support members being adapted to rest on said support brackets such that said rack is releasably secured to and is selectively removable from said frame, said support brackets coacting with said support members to support all of the weight of said rack and to permit removal of said rack from said frame by lifting said rack upwardly, said rack further having a handle secured to said panel so as to enable said rack and said spools to be carried to a location remote from the frame.

5,509,672

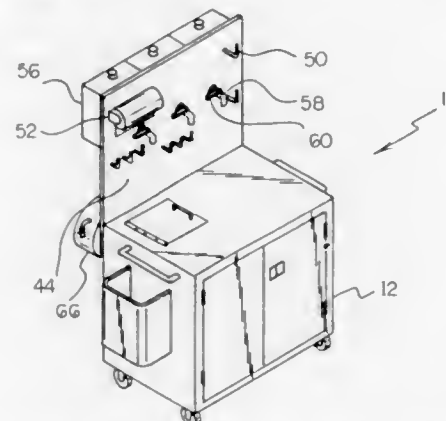
PAINTER'S SUPPLY CART
Leo A. Offerson, P.O. Box 302, Pedersen Road, Dawson Creek, B.C., Canada

Filed May 1, 1995, Ser. No. 432,462

Int. Cl.⁶ B62B 3/00; 5/04

U.S. Cl. 280—47.35

3 Claims



1. A painter's supply cart for keeping materials for a paint job comprising, in combination:

a cart having a top end, a bottom end, an open front end, a back end, and two side walls, the top end having a sink formed therein, the sink having a fuseable link heat door hingedly secured to an edge thereof, the bottom end having four caster wheels disposed on corners thereof, the open front end having a dividing wall therein separating the open front end into a first compartment and a second compartment, the first compartment having a plurality of shelves disposed therein, the second compartment having a removable container disposed therein positioned beneath the sink, the open front end having a pair of doors hingedly secured on opposing edges thereof, each of the two side walls having a handle secured thereto, one of the two side walls having a U-shaped receptacle secured thereto;

an upper support board secured to an upper portion of the back end of the cart and extending upwardly of the top end of the cart, the upper support board having a front surface and a rear surface, the front surface having a plurality of securement hooks secured thereto, the front surface having a paper towel holder secured thereon;

a plurality of solvent tanks secured to the rear surface of the upper support board, each of the solvent tanks having a drainage valve extending through the front surface of the upper support board, each drainage valve having a flow regulator coupled therewith;

a pair of reels secured to the rear surface of the upper support board downwardly of the plurality of solvent tanks, each of the reels having a 150 PSI regulator therein and a length of hose;

a brake mechanism secured to the bottom end of the cart, the brake mechanism having a lever extending outwardly of the bottom end of the cart, the lever coupling with a floor engaging portion to optionally engage the floor engaging portion or disengage the floor engaging portion.

5,509,673

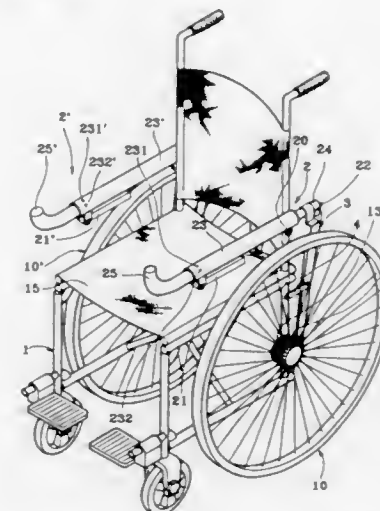
ARMREST-DRIVEN WHEELCHAIR
Kung-Hsiung Wu, and Hsiu-Fong Hsu, both of No. 294, Sec. 3, Hsing-Lung Rd., Taipei, Taiwan

Filed Feb. 1, 1995, Ser. No. 382,168

Int. Cl.⁶ A61G 5/02; B62M 1/04; 1/14; 1/16

U.S. Cl. 280—250.1

7 Claims



1. An armrest-driven wheelchair of the type comprising a wheelchair frame, a seat upholstery carried on said wheelchair frame for sitting by an user, two separate wheels mounted on said wheelchair frame at two opposite sides and separately turned for moving said wheelchair frame, and two armrests mounted on said wheelchair frame at two opposite sides, wherein: two first bearing means are respectively mounted on the shaft of each wheel and driven to turn each wheel forwards; two second bearing means are respectively mounted on the shaft of each wheel and driven to turn each wheel backwards.

mounted on the shaft of each wheel and driven to turn each wheel backwards; said armrest are respectively pivoted to said wheelchair frame and turned back and forth about a respective pivot on said wheelchair frame to turn said wheels forwards or backwards; two transmission rods respectively coupled to said armrests and controlled by said armrests to connect said first bearing means or said second bearing means to said armrests, permitting said wheels to be turned forwards or backwards by said armrests.

5,509,674

BICYCLE SUSPENSION SYSTEM

Michael Ronald S. Browning, Blackwater, England, assignor to Cannondale Corporation, Georgetown, Conn.

Division of Ser. No. 588,160, Sep. 26, 1990, Pat. No. 5,308,099.

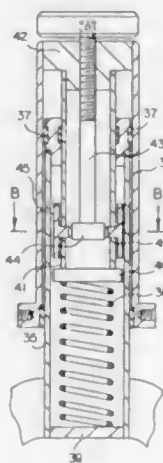
This application May 2, 1994, Ser. No. 236,970

Claims priority, application United Kingdom, Sep. 26, 1989, 8921962

Int. Cl.⁶ B62K 17/00

U.S. Cl. 280—276

9 Claims



1. A bicycle comprising a frame, at least a front wheel, handle bars, and a suspension system, the frame including a head tube and a steering tube located in the head tube, the suspension system comprising:

- a suspension tube received within the steering tube, the suspension tube being coupled with the front wheel of the bicycle;
- a block fixed to the steering tube;
- a stop fixed to the suspension tube;
- a spring located in the suspension tube between the block and the stop;
- at least one friction element located within the steering tube and the suspension tube for engaging an inner wall of the suspension tube and restricting movement thereof;
- a rotatable control knob located at the top of the head tube;
- a control rod extending from the control knob to a member cooperating with the friction element, whereby rotation of the control knob can vary the engagement of the friction element with the suspension tube.

5,509,675

BICYCLE FRONT SUSPENSION SYSTEM

Robert L. Barnett, 2090 Meyer Pl., Costa Mesa, Calif. 92627

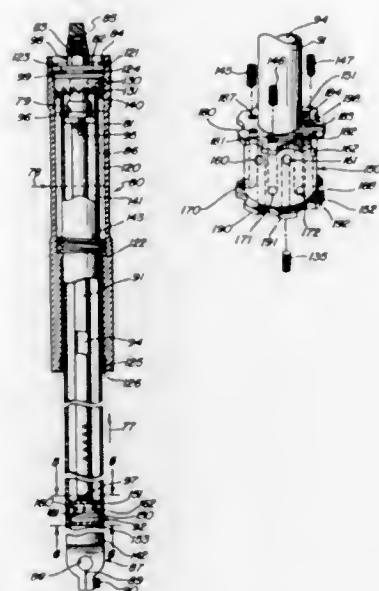
Filed Nov. 7, 1994, Ser. No. 335,268

Int. Cl.⁶ B62K 25/08

U.S. Cl. 280—276

9 Claims

1. For use in a bicycle having a front wheel and axle and a head tube, a front suspension comprising:
- an upper strut support coupled to said head tube and having upper strut attachment means;



- a lower strut support coupled to said head tube beneath and spaced from said upper strut support, said lower strut support having lower strut attachment means;
- a pair of suspension struts each having upper and lower telescoping portions movable between compressed and extended positions, said upper portions being secured to said upper and lower strut attachment means and said lower portions having axle securing ends for securing a front wheel axle and each of said suspension struts including oil dampening means for resisting telescoping motion of said upper and lower telescoping portions and valve means for independently controlling the resistance to telescoping motion produced by said oil dampening means in the compressing and extending directions, said valve means including:
- a valve body having upper and lower surfaces and a side surface;
- a first plurality of oil passages each extending into said valve body from said lower surface and exiting said valve body at said side surface proximate said upper surface;
- a second plurality of oil passages each extending into said valve body from said upper surface and exiting said valve body at said side surface proximate said lower surface; and
- a seal ring slidable upon said side surface of said valve body for closing said first plurality of oil passages during compressing motion of said telescoping portions and closing said second plurality of oil passages during extending motion thereof.

5,509,676

SHOCK ABSORBER FOR A BICYCLE FRONT FORK

Heiji Fukutake, Toyonaka; Minoru Abe, Katano, and Toru Fujii, Kyoto, all of Japan, assignors to Kabushiki Kaisha Daikin Seisakusho, Osaka, Japan

Filed Jan. 13, 1995, Ser. No. 372,465

Claims priority, application Japan, Jan. 26, 1994, 6-006856

Int. Cl.⁶ B62K 21/20

U.S. Cl. 280—276

7 Claims

1. A shock absorber mechanism disposed between handlebar and fork stems in a bicycle head tube, comprising:
- a sleeve having separated upper and lower interior portions, the upper sleeve portion configured for retaining the handlebar stem of a bicycle, and the lower sleeve portion configured for retaining the fork stem of a bicycle such that the fork stem is slidable but non-rotatable within said sleeve;
 - a removable spring disposed axially in said lower sleeve portion, wherein the spring is compressible and extensible between said lower sleeve portion and the fork stem of a bicycle;

5,509,678

RECUMBENT BICYCLE

David G. Ullman, 1655 NW. Hillcrest Dr., and Paul A. Atwood, 2315 SE. Crystal Lake Dr., both of Corvallis, Oreg. 97330

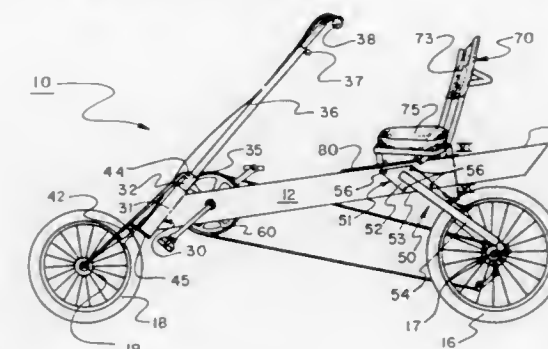
Continuation of Ser. No. 188,036, Jan. 28, 1994, abandoned.

This application Mar. 20, 1995, Ser. No. 406,647

Int. Cl.⁶ B62K 3/02

U.S. Cl. 280—281.1

15 Claims



- a deformable friction member retained in a bottom end of said lower sleeve portion, and slidable along a peripheral portion of the fork stem of a bicycle; and
- a friction member retainer adjustably fastened into said bottom end of said lower sleeve portion such that said friction member retainer can variably deform said deformable friction member.

5,509,677

SUSPENSION FORK FOR BICYCLES WITH DUAL, FLUID-BASED DAMPERS

E. Douglas Bradbury, Colorado Springs, Colo., assignor to Manitou Mountain Bikes, Inc., Colorado Springs, Colo.

Continuation-in-part of Ser. No. 241,050, May 10, 1994, Pat.

No. 5,445,401, which is a continuation-in-part of Ser. No.

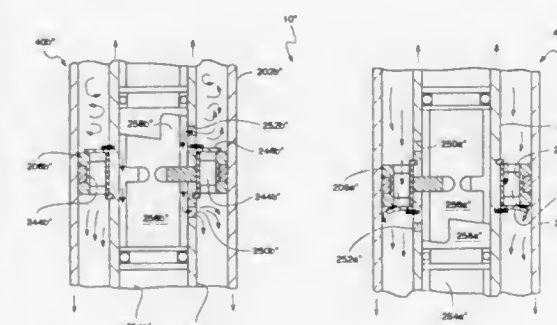
116,683, Sep. 7, 1993, Pat. No. 5,470,090. This application

Mar. 15, 1995, Ser. No. 403,372

Int. Cl.⁶ B62K 25/08

U.S. Cl. 280—276

26 Claims



24. A bicycle fork, comprising:

- first and second laterally displaced leg assemblies interconnectable with each of a bicycle wheel and a bicycle frame, said first and second leg assemblies each comprising:
- first and second slidably interconnected leg members; and
- at least one elastomer positioned interiorly of at least one of said first and second leg members, one end of said at least one elastomer being interconnected with said first leg member and an opposite end of said at least one elastomer being interconnected with said second leg member;
- a primary compressive fluid-based damper associated with said first leg assembly; and
- a primary expansive fluid-based damper associated with said second leg assembly.

5,509,679

REAR SUSPENSION FOR BICYCLES

Horst Leitner, Laguna Beach, Calif., assignor to 89908, Inc., Laguna Beach, Calif.

Continuation of Ser. No. 6,325, Jan. 21, 1993, abandoned,

which is a continuation-in-part of Ser. No. 827,089, Jan. 21,

1992, abandoned. This application Sep. 9, 1994, Ser. No.

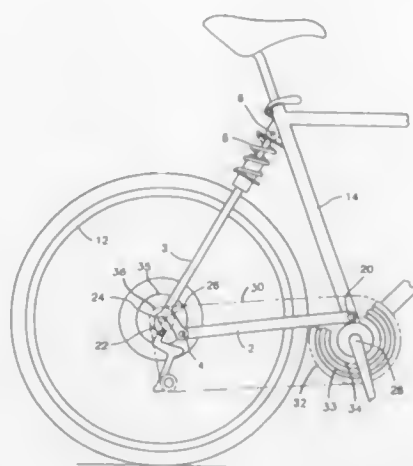
303,568

Int. Cl.⁶ B62K 25/20

U.S. Cl. 280—284

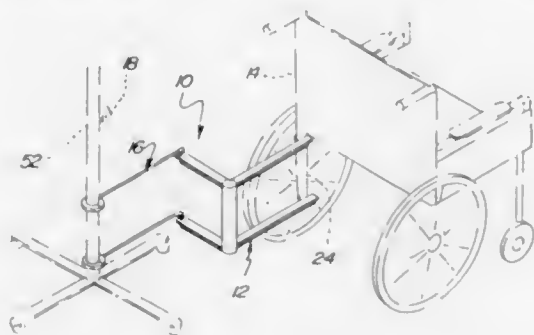
21 Claims

1. A bicycle frame comprising:
- a rigid generally triangular main frame including a top tube, a down tube, and a seat tube, and including a bottom bracket embracing a crank axis near the main frame lower apex, said crank axis defining an axis for rotation;
 - a plurality of chainwheels of differing diameters mounted on said crank axis;
 - paired right and left lower arm members each having a front and a rear end, said front ends of said lower arm members being pivotally connected to the main frame such that said lower arm members are pivotable about a lower arm pivot axis situated above the horizon of the bottom bracket crank axis;
 - paired right and left upper arm members each having an upper and a lower end, said lower end of each upper arm member being pivotally connected to a respective one of said lower



arm members such that said upper and lower arm members are pivotable about a rear pivot axis near said rear ends of said lower arm members, said upper arm members receiving a rear wheel axle at hub points located on a hub axis spaced above the horizon of said rear pivot axis;
a plurality of sprockets of differing diameters mounted on said rear wheel axle; and
means, associated with said upper ends of said upper arm members and pivotally connected to an upper pivot point situated at an upper portion of the main frame, for limiting the path of movement of, and for substantially continuously providing effectively all resilient resistance to movement of, said upper ends of said upper arm members.

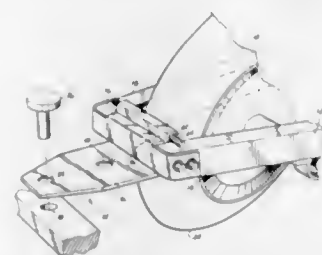
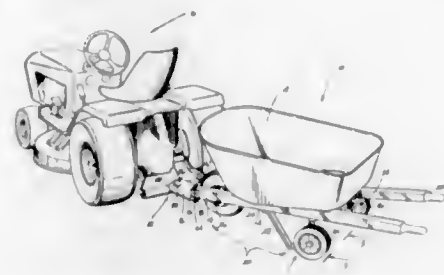
5,509,680
WHEELCHAIR TETHER
Albert Scharf, 9 Grace St., Danbury, Conn. 06811, and Diane A. Pimentel, 43 Vail Rd., Bethel, Conn. 06801
Filed Oct. 26, 1994, Ser. No. 329,533
Int. Cl.⁶ F16C 11/00
U.S. Cl. 280—304.1 7 Claims



1. A tether for coupling a medical support structure to a movable conveyance, comprising:
a mounting means adapted to be secured to said movable conveyance;
and,
a support mounting means pivotally coupled to said mounting means for towing said medical support structure relative to said movable conveyance,
wherein said mounting means comprises at least one rear extension member securable to said movable conveyance; and at least one lateral extension member secured to said at least one rear extension member and projecting substantially orthogonally therefrom;
wherein said support mounting means comprises at least one towing rod pivotally and removably coupled to a distal end of said at least one lateral extension member; and at least one

post coupler pivotally mounted to an end of said at least one towing rod, said at least one post coupler being securable about a post of said medical support structure, and
wherein said at least one post coupler comprises a first upper semi-cylindrical member positionable partially about said post of said medical support structure; a second upper semi-cylindrical member removably coupled to said first upper semi-cylindrical member to secure and frictionally engage said upper post coupler about said post; a pivot arm pivotally mounted to said first upper semi-cylindrical member, said pivot arm extending from said first upper semi-cylindrical member to pivotally couple with said end of said at least one towing rod.

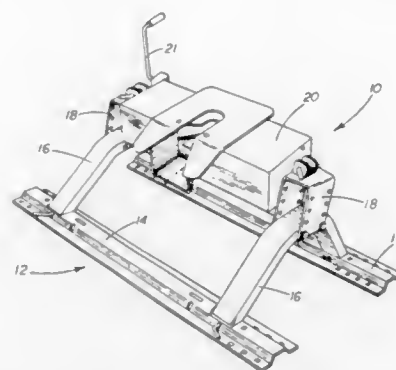
5,509,681
KIT AND METHOD FOR CONVERTING A WHEELBARROW INTO A GARDEN CART
Louis D. Keller, P.O. Box 5336, North Muskegon, Mich. 49445
Filed Dec. 30, 1994, Ser. No. 367,436
Int. Cl.⁶ B62D 5/00
U.S. Cl. 280—415.1 17 Claims



1. A kit for converting a wheelbarrow for use as a towed garden cart, the wheelbarrow comprising a pan supported on and secured to a pair of spaced apart beams, a brace between forward ends of the beams, a forward wheel mounted to the beams adjacent the brace and a pair of depending legs mounted to the beams behind the forward wheel, the kit comprising:
a pair of rear wheel assemblies each having an axle and adapted to be mounted to one of the depending legs; and
a front hitch plate adapted to be releasably mounted without the use of tools to the beams adjacent the brace and having a tongue extending beyond the forward ends of the beams and adapted to be connected to a towing vehicle, said hitch plate having a riser extending upwardly from said tongue and a support member extending laterally outwardly from an upper portion of said riser.

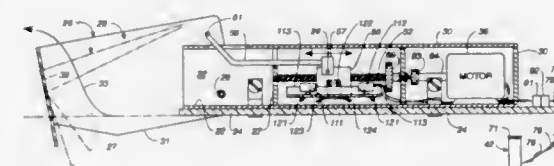
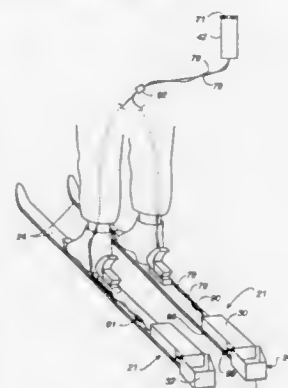
5,509,682
FIFTH WHEEL HITCH ASSEMBLY
Thomas W. Lindenman, South Bend, and Richard McCoy, Granger, both of Ind., assignors to Reese Products, Inc., Elkhart, Ind.
Filed Oct. 7, 1994, Ser. No. 319,758
Int. Cl.⁶ B62D 53/08
U.S. Cl. 280—440 8 Claims

1. A fifth wheel hitch assembly for towing a trailer behind a towing vehicle, comprising:



a frame including means for fixing said frame to the towing vehicle;
a head assembly including means for engaging the trailer to be towed by the towing vehicle; and
means for mounting said head assembly for pivotal movement relative to said frame, said mounting means including a pivot pin secured to said head assembly, a yoke for receiving said pivot pin, a support bracket for receiving said yoke, and a means for damping vibration and shock loads engaging between said yoke and said support bracket;
said yoke further including a pair of outwardly projecting retaining tabs and said support bracket including a pair of cooperating elongated slots for receiving said retaining tabs while allowing sliding movement of said yoke relative to said support bracket at least in a substantially vertical direction.

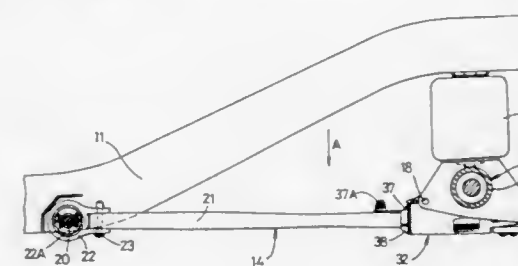
5,509,683
BRAKE ASSEMBLY FOR SNOW SKIS AND SNOW BOARDS
Dorce L. Daniel, 1101 W. L. Benicia, Calif. 94510
Filed Sep. 25, 1995, Ser. No. 533,255
Int. Cl.⁶ A63C 7/10
U.S. Cl. 280—605 11 Claims



1. A brake assembly for snow skis and snow boards comprising:
a framework formed for mounting to a body of a ski or snow board proximate a rear end thereof;
a snow-engaging braking blade mounted for movement between a retracted position in which said braking blade is out of contact with the snow and a plurality of distinct braking positions in which said braking blade is in contact with the snow and oriented to effect braking;
an electrical motor;

a battery electrically connected to said electrical motor;
a switch assembly and electrical circuit electrically coupled to control operation of said motor by manual gripping and operation of said switch assembly by a user while skiing; and
a blade drive assembly mounted to said framework and coupled between said electrical motor and said braking blade to displace said braking blade between said retracted position and said plurality of braking positions in response to operation of said motor, said drive assembly and electrical motor actuated to displace said braking blade from said retracted position to a selected one of said plurality of braking positions and providing an assembly to hold said braking blade in said selected one of said plurality of braking positions against reaction braking forces upon termination of said electrical motor by a release of the switch assembly by the user.

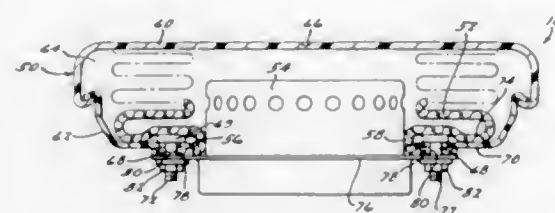
5,509,684
VEHICLE SUSPENSION TORQUE ARM ASSEMBLY
Nigel S. Yarrow, Coventry; Neil F. Milburn, Studley, and Malcolm J. Burgess, Coventry, all of, England, assignors to Rover Group Limited, Birmingham, England
Continuation of Ser. No. 150,477, Nov. 10, 1993, abandoned.
This application Aug. 21, 1995, Ser. No. 517,072
Claims priority, application United Kingdom, Nov. 11, 1992, 9223618
Int. Cl.⁶ B60G 11/02
U.S. Cl. 280—720 24 Claims



1. In a vehicle having a chassis, an axle and a pair of laterally spaced torque arm assemblies connecting the axle to the chassis and arranged longitudinally of the vehicle;
each suspension torque arm assembly comprises:
a composite arm having one end and another end, said one end being arranged for pivotal attachment to the vehicle chassis; an end fitting at said other end of the arm for attaching the arm to the axle at a first position on the axle;
and a clamp assembly clamped to the arm so as to apply a clamp load to the arm along a length of the arm spaced from the end fitting and arranged to be fastened to the axle at a second position on the axle spaced from the first position, the clamp assembly including a clamp member which extends to flank the end fitting so that in use the clamp assembly is fastened to the axle at said first position and the clamp assembly is prevented from pivoting on the axle.

5,509,685
AIR BAG MODULE
Walter J. Boyle, III, Lake Orion, Mich., assignor to Chrysler Corporation, Auburn Hills, Mich.
Filed Dec. 5, 1994, Ser. No. 349,288
Int. Cl.⁶ B60R 21/16
U.S. Cl. 280—728.2 2 Claims

1. An air bag module adapted to be mounted in the steering wheel of an automotive vehicle comprising
a module housing having a wall formed with an opening, an air bag inflator extending into said housing through said opening, said inflator having an annular flange overlapping said hous-



ing wall on the outer side thereof around the opening in said housing wall, an air bag made of flexible sheet material and having an opening, said air bag being disposed in said housing with said opening therein surrounding said inflator and registering with the opening in said housing wall, said air bag having retainer means comprising a plurality of angularly spaced tabs integral with and of the same material as said air bag, said tabs extending from said opening in said air bag through said opening in said housing wall and folded radially outwardly so as to be sandwiched between said housing wall and said flange,

means for securing said flange to said housing wall with said tabs clamped therebetween,

said securing means comprising a plurality of angularly spaced studs secured to said housing wall around the opening therein and extending perpendicularly outwardly from said housing wall through said tabs and through said flange, and nuts threaded on said studs and tightened against said flange.

5,509,686

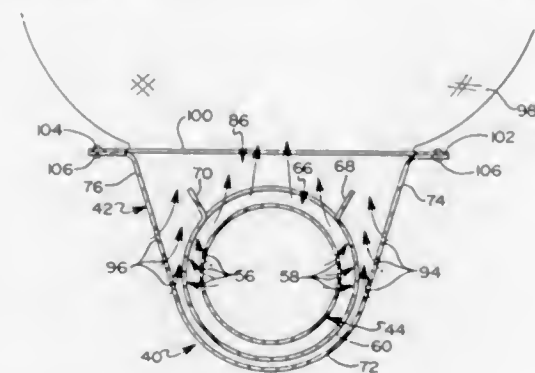
INFLATABLE RESTRAINT SYSTEM WITH GAS AUGMENTATION

Jeffrey A. Shepherd, Fairborn, and Michael W. Donegan, Bellbrook, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed May 4, 1992, Ser. No. 878,712
Int. Cl.⁶ B60R 21/30

U.S. Cl. 280—738

4 Claims



1. An air bag assembly comprising:
an inflatable air bag having a central opening;
a thrust neutral inflator for generating pressure gas and having a cylindrical casing with a plurality of diametrically opposed gas discharge holes for discharging the gas in diametrically opposed directions to inflate the air bag;
a reaction canister housing the inflator and having a part-cylindrical bottom wall terminating in upstanding side walls and including end walls closing the ends of the side and bottom walls, and the inflator being mounted on the end walls, and the side and end walls defining a canister gas discharge opening remote from the inflator and having the central opening of the air bag mating therewith so that gas discharged from the inflator travels upwardly through the canister and out through the canister discharge opening into the air bag via the central opening;

a plurality of aspiration holes continuously communicable with ambient air and located in the reaction canister side walls adjacent the gas discharge holes of the inflator such that gas discharged from the inflator is directed at the aspiration holes; and

a cylindrical baffle which is mounted in the canister surrounding the inflator and remote and separate from the canister discharge opening and the air bag, the baffle being interposed directly between the inflator and the aspiration holes in the reaction canister side walls to prevent discharging inflator gas from communicating out through the aspiration holes to the ambient air, the baffle being spaced from the inflator and the aspiration holes and having a baffle outlet to direct gas discharged from the inflator away from the aspiration holes and upwardly through the canister and out through the canister discharge opening and into the air bag so that the baffle provides directional thrust from the thrust neutral inflator to enable the use of a thrust neutral inflator with a canister having a plurality of aspiration holes for ambient air aspiration, whereby upon air bag deployment, the directional thrust creates a pressure drop around the baffle such that ambient air is aspirated in through the aspiration holes to augment the volume of gas delivered to the air bag by the inflator.

5,509,687

LANDING GEAR ASSEMBLY

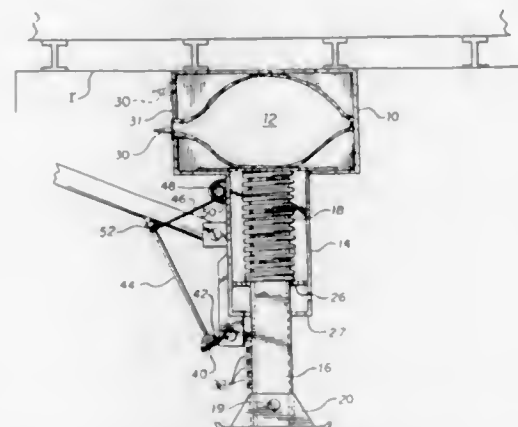
Robert J. Thorndike, Oshawa, Canada, assignor to Thorsons Projects Canada, Inc., Oshawa, Canada

Continuation-in-part of Ser. No. 268,939, Jun. 30, 1994, Pat. No. 5,409,251. This application Apr. 25, 1995, Ser. No. 428,617

Int. Cl.⁶ B60S 9/02

U.S. Cl. 280—766.1

19 Claims



1. An improved landing gear-assembly including a pair of substantially identical supports, each support comprising:
a box configured chamber having generally vertical side walls and a slot defined through one of said side walls;
an air bladder located within said chamber and including a fitting for attachment to a source of compressed air, said fitting extending through said slot and riding up and down therein as said bladder is deflated and inflated, respectively;
an extensible leg having a top end and a bottom end, said top end being surmounted by a reaction plate affixed to said leg top end, said reaction plate being located beneath said air bladder;
a housing depending from said chamber, said leg being telescopically interfitted therewithin; and
a spring urging said leg upwardly against the downward urging provided by said bladder when supplied with air under pressure;
said chamber having lateral dimensions greater than those of said leg housing; said chamber including a bottom, the maxi-

5,509,688

VEHICLE WEIGHT TRANSFER SUBFRAME

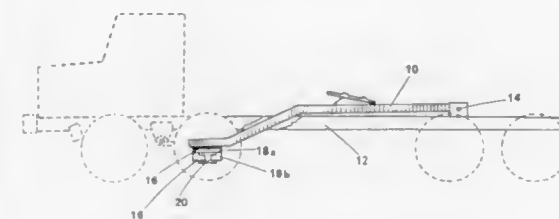
Dennis Tingstad, 3205 McLeod Rd., Westbank, British Columbia, Canada

Filed May 31, 1994, Ser. No. 251,335

Claims priority, application Canada, Apr. 19, 1994, 2121617
Int. Cl.⁶ B62D 63/06

U.S. Cl. 280—789

8 Claims



1. A weight transfer subframe for a tandem steer tractor, said tractor having a tractor frame, comprising a longitudinal subframe member having forward and rearward ends, said longitudinal subframe member pivotally mounted at said rearward end to said tractor frame and said forward end of said longitudinal subframe member adapted for vertical engagement with a weight bearing member of said tractor, said weight bearing member of said tractor for transferring weight to an opposed pair of front wheels of said tractor, a load transfer trailer coupling device mountable on said longitudinal subframe member between said forward and rearward ends, wherein said longitudinal subframe member comprises an opposed pair of longitudinal members pivotally mounted at their rearward ends to said tractor frame at a rearward location on said tractor frame and said load transfer trailer coupling device mounted to a cross member extending between said opposed longitudinal members, said weight transfer subframe further comprising vertical engagement means for securing said longitudinal subframe member in vertical relation to said weight bearing member whereby said longitudinal subframe member may move a small distance longitudinally over said weight bearing member and said longitudinal subframe member may rotate about said weight bearing member to a small degree, wherein said weight bearing member is a steering axle, and wherein said steering axle is a rearmost steering axle on said tandem steer tractor.

5,509,689

HANDHOLD FOR A ROLLER SKATE

Tsang-Heng Lin, P.O. Box 1750, Taichung, Taiwan

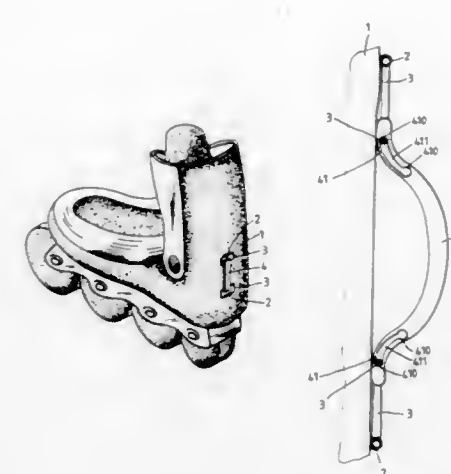
Filed Jan. 17, 1995, Ser. No. 373,432

Int. Cl.⁶ A63C 3/00; 17/00

U.S. Cl. 280—811

1 Claim

1. A roller skate comprising:
a boot including an outer surface,
two buckles fastened at a predetermined interval to said outer surface of said boot,
two hooks pivotally coupled to said buckles, and
holding strap of elastic material, said holding strap including two ends each having a fastening hole formed therein for engaging with said hooks, said fastening holes of said holding strap each including a round space formed at opposite ends of said fastening hole and each fastening hole including a tapered space intermediate to said opposite round spaces for engaging with and for locating said hook, said hook being moved freely in and through said tapered space when said hook is received in one of said round spaces of said fastening hole.



5,509,690

SIDE SPRAY SAFETY APPARATUS

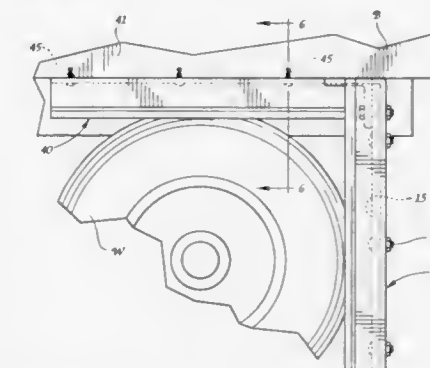
Flavious L. Whittington, Hamer, S.C., assignor to Truck Safety of America, Inc., Rock Hill, S.C.

Filed Jul. 30, 1993, Ser. No. 100,627

Int. Cl.⁶ B62D 25/18

U.S. Cl. 280—851

11 Claims



1. In combination with a vehicle, the improvement comprising a safety apparatus for minimizing the uncontrolled outward spray of water, snow, ice, slush, debris or other roadway materials from the rotating tires of the vehicle when moving, the safety apparatus comprising:

- a) a generally rectangular flexible flap for being substantially vertically suspended from a portion of the vehicle immediately rearward of the tires of the vehicle, said flap having a forward side, a rearward side, and inner and outer vertical edges disposed respectively toward the inside and outside of the vehicle;
- b) a single elongate rigid stiffening device mounted on said flap and positioned on said outer vertical edge of said flap to extend vertically alongside a substantial extent of said outer vertical edge of said flap for substantially preventing materials adjacent said forward side of said flap from passing outwardly from said outer vertical edge of said flap, and for stiffening said outer edge of said flap so that the portion of said flexible flap adjacent said device remains substantially undeflected by the rearward flow of air, while said inner vertical edge of said flap remains readily deflectable by the rearward flow of air and so that the rearward flow of air deflects said flap inwardly thereby directing a substantial portion of any materials carried by the rearward flow of air inwardly toward the vehicle, said elongate rigid stiffening device comprising a generally vertical elongate main wall portion extending forwardly from said flap to overlap a portion of the vehicle tire and having an overall width of only a fraction of its length and wherein said main wall portion has an inwardly directed leading wall

portion defining a leading edge thereof which also serves as the leading edge of said device.

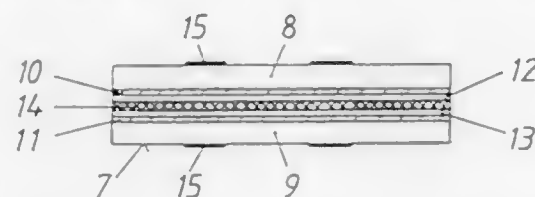
5,509,691

SECURITY ELEMENT IN THE FORM OF THREADS OR STRIPS TO BE EMBEDDED IN SECURITY DOCUMENTS AND A METHOD FOR PRODUCING AND TESTING THE SAME

Wittich Kaule, Emmering; Wilhelm Ilgmann, Wolfratshausen; Gerhard Schwenk, Puchheim, and Gerhard Stenzel, München, all of, Germany, assignors to GAO Gesellschaft für Automation und Organisation mbH, Germany
Continuation of Ser. No. 966,546, Oct. 26, 1992, Pat. No. 5,324,079. This application Feb. 7, 1994, Ser. No. 192,610
Int. Cl.⁶ B42D 15/00

U.S. Cl. 283—67

5 Claims



1. A method for producing a security element in the form of a thread or strip to be embedded in the security document comprising a carrier sheet and at least one marking substance applied thereto to allow for visual and or machine detection of authenticity, characterized by the steps of
preparing a plastic sheet,
providing this plastic sheet with the substance allowing for detection of authenticity,
producing a second, similarly pretreated sheet,
providing at least one of the sheets with a laminating adhesive on a side provided with marking substance,
superimposing the two sheets with their sides provided with marking substance or with the adhesive layer facing each other, and gluing them together, and
cutting the security elements out of this two ply stretch of sheet in the necessary strip or thread width.

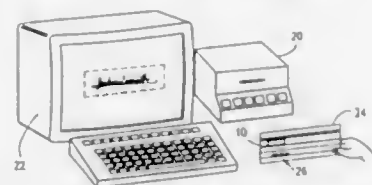
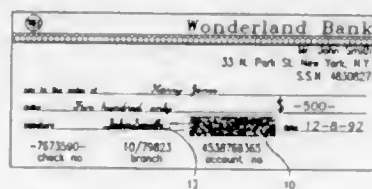
5,509,692

MONETARY INSTRUMENT

Gloria Oz, Kibbutz Be'eri, Israel, assignor to Be'Eri Printers, Kibbutz Be'eri, Israel
Filed Jan. 18, 1994, Ser. No. 183,059
Claims priority, application Israel, Jan. 26, 1993, 104520
Int. Cl.⁶ B42D 15/00

U.S. Cl. 283—70

21 Claims



1. A method for point of presentation signature verification for a monetary instrument comprising the steps of:

machine reading a machine-only readable representation of an authorized signature on a monetary instrument;
comparing an actual signature on the monetary instrument with said representation thereof provided by machine reading of the machine-only readable representation; and
in response to similarity, providing an output indication of information verification.

5,509,693

PROTECTED PRINTED IDENTIFICATION CARDS WITH ACCOMPANYING LETTERS OR BUSINESS FORMS

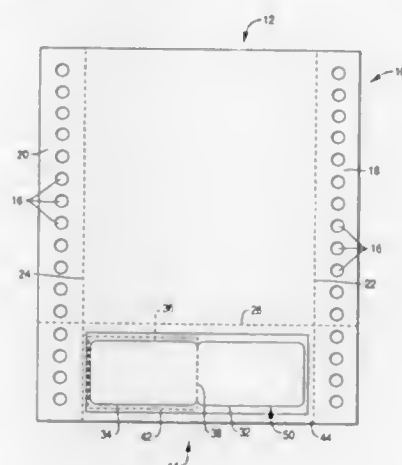
Scott R. Kohls, Springboro, Ohio, assignor to NCR Corporation, Dayton, Ohio

Filed Feb. 7, 1994, Ser. No. 192,524

Int. Cl.⁶ B42D 15/00

U.S. Cl. 283—75

25 Claims



1. A protected printed identification card with associated letter or business form, comprising:
a paper stock sheet having a front surface and a back surface, said paper stock sheet having a silicon coat over a portion of said back surface of said paper stock sheet;
a laminate liner adhered by an adhesive to at least a part of said back surface of said paper stock sheet;
a die cut through said paper stock sheet and said laminate liner to form a rear portion of said protected printed identification card; and
a partial die cut through said laminate liner corresponding with said die cut through said paper stock sheet and said laminate liner to form a front portion of said protected printed identification card, said front portion of said protected printed identification card is positioned over said portion of said paper stock coated with said silicon coat.

5,509,694

TRI-FOLD LABEL OR BUSINESS FORM

David F. Laurash, Bellbrook; Lawrence W. Arway, Kettering, and Oleh B. Mudry, Spring Valley, all of Ohio, assignors to The Standard Register Company, Dayton, Ohio

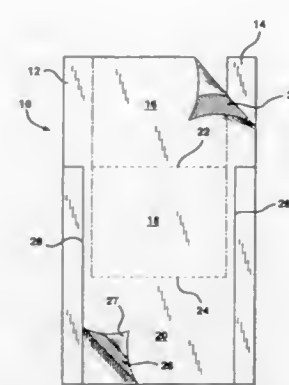
Filed Sep. 16, 1994, Ser. No. 306,939

Int. Cl.⁶ B42D 15/00

U.S. Cl. 283—81

22 Claims

1. A tri-fold label or business form comprising:
a label ply having first and second sides with said second side coated with an adhesive; said label ply including a first panel having a pair of edge portions, an intermediate panel connected along a first perforated fold line to said first panel, and a second panel connected along a second perforated fold line to said intermediate panel; and,



a liner ply having first and second sides, said first side of said liner ply having a release coating thereon and contacting said second side of said label ply, said liner ply opposite said intermediate panel and said first panel being die cut interiorly of the edges of said first and intermediate panels of said label ply;
whereby when said label ply is removed from said liner ply, a portion of said liner ply remains adhered to a central portion on said second side of said first and intermediate panels, and adhesive is exposed on said second side of said second panel and on said edge portions of said second side of said first panel, said intermediate and second panels being narrower than said first panel such that when said label assembly is folded and applied to a surface, said second side of said second panel directly adheres to said surface, with said first panel exposed and having said edge portions adhered to said surface, with said intermediate panel folded there between.

5,509,695

PRECOCKED QUICK CONNECT FLUID COUPLING HAVING A V-SHAPED HOLDING RING

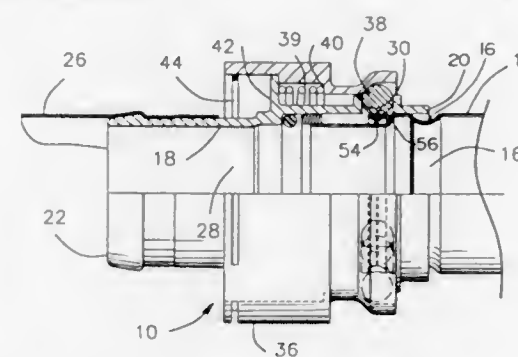
Sean P. Hummel, Howell, Mich., assignor to Pilot Industries, Inc., Dexter, Mich.

Filed Jun. 1, 1995, Ser. No. 456,468

Int. Cl.⁶ F16L 37/23

U.S. Cl. 285—23

6 Claims



1. A quick connect fluid coupling for use with a tubular and cylindrical nipple having an annular and circumferentially extending recess at a position spaced from a free end of the nipple, said quick connect coupling comprising:

a tubular and cylindrical body having a first end and a second end and a fluid passageway extending between said first and second ends,
said first end of said body being movable between a disconnected position in which said body is spaced from said nipple and a connected position in which said nipple is axially received within said first end of said body,
said body having a plurality of circumferentially spaced and radially extending openings formed therethrough which register with said annular recess when said body is in said connected position,

a retainer positioned in each radially extending opening, said retainers being radially movable between an inner locked position in which a portion of each retainer is positioned in said recess and an outer unlocked position in which said retainers are spaced outwardly from said recess,
a locking collar disposed coaxially around said body and axially movable between an extended position and a retracted position, said locking collar having a cam surface which coacts with said retainers to move said retainers from said outer to said inner position as said locking collar moves from said retracted to said extended position,
means for resiliently urging said locking collar toward said extended position, and
means for holding said retainers in said outer position until insertion of said body over said nipple,
wherein said holding means comprises an annular ring contained within said body fluid passageway, said ring having an outer peripheral surface which abuts against said retainers and holds said retainers in said outer position,
wherein said outer peripheral surface of said ring is substantially v shaped in cross section, said outer peripheral surface having two sides which engage portions of each of retainers on opposite sides of a radially extending plane which bisects said retainers.

5,509,696

CONNECTOR WITH SPRING RETAINER

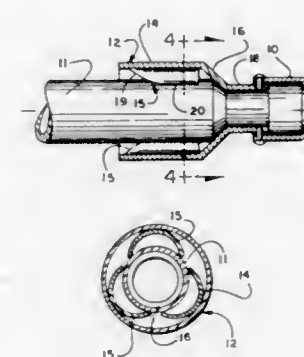
Leary W. Smith, 3664 Keswick Dr., Chamblee, Ga. 30341, and Clifford H. Boylston, 1892 Surry Trail, Conyers, Ga. 30208

Filed Mar. 7, 1995, Ser. No. 399,609

Int. Cl.⁶ F16L 35/00

U.S. Cl. 285—27

19 Claims



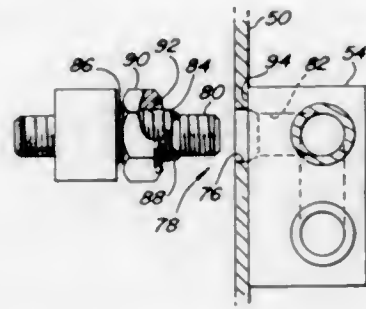
1. A connector for releasably holding a male member having a centerline coaxially within a female member having a centerline, said connector comprising a plurality of spring means externally of said male member and internally of said female member, each spring means of said plurality of spring means including a pair of holding portions and a central portion, said central portion of each spring means of said plurality of spring means being fixed with respect to one of said members so that said pair of holding portions are resiliently movable away from each other about lines parallel to the centerline of such member and resiliently engageable with the other of said members along lines parallel to the centerline of such member, and further including camming means interacting with said other of said members for flexing said pair of holding portions as said male member is urged into said female member.

5,509,697
COMBINED HYDRAULIC RESERVOIR AND LINE COUPLING

David L. Phillips, Mayville, and Michael J. Jenkins, Milwaukee, both of Wis., assignors to Deere & Company, Moline, Ill. Division of Ser. No. 85,218, Jun. 29, 1993. This application Jan. 20, 1995, Ser. No. 376,161
Int. Cl.⁶ F16L 3/04

U.S. Cl. 285—158

3 Claims



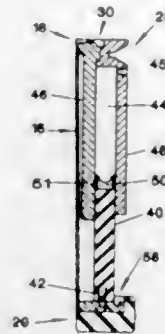
1. A mechanism for operatively coupling portions of a hydraulic line, said mechanism comprising:
 - a fluid reservoir containing hydraulic fluid and having a wall with an opening formed therein,
 - interior and exterior portions of a fluid carrying line, the interior portion being positioned within the walls of the fluid reservoir, the exterior portion being positioned outside the walls of said reservoir,
 - a first threaded male portion coupled with the exterior line portion,
 - a second threaded male portion coupled with the exterior line portion and having a larger diameter than the first male portion for defining a ledge between the first and second threaded male portions,
 - a first seal carried with the ledge,
 - a threaded female portion formed in the interior portion of the fluid line for receiving the first male portion, said first seal being in sealing abutment between the ledge and the interior line when the first male portion is threaded into the female portion to thereby seal the exterior and interior lines together for operative fluid communication therebetween,
 - a nut threaded onto the second threaded male portion,
 - a second seal carried with the nut, said nut being adjustable on the second threaded portion for operatively pressing the second seal against the exterior of the wall of the reservoir for preventing fluid from leaking from the reservoir through the opening in the wall of the reservoir, and
 - the interior portion of the line includes a portion which is operatively pressed against the interior of the wall of the reservoir when the nut means is tightened on the second threaded portion.

5,509,698
AXIALLY EXTENDIBLE CONDUIT
Helmut Habicht, 15 Royal Park Ter., Hillsdale, N.J. 07642
Filed Mar. 3, 1995, Ser. No. 398,113
Int. Cl.⁶ F16L 27/107

U.S. Cl. 285—302

18 Claims

1. An axially extendible conduit comprising:
 - a) an elastic conduit member having a first terminal end, and a second terminal end, the elastic conduit member having a predetermined inside diameter and outside diameter, the elastic conduit member having an interior wall that provides a substantially continuous straight surface from the first terminal end to the second terminal end;
 - b) an actuator means that encircles an exterior wall of the elastic conduit member, the actuator means being co-axial with the elastic conduit member, the actuator means being adapted for selective actuation, said selective actuation moving a ring

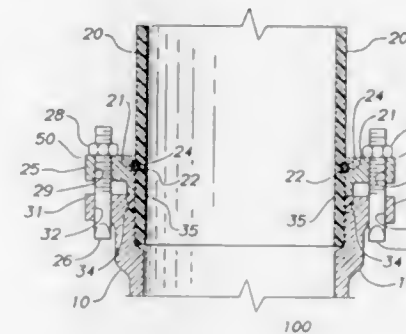


member of the actuator means between a retracted position and an extended position; the first terminal end of the elastic conduit member being attached to a fixed portion of said actuator means; the second terminal portion of the elastic conduit member being attached to the ring member; and wherein the elastic conduit member is urged between its retracted position to an axially extended condition by the selective actuation of the actuator means.

5,509,699
MECHANICAL JOINT PIPE ADAPTER WITH INSERTED FLEXIBLE SPLINE
John Himmelberger, Chester Springs, Pa., assignor to Certain-Teed Corporation, Valley Forge, Pa.
Filed Jun. 6, 1994, Ser. No. 254,348
Int. Cl.⁶ F16L 23/02; 23/024

U.S. Cl. 285—337

3 Claims

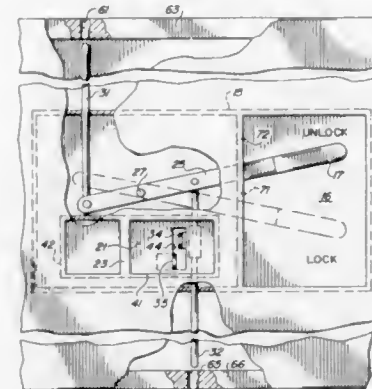


1. A high pressure, mechanical pipe-to-fitting connection comprising:
 - a polymeric pipe having a first annular recess along its outer diameter;
 - a metal fitting having a flanged end including a plurality of fastener holes therein;
 - and an adapter sized to fit around said polymeric pipe, said adapter including a second annular recess located along its inner diameter and an aperture through its side wall which communicates with said second annular recess, said first and second annular recesses forming an annular cavity when said adapter is mounted and aligned on said polymeric pipe, said adapter further including a flexible spline inserted into said annular cavity for forming a mechanical lock between said polymeric pipe and said adapter; said polymeric pipe and said metal fitting being joined together by fasteners disposed through the fastener holes of said adapter and said flanged end of said metal fitting, said connection rated for a working pressure of no less than about 150 psi.

5,509,700
LATCH AND LOCK FOR TRAILER DOORS
Burton K. Kennedy, Jr., Mesa, Ariz., assignor to National Security Containers, Inc., Phoenix, Ariz.
Filed Jun. 6, 1994, Ser. No. 254,689
Int. Cl.⁶ E05C 9/00

U.S. Cl. 292—3

11 Claims

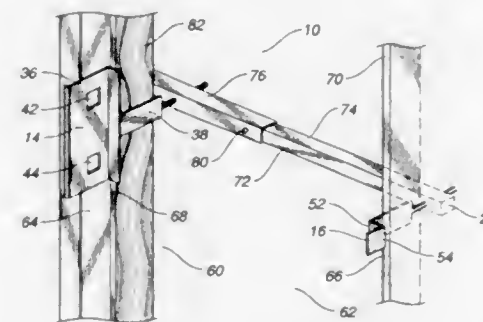


1. A latch for a door on a trailer, said latch located on the inside of said door and comprising:
 - a pivot attached to the inside of said door;
 - an arm having a first end and a second end, said arm attached to said pivot between said ends and rotating about said pivot in a plane approximately parallel to said door;
 - a first locking bar attached to said arm;
 - a second locking bar attached to said arm, wherein said pivot is between said first locking bar and said second locking bar;
 - a handle attached to said arm for rotating said arm about said pivot in a plane substantially parallel to said door, wherein said door includes an aperture adjacent said handle for providing access to said handle from the outside of said door and said handle is frangible and breaks when moved out of said plane.

5,509,701
DOOR BRACING APPARATUS
Michael Reinhard, 1221 Bryant St., Fort Worth, Tex. 76126
Filed Nov. 25, 1994, Ser. No. 308,347
Int. Cl.⁶ F05C 19/18

U.S. Cl. 292—259 R

19 Claims



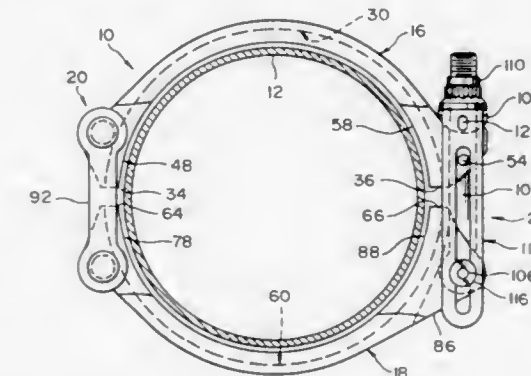
1. A door bracing apparatus comprising:
 - a crossbar;
 - a striker means threadedly connected to said crossbar inwardly of a first end of said crossbar, said striker means extending outwardly generally transverse to said crossbar, said striker means for fitting against a surface of a frame of the door, said striker means comprising:
 - a first plate having a flat surface thereon;
 - a second plate connected to said first plate and extending toward said crossbar; and

- a threaded member connected to said second plate and to said crossbar, said threaded member rotatably connected to said crossbar so as to vary a distance of said first plate from said crossbar; and
- a stabilizer means threadedly connected to said crossbar inwardly of a second end of said crossbar, said stabilizer means extending outwardly generally transverse to said crossbar and in generally parallel relationship to said striker means, said stabilizer means for fitting against an opposite surface of the frame of the door.

5,509,702
LOW DISTORTION PIPE COUPLING DEVICE
Kevin S. Warehime, Taneytown, and Daniel T. Munley, Laurel, both of Md., assignors to EG&G Pressure Science, Inc., Beltsville, Md.
Filed Aug. 23, 1994, Ser. No. 294,355
Int. Cl.⁶ B65D 63/02; F16L 17/06

U.S. Cl. 285—409

28 Claims



1. A pipe coupling device for releasably coupling a pair of pipes with peripheral end flanges together, comprising:
 - a first arcuate retainer having a first end, a second end, and a groove with an inner gripping surface extending between said first and second ends for receiving a first portion of each of the peripheral end flanges of the pipes therein;
 - a second arcuate retainer having a first end, a second end, and a groove with an inner gripping surface extending between said first and second ends of said second arcuate retainer for receiving a second portion of each of the peripheral end flanges of the pipes therein;
 - a hinge including a first link and a second link with each of said links being pivotally coupled to said retainers adjacent said first ends of said retainers by first and second pivot pins, respectively, each of said links having a line of force extending between said centers of said pins, and said first link being positioned on one side of the peripheral flanges of the pipes and said second link being positioned on the other side of the peripheral flanges of the pipes, said first and second pivot pins having their centers spaced from said first ends of said retainers, respectively, by a first distance which is greater than a second distance measured between said first ends of said retainers at their inner circumferential edges so that said first ends form a pair of lever arms; and
 - a latch pivotally coupled to said second end of said first retainer by a third pivot pin and releasably coupled to said second end of said second retainer by a lug surface.

5,509,703

ENCLOSURE LATCH

Robert G. Lau, Anoka; John S. Abbott, Plymouth, and David A. Swan, Shoreview, all of Minn., assignors to Federal-Hoffman, Inc., Anoka, Minn.

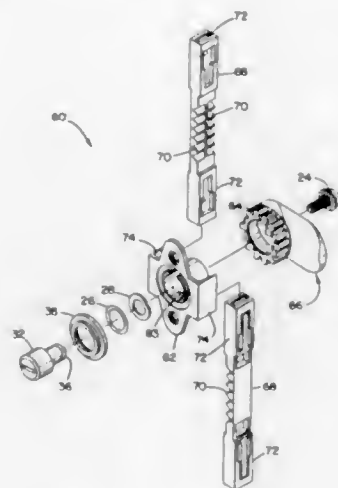
Continuation of Ser. No. 184,673, Jan. 21, 1994, abandoned.

This application Aug. 9, 1995, Ser. No. 512,778

Int. Cl.⁶ E05C 19/00

U.S. Cl. 292—1

17 Claims



1. A quarter turn latch, comprising:

- (a) a latch housing;
- (b) an insert rotatably mounted in the housing;
- (c) a cam member mounted to the insert;
- (d) a gear attached to the insert;
- (e) a pair of rack members disposed on either radial side of the gear and extending in opposite directions slidably mounted to the housing, wherein each of the rack members includes a plurality of teeth interacting with the gear, and wherein rotating the gear in a first direction retracts the rack members and rotating the gear in a second direction extends the rack members; and,
- (f) a gasket mounted on the housing around the insert and forming a seal between the insert and the housing.

5,509,704

CANTILIVERED RETENTION LATCH

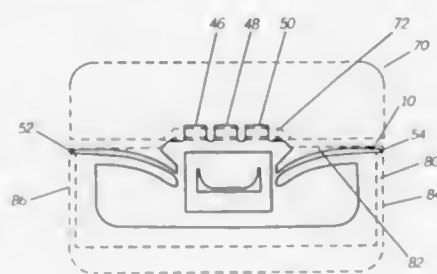
Christian Schneider, Flowery Branch; John H. Hackenberg, Atlanta, and Aaron P. Clark, Buford, all of Ga., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Aug. 1, 1994, Ser. No. 283,328

Int. Cl.⁶ E05C 1/08

U.S. Cl. 292—163

3 Claims



1. A latch for slideably connecting a battery pack to an electronic device, said latch comprising:

- a latch body having first and second major surfaces, and four side portions, and being disposed in said battery pack and including both a metal and an overmolded plastic member;

a raised portion formed on said first major surface, said raised portion having at least one ridge formed therein and extending through an opening in said battery pack;

an engagement member extending from one of said side portion of said latch body, said engagement member including at least two side portions and at least one hooked end disposed distally away from said latch body, said hooked end portion adapted to engage a recessed region disposed on said electronic device; and

at least one biased, cantilevered beam extending from each said side portion of said engagement member.

5,509,705

RATCHET SOCKET HOLDING TOOL AND METHOD OF USE

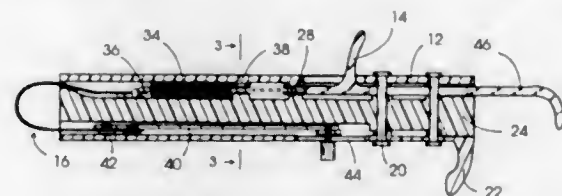
David A. Woodsum, 2623 Gladiolus St., New Orleans, La. 70122

Filed Nov. 25, 1994, Ser. No. 344,869

Int. Cl.⁶ B25B 33/00

U.S. Cl. 294—1.1

4 Claims



1. A tool for holding a ratchet socket comprising a handle housing, a core member, a trigger extending through a slot in said housing and connected to a slider, said slider is connected to a push rod, said trigger, slider and push rod slidably held for movement in the longitudinal direction of said housing, an adjustable bar slidably positioned within said housing, and a flexible grasping belt connected at one end to said adjustable bar and at the other end to said push rod, a tension spring with an end connected in said housing and the other end connected to said flexible grasping belt, said tension spring is provided with at least one spring loop, said spring loop is positioned around a push rod guide member in said housing, said flexible grasping belt extends from one end of said housing to form a loop whereby a ratchet socket positioned in said loop may be held under tension of said spring.

5,509,706

PAVING STONE, BRICK AND TILE TOOL

Hans J. Thalmann, 355 Glenwood Rd., Ridgewood, N.J. 07450

Filed Mar. 14, 1995, Ser. No. 403,399

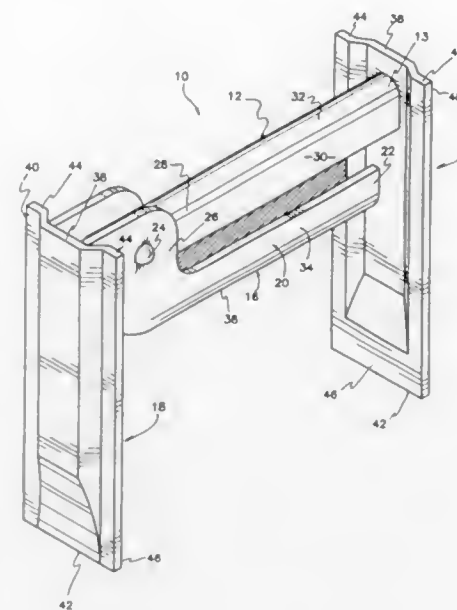
Int. Cl.⁶ B65G 7/12

U.S. Cl. 294—62

4 Claims

1. A lifting tool for patio block elements which is specifically designed for lifting a single block from within an array of pre-existing blocks, each block having a lateral periphery presenting opposite surfaces comprising:

- a horizontal upper handle having opposite trailing and free distal ends,
- a rear jaw fixedly attached to said upper handle trailing end,
- a lower handle having a forward end joined to a finger grip section disposed beneath said upper handle and terminating in a distal trailing end,
- said lower handle forward end including a pair of laterally spaced apart side walls and where said upper handle distal end is sandwiched between said laterally spaced apart side walls of said lower handle,
- a front jaw fixedly attached to said lower handle forward end, where said front and said rear jaws include an upper end and an opposite lower grasping end, both said front jaw grasping end and said rear jaw grasping end being a substantially continuous thin surface perpendicular to said lower handle and said



upper handle, respectively, and each of said jaws including a central reinforcing rib, including an inner recessed portion and an outer deformation, extending from said jaws upper ends to a point proximate said jaws lower grasping ends, wherein said thin surface of said grasping ends is narrow enough to be easily placed in preexisting gaps between the blocks in the array of blocks so as to be able to lift out a single one of the blocks without disturbing surrounding blocks;

said front and rear jaws disposed normal to said lower handle finger grip section and said upper handle respectively, a fastener pivotally connecting said lower handle forward end to said upper handle adjacent said upper handle distal end with said front jaw juxtaposed said upper handle distal end, and both said jaws having integral lower grasping ends adapted to flushly engage only opposite vertical surfaces of the lateral periphery of a block element, whereby upon grasping said upper handle with one's hand said tool is elevated while one's finger tips engage said lower handle to manipulate said lower handle finger grip section with a corresponding angular displacement of said front jaw relative said rear jaw to regulate the gripping action between said lower grasping ends of said jaws and the lifting action on said lower handle enhances the gripping action between opposite smooth sides of said block.

5,509,707

ROBOTIC GRIPPER MODULE

Frank Schauer, Kitchener, Canada, assignor to 737333 Ontario Inc., Kitchener, Canada

Filed Mar. 4, 1994, Ser. No. 205,369

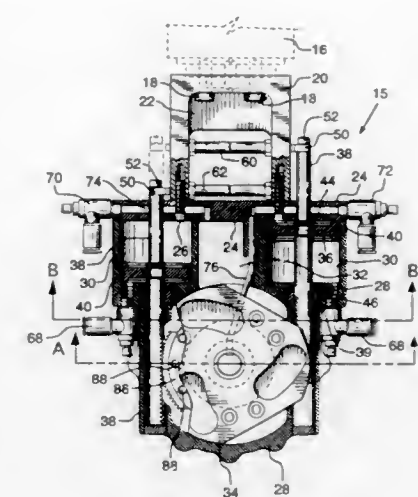
Int. Cl.⁶ B25J 15/10; B66C 1/42

U.S. Cl. 294—86.4

20 Claims

1. A robotic gripper module comprising:

- (a) a frame adapted to be fitted to an end of a robotic arm or to other support means;
- (b) a rotor rotatably mounted on the frame and bearing a series of equiangularly-spaced first slots each extending at an angle to a radius of the axis of rotation;
- (c) at least two cam followers mounted one each on radially-movable slide members to which finger assemblies may be attached, each cam follower being constrained to move in a respective first slot and also in a respective one of a series of second slots in the frame, each second slot extending radially from a point on the frame that corresponds with the rotational axis of the rotor, rotation of the rotor thereby resulting in the



cam followers and slide members moving uniformly either toward or away from each other;

(d) a first rod extending parallel to a face of the rotor proximate one outer circumferential edge of the rotor, and being in positive engagement with said outer circumferential edge of the rotor such that axial movement of the first rod results in rotation of the rotor; and,

(e) a first actuator positioned outside of the periphery of the rotor, the first actuator creating the axial movement of the first rod;

whereby actuation of the first actuator results in rotation of the rotor and in radial movement of the cam followers and slide members to which finger assemblies may be attached.

5,509,708

HANDLE FOR CARRYING OBJECTS AND SELF DEFENSE

Fried Nathan, 65, Ha-Tishbi Street, Haifa 34523, Israel

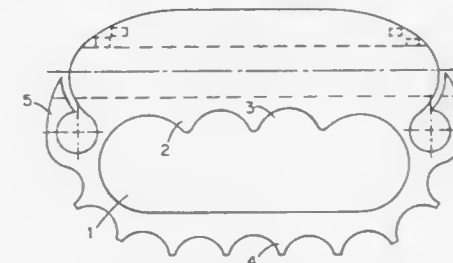
Filed Aug. 16, 1994, Ser. No. 291,563

Claims priority, application Israel, Aug. 17, 1993, 106712

Int. Cl.⁶ B65D 33/06

U.S. Cl. 294—141

3 Claims



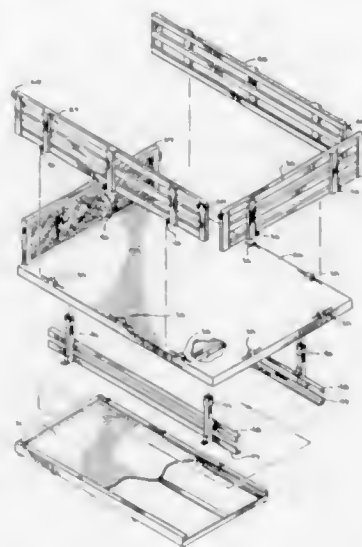
1. An assistance handle for carrying objects and for self defense, comprising:

- a body made of a rigid material and including an opening in the center thereof adapted to be grasped by the hand of a user;
- means for attaching the objects to the body; and
- a plurality of nodules integral with and protruding from a bottom portion of the body to provide personal defense against attackers.

5,509,709
PICK-UP TRUCK BED ATTACHMENT
 Richard I. Carroll, 17913 N. 71st Dr., Glendale, Ariz. 85308
 Filed Jul. 6, 1993, Ser. No. 86,129
 Int. Cl.⁶ B60P 7/00

U.S. Cl. 296—3

11 Claims



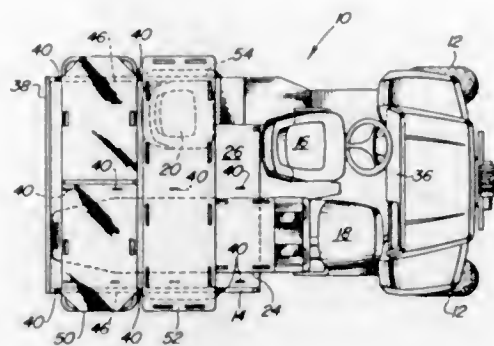
1. An attachment for a pick-up truck bed having an open topped rectangular box with upright sides, the attachment comprising:
 a plurality of vertical supports having a lower end constructed to be attached to the pick-up truck bed;
 a flat bed affixed to upper ends of the vertical supports;
 racks pivotally attached adjacent edges of the flat bed for movement between a first upright position and a second lowered position by a plurality of pivots affixed to the flat bed; the racks having locking means that lock the racks to each other in the first upright position,
 each pivot being formed by a base member affixed to the flat bed, the base member extending vertically from the flat bed, the base member having a rod extending from the base member in opposite horizontal directions, the rod being positioned vertically on the base member above said flat bed to allow a tie down rope to be wound under the rod to hold a load down when the racks are not being used, and
 each rack having at least one plate with a hole therein affixed to a lower portion of the rack, the holes being aligned so that they mate with the rods and can be slid over the ends of the rods to easily put on and take off the racks to thereby allow the truck to haul using either the racks or a tie down rope, the plate having a thickness and the rod having a horizontal portion extending from the base member in the opposite horizontal directions a distance greater than the thickness of the plate.

5,509,710
RESCUE VEHICLE
 Jimmy N. Eavenson, Sr., Juneau; Stanley J. DeBaal, West Bend; Werner E. Biedermann, Horicon; Lloyd E. Wright, Beaver Dam, and Daryl A. Levenhagen, Horicon, all of Wis., assignors to Deere & Company, Moline, Ill.
 Continuation of Ser. No. 167,471, Dec. 15, 1993, abandoned.
 This application Mar. 9, 1995, Ser. No. 401,323
 Int. Cl.⁶ A61G 3/00

U.S. Cl. 296—19

1 Claim

1. A vehicle adapted for transporting a plurality of injured persons carried on backboards, comprising:
 a box structure having a floor portion and side walls extending upwardly from said floor portion, said side walls and floor portion defining a U-shaped structure having a generally open top,



a vehicle driver's seat positioned forwardly from said box structure,
 a passenger seat adjacent the driver's seat, said passenger seat being shiftable forwardly for allowing a first backboard to be positioned longitudinally on the floor portion of the box structure such that a portion of the first backboard is located in the space vacated by the forwardly shifted passenger seat,
 a plurality of fastener means coupled with the floor portion, and abutable with the side edges of the first backboard for locating and generally maintaining the first backboard in its proper position on the floor of the box structure, said fastener means also serving as structure to which the first backboard can be secured, wherein said fastener means further comprise an upwardly projecting loop member against which the side edges of the first backboard may abut for locating the first backboard and maintaining the first backboard in its proper position during transport, and
 a plurality of said fastener means are coupled with upper edges of said side walls and are abutable with the side edges of second and third backboards for generally confining and positioning said second and third backboards to extend transversely across the open top of said box structure while said longitudinally extending first backboard and injured person are positioned on the floor of the box structure, said second backboard being positioned to the rear of the third backboard, and
 wherein said fastener means coupled with the floor portion and the side walls are spaced sufficiently to allow a plurality of different sizes and types of backboards to be secured with the vehicle by said fastener means,
 a forwardly facing attendant seat positioned generally within said box structure and adjacent one of said side walls, said attendant seat being located forwardly of the second backboard and adjacent the first backboard such that an attendant may be seated in the attendant seat when only the first and second backboards are carried by the vehicle, said box structure being adapted to support the third backboard generally directly over the attendant seat.

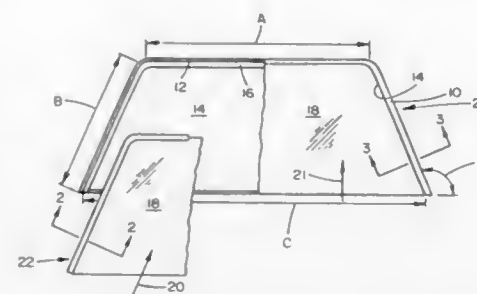
5,509,711
INSTALLATION MOLDING FOR TRAPEZOIDAL AUTO WINDSHIELD

Peter Gold, 389 Peninsula Blvd., Hempstead, N.Y. 11550
 Filed Oct. 18, 1994, Ser. No. 324,877
 Int. Cl.⁶ B62D 27/00; E06B 3/62

U.S. Cl. 296—93

1 Claim

1. A method of establishing an engagingly gripping relation of an elastomeric molding about the peripheral edge of an auto windshield during the installation thereof in a windshield opening of a type having edges cooperating to bound said opening in a specific trapezoidal shape consisting of a horizontally oriented upper edge and opposite angularly oriented side edges terminating in ends subtending similar selected obtuse angles, said ends of said side edges bounding in spanning relation therebetween an entrance opening into said trapezoidal shape of said windshield opening characterized by a progressive diminishment in size of said opening in a direction toward said upper edge of said trapezoidal shape

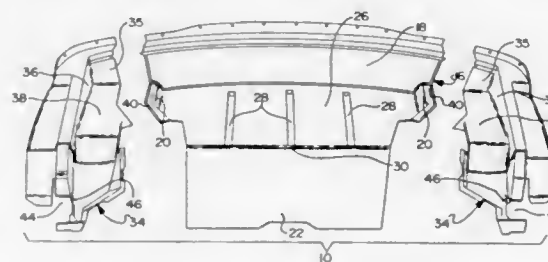


as results from an angular orientation towards each other of said side edges, said windshield being of a type having upper and side edges cooperating to embody said windshield with a trapezoidal shape conforming to said trapezoidal shape of said windshield opening, said method comprising the steps of extruding said elastomeric molding having in cross section a C-shape defined by opposite spaced-apart side legs and connected in spanning relation between said side legs a center leg characterized by a concavely shaped configuration, cutting to size said molding preparatory to the positioning of a length portion thereof about said windshield upper and side edges, seating said sized molding upon said windshield with said upper and side edges thereof projected between said opposite side legs of said molding incident to establishing an initial gripping relation therebetween, inserting said windshield with said seated molding thereabout through said entrance opening into said trapezoidal shape, and urging said windshield with said seated molding thereabout in movement through said progressive diminishment in size of said trapezoidal shape so as to establish progressive engagement between said molding concavely shaped center leg and said angularly oriented opposite side edges until abutting contact is made by said windshield upper edge with said upper edge of said trapezoidal shape whereby sliding contact of said molding seated upon said windshield side edges against said window opening side edges flattens said concavely shaped configuration of said molding center leg to cause an urgency in said molding side legs contributing to providing said engagingly gripping relation therebetween.

5,509,712
CONVERTIBLE VEHICLE TOPWELL ASSEMBLY
 Jeffrey S. Rausch, Royal Oak; Wayne A. Conti, Troy, and Jack C. Higdon, Canton, all of Mich., assignors to Chrysler Corporation, Auburn Hills, Mich.
 Continuation of Ser. No. 56,151, Apr. 30, 1993, abandoned.
 This application Oct. 5, 1994, Ser. No. 319,214
 Int. Cl.⁶ B60J 7/00; B60R 13/07

U.S. Cl. 296—124

1 Claim



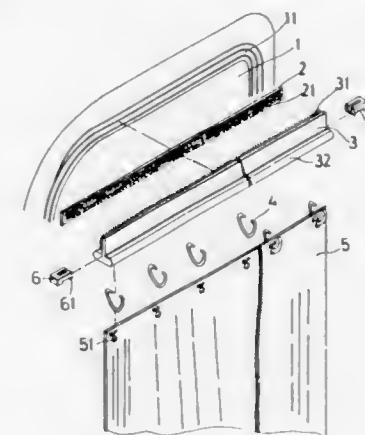
1. A topwell assembly comprising:
 a rigid, unitary molded plastic shell for attachment to vehicle structure to support a convertible top having an integral support surface, side wall surfaces projecting laterally from said support surface, a front wall surface depending downwardly from said support surface and having a terminal end adjacent a floor of vehicle structure, and a rear wall surface projecting from said support surface;
 said support surface having three longitudinally extending and laterally spaced channels formed therein to provide a dual

function to increase rigidity and strength of said support surface and to drain fluid from said support surface, and a laterally extending channel between one end of said longitudinally extending channels and said front wall surface, and at least one aperture in said laterally extending channel for draining water collected in said longitudinally extending channels and said laterally extending channel;
 separate side portions at each side of said shell between vehicle structure and said side wall surfaces and having a shelf portion overlapping a flange on said side wall surfaces of said shell such that said side portions may sealingly engage said shell;
 a grommet member sealingly disposed within said aperture;
 a drainage tube having an end thereof attached to said grommet; and
 a silencing material attached to an outer surface of said shell.

5,509,713
WINDOW SUNSHADE FOR CARS
 Hsien-Te Hou, No. 5, Lane 279, Chung Cheng Road, Yung Kang Shih, Tainan Hsien, Taiwan
 Filed Oct. 25, 1994, Ser. No. 328,439
 Int. Cl.⁶ B60J 3/00

U.S. Cl. 296—138

2 Claims



1. A window sunshade for a vehicle side window comprising:
 an elongate foam rubber band for attachment to an inner, upper edge of a frame of said side window, a VELCRO hook strip adhered on an outer longitudinal side of said foam rubber band, an elongate position bar having an inverted T-shaped cross-section consisting of a vertical longitudinal portion and a lower, horizontal rail portion under said vertical longitudinal portion, a VELCRO loop strip attached to said vertical longitudinal portion for fastening with said VELCRO hook strip of said foam rubber band, a sunshade having larger dimensions than said window to be shaded and a plurality of hook holes in an upper end thereof, a plurality of C-shaped hooks hooking through said hook holes of said sunshade and being slidably mounted on said horizontal rail portion such that the vertical longitudinal portion passes through openings in said C-shaped hooks, and two U-shaped end fasteners frictionally engaging two ends of said position bar, and the two outermost hooks of said C-shaped hooks hooking in said two end fasteners so as to secure said sunshade in a spread position.

5,509,714
FRAMELESS CONTAINER FOR CARRYING CARGO
HAVING OVERLAPPED SIDEWALLS AND A UNITARY
BOTTOM SCUFF PANEL

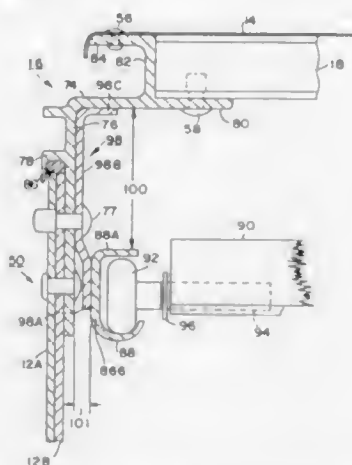
George A. Schmidt, Langhorne, Pa., assignor to Strick Corporation, Fairless Hills, Pa.

Filed Aug. 16, 1993, Ser. No. 107,269

Int. Cl.⁶ B62D 33/04

U.S. Cl. 296—181

5 Claims



1. A frameless container for carrying a cargo with a known load and having a predetermined length comprising:

a floor having floor support means, a roof, a pair of opposing sidewalls and a pair of end walls, at least one end wall including an access door, said sidewalls having means located at the top and bottom thereof that are respectively connected to said floor support means and to said roof, the upper portion of each of said opposing sidewalls including at least a first and second lap-jointed panels each having predetermined height, width, and thickness dimensions,

the lower portion of the side walls having a scuff plate, the scuff plate having its bottom connected to said floor support means and its top extending up from the floor by a predetermined distance to define a scuff zone, the scuff zone having a projection-free surface exposed to the interior of said container, said scuff plate having a predetermined thickness relative to the thickness of each of said first and second lap-jointed panels,

fastening means for fastening said scuff plate above the scuff zone to said lap-jointed first and second panels, said fastening means arranged in at least one horizontal row located above said scuff zone, said fastening means having low profile heads projecting only slightly from said exposed inner surface of the scuff plate so as to avoid entanglement with cargo carried by said frameless container,

a top rail interconnected between said roof and the side wall, said top rail having a portion of an inner surface exposed to the interior of said container and a portion of an outer surface exposed to the exterior of the container; said top rail including a main horizontal web portion, a vertical web portion having a lower dependent web depending from the main horizontal web portion and an upper segment projecting upward from the main horizontal web portion, a ledge portion extending inwardly of the upper segment of the vertical web portion, a lip portion carried by the lower dependent web of the vertical web portion, an upper horizontal, outwardly extending portion carried by the upper segment and overlying the main horizontal web portion, and said dependent web portion adjacent to and running along the inner side of said lip portion, said dependent web portion having at least one hole for accepting fastening means that join said first and second panels to said dependent web portion,

the access door is a generally vertically moving, roll-up door, the door having roller members attached to each opposite side of said access door, said roller members engaging "C"-shaped guide tracks to allow the access door to be rolled from its

lower closed position to its upper open position, in the closed position said door rests in and is supported by said guide tracks parallel to the container roof and at a predetermined, functionally critical distance below it, and

a plurality of clip members which are shaped to be contoured to one surface of said dependent web portion of the top rail and to one surface of the guide tracks for positioning of the guide tracks at the predetermined distance below roof, prior to permanent attachment to the container top rail, a portion of said clip members for attaching to said one surface of said dependent web portion and to said one surface of said guide tracks have at least one hole for accepting a fastener and said clip members being positioned so as to extend vertically upward to contact a designated inside surface of the container's top rail, each of said clip members serving as a gauge for easily and accurately locating said guide tracks at said predetermined distance below the container roof during installation.

5,509,715
PROTECTED FLOORING

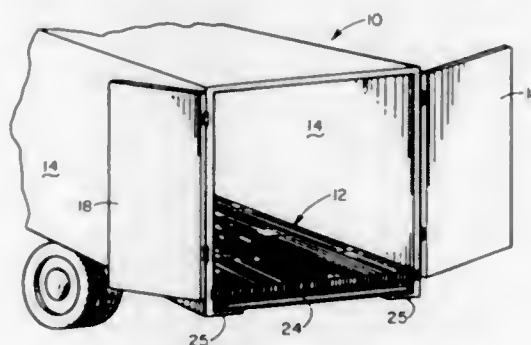
Mike A. Scharpf, 1450 N. Clay Rd., Oshkosh, Wis. 54904

Filed Apr. 17, 1995, Ser. No. 422,987

Int. Cl.⁶ B60J 5/06

U.S. Cl. 296—181

11 Claims



1. A flooring having a top surface and an undersurface, for truck trailers, railroad box cars, or shipping containers, comprising: a plurality of substantially parallel, wooden strips having their longitudinal edges in abutting relationship; a plastic film or fabric disposed to the undersurface of said flooring, said plastic film or fabric being permeable to vapor and impermeable to liquid; and discontinuous means for adjoining said plastic film or fabric to said undersurface of said flooring at least at the perimeter of said flooring.

5,509,716
VEHICLE SEAT WITH PERIMETER FRAME AND PELVIC CATCHER

David P. Kolena, Bloomfield Hills; Paul A. Glinski, Chesterfield; Robert S. Crane, Waterford; Mladen Humer, Eastpointe; David C. Viano, Bloomfield Hills, and Richard J. Neely, Casco, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

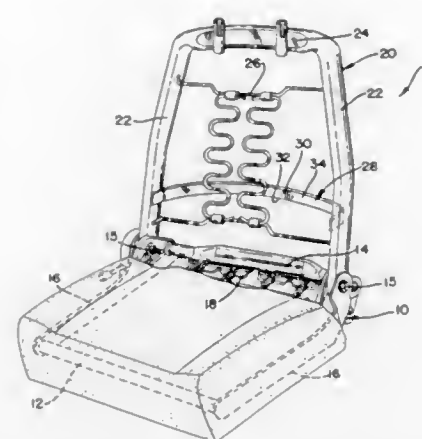
Filed Nov. 8, 1994, Ser. No. 335,591

Int. Cl.⁶ B60R 21/00

U.S. Cl. 297—216.13

6 Claims

1. A vehicle seat comprising:
a seat bottom frame for providing support of a thigh and pelvic region of a 95 percentile male seated occupant;
a seat back frame, generally U-shaped, with an upper cross member with legs being selectively adjustably pivotally mounted with respect to the seat bottom frame, the seat back frame legs supporting a seat back suspension therebetween for supporting a torso region of the seated occupant, the upper cross member oriented to be at a vertical height generally at



least approximately 470 millimeters along a line generally parallel to the torso of the seated occupant from an H point of the seated occupant, and the upper cross member oriented to be concavely bowed toward a front end of the seat when the upper cross member is under a height of approximately 525 millimeters from the H point of the seated occupant along a line generally parallel to the torso line of the seated occupant and

a plastically deformable lower cross member having ends fixably connected to the seat back frame legs and being, toward the front end of the seat, concavely bowed, the lower cross member having a major dimension oriented to be generally parallel to the torso of the seated occupant and having a major dimension length of approximately at least 25 millimeters, the lower cross member having an upper and a lower end, the lower cross member upper end oriented to be vertically above the H point of the seated occupant at a distance of 55±20 millimeters when the seat back frame is positioned, in a normal seating position and where in a crash situation when the seat back frame is excessively loaded rearwardly, the lower cross member deforms to pivot its lower end further away from the seat back frame legs than its top end to capture the seated occupant's pelvic region between the lower cross member and the bottom frame.

5,509,717
ALL-TERRAIN VEHICLE ENCLOSURE
Robert L. Martin, 3831 Little Zion Rd., Sneads, Fla. 32460
Filed Jul. 18, 1994, Ser. No. 276,823
Int. Cl.⁶ B60J 7/10

U.S. Cl. 296—77.1

1 Claim



1. An all-terrain vehicle enclosure for simultaneously shielding a driver and a driver's all-terrain vehicle from adverse weather conditions and terrain hazards comprising, in combination: a rigid frame generally shaped in a contour of an automobile formed of a plurality of tubular and rigid members coupled

together to define an open central portion for holding the driver and a top portion of the all-terrain vehicle therein and a peripheral skeletal portion therearound having a curved front wheel well section, a curved rear wheel well section, a pair of spaced, opposed, and parallel side sections extended between the front wheel well section and the rear wheel well section, a trunk section extended upwards in curvature from the rear wheel well section, a hood section extended upwards from the front wheel well section, a rear viewing section extended upwards from the trunk section, a front viewing section extended upwards at an angle from the hood section, and a roof section extended between the front viewing section and the rear viewing section;

a rigid and segmented skin formed of an elastomeric matrix secured over the skeletal portion of the frame to define a body, the body having a roof secured to the roof section, a front wall secured to the front viewing section and the hood section with the front wall having a front windshield aperture disposed therethrough at a location adjacent to the front viewing section, a rear wall secured to the rear viewing section and the trunk section with the rear wall having a rear windshield aperture disposed therethrough at a location adjacent to the rear viewing section and a trunk aperture disposed therethrough at a location adjacent to the trunk section, a first side wall and a second side wall each secured to one of the separate side sections with the first side wall having a first window aperture disposed therethrough directly below the roof and the second side wall having a side door aperture disposed therethrough, a side door pivotally coupled to the frame and positionable over the side door aperture with the side door having a second window aperture disposed therethrough at a location such that it is aligned with the first window aperture, a trunk door pivotally coupled to the frame and positionable over the trunk aperture, and an inner wall secured to the trunk section at a location inwardly offset from the trunk aperture to define a rear cargo area for holding miscellaneous items therein;

side door latch means for securing the side door to the second side wall and over the side door aperture;

trunk latch means for securing the trunk door to the rear wall and over the trunk aperture;

a first sheet, a second sheet, a third sheet, and a fourth sheet of transparent material formed of an elastomeric matrix with the first sheet removably secured over the front windshield aperture to define a front windshield, the second sheet removably secured over the rear windshield aperture to define a rear windshield, the third sheet removably secured over the first window aperture to define a first side window, and the fourth sheet removably secured over the second window aperture to define a second side window;

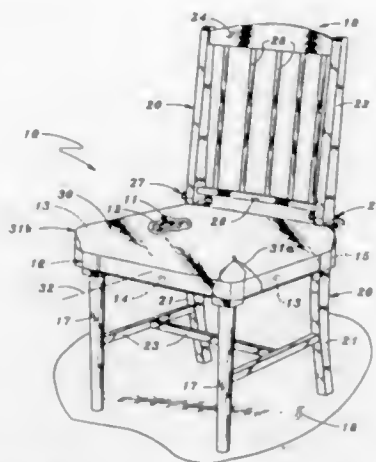
frame coupling means for removably coupling the body over the all-terrain vehicle such that wheels of the all-terrain vehicle extend from the body and the driver is allowed to mount the all-terrain vehicle contained therein through the side door; and a coupling plate formed of steel positionable under the body and removably coupleable thereto, whereby when the body is disposed over the top portion of the all-terrain vehicle and the coupling plate is secured thereto, the all-terrain vehicle and the associated driver are shielded from adverse weather conditions and terrain hazards.

5,509,718
SELF-SEALING POLYVINYL CHLORIDE SEAT COVER
FOR A DINING CHAIR
Lynn L. Neary, 8262 Honor Pl., Cotati, Calif. 94931
Filed Mar. 31, 1994, Ser. No. 298,602
Int. Cl.⁶ A47C 31/00

U.S. Cl. 297—228.12

12 Claims

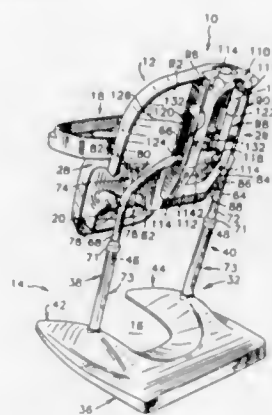
1. A one-piece cover for a seat of a chair, comprising a single layer of transparent polyvinyl chloride polymer having broad double polished top and bottom surfaces of sufficient tackiness to adhere to each other without need for a separate adhesive therebetween.



tween but allow fabric associated with clothes of the user to slide without adherence thereover, said top and bottom broad surfaces being of generally rectangular shape terminating in a front edge, a pair of side edges, a rear edge and defining a longitudinal axis of symmetry bisecting said front and rear edges parallel to said side edges, said front edges intersecting said side edges at a pair of front junctions each of which defining a diagonal slot extending inwardly therefrom toward said axis of symmetry a predetermined distance wherein each of said diagonal slots permits spaced-apart corner sectors on opposite sides thereof to be overlapped and create tension to associated front and side sections to cause them to fold downward relative to said axis of symmetry, said broad surfaces of said corner sectors being sufficiently tacky to disconnectably adhere to each other when overlapped without need for a separate adhesive therebetween but allow separation without loss of adhesion power when disconnectable pressure is applied.

5,509,719
MULTI-POSITION CHAIR
Richard E. Cone, II, Athens, Ohio, assignor to Cosco, Inc., Columbus, Ind.
Filed Nov. 4, 1994, Ser. No. 334,248
Int. Cl.⁶ A47C 3/20; 1/02
U.S. Cl. 297—344.14

14 Claims

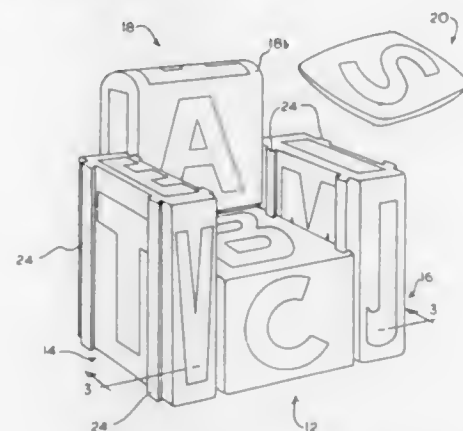


I. A chair comprising
a seat having a seat bottom and a seat back positioned to lie adjacent to the seat bottom, the seat back being formed to include a guide channel, and
a frame assembly supporting the seat in a selected elevated position above a floor underlying the seat and the frame assembly, the frame assembly including a pedestal, a frame coupled to the pedestal and arranged to pass through the guide channel, at least one seat support link having one end pivotally coupled to the frame and another end pivotally coupled to the seat to allow the seat to move relative to the frame

between selected positions, and a latch assembly releasably coupling the seat back to the frame to block pivoting and sliding movement of the frame in the guide channel and relative to the seat back and pivoting movement of each seat support link relative to the seat and frame.

5,509,720
ALPHABET BLOCK CHAIR KIT
Dorothy J. Croom, 15 Cedar Hill Dr., Durham, N.C. 27713
Filed Sep. 23, 1994, Ser. No. 311,173
Int. Cl.⁶ A47C 7/00
U.S. Cl. 297—440.14

7 Claims

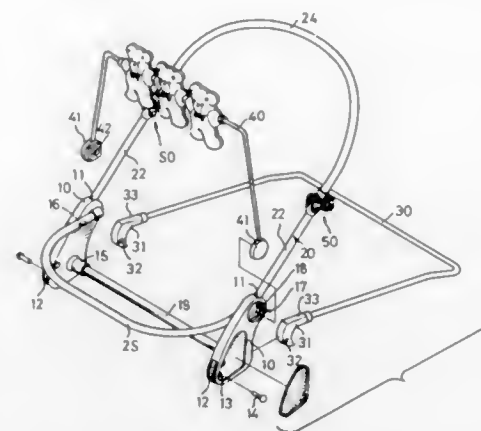


I. An alphabet block chair kit wherein the respective alphabet blocks comprising the kit can be assembled into a chair that can be readily disassembled, the alphabet block chair kit comprising:
a) a series of at least four alphabet blocks;
b) each block including a plurality of faces;
c) a single letter of the alphabet formed on respective faces of at least three of the blocks;
d) fasteners formed on certain of the faces of said blocks such that the blocks can be detachably secured together;
e) the fasteners including elongated slots formed in the certain faces of selected blocks and a series of mating elongated locking rails formed in the certain faces of other blocks; and
f) wherein the elongated slots and mating locking rails are so arranged that the blocks can be assembled to form a chair where one block forms a seat portion of the chair, a pair of blocks connected to the seat block form side arms, and a fourth block secured to at least one of the other blocks forms the back of the chair.

5,509,721
FOLDABLE RECLINER STRUCTURE FOR AN INFANT
Li-Chu C. Huang, No. 9, Alley 2, Lane 606, Sec. 2, Po Ai Rd., Chia Yi City, Taiwan
Filed Oct. 27, 1994, Ser. No. 331,365
Int. Cl.⁶ A47D 1/02
U.S. Cl. 297—452.13

4 Claims

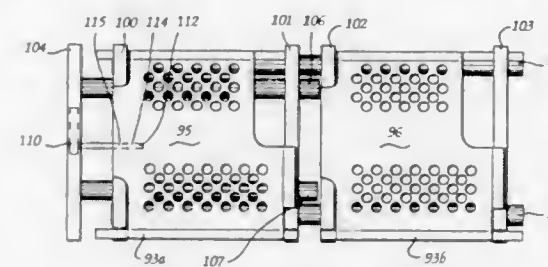
I. A foldable recliner frame for an infant comprising:
a pair of spaced fixed seats each having upper and lower ends;
a horizontal beam securely mounted between said fixed seats;
a substantially U-shaped seat supporting member having two distal ends thereof pivotally mounted to said upper ends of said fixed seats;
a substantially U-shaped backrest supporting member having two distal ends thereof pivotally mounted to said upper ends of said fixed seats; and
a substantially U-shaped base frame member having two distal ends thereof pivotally mounted to said lower ends of said fixed seats;



said fixed seats further having two mutually faced ledges respectively formed thereon to provide a support for said seat supporting member when said recliner frame is in an extended position, and a groove defined in said lower end of each said fixed seats, a pair of protrusions being respectively formed on two mutually faced walls which together define said groove, said base frame member including two hooked ends each of which is pivotally mounted in associated said groove, and said hook ends of said base frame member being retained in position by said protrusions when said recliner frame is in an extended position.

5,509,722
CONVERTIBLE PASSENGER SEAT ASSEMBLY AND GROUPING OF PASSENGER SEAT ASSEMBLIES
Michael T. Beroth, Lewisville, N.C., assignor to Burns Aerospace Corporation, Winston-Salem, N.C.
Filed Apr. 15, 1994, Ser. No. 228,284
Int. Cl.⁶ B64D 11/06
U.S. Cl. 297—452.40

4 Claims



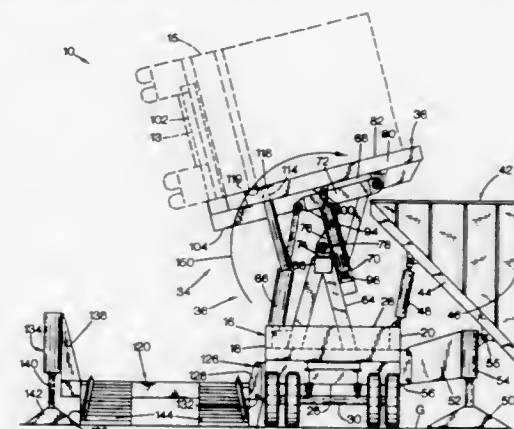
I. A passenger seat assembly convertible between a first two-seat configuration, and a second two-seat configuration having increased seating space between seat armrests and spacing between seats, comprising:

(a) a seat assembly base;
(b) first and second seats mounted on said seat assembly base for carrying respective seat bottom and seat back cushions;
(c) said first seat being slidably mounted on seat slide means on said seat assembly base for lateral movement, said first seat including first and second armrest assemblies mounted on opposite lateral sides of said first seat;
(d) said second seat being mounted in fixed relation on said seat assembly base, said second seat having a third armrest assembly positioned in fixed relation on the side of said second seat opposite the second armrest assembly of said first seat;
(e) said first armrest assembly mounted on first armrest slide means in laterally slidable relation to both said first seat bottom cushion and said second seat;
(f) said second armrest assembly mounted on second armrest slide means in laterally slidable relation to said second seat and in fixed relation to said first seat bottom cushion;

(g) whereby said first seat and said second armrest assembly are moveable in unison between:
(1) said first seat configuration wherein said first and second seats and the first, second and third armrest assemblies are relatively close together;
(2) said second seat configuration wherein said first and second seats and the first, second and third armrest assemblies are each further apart to provide increased spacing between seat armrests and spacing between seats; and
(h) locking means carried by said base and selectively engaging said seat slide means for locking the seat assembly into either its first or second seat configuration.

5,509,723
PORTABLE ROTARY TRAILER TIPPER
Kenneth A. Brathie, Portland, Oreg., assignor to Columbia Trailer Co., Inc., Hillsboro, Oreg.
Filed Oct. 15, 1993, Ser. No. 138,500
Int. Cl.⁶ B65G 67/30
U.S. Cl. 298—18

15 Claims

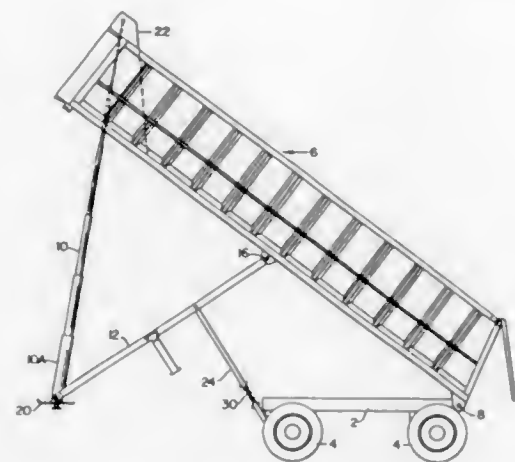


I. A portable tipper for dumping material from a trailer having an open top portion, comprising:
a portable elongate transport having a longitudinal axis and opposing first and second sides;
a trailer inverter having a tipper device mounted to the transport, and a carriage supported by the tipper device, the carriage having an extendable and retractable support portion; and
the carriage having a rest configuration wherein the support portion is retracted to permit the trailer to be moved into tipping position closely alongside the carriage without the carriage substantially vertically supporting the trailer, and the carriage having an extended tipping configuration wherein the support portion is extended from the carriage to engage and vertically support the trailer in the tipping position, the tipper device inverting the carriage about at least one axis which is substantially parallel to the longitudinal axis to dump material from the open top portion of the trailer beyond the second side of the transport.

5,509,724
MULTIPLE AXLE QUARTER FRAME END DUMP TRAILER
John W. Perry, Reston, Va.; Steven F. Retzlaff, and Jason R. Backs, both of Houston, Tex., assignors to Travis Body & Trailer, Inc., Houston, Tex.
Filed May 2, 1994, Ser. No. 235,884
Int. Cl.⁶ B60P 1/18
U.S. Cl. 298—22 D

7 Claims

I. A quarter frame end dump trailer comprising a subframe having front and back ends,



a trailer body having a front end and a dump end pivoted to the back end of the subframe,
 a telescoping hydraulic cylinder having one end pivotally attached to the trailer body adjacent the front end of the trailer body,
 a coupler plate secured to a stable location separate from the trailer body,
 a draft arm assembly having parallel arms extending from a region of the trailer body between its front and dump ends and pivotally attached to the coupler plate remote from the point of attachment to the trailer body,
 at least one resilient member,
 an air ride suspension, and
 a pair of drag links each having one end pivotally secured to the front end of the subframe, the other end secured to a predetermined location on a different one of said arms of said draft arm assembly; and
 each said drag link having in line first and second sections movable relative to each other to permit a change in the length of the drag link between the draft arm assembly and the subframe,
 said resilient member extending between said first and second sections of said drag link to resist reduction in length of said drag link.

5,509,725

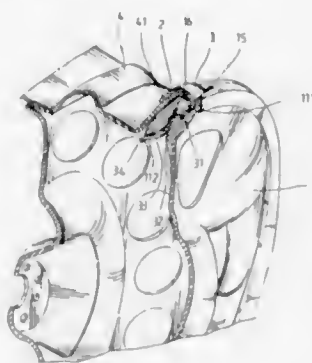
WHEEL COVER ASSEMBLY FOR MOTOR VEHICLES
 Mexa Chiu, Taipei, Taiwan, assignor to Mexa Co., LTD., Taipei, Taiwan

Filed Nov. 16, 1994, Ser. No. 341,950

Int. Cl.⁶ B60B 7/10

U.S. Cl. 301—37.36

6 Claims



1. A wheel assembly comprising a wheel, fastening means, and a wheel cover fastened to said wheel by said fastening means, wherein:

said wheel cover includes an inner side, a circular shape, a plurality of sliding grooves radially disposed at the inner side, and a plurality of locating blocks raised from the inner side and respectively disposed adjacent to said sliding grooves, said locating blocks defining with the inner side of said wheel cover a respective receiving chamber in alignment with said sliding grooves to receive said fastening means;

said wheel has a recessed wall portion at an outer side, which receives said locating blocks, and a smoothly curved peripheral wall portion around said recessed wall portion for mounting said fastening means permitting said wheel cover to be fastened to said wheel by said fastening means; and

said fastening means comprises a plurality of clamps, each of said plurality of clamps including a hook-shaped end on the smoothly curved peripheral wall portion of said wheel and an opposite end respectively inserted through said sliding grooves into said respective receiving chamber.

5,509,726

VARIABLE OFF-SET FULL FACE WHEEL AND METHOD FOR MAKING THE SAME

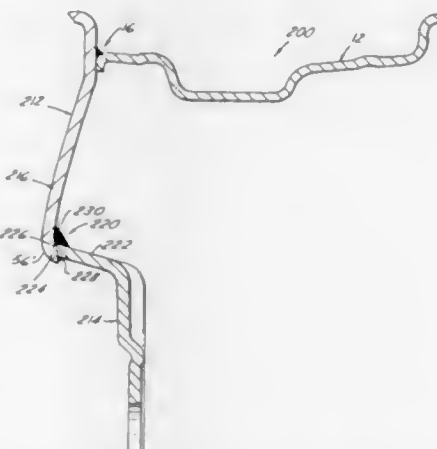
Joseph C. Overbeck, East Lansing, Mich., assignor to Motor Wheel Corporation

Filed Dec. 10, 1993, Ser. No. 165,079

Int. Cl.⁶ B60B 3/00

U.S. Cl. 301—63.1

22 Claims



1. A multi-piece, non-take-part full-face vehicle wheel assembly comprising a single piece drop-center-well rim having an inboard bead seat and an outboard bead seat for mounting of a pneumatic tire thereon, said rim having annular disc mounting means affixed thereto and extending radially inwardly of the rim, a wheel mounting disc center part with a center pilot opening and a circular row of wheel mounting bolt holes encircling said center pilot opening for receiving wheel mounting fasteners for fixing said wheel to the wheel mounting structure of a vehicle, and a disc outer part having an annular outer peripheral portion radially overlapping and permanently secured to said disc mounting means of said rim in assembly therewith, said disc outer part also having an intermediate window vent opening portion disposed radially between said disc center part and said outer peripheral portion, said disc outer part and said wheel center part each being made separately from one another and each having an annular connector flange formed respectively at the inner and outer peripheries thereof, said connection flanges engaging one another in assembly, and connector means permanently squaring said center part and said disc outer part together at said connector flanges, and wherein said connector

flanges have complementarily shaped end edges disposed in inter-fitted abutment, and said connector means comprises circumferentially continuous weld means formed at an overlap joint defined by said end edges and securing the same permanently together.

5,509,727

RAILWAY AUTOMATIC BRAKE CONTROL VALVE TEST UNIT

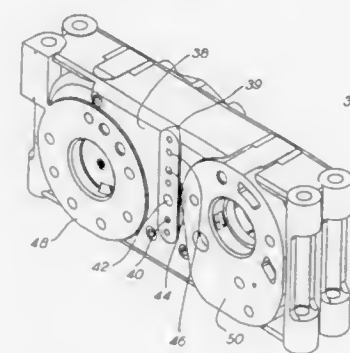
James E. Hart, Trafford; Edward W. Gaughan, Irwin, both of Pa.; Jeffrey D. Reid, St. Catharines, Canada, and Vincent F. Troiani, New Florence, Pa., assignors to Westinghouse Air Brake Company, Wilmerding, Pa.

Continuation-in-part of Ser. No. 306,790, Sep. 15, 1994, Pat. No. 5,480,218. This application Mar. 2, 1995, Ser. No. 396,815

Int. Cl.⁶ B60T 11/34

U.S. Cl. 303—3

15 Claims



1. A portable, automatic single-car test unit for executing a predetermined series of pressure manipulations to evaluate the operating conditions of a railway freight brake control valve, said control valve being of the type having a pipe bracket portion, with a service portion and an emergency portion mounted thereto, said pipe bracket portion further being connected to a brake pipe, an auxiliary reservoir, an emergency reservoir and a brake cylinder, wherein a plurality of passageways are provided to said control valve for providing fluid communication from such brake pipe, such brake cylinder, such emergency reservoir and such auxiliary reservoir to respective ones of said service portion and said emergency portion, and wherein ports are provided for accessing such passageways, said test unit comprising:

a pneumatic pressurized air supply;
 valve means for charging and discharging pressurized air in said passageways and for selectively allowing fluid communication between selected ones of such passageways;
 a connection attachable to said ports for accessing said passageways, said connection sealably linking said passageway access means with said test unit;
 means for measuring air pressure representative of the pressure in each of said passageways; and
 a computing means having a microprocessor connected to an input output device for operating said valve means to selectively pressurize one of said passageways from said pressurized air supply, and for verifying said control valve operation by performing at least one of receiving and storing pressure measurements from said air pressure measuring means and calculating and storing differences between selected pairs of said pressure measurements, and measuring and storing first elapsed times for a predetermined amount of pressure to be reached in selected ones of said passageways beginning from a predetermined event, and measuring and storing the rate of

5,509,728

BRAKE SYSTEM ZINC-BASE ALLOY COMPONENTS

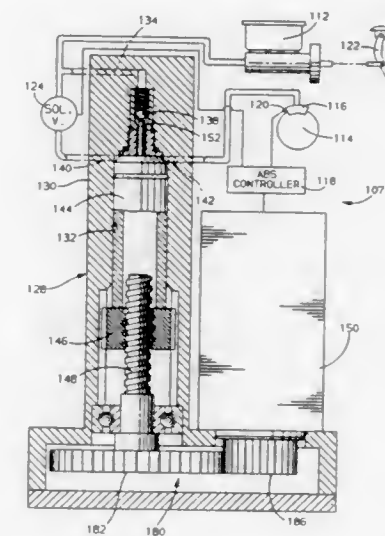
Michael D. Hanna, Royal Oak, and Moinuddin S. Rasbid, Bloomfield Hills, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Dec. 14, 1994, Ser. No. 356,016

Int. Cl.⁶ B60T 8/42

U.S. Cl. 303—115.2

4 Claims



1. An anti-lock braking system (ABS) for a wheel of an automotive vehicle comprising:

a master cylinder for supplying pressurized fluid;
 a sensor to determine a rotational speed of a wheel;
 a wheel brake receiving pressurized fluid from said master cylinder means and for restraining rotational movement of said wheel;
 an ABS controller cognizant of the rotational condition of said wheel via the sensor and providing a signal when the rotational condition of said wheel is within present parameters;
 an actuator frame having a bore with fluid communication with said wheel brake means;
 a piston slidably sealably mounted with said bore for providing a variable control volume in communication with said wheel brake and thereby modulating the pressure therein;
 a nut operatively associated with said piston and slidably mounted within said bore in a non-rotative fashion;
 a power screw projecting into said nut and threadedly engaged within in a low friction backdriveable manner, said power screw having a fixed rotational axis with respect to said actuator frame;
 a drive gear connected to said power screw;
 reversible motor for powering said power screw, said motor being responsive to signals given by said controller;
 a pinion gear operatively connected to said reversible motor and engaging said drive gear to turn said power screw; and
 wherein said pinion gear comprises an alloy consisting essentially of, by weight, between about 4 and 12 percent copper, 2

and 4 percent aluminum, and the balance zinc and impurities and having fine epsilon and eta grains dispersed in a ternary eutectic matrix.

5,509,729

ANTI-LOCK HYDRAULIC BRAKE SYSTEM WITH A FLOW CONTROL VALVE

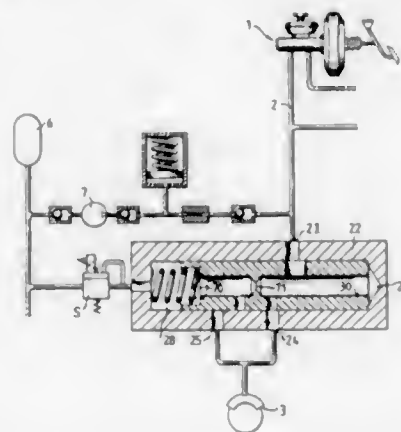
Dalibor Zavisla, Frankfurt am Main, and Paul Linhoff, Kelkheim-Flschbach, both of, Germany, assignors to ITT Automotive Europe GmbH, Frankfurt, Germany
PCT No. PCT/EP92/02177, § 371 Date Apr. 15, 1994, § 102(e) Date Apr. 15, 1994, PCT Pub. No. WO93/08056, PCT Pub. Date Apr. 29, 1993

PCT Filed Sep. 21, 1992, Ser. No. 211,849
Claims priority, application Germany, Oct. 18, 1991, 41 34 427.8

Int. Cl.⁶ B60T 8/50

U.S. Cl. 303—117.1

1 Claim



1. An anti-lock hydraulic brake system including a master cylinder, at least one wheel brake connected to the master cylinder by a brake line, a hydraulic accumulator which communicates with the wheel brake by way of a return line, comprising:

a flow control valve housing disposed along the brakeline and having a longitudinal bore in the housing fluidly connected at a first location to the master cylinder and fluidly connected at a second location to the wheel brake;

a piston slidably disposed for movement between a first position and a second position in the longitudinal bore in the housing and cooperatively with the housing defining an outlet chamber and an inlet chamber at opposite ends thereof and having a longitudinal through bore parallel to the longitudinal bore of the housing fluidly connecting the inlet chamber and the outlet chamber and having a first transverse bore through the piston in the first position communicating fluid from the master cylinder to the longitudinal through bore of the piston when the piston is in a first position and a second transverse bore communicating fluid from the longitudinal through bore to the wheel brake and in the second position communicating fluid from the wheel brake to the longitudinal bore of the piston and blocking fluid communication between the master cylinder and the longitudinal bore in the housing wherein a flow restrictor is defined in the longitudinal through bore between the second transverse bore and the outlet chamber;

a compression spring disposed in the output chamber biasing the piston toward the first position; and
a selectively operable outlet valve in the return line between the outlet port of the flow control valve housing and the hydraulic accumulator wherein opening the outlet valve produces a pressure differential across the flow restrictor overcoming the spring to move the piston from the first position to the second position thereby blocking fluid flow from the master cylinder and exhausting fluid from the wheel brake through second

port and the second transverse bore to the longitudinal through bore of the piston.

5,509,730

BRAKE FLUID PRESSURE CONTROL APPARATUS

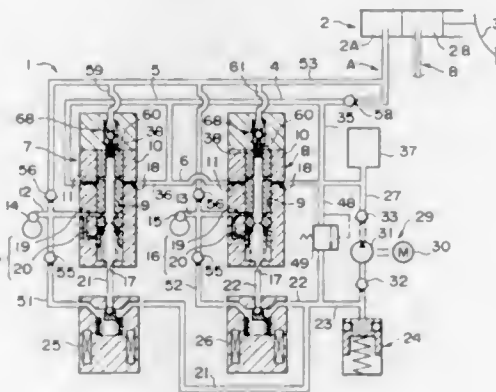
Hiromi Ando; Kenji Sano, and Yoshihiko Kohayashi, all of Yamanashi, Japan, assignors to Tokico Ltd., Kanagawa, Japan

Filed Feb. 17, 1995, Ser. No. 390,477

Claims priority, application Japan, Feb. 18, 1994, 6-021533
Int. Cl.⁶ B60T 8/32

U.S. Cl. 303—117.1

4 Claims



1. A brake fluid pressure control apparatus comprising:

a flow control valve which has a casing, a spool and a spool spring biasing said spool, said casing having a master cylinder communicating port extending in a direction of movement of said spool and communicating with a master cylinder, a port communicating with a wheel cylinder, a port communicating with a variable-capacity reservoir through a normally-closed valve, and a first pump communicating port communicating with a discharge side of a pump that sucks the reservoir-side brake fluid and discharges it, said spool being slidable in said casing and defining passageways configured so that, when the spool is held in a stationary state by a biasing force of the spool spring when antiskid control is inoperative, said spool provides communication between said master cylinder communicating port and said wheel cylinder communicating port, and so that when said spool is moved and brought into a movable state against the biasing force of said spool spring by a pressure difference produced between two ends of said spool at least during a repressurizing process of antiskid control, said spool provides communication between said first pump communicating port and said wheel cylinder communicating port, and wherein said casing also has a second pump communicating port that communicates with the discharge side of said pump, and that also communicates with said wheel cylinder communicating port when said spool is in said movable state, said second pump communicating port facing towards said first pump communicating port and being disposed approximately perpendicularly to the direction of movement of said spool, said first and second pump communicating ports being connected to said master cylinder;

a check valve provided between each of said first and second pump communicating ports and said master cylinder, said check valve being adapted to open when the master cylinder-side brake fluid pressure becomes a predetermined value higher than the pump discharge-side brake fluid pressure; and
a cut-off valve provided between said master cylinder communicating port and said master cylinder, said cut-off valve being closed when said spool is brought into said movable state.

5,509,731

EJECTING STORAGE CASE

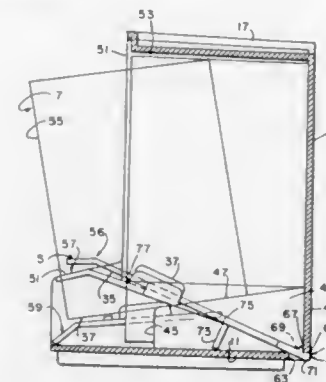
Steven E. Callahan; Todd K. Dymont, both of Clinton, Mass.; Anthony L. Gelardi, Cape Porpoise, and Tyler Fitzsimmons, Kennebunkport, both of Me., assignors to Microplas, Inc., Clinton, Mass.

Filed Oct. 18, 1993, Ser. No. 136,829

Int. Cl.⁶ A47B 81/06

U.S. Cl. 312—9.22

17 Claims



1. A storage case comprises a housing with a bottom, first and second side walls extending upward from opposite ends of the bottom, and a top extending across upper ends of the first and second side walls and a back joining the bottom, top and side walls, parallel ramps extending upward from the bottom and connected to lower portions of the back, the ramps having upper surfaces sloping downward and forwardly from the back, a first anchor along a lower portion of the back, a retainer-ejector having a second anchor complementary with the first anchor, and having elongated openings for receiving the ramps, and having fulcrum legs extending downward between the openings and oriented transversely thereto, and having plural leaves extending forward from the fulcrum legs, with finger pads at fronts of the leaves, the fulcrums and anchors urging the fronts of the leaves upward for urging data cartridges upward and rearward toward the top and back, the leaves being flexible and depressible about the fulcrums for allowing data cartridges to slide downward and forward on the leaves and on sloping upper surfaces of the ramps when the finger pads are depressed.

5,509,732

MIXER ASSEMBLY

Robert P. Adamski, Missouri City; Eugene L. Holloway, Richmond, and Robert B. Wood, Bellville, all of Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Dec. 16, 1994, Ser. No. 357,828

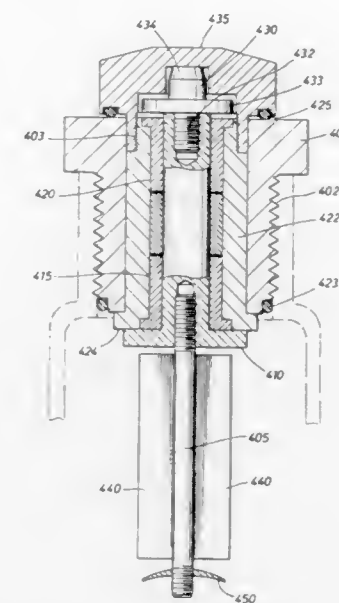
Int. Cl.⁶ B01F 13/00

U.S. Cl. 366—349

20 Claims

1. A mixer assembly for mixing liquids in a tubular container comprising:

- a. an electrically conductive central shaft member,
 - (1) having a top end portion and a bottom end portion;
 - (2) wherein said central shaft member is oriented longitudinally along the length of said mixing blade assembly; and
 - (3) wherein said central shaft member is threaded along at least a portion of its circumference;
- b. a plurality of shearing members fixedly attached to said central shaft member for shearing said liquids when said shaft member is rotated;
- c. a vortex breaker member positioned below said blade members and above said bottom end portion of said central shaft member; wherein said vortex breaker member comprises:
 - (1) a concave-shaped disk having an aperture substantially at its center,
 - (2) wherein said central shaft member is positioned through, and fixedly attached at, said aperture of said vortex breaker member;



- (3) wherein the concave-shaped side of said vortex breaker member is oriented toward the bottom end portion of said central shaft member;
- (4) wherein all points along the perimeter of the circumference of said vortex breaker member are substantially equidistant from the center of said central shaft member;
- d. a stopper member for removably affixing said mixing assembly inside a tubular container, said stopper member:
 - (1) having threads around at least a portion of its circumference, for removably affixing said stopper member to said tubular container;
 - (2) having a passage substantially through its center; and
 - (3) wherein said stopper member is in threaded communication with threads of an open end of said tubular containers;
- e. a sleeve casing member oriented within and along substantially the same axis of said passage of said stopper member for receipt of a pair of bushing members;
- f. a pair of bushing members for receipt of a spindle member;
 - (1) one of said bushing members disposed within and along substantially the same axis as a lower portion of said sleeve casing member;
 - (2) another of said bushing members disposed within and along substantially the same axis as an upper portion of said sleeve casing member;
- g. a spindle member positioned within and along substantially the same axis as said pair of bushing members,
 - (1) said spindle member having threaded hollows at its top and bottom end portions for attachment of a coupling to its top end portion and said central shaft member to its bottom portion;
- h. a coupling member,
 - (1) having a threaded lower portion,
 - (2) wherein said coupling member is in threaded communication with the threaded hollow of the top end portion of said spindle member, and
 - (3) a top portion of said coupling member is for removable mated connection to a corresponding coupling member attached to a gear for rotating said mixing blade assembly;
- i. wherein said sleeve casing member is threaded around the circumference of an upper portion thereof; and
- j. a pressure cap member for preventing leakage of gas or liquid when said liquids are heated;
 - (1) said pressure cap member having a threaded hollow in a bottom portion thereof for removable attachment to the threads around the circumference of the upper portion of said sleeve casing member;
 - (2) wherein when said central shaft member is being rotated for mixing said liquids, said pressure cap is not attached to said sleeve casing member; and

(3) wherein when said liquids are being heated and said central shaft member is not being rotated, said pressure cap member is threadably attached to said sleeve casing member.

5,509,733
INFRARED HEATED DIFFERENTIAL THERMAL ANALYZER

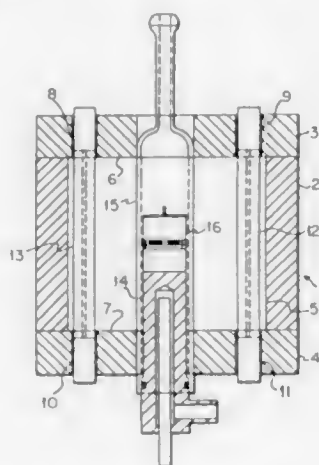
Robert L. Danley, Collingswood, N.J., assignor to TA Instruments, Inc., New Castle, Del.

Filed Dec. 21, 1993, Ser. No. 171,609

Int. Cl.⁶ G01N 25/20; 25/00; G01K 17/00

U.S. Cl. 374—11

22 Claims



1. A differential thermal analyzer comprising:
(a) a differential thermal analysis sensor;
(b) a first actively cooled heat sink;
(c) a first heat flow restricting element, thermally connecting the first heat sink to the differential thermal analysis sensor;
(d) a first source of infrared radiation; and
(e) means for directing the infrared radiation at the heat flow restricting element such that it is incident upon the heat flow restricting element.

5,509,734
WEDGE ACTIVATED ZIPPER

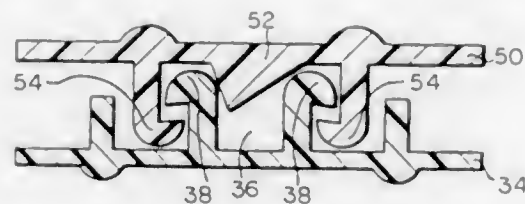
Steven Ausnit, New York, N.Y., assignor to Minigrip, Inc., Orangeburg, N.Y.

Filed Jan. 11, 1994, Ser. No. 179,919

Int. Cl.⁶ B65D 33/24

U.S. Cl. 383—63

34 Claims



1. A reclosable bag comprising:
a first wall and a second wall joined to form an enclosure with a mouth defined by wall edges; and
a closure for selectively opening and sealing said mouth, said closure comprising a first profile extending along an internal surface of said first wall and a second profile adapted to interengage with said first profile and extending along an internal surface of said second wall,

wherein said first profile has a first interlocking member, a second interlocking member and a spreader comprising a first wedge extending longitudinally along said first profile between said first and second interlocking members, and wherein said second profile has a first interlocking member and a second interlocking member spaced apart from said first interlocking member along said second wall, said second profile first and second interlocking members interengaging with said first and second interlocking members, respectively, of said first profile to interengage said first and second profiles,

said spreader on said first profile occupying a portion of the space between said second profile interlocking members to further separate said first and second interlocking members on said second profile from one another after said first and second profiles are interengaged, so that said first and second profiles may be more effectively interengaged when said reclosable bag is closed.

5,509,735

CLOSURE ARRANGEMENT HAVING A PEELABLE SEAL
Timothy J. May, Greenville, Wis., assignor to Reynolds Consumer Products Inc., Appleton, Wis.

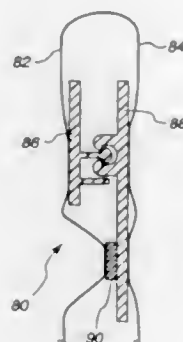
Division of Ser. No. 225,864, Apr. 11, 1994, Pat. No. 5,470,156.

This application Jul. 7, 1995, Ser. No. 499,619

Int. Cl.⁶ B65D 33/24

U.S. Cl. 383—210

4 Claims



1. A closure arrangement in combination with a polymeric bag, said bag having first and second opposing films each having an inner and outer surface, comprising:

first and second opposing base strips each having an inner and outer surface, said outer surfaces of said first and second base strips being attached to the inner surfaces of the respective first and second films;

a peelable strip having a pair of opposing surfaces, one of said surfaces being connected to said inner surface of said first base strip and the other of said surfaces being directly detachably connected to the inner surface of said second film to form a peelable seal; and

a pair of interlocking closure profiles attached to said respective inner surfaces of said first and second base strips so that the bag is reclosable.

5,509,736

LINEAR GUIDING DEVICE

Werner Keller, Wasserlosen; German Dutsch, Schweinfurt, and Roland Hartmann, Grettstadt-Durrfeld, all of, Germany, assignors to Deutsche Star GmbH, Schweinfurt, Germany

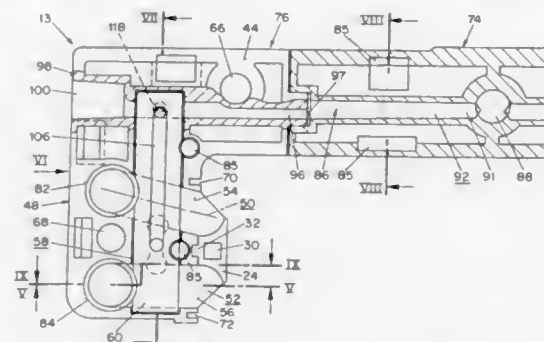
Filed Sep. 7, 1994, Ser. No. 302,119

Claims priority, application Germany, Sep. 10, 1993, 43 30 772.8

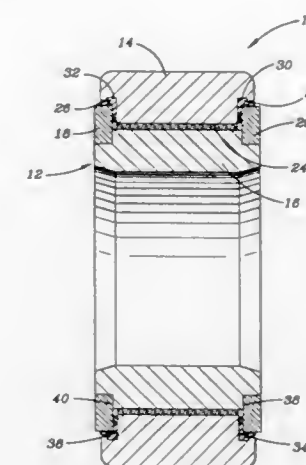
Int. Cl.⁶ F16C 29/06

U.S. Cl. 384—45

43 Claims



1. A linear guiding device, comprising a guide rail having a longitudinal axis, a main body of a bearing having at least one rolling-element circuit guiding the main body along the axis on the guide rail and having an end surface, an end plate attached to the end surface of the main body of the bearing, the end plate having a contact surface facing the end surface of the main body of the bearing, a deflection duct for the rolling-element circuit recessed into the contact surface of the end plate and constituting an outer deflecting surface for a deflection-arc segment of the rolling-element circuit, a deflection-piece receiver duct recessed into the contact surface of the end plate and arranged crosswise of the deflection duct, a deflection piece received in the deflection-piece receiver duct and extending across the deflection duct, the deflection piece having a breast surface facing and located proximate to the end surface of the main body of the bearing and a convex back-surface located opposite the outer deflecting surface and forming an inner deflecting-surface for the deflection-arc segment, at least a part of a lubricant-supply system for the rolling-element circuit being accommodated in the end plate, a portion of said part of the lubricant-supply system which is close to the rolling elements extending inside the deflection-piece receiver duct and being open toward the rolling elements of the rolling-element circuit in the area of the inner deflecting surface, said part of the lubricant-supply system having a lubricant channel running wholly inside the end plate and connected proximate to the deflection-piece receiver duct with channel portions of the lubricant-supply system that are accommodated in the deflection-piece receiver duct, said end plate being shaped from an end plate base material, said lubricant channel having a channel axis substantially parallel to the end surface of the main body of the bearing, said lubricant channel being surrounded along at least a part of its length along said channel axis by surrounding wall means, said surrounding wall means being annularly closed around said channel axis and integrally made of said end plate base material.



an inner annular member and an outer annular member with an annular space between said annular members;
the inner annular member and the outer annular member each having a radially extending thrust bearing surface facing one another and axially spaced from one another;
an annular seal-thrust withstanding member having an elastomer portion extending across said annular space and in contact with each of said inner and outer annular members;
said annular seal-thrust withstanding member having a thrust portion made of material adapted to withstand dynamic thrust and in contact with said inner annular member and outer annular member radially extending thrust bearing surfaces, the thrust portion being a separate ring which has been press fit into the bore of the elastomer portion.

5,509,738

COMPOSITE JOURNAL AND THRUST BEARING SYSTEM

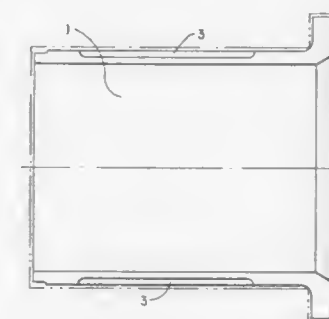
Robert Haynes, Ontario, Canada, and James F. McNamara, Kennett Square, Pa., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 286,721, Aug. 5, 1994, abandoned. This application Aug. 10, 1994, Ser. No. 288,116

Int. Cl.⁶ F16C 17/10

U.S. Cl. 384—275

4 Claims



1. A composite journal and thrust bearing system comprised of a bearing housing having a journal and a thrust face wherein the thrust face and the journal are lined with a high performance polymeric material having a pressure-velocity characteristic of at least 100,000 psi ft/minute; the bearing having an inlet along the length of the bearing housing, said inlet serving as a means to feed lubricant into the inside of the bearing housing, and wherein there are grooves along the inner diameter at each end of the bearing housing.

5,509,737

BEARING WITH A SEAL-THRUST WITHSTANDING MEMBER

Walter P. Waskiewicz, Bristol, and Daniel R. McLarty, Burlington, both of Conn., assignors to The Torrington Company, Torrington, Conn.

Filed Nov. 2, 1994, Ser. No. 333,177

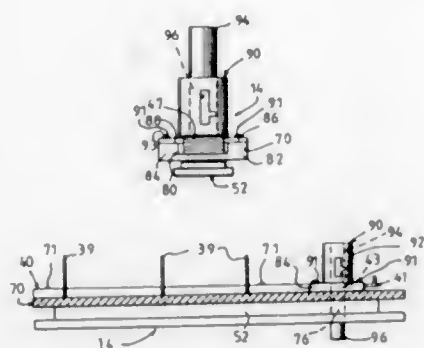
Int. Cl.⁶ F16C 33/74

U.S. Cl. 384—138

4 Claims

1. A bearing comprising:

1. In combination:
a mountable and lockable document holder, a document support stand for removably mounting the document holder thereon; the document support stand including a main body, the main body having a viewing side, and means for mounting the document holder on the viewing side of the body;



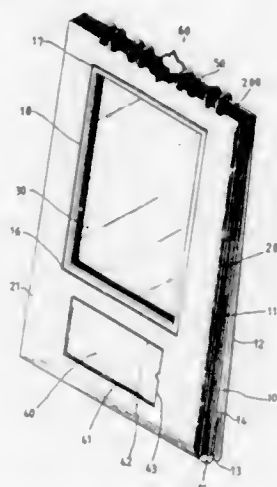
the mountable and lockable document holder including document retaining means, means for supporting the retaining means, the retaining means being mounted thereon, and means mounted on the document retaining support means for engageably cooperating with the document holder mounting means of the document support stand to allow the document holder to be mounted on the document support stand; and means for locking the document holder to the support stand; the document holder locking means including a lock, the lock being fixedly mounted on the document retaining support means of the document holder, lock engaging means, the lock engaging means being located on the viewing side to engageably cooperate with the lock in securing the mountable and lockable document holder to the support stand.

5,509,746

LOOSE-LEAF PICTURE ALBUM

Cheng-Cheng Ho, P.O. Box 1750, Taichung, Taiwan
Filed Jun. 22, 1994, Ser. No. 263,740
Int. Cl.⁶ F42F 13/00

U.S. Cl. 402—79



1. A loose-leaf picture album comprising:
 - a bottom plate including a front piece and a rear piece each having a lower portion and an upper portion, at least one connection piece coupled between said lower portion of said front piece and said rear piece so as to form an upright configuration and so as to be supported on a supporting surface, said connection piece including a plurality of creases formed therein;
 - a coil fastener coupling said upper portions of said front piece and said rear piece together;
 - a plurality of blank pages including an upper portion secured to said coil fastener so as to be secured to said bottom plate, said blank pages each including at least one picture window having a first upper edge and a first lower edge and having at least one open side portion, said blank pages each including at

- least one information window having a second upper edge and a second lower edge and having at least one open side port;
- a plurality of first transparent protective membrane each including an upper portion and a lower portion secured to said first upper edges and said first lower edges of said picture window so as to allow insertion of a picture into said picture window via said open side portion;
- a plurality of second transparent protective membrane each including an upper portion and a lower portion secured to said second upper edges and said second lower edges of said information window so as to allow insertion of a card member into said information window via said open side port, and an arcuate cross rod engaged in said coil fastener for securing said loose-leaf picture album to a supporting member.

5,509,747

ARTICULATION ARRANGEMENT FOR CONNECTING FOLDING STRUCTURE ELEMENTS

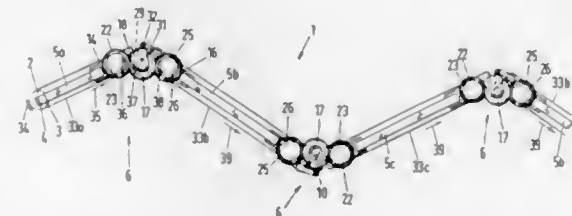
Helmut Klendl, München, Germany, assignor to Deutsche Aerospace AG, Germany

Filed Oct. 22, 1993, Ser. No. 139,699

Int. Cl.⁶ B64G 1/44; F16M 11/42; 13/00; F16H 21/10

U.S. Cl. 403—102

2 Claims



2. The articulation arrangement for connecting two individual elements of a folding structure configured to be unfolded and locked in an unfolded condition and swivelably disposed on a central body, comprising two hinge parts which are each rigidly fastened on one of the two adjacent elements and swivelable about a common hinge axle, a slotted disk forming part of one of the two hinge parts, a lever swivelable disposed on the other of the two hinge parts and provided with a pin which is configured and arranged such that, before the unfolded condition is completely reached and the locking condition occurs, the pin slides on an edge of the slotted disk and, in the completely unfolded locked condition, the pin is engaged in the slot, a pulley arranged to be freely rotatably disposed on one of the two hinge parts to directly disengage the pin from the seat via an edge curve which changes continuously from a zone of minimal distance into a zone of maximal distance from an axis of rotation thereof, and which, in the locked condition, rests with the zone of minimal distance against the pin, and driving and transmitting means configured to effect simultaneous coordinated rotation of the pulley and of the cam plate wherein the driving and transmitting means comprises a cable arranged to be non-slippingly guided on the pulley, and two mutually engaging toothed wheels which, on one hand, are firmly connected with the pulley, and, on the other hand, are firmly connected with the cam plate and concentric with respect to respective axes of rotation thereof.

5,509,748

BALL JOINT

Hidetaka Idosako, and Takatsugu Masuno, both of Hamamatsu, Japan, assignors to Kabushiki Kaisha Somic Ishikawa, Tokyo, Japan

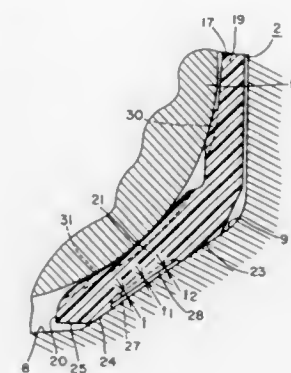
Filed Aug. 1, 1994, Ser. No. 284,081

Claims priority, application Japan, Aug. 6, 1993, 5-43376 U

Int. Cl.⁶ F16D 11/12; F16C 11/00; 23/04

U.S. Cl. 403—133

10 Claims



1. A ball joint, comprising:
 - a housing;
 - a bearing seat in said housing;
 - a ball stud;
 - a ball on said ball stud secured in said bearing seat;
 - a conical inner surface in said housing;
 - a generally conical outer surface on said bearing seat;
 - an annular concave section in said generally conical outer surface of said bearing seat;
 - portions of said generally conical outer surface outside said annular concave section contacting said conical inner surface, and supporting said annular concave section out of contact with said conical inner surface;
 - a plurality of ribs in said annular concave section;
 - said plurality of ribs extending part way toward said conical inner surface, to leave a space therebetween in an unloaded condition of said ball joint; and
 - said space being reducible to enable said bearing seat to absorb heavy loading without permanent deformation of said bearing seat.

5,509,749

COMPRESSION LOWER PRELOADED BALL JOINT

Charles D. Elfert, Vandalia; Patrick H. Fullenkamp, Bellbrook, and Douglas M. Brademeyer, West Chester, all of Ohio, assignors to General Motors Corporation, Detroit, Mich.

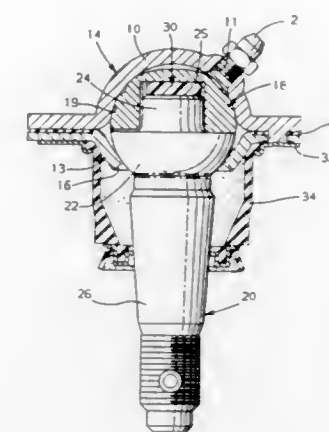
Filed Sep. 28, 1994, Ser. No. 313,931

Int. Cl.⁶ F16C 11/08

U.S. Cl. 403—144

7 Claims

1. A compression ball joint comprising:
 - a housing forming a socket;
 - a substantially hemispherical bearing having a recess and disposed in the socket;
 - a stud including a parti-spherical head adaptively mating with the substantially hemispherical bearing with a post extending into the recess; and
 - a spring disposed in the recess between the post and the bearing, wherein the spring comprises a resilient solid formed in a two tiered construction, one tier being larger than the other.



5,509,750

ROTATABLE COUPLING FOR CORE ELEMENT

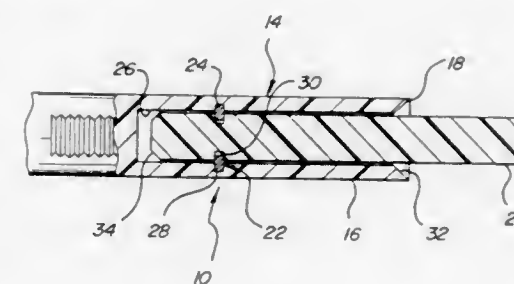
Randy J. Boike, Clarkston, Mich., assignor to Teleflex Incorporated, Limerick, Pa.

Filed Dec. 29, 1993, Ser. No. 175,151

Int. Cl.⁶ F16C 11/14; F16B 21/18

U.S. Cl. 403—164

17 Claims



1. A motion transmitting remote control cable assembly (10) for transmitting motion in a curved path comprising:
 - a flexible conduit (12);
 - a flexible motion transmitting core element (14) slideably supported in said conduit (12) and defining the longitudinal axis of the assembly, said core element including:
 - a female section (16) defining an opening (18);
 - a male section (2) disposed in said opening (18);
 - locking means (22) for mechanically interconnecting said male and female sections (20, 16) and preventing axial sliding movement between said male and female sections (20, 16) while allowing relative rotation about said axis between said male and female sections (20, 16);
 - characterized by said locking means (22) including abutting means (24) disposed on said male section (20) for moving radially between a compressed position to allow said male section (2) to slide axially into said female section (16) and an extended position to interconnect with said female section (16) and prevent further axial sliding between said male and female sections (20, 16) while allowing said relative rotation therebetween said core element (14) including a notch (36) disposed therein.

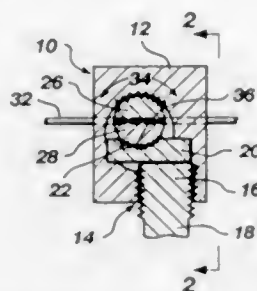
5,509,751

SEAT ATTACHMENT APPARATUS

Jeff Keller, 138 E. 100, N. Logan, Utah 84321
Continuation-in-part of Ser. No. 226,027, Apr. 11, 1994, abandoned. This application Sep. 9, 1994, Ser. No. 303,435
Int. Cl.⁶ B62J 1/04

U.S. Cl. 403—235

40 Claims



1. Seat attachment apparatus, adapted for use with a seat including an attachment member, comprising:

- a housing;
- an elongate seat post having first and second ends, the first end being engaged with and adapted for rotational movement within the housing;
- means for moving the seat post through the housing in a direction into or out of the housing when the seat post is rotated relative to the housing;
- a clamp assembly, adapted for selective engagement of the attachment member, disposed within the housing; and
- a connector selectively connecting the seat post to the clamp assembly such that the movement of the seat post relative to the housing causes the clamp assembly selectively to engage and disengage the attachment member.

5,509,752

ARRANGEMENT COMPRISING A SHAFT, A HUB MOUNTED ON THE SHAFT BY MEANS OF AN ELASTICALLY EXPANSIBLE CLAMPING MEMBER, AND AN EXPANSION DEVICE FOR EXPANDING THE CLAMPING MEMBER

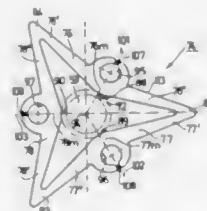
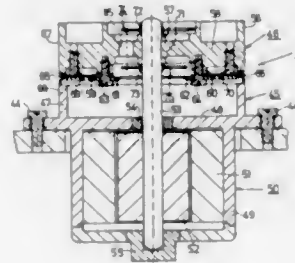
Karl Kocisek, Haslau, Austria, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 114,544, Aug. 31, 1993, abandoned.
This application May 30, 1995, Ser. No. 453,291

Claims priority, application Austria, Oct. 14, 1992, 2024/92
Int. Cl.⁶ G11B 5/105; F16B 7/04; 2/06

U.S. Cl. 403—373

30 Claims



1. A clamping member, comprising:

- a symmetrical, planar, annular member defining an axis of symmetry, said annular member including an outer bounding wall,
- at least three inwardly directed clamping zones circumferentially equispaced and extending in the plane defined by said annular member,
- a respective application zone, radially aligned with each of said clamping zones, for receiving an expansion device, each application zone including a slot which traverses the annular member in the axial direction and extends radially to the outer bounding wall,
- the annular member being (i) substantially non-deformable in circumferential areas each including a said application zone and a radially aligned clamping zone and (ii) elastically deformable in circumferential regions between said circumferential areas for biasing each of said application zones in the radial direction relative to the axis of symmetry.

5,509,753

RETRACTABLE SPEED BUMP

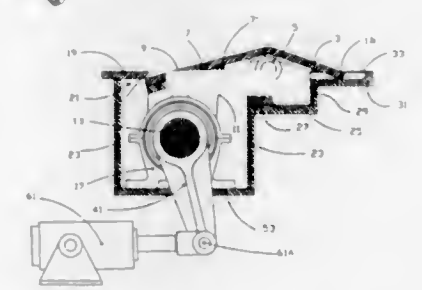
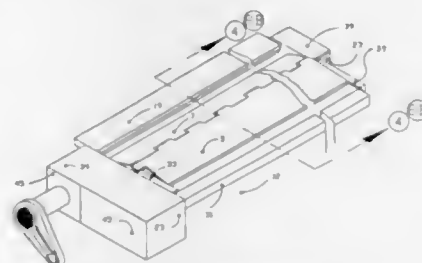
Clinton C. Thompson, 3437 Newburg Rd. #5, Louisville, Ky. 40218-2419

Filed Nov. 22, 1994, Ser. No. 343,186

Int. Cl.⁶ E01F 9/00

U.S. Cl. 404—6

7 Claims



1. A motorized retractable speed bump, comprising: first and second interlocking rectangular bump plates, said bump plates hinged together along their longitudinal edges by a plurality of roll hinges;

- a first and a second guide pin longitudinally extending from said first bump plate, said first and said second guide pins located at opposite ends of said first bump plate;
- a shaft extending longitudinally below and fixedly attached to said second bump plate;
- a first motorized linear actuator;
- an actuating arm having a first and a second end, said arm fixedly attached at said first end to said shaft and rotatably attached at said second end to said first motorized linear actuator;
- a trough container, said container having a curved surface extending longitudinally therein, and a pair of channelled slots for slidably receiving said first and said second guide pins;
- wherein said shaft extends longitudinally through said container and supports said second bump plate, said plurality of roll hinges slidably engages said curved surface said first bump plate being supported by said plurality of roll hinges and by said guide pins inserted into said channelled slots;

and wherein when said first motorized linear actuator is activated, said actuator arm turns said shaft causing said second bump plate to move in the direction of said shaft rotation and causing said plurality of roll hinges to move upwardly along said curved surface causing said first and said second bump plates to hinge about said plurality of roll hinges to form an angularly raised surface above said trough container.

5,509,754

DRIVEWAY SECURITY POST

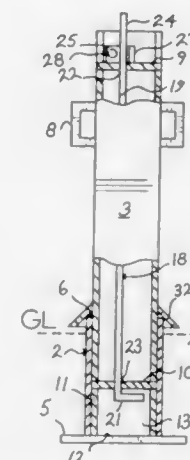
Simone Conigliaro, 60-58 68th St., Maspeth, N.Y. 11378

Filed Dec. 29, 1994, Ser. No. 366,315

Int. Cl.⁶ E01F 13/08

U.S. Cl. 404—9

4 Claims



1. A driveway obstruction device comprising a hollow bracket serving as a supporting base for the device and having an open top end, a hollow elongated post adapted to be slidably seated in the bracket through the open top end and when seated to project vertically several feet above the open top end, the post having interior upper and lower horizontally extending walls, an ell-rod extending vertically in the post with a slide fit through complementary holes in the upper and lower walls, the ell-rod having at its bottom end below the lower wall a radially extending foot, the ell-rod having on an upper portion thereof a radially extending wing resting upon the upper wall, and the ell-rod being arranged in the post and limited by the complementary holes in the upper and lower walls for turning relative to the post about a vertical axis so that, upon turning of the ell-rod in one direction about its vertical axis its foot is caused to project through aligned ports in side walls of both the seated post and the bracket whereby the post becomes interlocked with the bracket against movement of the post out of the bracket.

5,509,755

SAND DUNE AND SHORE-LINE EROSION PREVENTION SYSTEM

Glenn C. Olsen, P.O. Box 1681, Bridgehampton, N.Y. 11932, and Charles A. West, 205 Harbor Beach Rd., Mt. Sinai, N.Y. 11766

Filed Dec. 27, 1993, Ser. No. 173,604

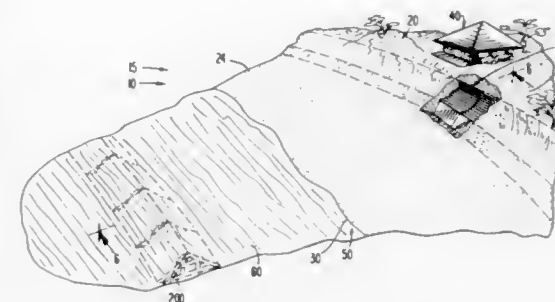
Int. Cl.⁶ E02B 3/12; 3/06

U.S. Cl. 405—21

38 Claims

1. For a beach-front ecosystem comprising a sand dune, water and a shore-line between said sand dune and said water, an erosion prevention system, comprising:

- a sand ladder positioned proximate said sand dune having a curved surface facing said water; and



a sand ladder reef submerged in said water having at least one curved surface, wherein the positioning of said sand ladder reef in said water creates first and second portions of said water, said first portion of said water closer to said sand ladder, wherein the force of a wave from said second portion of said water will be diminished by said sand ladder reef thereby dissipating said force of said wave against said sand ladder.

5,509,756

OIL BOOM END CONNECTOR

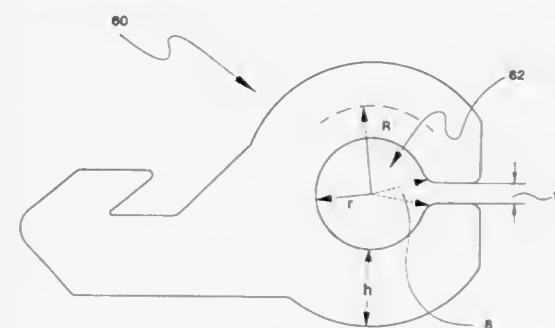
Chun C. Chou; Joe Falk; Robert Ferguson, and Glenn Beach, all of Columbia, Md., assignors to TCOM, L.P., Columbia, Md.

Filed Mar. 4, 1994, Ser. No. 205,732

Int. Cl.⁶ E02B 15/04

U.S. Cl. 405—70

20 Claims



1. An oil boom end connector, comprising:

- two curved beam arms made of a predetermined material, which define a central cavity wherein a width b of each of said two curved beam arms is defined by:

$$h \geq \frac{5r}{\left(1.2 - \frac{2\sigma_{ws}r}{P_R}\right)} \left[-12 - 3.1 \frac{\sqrt{9P_R + 10\sigma_{ws}r}}{P_R} \right]$$

provided:

$$\frac{\sigma_{ws}}{P_R} > \frac{0.6}{r}$$

where:

- R_r =a single arm load;
- σ_{ws} =the predetermined material allowable working stress;
- r =a radius of the central cavity; and
- h =a thickness of the each of said two curved beam arms.

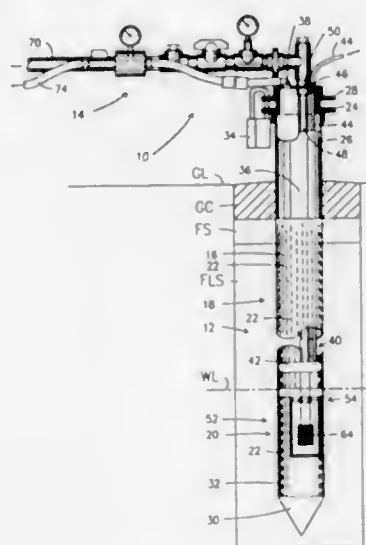
5,509,757

FLUID EXTRACTION DEVICE

Richard L. Croy, 3201 Masters Dr., Clearwater, Fla. 34621
Continuation of Ser. No. 26,536, Feb. 11, 1993, Pat. No. 5,380,125. This application Jan. 9, 1995, Ser. No. 369,901
Int. Cl.⁶ B09B 3/00

U.S. Cl. 405—128

14 Claims



1. A fluid extraction device to remove fluid contaminants from the vadose zone of unsaturated subsurface area by selectively evacuating liquid and gas therefrom comprising a lower well screen assembly coupled to a vacuum source through an upper fluid conduit structure including a fluid flow control to separately extract liquid and vapor from the vadose zone, said lower well screen assembly comprises an elongated hollow extraction housing including an upper vapor extraction section and a lower liquid extraction section each having a plurality of vertically disposed elongated evacuation apertures formed therethrough, a vapor-extraction tube is disposed within the interior of said elongated hollow extraction housing coupled to said upper fluid conduit structure and a liquid extraction tube disposed within the interior of said elongated hollow extraction housing is coupled to said upper fluid conduit structure.

5,509,758

METHOD AND APPARATUS FOR PADMOUNT TRANSFORMER INSTALLATION

Donald W. Anderson, 1857 Hayes Leonard Rd., Valparaiso, Ind. 46383

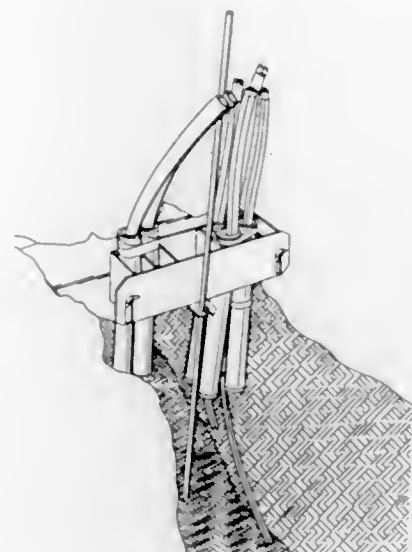
Filed Oct. 18, 1993, Ser. No. 137,462

Int. Cl.⁶ F16L 1/00

U.S. Cl. 405—154

7 Claims

1. An apparatus for use in locating and positioning flexible cables subject to underground burial, comprising:
a base member,
grounding means electrically connected to said base member,
retaining means for separately receiving a plurality of said cables and fixedly positioning said cables with respect to said base member, and
at least one element slidably connected to said base member for expanding the effective width of said apparatus.



5,509,759

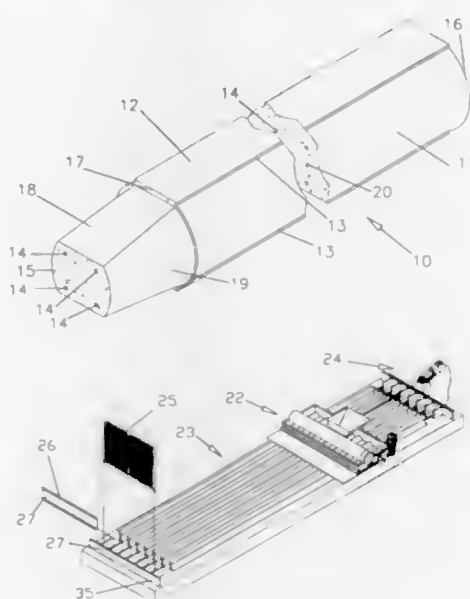
PRESTRESSED CONCRETE PILING

Klinton H. Keesling, 615 Dupont St., Punta Gorda, Fla. 33951
Filed Apr. 17, 1995, Ser. No. 422,885

Int. Cl.⁶ E02D 5/30; 5/58

U.S. Cl. 405—232

6 Claims



1. Apparatus for horizontally casting prestressed, concrete piles, said apparatus comprising:
a reinforced concrete base,
a plurality of horizontally spaced pile mold side plates affixed to said concrete base, said side plates having,
a first end and a second end,
a mold cavity between each pair of said mold side plates, and a horizontal top opening for admitting a concrete mixture,
at least one bucket mold positioned in each of said pile mold cavities for forming bottom surfaces of the concrete piles,
removable end braces placed at each of said first and second ends, said end braces having a plurality of cable receiving holes formed therein,
cable tensioning means for prestressing cables to be embedded in the concrete piles,

concrete spreading means placed on said mold side plates for feeding and spreading the concrete into said mold cavities, and,
spreader driving means affixed to said base and attached to said concrete spreading means for pulling said concrete spreading means across said mold side plates, and thereby filling said cavities with concrete.

5,509,760

METHOD OF RAPID PURGING OF CONTAMINANTS FROM A CONTAMINATED AREA OF SOIL OR GROUND WATER

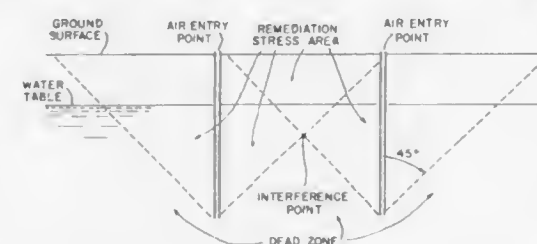
Fred E. Schriefer; Robert Bass, and Stephen G. McMahon, all of Jacksonville, Fla., assignors to Integrated Environmental Solutions, Inc., Jacksonville, Fla.

Filed Apr. 12, 1994, Ser. No. 226,991

Int. Cl.⁶ F02D 3/00

U.S. Cl. 405—258

30 Claims



1. A method of rapid purging of contaminants from a contaminated zone of soil or ground water which is located beneath a surface of the earth, said contaminants including hydrocarbon constituents associated with diesel fuel, gasoline, kerosene, solvents and creosote, said method comprising the steps of:

forming at least two bore holes extending at a depth beneath said zone;

forcing a gas into said two bore holes and into said contaminated zone so that said gas exits said bore holes and flows along paths upwardly from said bore holes to said surface in volumes each having a shape approximately that of an inverted cone having (1) a vertex at a gas-exit portion of each bore hole and (2) a conical surface of revolution about an axis;

spacing said two bore holes apart by a predetermined distance such that the conical surfaces intersect at an interference point that is at a level which is at or beneath said contaminated zone to be purged; and

selecting a range of gas flow rates for the gas-forcing step so that the contaminants are stripped from said soil or water, via a mass-transfer process, by the flowing gas, thereby placing the entire zone under maximum remediation stress.

5,509,761

DRILL

Günter Grossman, Krefeld, Germany, and Yoshikazu Iwata, Gifu, Japan, assignors to Mitsubishi Materials Corporation, Tokyo, Japan

Filed Sep. 20, 1993, Ser. No. 123,380

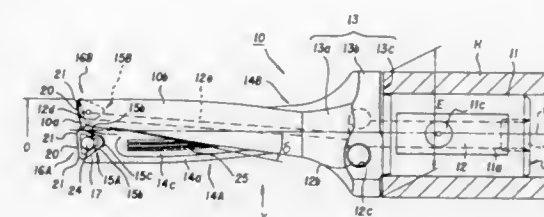
Claims priority, application Germany, Sep. 19, 1992, 42 31 381.3

Int. Cl.⁶ B23B 51/02

U.S. Cl. 408—59

26 Claims

1. A drill, comprising:
a substantially cylindrical bit body;
a pair of chip discharging flutes with different depths, as measured from an outer diameter of said bit body to a bottom of the chip-discharging flute, formed in the outer peripheral surface of said body so as to open in the front end surface of said bit body and to extend rearward therefrom along and at both sides of an axis of said bit body;



a plurality of cutting members each having substantially the same size cutting edge portions constituting a bottom cutting edge;

said bit body having a flange portion which includes a substantially disk shaped flange connected to a converging portion, the diameter of said converging portion progressively decreases along said axis towards the front end of said bit body; and

said substantially disk-shaped flange having a rearwardly facing annular end surface, said annular end surface being formed to contact a front end surface of a drill holding portion of a machine which rotatably holds said bit body substantially over the entire area of said annular end surface.

5,509,762

DRILL BIT CENTERING DEVICE

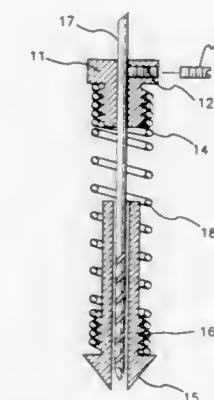
Robert L. Fredricksen, 192 New Jersey Ave., Bergenfield, N.J. 07621

Filed Mar. 16, 1995, Ser. No. 404,910

Int. Cl.⁶ B23B 45/00

U.S. Cl. 408—80

4 Claims



1. A drill bit centering device for use with a drilling machine, the centering device having a top end and a bottom end comprising:
a locking collar including;

a central bore at the top end,

a shoulder with an opening for the insertion of a set screw, said set screw securing a drill bit enclosed within said collar,

a downwardly extending, externally threaded first sleeve portion integral with said collar;

a centering cone including;

a central bore at the bottom end,

an upwardly extending, externally threaded second sleeve portion, said sleeve portion being integral with said centering cone;

a spring extending between said locking collar and said centering cone, said spring anchored by said externally threaded portions of said first and second sleeve portions, whereby said spring serves as a sole connecting member between said first and second sleeve portions.

5,509,763 COUPLING DEVICE FOR A WORKPIECE OR TOOL HOLDER

Josef Reinauer, Sigmaringen; Wolfgang Effenberger, Kempton, and Franz Friedl, Marktoberdorf, all of, Germany, assignors to Gottlieb Guhring KG, Albstadt, Germany
Continuation of Ser. No. 445,834, Mar. 10, 1993, Pat. No. 5,443,340. This application Oct. 31, 1994, Ser. No. 331,926
Claims priority, application Germany, May 11, 1987, 37 15 658.6; May 22, 1987, 37 17 270.0; Feb. 2, 1988, 38 03 017.9; Mar. 4, 1988, 38 07 140.1

Int. Cl.⁶ B23C 5/26; B23B 31/02
U.S. Cl. 409—233

2 Claims

1. A coupling device for use between a workpiece or tool-carrier element, such as, for example, a tool system module, for example in a form of a tool receptacle, and a manipulator device, for example a receptacle provided by the manipulator device for a centering extension of the tool carrier element and a clamping device to generate a contact force between plane surfaces of the parts to be coupled, in which the clamping device has an operating rod, by which a wedge drive can be operated, with which the clamping elements that are provided in one part to be coupled can be pressed essentially radially outward in a correspondingly configured recess on the other part to be coupled, characterized in that the clamping elements are a component of a clamping claw arrangement, bridging in a clamplike manner a seam point between the parts to be coupled, with at least three clamping points distributed in a uniform angular distribution, in which the clamping claw arrangement with its clamping bar extends essentially parallel to a centering extension of the tool system module, having on one end a radially outwardly projecting holding section which is received into a corresponding radial recess of a receptacle and on the other end forms claws defining the clamping points, which can be pressed radially outward in a groove-like recess of an extension for clamping the part to be coupled under axially firm support over holding section by means of the wedge drive.

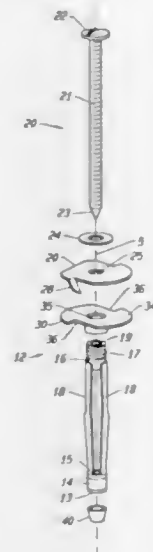
rail, wherein said first end is slidably mounted within said first inwardly open longitudinal channel while said second end is slidably mounted within said second inwardly open longitudinal channel, thereby enabling the slidable positioning of said beam member between said first and second end within, respectively, said first and second longitudinal channel; locking means for locking said first end of said beam member at a predetermined position within said first inwardly open longitudinal channel, wherein said locking means comprises: a spring-tensioned pin slidably mounted to said beam member through said first end by spring means for urging said pin outwardly toward said first slide rail; orifice means for receiving said outwardly urged spring-tensioned pin, wherein said orifice means is positioned within said first slide rail to receive said pin that is urged through said inwardly open longitudinal channel; handle means attached to said spring-tensioned pin for manually urging said spring-tensioned pin inwardly against said spring means; and wherein said beam member further comprises a crossbar member attached to said beam member with spring attachment means for urging said crossbar member outwardly away from said beam member.

5,509,765 REMOVABLE MOLLY BOLT

Stephen D. Albin, 610 Rancho, Los Altos, Calif. 94024
Filed Aug. 12, 1994, Ser. No. 289,917
Int. Cl.⁶ F16B 13/04; 13/06

U.S. Cl. 441—38

31 Claims



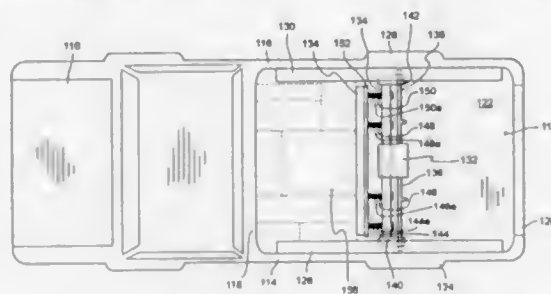
1. A hollow-wall anchor comprising: an inner portion provided with an inner aperture receptive to a threaded shaft of a machine screw; an outer portion having an outer aperture through which the threaded shaft can extend without engaging the outer aperture, the outer portion having outer portion threads; a deformable leg coupling the inner portion to the outer portion; and a flange removably attached to the outer portion, the flange including a surface having a flange aperture through which the threaded shaft can extend without engaging the flange aperture, and the flange having flange threads engagable with the outer portion threads.

5,509,764 CARGO SECURING SYSTEM FOR PICK-UP TRUCKS

Mark E. Shives, 346 Bangor Dr., Indianapolis, Ind. 46227
Filed Jun. 10, 1994, Ser. No. 258,074

U.S. Cl. 410—150

8 Claims



1. A cargo securing system adapted to be mounted in a cargo bed of a pick-up truck, wherein the bed has a horizontally extending support surface and a first and second bed wall extending vertically from said support surface, said system comprising: a first slide rail which defines a first inwardly open longitudinal channel, wherein said first slide rail is fixedly mounted to the first bed wall of the bed; a second slide rail which defines a second inwardly open longitudinal channel wherein said second slide rail is fixedly mounted to the second bed wall of the bed; means for securing said first and second slide rail relative to the cargo bed, at a position appropriate for securing cargo, with said channel of said first slide rail in mirrored opposition to said channel of said second slide rail; a beam member having a first end and a second end and slidably mounted between said fixedly mounted first and second slide

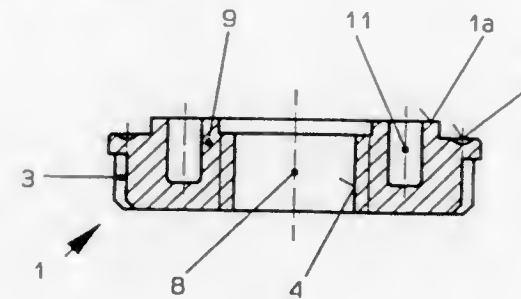
5,509,766 FASTENING APPARATUS

Werner Leuschner, Hanover, Germany, assignor to Nass Magnet GmbH, Hanover, Germany
Filed Sep. 13, 1993, Ser. No. 121,262
Claims priority, application Germany, Jan. 11, 1993, 43 00 465.2

Int. Cl.⁶ F16B 39/282

U.S. Cl. 411—187

17 Claims



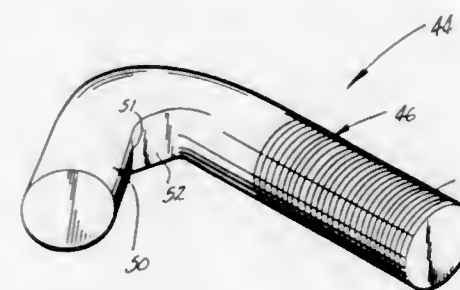
1. Fastening apparatus comprising a nut member rotatable about an axis, and a counterpart member, said nut member having a bore and said members having confronting surfaces, one of said members having a fastening element comprising at least one projection and the other of said members having a fastening element comprising at least one depression in which said projection removably may be accommodated, said nut member being formed of resilient, flexible material and having at least one groove therein adjacent its associated fastening element to increase the flexibility of said nut member adjacent its associated fastening element, said groove being in that surface of said nut member which confronts the surface of said counterpart member.

5,509,767 ATTACHMENT BOLT

Richard L. Easton, St. Peters, Mo., assignor to Alvey, Inc., St. Louis, Mo.
Division of Ser. No. 204,738, Mar. 2, 1994, Pat. No. 5,421,451.
This application Dec. 9, 1994, Ser. No. 352,584
Int. Cl.⁶ F16B 23/00; 45/00

U.S. Cl. 411—400

15 Claims



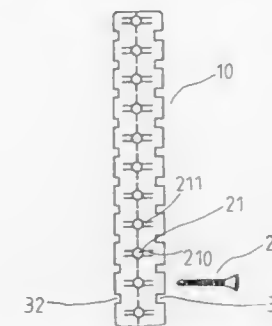
1. An attachment bolt comprising a shaft and a hook portion extending at an acute angle to the shaft, the hook portion having an inner surface and a flat surface area extending a substantial distance across the inner surface and extending in a direction substantially 90° to the shaft, and further wherein the bolt has a predefined diameter and a portion of the flat surface has a predefined cross dimension, the ratio of the diameter to the cross dimension being in the range of 8:3 to 2:1.

5,509,768 SCREW RETAINING STRAP FOR SCREWING GUN DEVICE

Mau-Song Hon, 58, Ma Yuan West St., Taichung, Taiwan
Filed May 18, 1995, Ser. No. 443,736
Int. Cl.⁶ F16B 15/08; B65D 85/24

U.S. Cl. 411—442

1 Claim



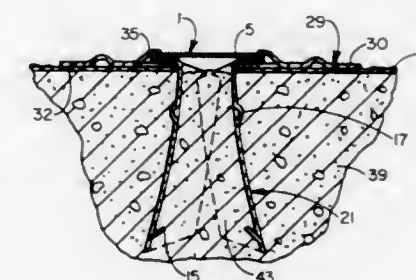
1. A strap for supporting a plurality of screws thereon and for supplying the screws into a screwing gun device for screwing purposes, said strap comprising: a strap body including a plurality of holes formed therein for engaging with said screws and including a plurality of slits formed around said holes so as to define a plurality of resilient blades for retaining said screws in place, said strap body including a first side edge having a plurality of first notches formed therein and including a second side edge having a plurality of second notches formed therein, said first notches including a depth smaller than that of said second notches so as to allow bending of said strap from said second side edge toward said first side edge and so as to prevent said strap from affecting the operation of the screwing gun device.

5,509,769 BARBED LIGHT WEIGHT CONCRETE FASTENER AND PLATE

Paul M. Larson, Palatine, Ill., and Donald H. Egan, Dallas, Tex., assignors to Illinois Tool Works Inc., Glenview, Ill.
Filed Oct. 12, 1994, Ser. No. 321,553
Int. Cl.⁶ F16B 15/02; 15/06; E04B 1/00; 5/00

U.S. Cl. 411—456

22 Claims



1. A barbed light weight concrete fastener and plate comprising: a. a plate fabricated as a disk of thin material having a periphery, a central hole, and a reinforcing rib between the periphery and the central hole, the plate defining a plurality of obround openings therethrough located between the periphery and the rib; b. a fastener comprising: i. a head defining a central axis; ii. first and second legs having respective first ends bendably joined to the head and respective free ends and extending through the central hole in the plate, each fastener leg having a middle wall and two side walls, the legs being bendable between an inoperative mode whereat they

interest and are generally parallel to the central axis and an operative mode whereat their free ends diverge;

iii. a barb located proximate the free end of each leg and protruding from the leg middle wall; and

iv. a bump located intermediate the barb and the first end of each leg and protruding from the leg middle wall; and

c. means for retaining the fastener head to the plate, so that the fastener legs when in the inoperative mode can be inserted through a base ply and into a cementitious material and the legs bend to the operative mode as the plate approaches the base ply and the barbs and the bumps enhance resistance to pullout of the fastener from the cementitious material.

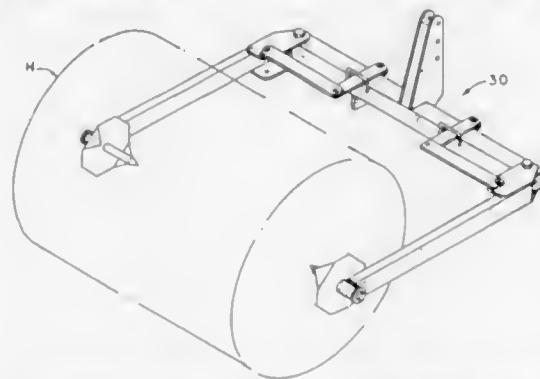
5,509,770

HAY HANDLER AND UNROLLER APPARATUS WITH IMPROVED CLAMP ARM AND BRACKET DESIGN
Thomas I. Burenga, Litchfield, Ill., assignor to Worksaver, Inc., Litchfield, Ill.

Filed Feb. 3, 1995, Ser. No. 383,308
Int. Cl.⁶ B66F 9/18

U.S. Cl. 414-24.6

13 Claims



1. A clamping means for use in a hay handler and unroller apparatus for transporting and unrolling hay bales having generally cylindrical or rectangular shapes with varying lengths and diameters, the length of the bales being between a maximum length and a minimum length, said clamping means being connectable by a frame having a first end and a second end to a three point hitch to a tractor, said clamping means being attached at each end of said frame and extending forwardly therefrom so as to define an opening/cavity in which said hay bale is contained, said clamping means including:

- a pair of brackets attached to each end of said frame, allowing for limited pivotal movement of said brackets about said frame, each bracket being disposed in either a first position or a second position depending upon the length of the bale of hay to be handled, said second position enabling said apparatus to handle a longer bale of hay than when said bracket is maintained in said first position;
- a pair of clamp arms, each clamp arm having a first end attached to said bracket and forwardly extending from said bracket and said frame, said clamp arms being disposed in a substantially perpendicular direction with respect to said frame;
- a pair of positioning means allowing for limited pivotal movement of said clamp arms and said brackets to accommodate varying lengths of hay bales, each positioning means including a pivot arm having a first end and a second end and a push arm having a first end and a second end, said first end of said push arm being connected to said bracket, said second end of said push arm connected to said first end of said pivot arm allowing for pivotal movement of said pivot arm with respect to said push arm, said second end of said pivot arm being connected to said frame allowing for pivotal movement of said pivot arm with respect to said frame; and
- a pair of securing means provided for ensuring said hay bale is tightly secured between said arms, said securing means being

mounted to the second end of each clamp arm and extending inwardly towards each other.

5,509,771

VACUUM PROCESSING APPARATUS

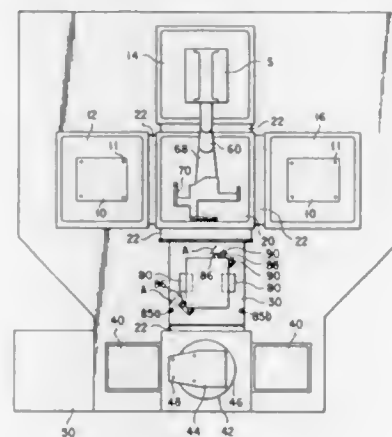
Tutomu Hiroki, Yamanashi, Japan, assignor to Tokyo Electron Limited, Tokyo, and Tokyo Electron Yamanashi Limited, Nirasaki, both of, Japan

Filed Jul. 28, 1993, Ser. No. 102,987

Claims priority, application Japan, Jul. 29, 1992, 4-222128
Int. Cl.⁶ B65G 49/07; B65H 1/00; 9/00

U.S. Cl. 414-217

23 Claims



1. A vacuum processing apparatus comprising:

- a process chamber in which a substrate is processed under a vacuum atmosphere;
- a first load lock chamber connected to the process chamber through a first gate valve;
- a second load lock chamber connected to the first load lock chamber through a second gate valve;
- a first transfer mechanism arranged in the first load lock chamber which transfers the substrate between the process chamber and the second load lock chamber through the first load lock chamber;
- a buffer rack arranged in the second load lock chamber to stack a plurality of substrates with an interval interposed between two adjacent substrates;
- a positioning mechanism arranged in the second load lock chamber, said positioning mechanism simultaneously aligning the substrates supported on the buffer rack;
- a table upon which a cassette is mounted in which a plurality of the substrates are stacked with an interval interposed between two adjacent substrates; and
- a second transfer mechanism transferring the substrates between the cassette mounted on the table and the buffer rack, wherein each of the substrates has a rectangular shape and the positioning mechanism includes first and second positioners movable relative to each other in a diagonal direction of the substrates to sandwich the substrates between the first and second positioners, and
- wherein the second transfer mechanism supports and transfers the substrates, which are supported together on the buffer rack, simultaneously with an interval interposed between two adjacent substrates.

5,509,772

SYSTEM FOR THE HANDLING AND CONFINEMENT OF FLAT OBJECTS IN INDIVIDUAL BOXES

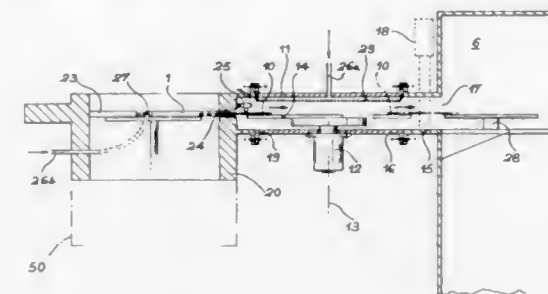
Claude Doche, Claix, France, assignor to Commissariat a l'Energie Atomique, Paris, France

Filed Oct. 6, 1993, Ser. No. 132,696

Claims priority, application France, Oct. 16, 1992, 92 12422
Int. Cl.⁶ B65G 1/08

U.S. Cl. 414-217

4 Claims



1. System for handling flat objects (10) confined in an ultraclean atmosphere in individual boxes (10) in order to bring the objects (10) into working stations (6, 6A, 6B) where there is a special atmosphere, said system comprising:

- individual boxes (1) in which there is an ultraclean atmosphere, each of said boxes being flat having a concealable door and receiving one of said flat objects;
- means (3) for displacing said boxes (1) in an ordinary atmosphere;
- an interface (5) between the displacement means (3) and an associated one of said working stations (6, 6A, 6B) in which the boxes (1) are opened and the flat objects (10) are extracted from the boxes (1) and kept under a special atmosphere throughout the time which they spend within the working stations (6, 6A, 6B), said interface (5) including a body (11) having an access tunnel, a pick and place robot (12) acting within said access tunnel for passing said objects (10) through said access tunnel, an adapting bottom plate (15) fixed to a first end (16) of the body (11) and to an inlet (17) of the associated one of said working stations (6) to ensure mechanical positioning of the interface (5) relative to the associated one of said working stations (6), and a modular bottom plate (20), said modular bottom plate (20) having means for connecting a feed pipe to a ventilation connection (27) of the boxes (1), and means (25) for opening the boxes (1) to tightly link an interior of said boxes (1) with the body (11); and
- a transfer tunnel (4) rigidly connecting two of said working stations (6A, 6B) for transferring said objects (1) between said working stations while keeping said objects under an ultraclean atmosphere.

5,509,773

MACHINE AND PROCESS FOR RECOVERING PHARMACEUTICAL PRODUCT

John J. Connor, Philadelphia, and Klaus E. Gehlert, Holland, both of Pa., assignors to Gemel Precision Tool Co., Inc., Ivyland, Pa.

Division of Ser. No. 203,005, Feb. 28, 1994, Pat. No.

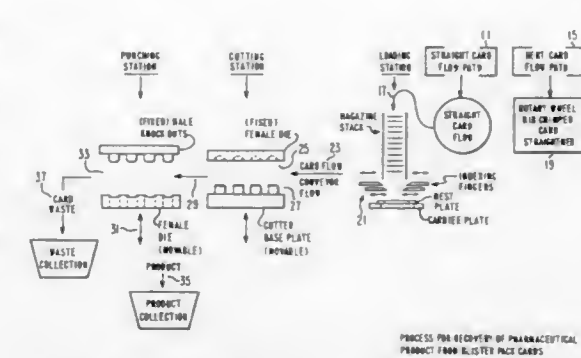
5,460,471. This application Mar. 30, 1995, Ser. No. 413,494
Int. Cl.⁶ B65B 69/00

U.S. Cl. 414-412

20 Claims

8. An apparatus, having a cutting station and a punching station, for recovering pharmaceutical product from blister pack cards, said cards each having a back face and a plurality of blister product pockets extending upwardly from said back face in a pattern to form a top face of said card, and pharmaceutical product held in said blister pockets, comprising:

- a retention structure for holding a quantity of said blister cards from which product is to be recovered;



- an indexing structure for selecting single ones of said blister cards from said retention structure and feeding same;
- a conveyance structure including a plurality of nest plates each having an opening therethrough for receiving said singly fed blister cards from said indexing structure and for conveying same in single sequential and predetermined order first to a cutting station and then to a punching station;
- a plurality of cutter structures, establishing said cutting station, and aligned consistent with said pattern of the product blister pockets on said card and operable to cut a flap through said back face at the location of each said product pocket when a said card is aligned with said cutting station, said cutter structures operating through each said nest plate opening;
- a knock out structure, establishing a punching station, and operable to simultaneously push each of said product units through its respective cut flap when said card is aligned with said punching station thereby emptying said card of said product, whereof a die member is lowered onto each said blister pocket collapsing it and pushing said product downward through said cut back face, said knock out structure operating through said each said nest plate opening;
- a collection structure for receiving said emptied product, being positioned adjacent said punching station; and
- a discharge structure wherein said conveyance structure is manipulated for each nest plate to discharge each said emptied card.

5,509,774

LOAD CLAMPING APPARATUS WITH AN INCREASED EXTENT OF VERTICAL MOVEMENT

Jae S. Yoo, Seoul, Rep. of Korea, assignor to Daewoo Heavy Industries Ltd., Incheon, Rep. of Korea

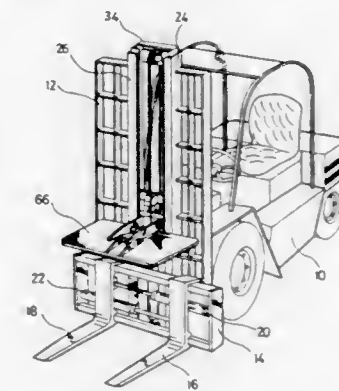
Filed Nov. 15, 1994, Ser. No. 340,401

Claims priority, application Rep. of Korea, Nov. 16, 1993, 93-24010(U.)

Int. Cl.⁶ B66F 9/18

U.S. Cl. 414-622

7 Claims



1. A load clamping apparatus for use with a forklift truck including a mast having a vertical guide channel, a lift carriage mounted to the mast for elevational movement therealong and a

pair of spaced apart forks carried by the lift carriage to support a load to be handled, the apparatus comprising:

- a slider member slidably fitted into the vertical guide channel and elevationally movable along the mast, the slider member having a vertical guide groove;
- a clamp carriage slidably fitted into the vertical guide groove of the slider member for pressing the load against the pair of spaced apart forks;
- an actuator pivotally affixed to the mast for causing the slider member to move up and down;
- upper and lower rotary guide means each rotatably mounted to top and bottom ends of the slider member;
- first pliable connecting means having a first end anchored to the mast and a second end fixedly secured to the clamp carriage, the first pliable connecting means extending upwardly from the first end thereof, turning around the upper rotary guide means and then extending downwardly to reach the second end thereof; and
- second pliable connecting means having a first end anchored to the mast and a second end fixedly secured to the clamp carriage, the second pliable connecting means extending downwardly from the first end thereof, turning around the lower rotary guide means and then extending upwardly to reach the second end thereof.

5,509,775

SELF-LOADING CARGO VEHICLE

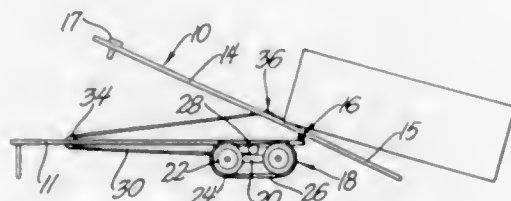
Donald H. Kendall, Almont, Mich., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Nov. 10, 1994, Ser. No. 338,704

Int. Cl.⁶ B60P 1/14

U.S. Cl. 414—437

6 Claims



6. A vehicle capable of on-loading or off-loading a cargo module, comprising:

- a frame having a forward section and an aft end;
- two bifurcation members of the frame extending from the forward section to the aft end;
- a frame slot defined by the frame and disposed between the bifurcation members;
- a spool rotatable relative to the frame;
- a bed tiltable from one position to another relative to the frame;
- a bed slot defined by the bed, the bed slot disposed along the frame slot during the one position of the bed;
- a block tracked to one of the slots and translating therewith while translating relative to another of the slots;
- a cable engaging the spool and passing through the block, the cable translating relative to the block;
- means for pivotally connecting the frame to a location on the bed remote from ends of the bed.

5,509,776

APPARATUS FOR RAISING AND LOWERING A LOAD ON OR FROM A SUPPORT

Martin Specht, Feldafing; Udo Hausrath, Hadorf, and Christoph Rösch, Starnberg, all of, Germany, assignors to IIS Technik Und Design Technische Entwicklungen GmbH, Oberpfaffenhofen, Germany

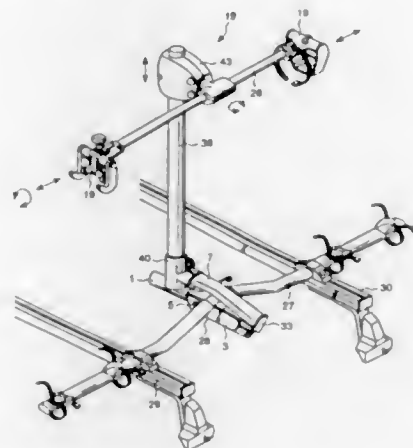
Filed Jul. 15, 1994, Ser. No. 275,873

Claims priority, application Germany, Jul. 22, 1993, 43 24 669.9; European Pat. Off., Jul. 8, 1994, 94110663

Int. Cl.⁶ B60P 9/00

U.S. Cl. 414—462

7 Claims



1. A device for lifting and lowering a load onto or from, respectively, a load carrier, comprising:

- an extension arm that is pivoted onto the load carrier; and
- attachment means provided on the extension arm for a load; wherein the extension arm makes contact in a lowered position with a stop connected to the load carrier, the extension arm being pivotable about an axis attached to the load carrier into a raised position, in which the extension arm can be stably fastened for positioning the raised load on the load carrier; wherein the extension arm is connected via a transmission to an energy accumulator for transferring energy of the energy accumulator onto the load;
- wherein the energy accumulator and the transmission are seated on a shared support and a force orientation with which the energy accumulator acts on the transmission can be changed; and
- wherein the force orientations of the energy accumulator lie on both sides of a dead center position of the transmission, where on one side of the dead center position the accumulator energy is absorbed by a stop on the shared support, and on another side of the dead center position the accumulator energy drives the transmission in a lifting direction.

5,509,777

MECHANICAL SIDE SHIFT AND TIP APPARATUS

David J. Corey, Utica, Mich., and Leland D. Blatt, 21 Carrington Pl., Grosse Pointe Farms, Mich. 48236, assignors to Leland D. Blatt, Grosse Pointe Farms, Mich.

Continuation of Ser. No. 37,093, Mar. 25, 1993, abandoned.

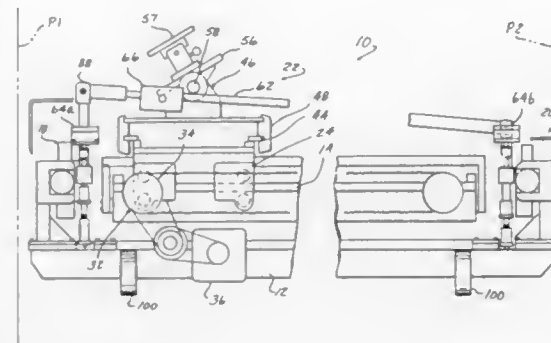
This application Nov. 14, 1994, Ser. No. 339,504

Int. Cl.⁶ B65G 35/00

U.S. Cl. 414—749

16 Claims

- 1. An article transfer apparatus, comprising:
- an elongate frame defining a plane;
- a substantially parallel main guide rail means longitudinally mounted on said frame;
- secondary guide rail means mounted on said frame and transversely extending respectively along opposite ends of said main guide rail means;



- shuttle means mounted on, and moveable along said main guide rail means between opposite ends thereof;
- article carrier guide rail means mounted on said shuttle means and extending transversely with respect to said main guide rail means;
- article carrier assembly means movably coupled to said article carrier guide rail means for movement along said article carrier guide rail means;
- means, pivotally connected to said article carrier assembly means, for holding an article;
- sleeve means, pivotally coupled to said holding means;
- elongate guide member means having opposite ends and extending longitudinally in the direction of said main guide rail means and slidably received by said sleeve means; and
- means mounted on said secondary guide rail means for moving each of said opposite ends of said guide member means in a separate plane substantially normal to said plane of said frame to provide pivotal movement of said holding means relative to said article carrier assembly means and to provide movement of said article carrier assembly means along said article carrier guide rail means when said shuttle means is moved along said main guide rail means.

5,509,778

FUEL PUMP FOR MOTOR VEHICLE

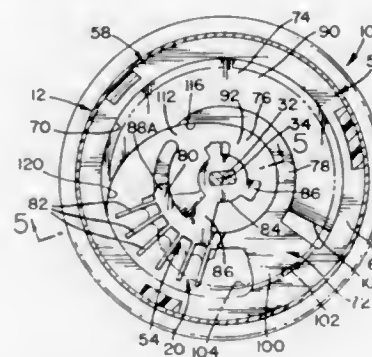
Edward A. Hantle, late of Caro; Orrin A. Woodward, Davison; David E. Harris, Frankenmuth, and John G. Fischer, Goodrich, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Feb. 22, 1995, Ser. No. 391,856

Int. Cl.⁶ F04D 5/00

U.S. Cl. 415—55.1

1 Claim



- 1. An open-vane regenerative turbine pump comprising:
- a housing;
- an impeller mounted on the housing for rotation about a centerline thereof having a body and a plurality of paddle-like open-vane type vanes extending radially out from said body, an annular pump channel in said housing around the periphery of said impeller and around said vanes having a pair of sidewalls each in a plane perpendicular to said centerline,

- a stripper on said housing in said pump channel closely adjacent said impeller;
- an inlet port in said housing connected to said pump channel closely adjacent a first side of said stripper;
- a discharge port in said housing connected to said pump channel closely adjacent a second side of said stripper;
- a vapor collection chamber in said housing radially inboard of said pump channel and separated therefrom by a pair of annular bosses on said housing closely adjacent respective ones of a pair of opposite sides of said impeller;
- a pair of radial vapor ports in respective ones of said pair of annular bosses between said inlet port and said discharge port each providing flow communication between said pump channel and said vapor collection chamber and each having a downstream side facing in the direction of said inlet port swept-back in a downstream direction; and
- a pair of steps on respective ones of said sidewalls of said pump channel each sweeping in a downstream direction for smooth transition with a corresponding one of said radial vapor ports from a point on an outside diameter of said annular pump channel upstream of said corresponding one of said pair of radial vapor ports to an inside diameter of said pump channel at said downstream side of said corresponding one of said radial vapor ports to gradually reduce the cross sectional area of said pump channel from a maximum upstream of said swept-back steps to a minimum at said downstream sides of said radial vapor ports.

5,509,779

SELF-PRIMING CHEMICAL PUMP

Yoji Mori, Saitama, and Kenichi Satoh, Ibaraki, both of, Japan, assignors to World Chemical Co., Ltd., Tokyo, Japan

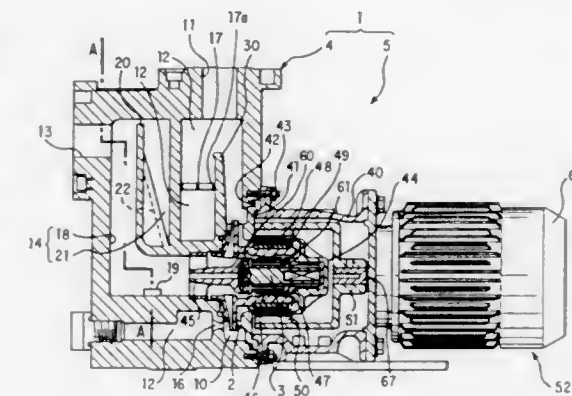
Filed Jan. 30, 1995, Ser. No. 380,687

Claims priority, application Japan, Feb. 3, 1994, 6-011911

Int. Cl.⁶ F04D 9/00

U.S. Cl. 415—56.1

6 Claims



- 1. A self-priming chemical pump comprising:
- a pump portion including at least an impeller and a shaft supporting said impeller;
- a self-priming mechanism portion including a self-priming chamber which is provided in the discharge side of a vortex chamber of said impeller so as to communicate with a discharge opening, and a suction chamber which is provided in the suction side of said vortex chamber of said impeller so as to communicate with a suction opening;
- a seal wall which is provided in the vicinity of the discharge side of said vortex chamber to form a slight gap along the outer circumference of said impeller; and
- a circulation hole which is provided in said self-priming chamber so as to be located inside the outer circumference of said impeller.

wherein said suction chamber comprises an L-shaped suction passage for making said suction opening communicate with the suction side of said vortex chamber, and a self-priming liquid remaining portion having pores communicating with said suction passage; and wherein said self-priming chemical pump further comprises a siphon-cut shortest passage which is provided in said suction passage, and the volume of said self-priming chamber is substantially equal to the volume of said suction chamber.

5,509,780

APPARATUS AND METHOD FOR PROVIDING UNIFORM RADIAL CLEARANCE OF SEALS BETWEEN ROTATING AND STATIONARY COMPONENTS

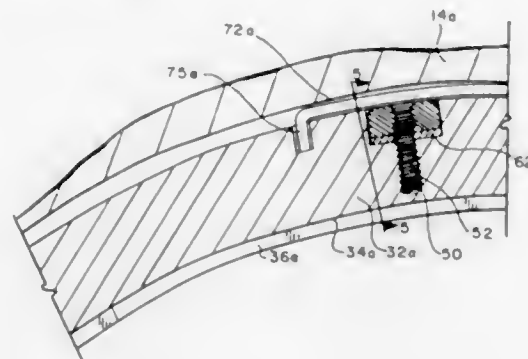
Edward G. Synfelt, Schenectady, N.Y., assignor to General Electric Co., Schenectady, N.Y.

Filed Mar. 8, 1995, Ser. No. 400,940

Int. Cl.⁶ F01D 11/02

U.S. Cl. 415—174.1

10 Claims



1. In a machine having rotating and stationary components formed about an axis, a seal comprising:

an annular groove formed in the stationary component including at least one axially directed locating flange about said axis and in part defining a slot opening into said groove, said seal further including about the machine axis a plurality of one-piece arcuate segments each having an arcuate seal face, a neck portion received in said slot and at least one axially directed flange disposed within said groove and spaced radially from said locating flange;

locating elements including a pair of pins secured to each said arcuate segment at circumferentially spaced positions thereabout and projecting generally in a radial direction, said pins having threads, shims about said pins and having a predetermined radial extent, and members having threads complementary to the threads on said pins and being threaded relative to said pins to engage said shims and project said shims radially inwardly of said one flange of said segments a predetermined distance to engage said locating flange and adjust the radial spacing between said locating flange and the one flange of said segments thereby establishing a substantially uniform radial clearance about and between the rotating component and the segment seal faces.

9. In a machine having a component rotatable about an axis and a stationary component including an annular groove about said axis, said stationary component having at least one axially directed locating flange about said axis and in part defining a slot opening into said groove and a plurality of one-piece annular segments about said axis, each segment having an arcuate seal face, at least one axially directed flange for disposition in said groove, and a neck portion receivable in said slot and interconnecting said seal face and the flange of said segment, a method of compensating for deviation in radial clearance between said seal faces and the rotatable component from a predetermined, substantially uniform radial clearance therebetween, comprising the steps of:

identifying the extent of the deviation of the locating flange of the groove from a predetermined radial location thereof about the axis;

locating a pair of pins in each arcuate segment at circumferentially spaced positions thereabout projecting generally in a radial direction;

disposing at least one shim about each said pin, each said shim having a predetermined radial extent; and

disposing members on said pins to engage said shims and project said shims radially inwardly of said one flange of said segments a predetermined distance into engagement with said one locating flange to adjust the radial spacing between the one locating flange and the flanges of the segments, thereby establishing a substantial uniform clearance about and between the seal of the segments and the rotating component.

5,509,781

COMPRESSOR BLADE CONTAINMENT WITH COMPOSITE STATOR VANES

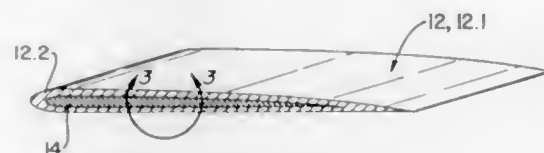
Samuel M. Boszor, and Stuart A. Sanders, both of Palm Beach Gardens, Fla., assignors to United Technologies Corporation, Hartford, Conn.

Filed Feb. 9, 1994, Ser. No. 194,200

Int. Cl.⁶ F01D 9/04

U.S. Cl. 415—200

7 Claims



1. A gas turbine engine comprising stator blades located between compressor stages, characterized by:

the stator blades including a composite shell of fibers laid up over a core, said core comprising randomly oriented fibers selected to have an elongation velocity that exceeds the elongation velocity of said fibers in said composite shell and said shell comprising a binder bonded to said core.

6. A method of constructing stator vanes characterized by: laying a composite surface over a fiber core to form a vane skin, said surface comprising fibers in a binder that attaches to the core, the elongation velocity of fibers in the core being greater than the elongation velocity of the fibers in the composite surface and the fibers in the core being randomly oriented.

5,509,782

BEARING CASE SUPPORT

Robert T. Streeter, Canisteo, N.Y., assignor to Dresser-Rand Company, Corning, N.Y.

Filed Mar. 2, 1995, Ser. No. 397,743

Int. Cl.⁶ F01D 25/28

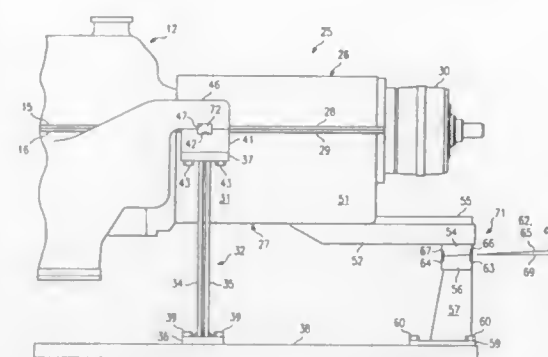
U.S. Cl. 415—213.1

23 Claims

1. Apparatus, suitable for use with a turbine machine having a turbine casing enclosing a turbine shaft, for supporting an end portion of said turbine shaft and an end of said turbine casing, said apparatus comprising:

a bearing case for at least substantially enclosing said end portion of said turbine shaft, said bearing case having an inboard end portion adjacent to said turbine casing and an outboard end portion remote from said turbine casing;

at least one inboard support element connected to said inboard end portion of said bearing case to provide vertical support for said inboard end portion of said bearing case while permitting movement of said inboard end portion of said bearing case in a direction at least substantially parallel to the longitudinal axis of said turbine shaft; and



at least one outboard support element connected to said outboard end portion of said bearing case to provide vertical support for said outboard end portion of said bearing case while permitting movement of said outboard end portion of said bearing case in a direction at least substantially parallel to the longitudinal axis of said turbine shaft, each said outboard support element having upper and lower camming shim members, each said upper camming shim member being mounted to said outboard end portion of said bearing case, each said lower camming shim member being stationary mounted, an upper surface of said lower camming shim member being inclined with respect to a horizontal plane so as to provide an upper edge and a lower edge of said upper surface of said lower camming shim member, such that said upper edge of said upper surface of said lower camming shim member is more remote from said inboard end portion than said lower edge of said upper surface of said lower camming shim member, a lower surface of said upper camming shim member being inclined with respect to said horizontal plane so as to provide an upper edge and a lower edge of said lower surface of said upper camming shim member, such that said upper edge of said lower surface of said upper camming shim member is more remote from said inboard end portion than said lower edge of said lower surface of said upper camming shim member, said upper camming shim member being positioned above said lower camming shim member with said lower surface of said upper camming shim member being in sliding contact with said upper surface of said lower camming shim member, whereby said outboard end portion of said bearing case can be maintained in alignment with said end portion of said turbine shaft during operation of said turbine machine at elevated temperatures.

5,509,783

REINFORCED VANE

Ralph G. Jones, Leicester, England, assignor to Preci-Spark, Ltd., Leicester, England

Continuation of Ser. No. 15,564, Feb. 9, 1993, abandoned.

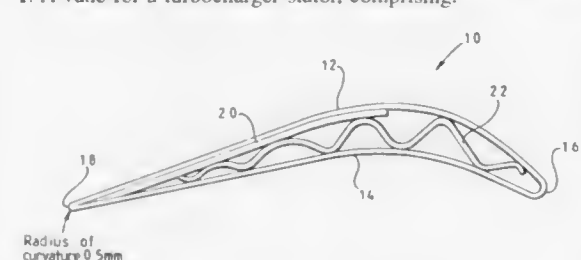
This application Mar. 17, 1994, Ser. No. 210,077

Int. Cl.⁶ F01D 9/00

U.S. Cl. 415—217.1

11 Claims

1. A vane for a turbocharger stator, comprising:



the vane being of generally hollow construction with a convex wall and a concave wall meeting at a leading edge and a trailing edge of the vane;

said convex wall being thickened over a portion of an inner surface thereof by a reinforcing plate secured to said inner surface of said convex wall;

said convex wall and said concave wall defining a region of maximum spacing between said convex and concave walls between said leading edge and said trailing edge, of the vane; and

said reinforcing plate extending from said trailing edge to a point in said region of the maximum spacing between said convex and concave walls to serve as a reinforcement to an area of the vane prone to damage during cleaning by impacting cleaning material.

5,509,784

TURBINE BUCKET AND WHEEL ASSEMBLY WITH INTEGRAL BUCKET SHROUD

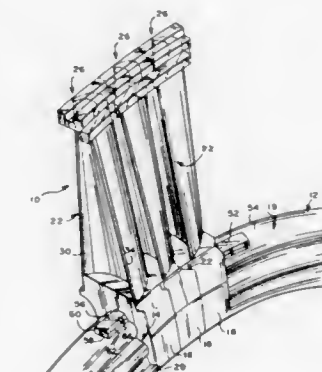
David A. Caruso; Robert E. Deallenbach, both of Schenectady; William D. Gordon, Scotia; Raymond J. Jones, Duanesburg, and Alexander Morson, Clifton Park, all of N.Y., assignors to General Electric Co., Schenectady, N.Y.

Filed Jul. 27, 1994, Ser. No. 280,898

Int. Cl.⁶ F01D 5/16; 5/22; 5/26

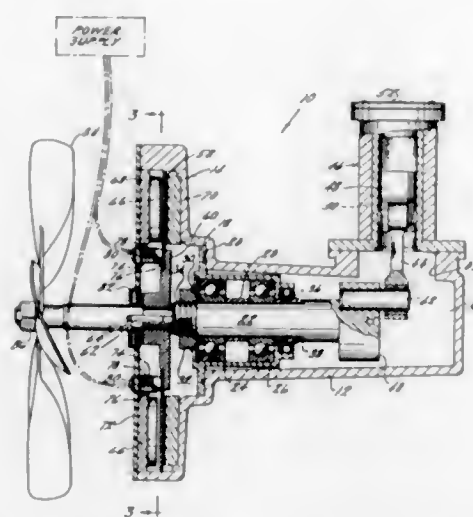
U.S. Cl. 416—222

16 Claims



1. A turbine wheel and bucket assembly comprising a wheel having an axis rotation and a peripheral rim machined to include a dovetail shape about the circumference of said rim, interrupted only by a bucket installation slot; and a plurality of buckets installed on said wheel, each bucket having a dovetail portion and blade portion, with the dovetail portion machined to include a complementary dovetail shape enabling each said bucket to be slidably received on said wheel dovetail shape; each bucket having an integral cover at a radial tip of said blade portion, each cover having circumferentially spaced sides, each side having axially extending surfaces joined by an angled contact surface in mating engagement with contact surfaces of adjacent covers, wherein said contact surfaces extend at an angle to a radial plane perpendicular to said axis of rotation sufficient to cause said buckets to be pretwisted in a first direction during assembly of the buckets on the wheel.

a piston disposed in said cylinder for axial movement therein,



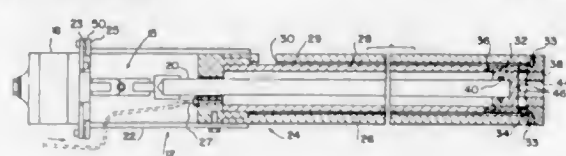
a crank arm, having means connecting one end of said crank arm to said piston and means connecting the other end of said crank arm to said elongated shaft; and fan means connected to said elongated shaft at an end of said shaft opposite said crank arm whereby rotation of said shaft by said disc armature reciprocates said piston in said cylinder and spins said fan means.

5,509,791

VARIABLE DELIVERY PUMP FOR MOLTEN METAL
Ogden L. Turner, Parque Residencial Orituco, Torre 2, Apt. 10-C, Calle A, Santa Rosa de Lima, Caracas 1060, Venezuela
Filed May 27, 1994, Ser. No. 250,622
Int. Cl.⁶ F04B 39/14; F04D 1/14

U.S. Cl. 417—238

8 Claims



1. A delivery pump for pumping reactive material from within a bath containing said reactive material, and into which the pump is immersed, said pump having an elongated housing having a motor at the upper end thereof, said housing containing an elongated drive shaft having a pump rotor secured to the lower end thereof, and an upwardly extending delivery passage within the housing substantially concentric with the drive shaft and connecting with a laterally extending delivery means, and flow modulator means comprising an annular ring having a plurality of outwardly directed passages for passage of said liquid material therethrough in flow moderating relation therewith, said rotor serving to partly block said passages in at least one axially located position thereof, wherein said axial location of said rotor relative to said flow modulator means may be selectively controlled.

5,509,792

ELECTROMAGNETICALLY DRIVEN RECIPROCATING PUMP WITH FLUTED PISTON

Paul J. Sullivan, Plymouth; Vernon R. Scott, Eden Prairie, and Robert Smith, Brooklyn Park, all of Minn., assignors to Pumpworks, Inc., Plymouth, Minn.

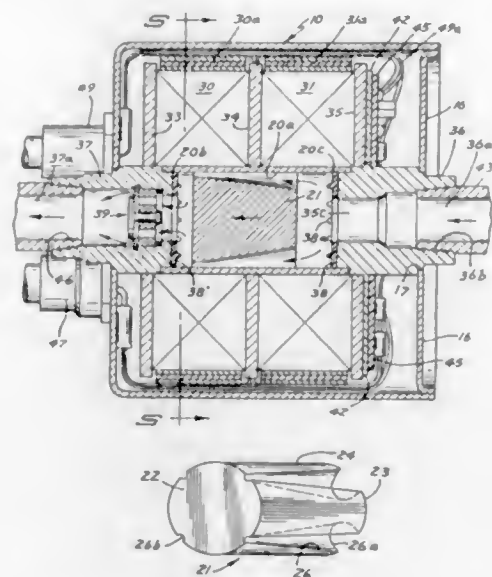
Filed Feb. 27, 1995, Ser. No. 394,890

Int. Cl.⁶ F04B 17/04

U.S. Cl. 417—417

11 Claims

1. A linear reciprocating device adapted to operate as a pump, comprising



a tubular housing,
a magnetically conductive cylindrical piston disposed in said housing,
said housing having an inlet and an outlet including a check valve,
said piston having an inlet facing end and an outlet facing end,
a power coil mounted onto said housing adapted to attract and move said piston toward said outlet,
a reset coil mounted onto said housing adjacent said power coil adapted to attract and move said piston toward said inlet,
said piston having clearance within said housing to have reciprocal movement therein,
said piston having a plurality of flutes thereabout tapered from the inlet facing end of said piston to the outlet facing end thereof having clearance at said outlet facing end to permit the passage of fluid thereby,
a circuit connected to an appropriate power source alternately energizing said coils to cause the reciprocal movement of said piston, and
a housing having said tubular housing, piston and coils disposed therein.

5,509,793

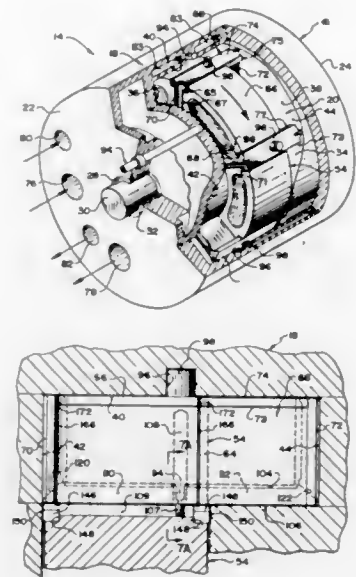
ROTARY DEVICE WITH SLIDABLE VANE SUPPORTS
Brian W. Cherry, Richmond, Canada; James E. Smith, Morgantown, W. Va.; Victor H. Mucino, Morgantown, W. Va.; Nigel N. Clark, Morgantown, W. Va.; Gregory Thompson, Morgantown, W. Va., and Patrick R. Badgley, Columbus, Ind., assignors to Regi U.S., Inc., Richmond, Canada
Continuation-in-part of Ser. No. 208,723, Feb. 25, 1994, Pat. No. 5,429,084. This application Dec. 29, 1994, Ser. No. 367,434

Int. Cl.⁶ F02B 53/00

U.S. Cl. 418—219

12 Claims

1. An axial vane rotary device (14) comprising a slater (16) with a cylindrical internal chamber (34) defined by an annular outer wall (40) and two side walls (36, 38) of the stator, each said side wall having an annular cam surface (42, 44); a rotor (54) rotatably mounted within the chamber, the rotor having an annular outer wall (66) and a plurality of angularly spaced-apart, axial slots (64) extending therethrough; a vane (68) slidably received in each said slot, each said vane having a radially outer edge (74), a radially inner edge (106) and side edges (70, 72), the side edges having members (134) slidably engaging the cam surfaces, each said vane having a projection (107) on its inner edge (106) slidably received in a transverse slot (109) in the rotor (54); first means (96, 98) for reciprocating the vanes axially; second means (42, 44) for alternatively expanding and compressing spaces between adjacent said



vanes and the cam surfaces as the rotor rotates, said second means including alternating first portions (92) and second portions (90) on the cam surfaces, the second portions being further from the rotor than the first portions, the first portions of one said cam surface being aligned with the second portions of another said cam surface, the axial slots (64) extending radially outwards on the rotor to the annular outer wall (66) thereof and having enlarged outer portions (65), the outer edge (74) of each said vane slidably engaging the annular outer wall (40) of the stator, each said vane having an enlarged outer portion (75) slidably received in the enlarged outer portion (65) of one said axial slot (64).

5,509,794

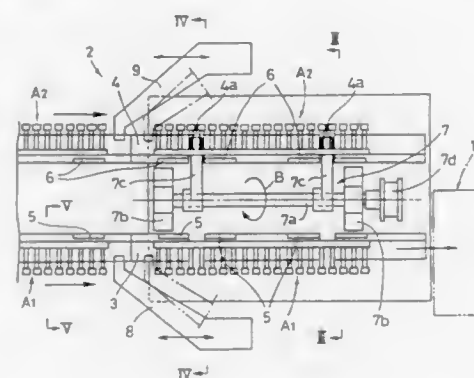
METHOD AND APPARATUS FOR MAKING MOLDED PHOTOINTERRUPTERS

Nobuyuki Nakamura, and Kazunori Fuji, both of Kyoto, Japan, assignors to Rohm Co., Ltd., Kyoto, Japan
Division of Ser. No. 979,281, Nov. 20, 1992, Pat. No. 5,391,346. This application Sep. 9, 1994, Ser. No. 302,456

Claims priority, application Japan, Nov. 20, 1991, 3-304759; Feb. 25, 1992, 4-38140; Sep. 16, 1992, 4-246465
Int. Cl.⁶ B29C 45/14

U.S. Cl. 425—3

4 Claims



1. An apparatus for making molded photointerrupters by using first and second leadframes, the first leadframe carrying a plurality of light emitting devices each having a light emitting face, the second leadframe carrying a plurality of light receiving devices each having a light receiving face, the apparatus comprising:
a molding unit which is openable and closable, the molding unit including means for supporting the first and second leadframes in a generally horizontal posture with the light emit-

ting faces of the light emitting devices directed toward the light receiving faces of the light receiving devices, the molding unit forming a plurality of molding cavities when the molding unit is closed;
a first transfer track extending toward the molding unit for transferring one of the first and second leadframes in a generally horizontal posture;
a second transfer track arranged side-by-side in parallel to the first transfer track and extending toward the molding unit for transferring the other of the first and second leadframes in a generally horizontal posture; and
inverting means for turning over said other leadframe and for bringing said other leadframe to the first transfer track before the light emitting devices and the light receiving devices are introduced into the molding unit so that the light emitting faces of the light emitting devices are directed toward the light receiving faces of the light receiving devices.

5,509,795

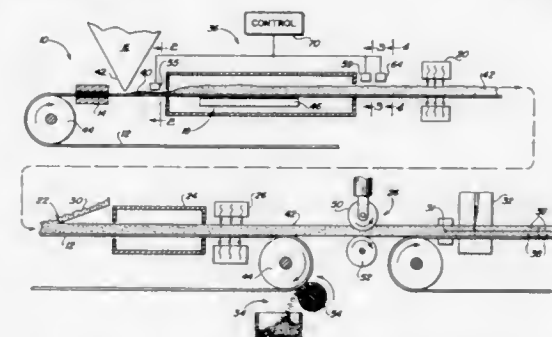
APPARATUS FOR CONTINUOUSLY FOAMING A POLYIMIDE POWDER

Daniel E. Near, Littleton; Royce M. Feagans, Morrison, and Ward T. Hobert, Littleton, all of Colo., assignors to Schuller International, Inc., Denver, Colo.

Division of Ser. No. 158,070, Nov. 23, 1993, Pat. No. 5,338,765. This application Apr. 29, 1994, Ser. No. 235,598
Int. Cl.⁶ B29C 44/28; 44/60

U.S. Cl. 425—4 C

8 Claims



1. An apparatus for continuously foaming prepolymer powders, including prepolymer powders that are not susceptible to heating by microwave energy, to form a foam product comprising:

an oven means for heating a prepolymer powder layer on a conveyor by convection and infrared radiation heating to cause the prepolymer powder to react, foam and form a continuous foam bun;

a continuous, driven metallic conveyor belt for moving the prepolymer powder through the oven means;

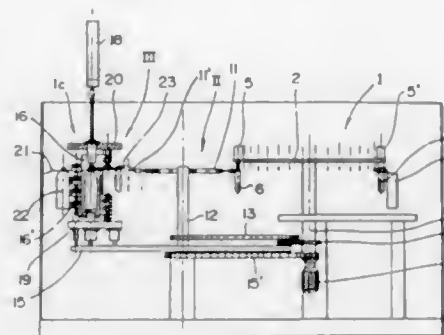
means for depositing the prepolymer powder on and across the width of the conveyor belt in a layer before the conveyor belt enters the oven;

means for heating the conveyor belt to between 175° C. and 290° C. prior to depositing the prepolymer powder layer in the conveyor belt to cause the prepolymer powder in contact with and adjacent the conveyor belt to be heated by conducting heat from the conveyor belt to react and foam a lower portion of the prepolymer powder layer in the formation of the continuous foam bun;

cooling means for cooling the conveyor belt and the continuous foam bun after the conveyor belt and the continuous foam bun exit the oven means to a temperature to impart sufficient integrity to the continuous foam bun to permit a skin to be removed from an upper surface of the continuous foam bun; and

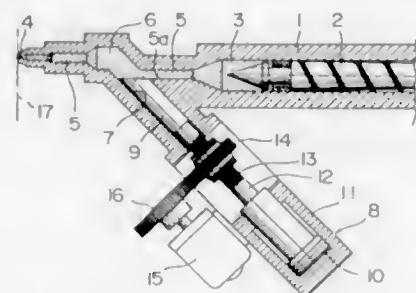
trimming means downstream of the cooling means for trimming the skin from the upper surface of the continuous foam bun after the continuous foam bun has been cooled by the cooling means to form a planar upper surface on the continuous foam bun.

5,509,796
MACHINE FOR MANUFACTURING HOLLOW BODIES BY BLOW MOLDING
 Antoine Di Settembrini, Saint Ouen l'Aumone, France, assignor to ADS, Saint Ouen l'Aumone, France
 PCT No. PCT/FR94/00020, § 371 Date Aug. 23, 1994, § 102(e) Date Aug. 23, 1994, PCT Pub. No. WO94/15770, PCT Pub. Date Jul. 21, 1994
 PCT Filed Jan. 7, 1994, Ser. No. 284,674
 Claims priority, application France, Jan. 8, 1993, 93 00135
 Int. Cl.⁶ B29C 49/00
 U.S. Cl. 425—526 21 Claims



1. A machine for manufacturing hollow bodies from thermoplastic preforms by blow molding, comprising:
 at least one preform heating apparatus;
 an assembly of molding stations fixedly arranged in an arc of a circle, each of said molding stations comprises a finished product ejection means;
 a rotary transfer device is provided between said heating apparatus and said assembly of molding stations to transfer the heated preforms; and
 cams which provide at least partial continuous and synchronous control of said molding stations, wherein said cams are driven in reverse rotation with respect to the direction of rotation of said transfer device, such that the preforms are worked in decreasing order with respect to the length of the path covered between said heating apparatus and said corresponding molding stations to ensure that the stabilization and thermal treatment periods are substantially equal for each preform.

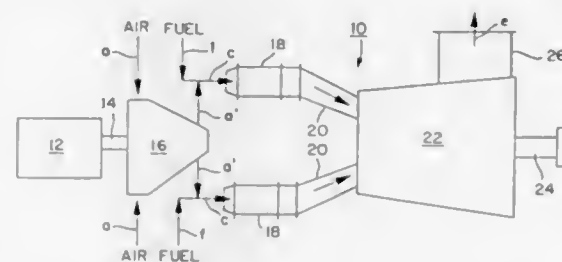
5,509,797
INJECTION APPARATUS POSSESSING PRESSURE HOLDING DEVICE
 Nobuyuki Nakamura, Nagano, Japan, assignor to Nissel Plastic Industrial Co., Ltd., Nagano, Japan
 Filed Sep. 26, 1994, Ser. No. 312,462
 Claims priority, application Japan, Sep. 30, 1993, 5-268443; May 31, 1994, 6-139675
 Int. Cl.⁶ B29C 45/02
 U.S. Cl. 425—557 2 Claims



1. An injection apparatus, comprising:
 an injection cylinder having a first end and a second end;

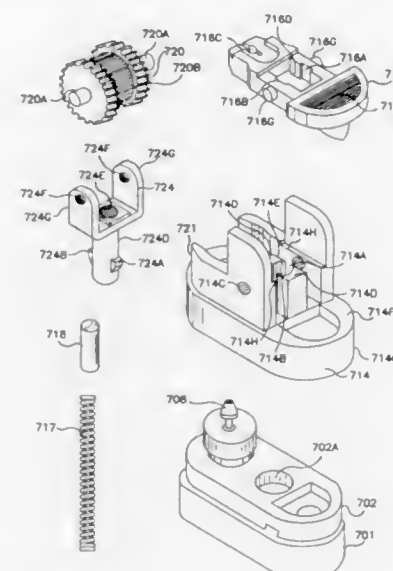
an injection screw disposed at said second end of said injection cylinder;
 a rear resin path having a first end and a second end, said rear resin path disposed within said injection cylinder and said second end of said rear resin path communicating with said injection screw;
 a front resin path having a first end and a second end, said front resin path disposed within said injection cylinder and said second end of said front resin path communicating with a first end of said rear resin path;
 a nozzle at said first end of said injection cylinder and communicating with said first end of said front resin path; and
 a pressure holding device disposed between said second end of said front resin path and said first end of said rear resin path, wherein said pressure holding device comprises:
 a rotatable pressure holding plunger,
 a piston connected to said pressure holding plunger, and
 a hydraulic cylinder communicating with said plunger,
 wherein said pressure holding plunger is rotatable to a first position, said first position allowing said front resin path to communicate with said rear resin path,
 wherein said pressure holding plunger is rotatable to a second position, said second position isolating said front resin path from said rear resin path, and
 wherein said pressure holding plunger is advanceable to a third position, said third position emptying said front resin path.

5,509,798
STABILIZED CATALYST CARRIER AND IMPROVED CARRIER CONFIGURATION FOR CATALYTIC COMBUSTION SYSTEM
 Jennifer S. Feeley, Clinton; Dianne O. Simone, Edison; Leonard M. Quick, Bridgewater, and Martha M. Hamill, Highland Park, all of N.J., assignors to Engelhard Corporation, Iselin, N.J.
 Division of Ser. No. 54,374, Apr. 28, 1993, Pat. No. 5,384,300.
 This application Oct. 4, 1994, Ser. No. 318,020
 Int. Cl.⁶ F23D 3/40
 U.S. Cl. 431—7 8 Claims



1. A process for the catalytically supported combustion of a gaseous carbonaceous fuel which comprises (a) forming a gaseous combustion mixture comprising the fuel and oxygen, (b) contacting the combustion mixture in a catalyst zone with at least one catalyst member comprising a carrier having a plurality of gas flow passages extending therethrough defined by channel walls and a catalyst material disposed on the channel walls and effective to catalytically support the combustion of the combustion mixture, under conditions suitable for catalyzed combustion of the combustion mixture, thereby effecting sustained combustion of at least a portion of the fuel in said combustion mixture without substantial formation of oxides of nitrogen, the carrier comprising a silica-alumina-magnesia material and prior to having the catalyst material disposed thereon, having been coated with a coating comprising alumina on the channel walls and having then been exposed to steam for a time and under conditions sufficient to induce the alumina to interact with the silica-alumina-magnesia material so that the carrier is stabilized against interaction with the catalyst material.

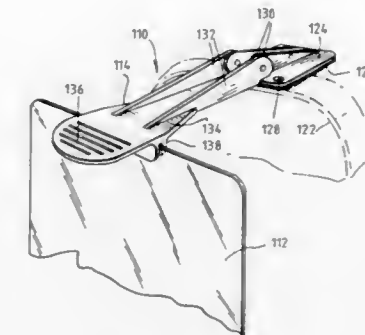
5,509,799
FLINT REPLACEABLE LIGHTER
 Tak C. Sher, North Point, Hong Kong, assignor to Polycity Industrial Ltd., and Tak Fi International (Holdings) Ltd., both of Quarry Bay, Hong Kong
 Filed Oct. 24, 1994, Ser. No. 328,670
 Int. Cl.⁶ F23Q 1/02
 U.S. Cl. 431—276 5 Claims



1. A flint replaceable lighter comprising:
 a lighter body including means for containing fuel;
 a striker wheel assembly including a striker wheel, a striker wheel support superstructure into which said striker wheel is inserted, a hollow support shaft disposed below said superstructure, a flint loosely disposed in said support shaft, a spring having an upper end and a lower end, the upper end of which is releasably disposed in said support shaft and abutting against said flint so as to urge it into contact with the striker wheel above it;
 receiving means fitted on said lighter body for releasably receiving said support shaft of said striker wheel assembly;
 orientation means on said striker wheel assembly and said receiving means for assuring that said striker wheel assembly is received by said receiving means in a correct orientation, wherein said shaft has a lower end with an inwardly extending flange having an internal diameter which is larger than said flint's diameter and smaller than said spring's external diameter, and wherein said shaft has an internal diameter above said flange which is greater than said spring's external diameter, whereby said flint and said flint spring are precluded from falling through said lower end of said shaft under their own weight.

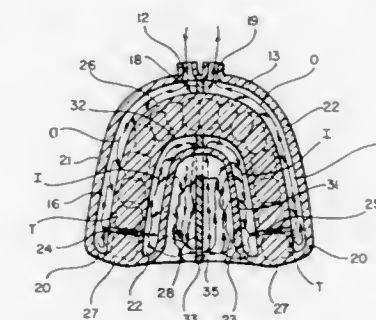
5,509,800
LIGHT-FILTER FOR DENTAL USE
 Peter J. Cunningham, 4 Howitt St., South Yarra Vic. 3141, and Raymond A. Leggo, 7 Inverness Way, Nth. Balwyn Vic 3104, both of, Australia
 Filed Aug. 19, 1994, Ser. No. 293,691
 Claims priority, application Australia, Aug. 20, 1993, PM0707
 Int. Cl.⁶ A61C 19/00; G02B 5/22
 U.S. Cl. 433—29 3 Claims

1. A light filter for dental use comprising:
 a transparent planar member colored so as to filter-out visible radiation in the range of 400 nm to 520 nm, said range being that to which dental composite materials are sensitive; and



an attachment device configured to detachably secure said transparent planar member to a dental lamp such that said planar member is placed in front of the dental lamp, said attachment device including:
 an attachment member for attachment to the dental lamp, said attachment member having at least one longitudinally extending rib extending upwardly therefrom, and
 an arm having an outer end for receiving said planar member, said arm hinged to said at least one rib.

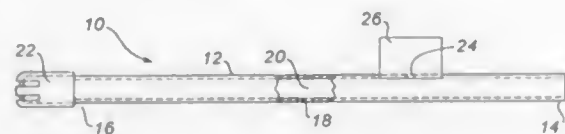
5,509,801
ORAL THERAPEUTIC APPARATUS FOR COOLING ORAL TISSUES
 James A. Nicholson, 120 S. 28th Ave., Hattiesburg, Miss. 39401
 Division of Ser. No. 100,279, Aug. 2, 1993. This application May 30, 1995, Ser. No. 453,879
 Int. Cl.⁶ A61C 17/02
 U.S. Cl. 433—80 20 Claims



1. An apparatus for cooling a patient's oral tissues while undergoing medical or dental treatment, comprising an oral therapeutic device having a body having imperforate wall portions which define a plurality of chambers in which a cooling medium may be retained, said body being formed of a biocompatible material which is shaped to be insertable in, and conform to, the contour of a patient's mouth.

5,509,802
ORAL SUCTION TIP
 Ronald L. S. Whitehouse, and Connie Watson, both of Edmonton, Alberta, Canada, assignors to White Shield Inc., Edmonton, Canada
 Filed Feb. 3, 1995, Ser. No. 382,975
 Int. Cl.⁶ A61C 17/06
 U.S. Cl. 433—95 1 Claim

1. An oral suction tip, comprising:
 a tubular body having a peripheral sidewall, a first end, a second end, and a single passage for transmitting fluids extending between the first end and the second end;
 a mouthpiece at the second end of the tubular body;



at least one vacuum release aperture extending through the sidewall of the tubular body in direct communication with the fluid passage, the at least one vacuum release aperture being spaced from the mouthpiece such that when the mouthpiece is inserted into a patient's mouth the at least one vacuum release aperture is not confined within the patient's mouth; and
 a porous guard overlying in spaced relation the at least one vacuum release aperture, thereby preventing accidental blockage of the at least one vacuum release aperture and preventing regulation of the suction by means of the at least one vacuum release aperture.

5,509,803

TOOLS FOR DENTAL WORK

Douglas G. Gwilliam, 31 Churchill Road, Gloucester, United Kingdom, and David G. Norman, Plump Hillm, Mitcheldean, Gloucester, United Kingdom

PCT No. PCT/GB93/01406, § 371 Date Mar. 4, 1994, § 102(e) Date Mar. 4, 1994, PCT Pub. No. WO94/01052, PCT Pub. Date Jan. 20, 1994

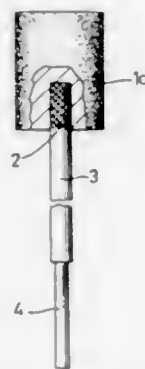
PCT Filed Jul. 5, 1993, Ser. No. 204,233

Claims priority, application United Kingdom, Jul. 4, 1992, 9214280

Int. Cl.⁶ A61C 3/06

U.S. Cl. 433—166

10 Claims



1. A rotary tool for dental work comprising a shank carrying at one end a rigid head of diamond grit in a resin matrix and its other end being smoothly cylindrical and having a diameter in accordance with the ISO standard for dental usage, the head being moulded onto said one end to form an effectively unitary tool.

5,509,804

BASE FOR DENTAL PROSTHESIS AND THE LIKE FOR IMPLANTATION IN BONE

Erich Arzt, Via della Mendola 46/19, I-39100 Bolzano, Italy

PCT No. PCT/EP93/00464, § 371 Date Aug. 23, 1994, § 102(e) Date Aug. 23, 1994, PCT Pub. No. WO93/17634, PCT Pub. Date Sep. 16, 1993

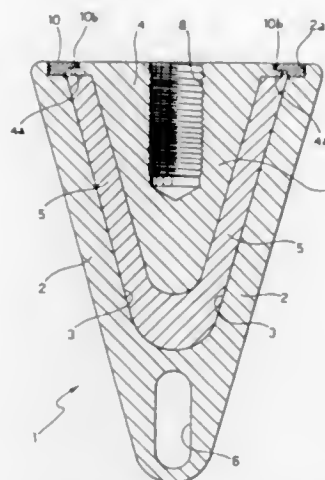
PCT Filed Mar. 2, 1993, Ser. No. 290,906

Claims priority, application Italy, Mar. 4, 1992, T092A0179 Int. Cl.⁶ A61C 13/28

U.S. Cl. 433—169

9 Claims

1. A base for a dental prosthesis for implantation in bone, including an outer body of rigid biocompatible metallic material having means for anchoring it to bony tissue and a cavity, an inner body of a rigid biocompatible metallic material having a seat for



holding a prosthesis disposed in said cavity and a layer of resilient shock absorbent bonding material disposed between said outer body and said inner body;

an annular retaining element being connected to an edge of the cavity in the outer body and having an inner edge; wherein the inner edge of the annular retaining element is in engagement with a corresponding outer collar on the inner body so as to be resiliently preloaded against the inner body.

5,509,805

RADIOGRAPHICALLY READABLE INFORMATION CARRIER AND METHOD OF USING THE SAME

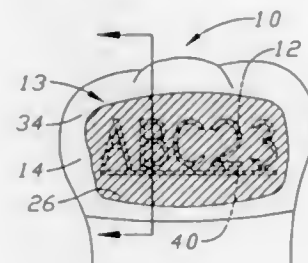
Gary E. Jagmin, 875 St. Andrews Way, Frankfort, Ill. 60423

Filed Nov. 16, 1993, Ser. No. 153,318

Int. Cl.⁶ A61C 3/00

U.S. Cl. 433—215

55 Claims



1. An identification apparatus comprising:
 a personal information carrier having information carried by a radiopaque configuration which is radiographically discernable;
 means for securing the personal information carrier to an external and noninvasive portion of a tooth; and
 means for visually concealing the personal information carrier in which the concealing means includes a patch member for overlying the personal information carrier and the external and noninvasive portion of a tooth.

5,509,806

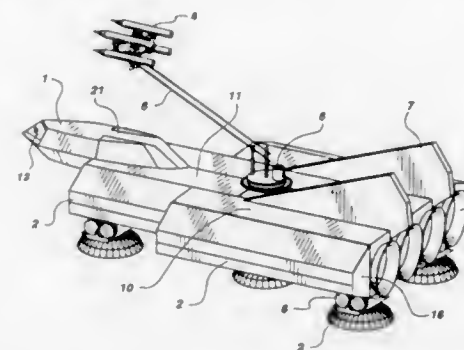
PORTABLE MULTIPLE MODULE SIMULATOR APPARATUS AND METHOD OF USE

Thayne N. Ellsworth, Boise, Id., assignor to Crusade For Kids, Inc., Boise, Id.

Continuation-in-part of Ser. No. 16,117, Feb. 10, 1993, Pat. No. 5,316,480. This application Feb. 1, 1994, Ser. No. 189,875 Int. Cl.⁶ G09B 9/02

U.S. Cl. 434—29

8 Claims



1. A portable multiple module simulator apparatus comprising:
 multiple roadable trailers attached together to form a platform; an exoskeleton covering, completely enclosing said multiple roadable trailers; multiple simulator modules formed on said roadable trailers;

said multiple simulator modules being substantially stationary in relationship to said roadable trailers;
 said multiple simulator modules being capable of limited vertical and lateral movements;
 said simulator modules having means for accommodating more than one person;
 said simulator modules having means for providing visual, auditory, and motion stimuli which simulate various real-life and pre-recorded experiences.

use in combination with a portable water combustion system comprising the steps of:

- positioning the water combustion system a desired location for fire fighting and filling it with water to a predetermined level;
- making a first combustion fuel source connection to the water combustion system;
- making an oxygen source connection and an ignition energy source connection to the water combustion system;
- activating the ignition energy source and the connected fuel supply and the oxygen supply to establish a pilot flame adjacent the surface of the water contained in the water combustion system;
- activating the connected combustion fuel source so as to cause combustion fuel to rise through the water and be ignited into a conflagration flame by the pilot flame;
- maintaining the pilot flame alight during activation of said connected combustion fuel source; and
- maintaining the level of water in the water combustion system at said predetermined level while the conflagration flame remains alight.

5,509,808

TOY TOILET TRAINING KIT

Samantha Bell, 80 Robinwood Dr., Little Rock, Ark. 72207

Filed Feb. 14, 1994, Ser. No. 195,715

Int. Cl.⁶ G09B 19/00

U.S. Cl. 434—247

22 Claims



1. A toy toilet training kit adapted to instruct children in the use of a standard size human toilet, comprising:

- a doll that is operative to receive a fluid and is operative to selectively discharge said fluid in simulation of urination;
- a toy toilet sized and adapted to interface with said doll whereby said doll and said toy toilet are proportional in size to a human and said standard size human toilet, said toy toilet having a bowl portion having an interior into which a child may selectively cause said doll to discharge said fluid, said bowl portion operative to receive and retain said fluid discharged therein; and
- a unit of dissolvable material constructed to dissolve on contact with said fluid, said unit sized and adapted to be placed in said bowl portion of said toy toilet whereby a child may selectively cause said doll to discharge said fluid onto said unit in a simulated toilet activity and thereby observe the disappearance of said unit.

5,509,807

CONFLAGRATION SIMULATOR AND METHOD OF OPERATING

Gary T. C. Joice, Stouffville, and Graham A. Huxley, Beeton, both of, Canada, assignors to CanCode Safety Services, Inc., Markum, Canada

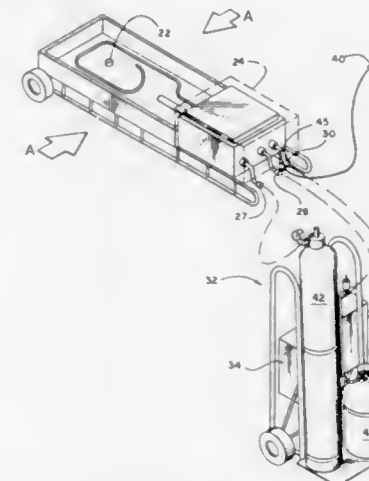
Continuation of Ser. No. 42,101, Apr. 1, 1993, abandoned.

This application Mar. 28, 1995, Ser. No. 411,852

Int. Cl.⁶ G09B 19/00

U.S. Cl. 434—226

19 Claims



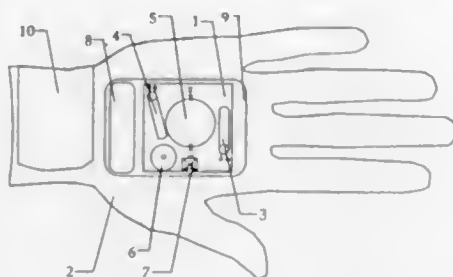
13. A method of operating a conflagration simulator system having a substantially inextinguishable pilot flame generator for

5,509,809

LEAD ARM WRIST POSITION TRAINING DEVICE
 Haile S. Clay, P.O. Box 326, LaHonda, Calif. 94020
 Continuation of Ser. No. 136,538, Oct. 14, 1993, abandoned.
 This application Oct. 19, 1994, Ser. No. 326,067
 Int. Cl.⁶ A63B 69/36

U.S. Cl. 434—252

11 Claims



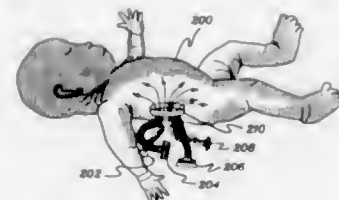
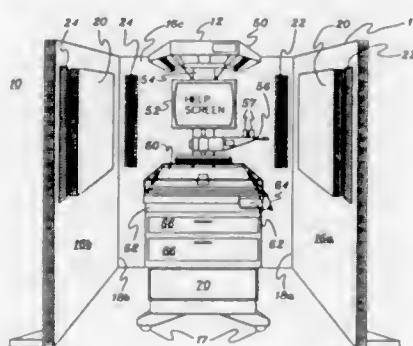
6. A sport training device mountable to a glove for training an athlete to use the proper swing, said training device comprising:
- a pair of sensors configured for sensing the positioning of the arm of said athlete in a swing plane defined by said proper swing, said sensors being positioned and oriented relative to one another such that when both of said sensors are positioned in a first plane, the wrist wearing said glove is positioned in a second plane substantially parallel to said swing plane;
 - a signal device coupled to said sensors, said signal device providing a signal when both of said sensors are substantially positioned in said first plane; and
 - a power source for energizing said sensors and said signal device.

5,509,810

INTERACTIVE NEONATAL RESUSCITATION TRAINING SIMULATOR AND METHOD
 Mitchell Schertz, West Hempstead, and Robert R. Richards, Bloomingburg, both of N.Y., assignors to Rofeh Simulations Limited, West Hempstead, N.Y.
 Filed Feb. 4, 1993, Ser. No. 13,820
 Int. Cl.⁶ G09B 23/28

U.S. Cl. 434—262

68 Claims



1. An interactive human resuscitation training simulator comprising:
- a robotic infant having an intelligent, interactive control mechanism and an outer skin, said outer skin's texture and feel approximating the skin texture and feel of a newborn infant,

said intelligent, interactive control mechanism being partially disposed external to said robotic infant and including:

- means for physically simulating within said robotic infant a condition corresponding to a human condition requiring resuscitation;
 - means for detecting and evaluating resuscitation activities on said robotic infant by a student employing the simulator; and
 - means for adjusting the robotic infant's physically simulated condition in response to the student's resuscitation activities as evaluated by said detecting and evaluating means, said adjustment mimicking a predetermined human reaction to resuscitation activity performed on the robotic infant by the student employing the simulator.
45. A method for conducting an interactive resuscitation training simulation comprising the steps of:
- providing a robotic infant having an outer skin, said outer skin's texture and feel approximating the skin texture and feel of a newborn infant;
 - physically simulating within said robotic infant a condition corresponding to a human condition requiring resuscitation;
 - detecting resuscitation activities on said robotic infant by a trainee;
 - evaluating in real time the trainee resuscitation activities detected in said step (c); and
 - adjusting the robotic infant's condition physically simulated in said step (b) in response to said evaluating step (d), said adjustment in said robotic infant's physically simulated condition mimicking a predetermined human reaction to resuscitation activity performed on the robotic infant by the trainee.
66. An interactive human resuscitation training simulator comprising:

- an android having an intelligent, interactive control mechanism, said intelligent, interactive control mechanism including:
 - means for simulating within said android a condition corresponding to a human condition requiring resuscitation;
 - means for detecting and evaluating resuscitation activities on said android by a student employing the simulator; and
 - means for adjusting the android's simulated condition in response to the student's resuscitation activities as evaluated by said detecting and evaluating means, said adjustment mimicking a predetermined human reaction to resuscitation activity performed on the android by the student employing the simulator; and
- a virtual reality environment enclosure surrounding said android, said virtual reality environment enclosure including a first audiovisual system and a second audiovisual system, said first audiovisual system and said second audiovisual system being disposed within said enclosure so as to generate a visual and an audio environment about said android representative of a typical working environment during an actual resuscitation process.

5,509,811

COMPUTER ENCLOSURE WITH EMBEDDED PCMCIA MODEM CARD
 Michael J. Homlc, Austin, Tex., assignor to Dell USA, L.P., Austin, Tex.

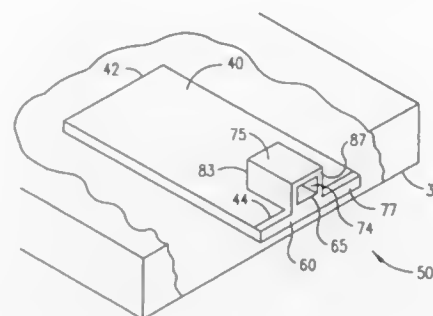
Filed Jan. 12, 1994, Ser. No. 180,269

Int. Cl.⁶ H01R 9/11

U.S. Cl. 439—55

14 Claims

1. A modem assembly for a computer, said computer including an enclosure with an outer wall, comprising:
- a socket receiving a removable PCMCIA Modem Card, said PCMCIA Modem Card including a standard PCMCIA Modem Card input/output connector;
 - a connector block physically and electrically connected to said input/output connector, said connector block including a body portion housing a telephone socket, and said connector block and said telephone socket residing flush with said outer wall; and



wherein said connector block also includes an end cap including an electrical socket mating with said standard PCMCIA Modem Card input/output connector.

5,509,812

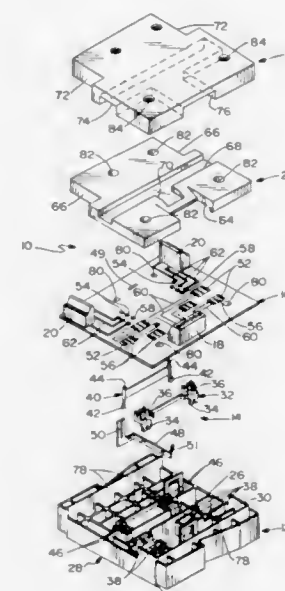
CABLE TAP ASSEMBLY
 Joseph D. Comer, Elmhurst; Robert DeRoss, Naperville, and Mark M. Data, Bollingbrook, all of Ill., assignors to Molex Incorporated, Lisle, Ill.

Filed Jun. 20, 1994, Ser. No. 262,802

Int. Cl.⁶ H01R 9/09

U.S. Cl. 439—76.1

2 Claims



1. A cable tap assembly, comprising:
- a housing having a mating face and an opposite generally planar terminating face;
 - a plurality of terminals mounted in the housing, each terminal including a mating portion engageable through the mating face of the housing with a complementary mating terminal and a terminating portion generally at the terminating face of the housing;
 - a wiring assembly, including a printed circuit board, mounted on the terminating face of the housing and including connectors electrically coupled, and mounted to the printed circuit board, the terminating portions of the terminals projecting into holes in printed circuit board and electrically coupled to circuit traces on the printed circuit board, the connectors being adapted to receive conductors of at least one multi-conductor electrical cable; and
 - strain relief means, separate from the housing and comprising a dielectric cover and cap for sandwiching the cable between

the cover and cap, mountable at the terminating face of the housing and adapted to hold and provide strain relief for the cable.

5,509,813

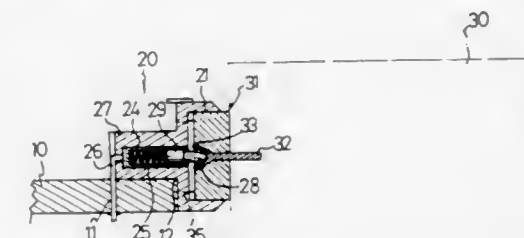
JOINT ASSEMBLY FOR ELECTRICALLY ENGAGING A PORTABLE COMPUTER WITH A BATTERY
 Sheng N. Lu, No. 174, Chun Ying St., Shu Lin Chen, Taipei Hsien, Taiwan

Filed May 20, 1994, Ser. No. 247,034

Int. Cl.⁶ H01R 13/24

U.S. Cl. 439—79

4 Claims



1. A joint assembly for electrically engaging a portable computer with a battery comprising:
- a first joint comprising a first portion which defines at least one aperture and a second portion which defines a recess so that the aperture is in communication with the recess, a metal cylinder which is received in the aperture and which defines a closed end and an open end, a pin which projects from the closed end of the metal cylinder and which is soldered to a printed circuit board of the portable computer, a spring which is received in the metal cylinder, a piston which is slidably received in the cylinder, a male connector which projects from the piston; and
 - a second joint comprising at least one aperture which is defined therein, a female connector which is received in the aperture which is defined in the second joint, a pin which projects from the female connector and which is soldered to the battery; whereby the spring biases the male connector into firm engagement with the female connector when the second joint is received in the recess which is defined in the first joint.

5,509,814

SOCKET CONTACT FOR MOUNTING IN A HOLE OF A DEVICE

Rene A. Mosquera, Laguna Niquel, Calif., assignor to ITT Corporation, New York, N.Y.

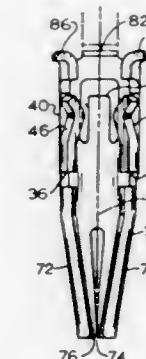
Filed Jun. 1, 1993, Ser. No. 69,493

Int. Cl.⁶ H01R 9/09

U.S. Cl. 439—82

9 Claims

1. A socket contact for receiving a downwardly-inserted pin of



substantially cylindrical shape and of predetermined radius, wherein the contact has a vertical axis and upper and lower portions spaced along said axis, and wherein said lower portion includes a plurality of beams having upper ends integral with said upper portion and free lower ends, with said beams extending largely downwardly and with a radially inward directional component from said upper ends to said free lower ends, characterized by:

at least one of said beam free ends has a pin-contacting radially inner surface that includes middle and opposite sides, wherein, as seen in a view along said axis, said middle has a radius of curvature less than said pin radius, and said opposite sides have pin-contacting locations each of a larger radius of curvature than said pin radius.

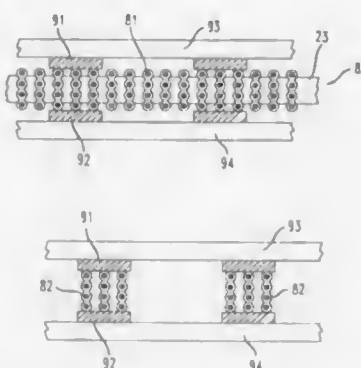
5,509,815

SOLDER MEDIUM FOR CIRCUIT INTERCONNECTION
Sungho Jin, Millington, and Mark T. McCormack, Summit,
both of N.J., assignors to AT&T Corp., Murray Hill, N.J.

Filed Jun. 8, 1994, Ser. No. 255,687
Int. Cl.⁶ H01R 9/09

U.S. Cl. 439—91

47 Claims



1. An electronic device comprising a pair of components with mating contact pads, said contact pads being in juxtaposed alignment each to another, and mating solder joints electrically and mechanically interconnecting said mating contact pads, wherein each of said solder joints is a high-aspect-ratio subdivided solder joint structure comprising a plurality of subdivided solder paths between said mating contact pads, said solder joints being formed by embedding a plurality of solder wires longitudinally in an insulating matrix, deforming said insulating matrix so as to elongate said insulating matrix and to reduce the diameter of said plurality of solder wires, and cutting said elongated insulating matrix transverse to its longitudinal axis into slices, the length of said slices being determined by a spacing between said mating pads, said ratio between the length of each wire and its diameter being at least 2:1.

5,509,816

LEVER-TYPE CONNECTOR AND METHOD FOR ASSEMBLING AND CONNECTING SAME
Takatoshi Katsuma, Yokkaichi, Japan, assignor to Sumitomo Wiring Systems Ltd., Mie, Japan

Filed Jun. 7, 1994, Ser. No. 255,918
Int. Cl.⁶ H01R 13/62

U.S. Cl. 439—157

12 Claims

1. A lever-type connector comprising a generally U-shaped lever having a guide groove of a generally volute shape formed in each of opposed inner surfaces of opposite end portions of said lever, said guide groove being open at one end to a side surface of said end portion, each of said opposite end portions having a rotation hole open to said inner surface, said lever being attached to a housing of said connector having rotation pins formed on respec-

tive opposite side surfaces thereof for rotatably fitting respectively in said rotation holes, and an inner end of each of said guide grooves being contiguous with a peripheral surface of a respective one of said rotation holes.

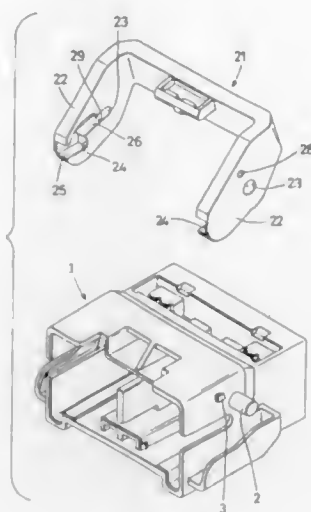
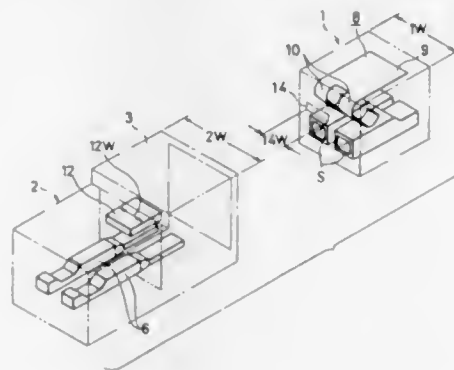
5,509,817

CONNECTOR HAVING SHORT CIRCUIT TERMINAL
Takeshi Tsuji, Yokkaichi, Japan, assignor to Sumitomo Wiring Systems Ltd., Mie, Japan

Filed May 10, 1994, Ser. No. 240,484
Claims priority, application Japan, May 12, 1993, 5-135365
Int. Cl.⁶ H01R 13/703

U.S. Cl. 439—188

20 Claims

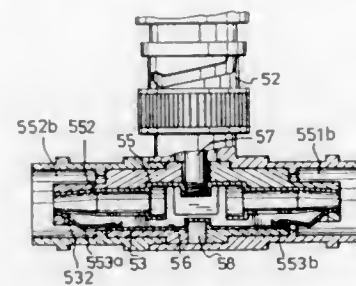


5,509,818

BNC T-TYPE ADAPTOR
Yang-Chuan Lai, No. 44, Lane 627, Sec. 5, Chung-Hsin Rd.,
San-Chung City, Taipei Hsien, Taiwan
Filed Oct. 25, 1994, Ser. No. 329,107
Int. Cl.⁶ H01R 29/00

U.S. Cl. 439—188

6 Claims



1. A BNC T-type adaptor including
a T-shaped insulating hollow housing having a vertical common branch, and left and right branches that extend horizontally from two sides of said common branch and that are communicated with said common branch, each of said left and right branches being adapted to receive a conducting plug with a tubular insulator;
an internal conductor disposed in said insulating housing and including a vertical conducting portion which extends into said common branch and a horizontal conducting portion that is connected to said vertical conducting portion and that has left and right parts that extend into said left and right branches respectively;
an elongated grounding unit disposed below said horizontal conducting portion in said insulating housing; and
two insulator units being sleeved around and positioning said left and right parts of said horizontal conducting portion and said elongated ground unit within said insulating housing;
wherein the improvement comprises:

each of said left and right parts of said horizontal conducting portion having a contact unit disposed thereon and a resilient conducting strip which is integral with an end portion of said horizontal conducting portion and which extends axially and inwardly from said contact unit, said contact units being adapted to connect electrically with said conducting plugs respectively, each of said resilient conducting strips having a slanted intermediate portion and a distal end which is located below said contact unit and which normally contacts said grounding unit; and
each of said insulator units having a circumferential wall body which defines an axial bore therethrough and which receives a corresponding one of said contact units therein, each of said insulator units being associated with a corresponding one of said left and right branches of said insulating housing and with said internal conductor to constitute a socket unit in which one of said contact units is disposed, each of said socket units being associated with a corresponding one of said conducting plugs to constitute a plug-and-socket assembly;
in each of said plug-and-socket assemblies, said wall body of said insulator unit cooperating with one of said left and right branches of said insulating housing so as to define an annular receiving space around said insulator unit for receiving said tubular insulator of said conducting plug therein;
in each of said plug-and-socket assemblies, said wall body of said insulator unit further having an axial slot formed therethrough through which said slanted intermediate portion of said resilient conducting strip extends to protrude into said annular receiving space;
whereby, in each of said plug-and-socket assemblies, when said conducting plug is inserted into one of said left and right branches so as to contact said contact unit, said tubular insulator enters into said annular receiving space to

push said slanted intermediate portion of said resilient conducting strip radially and inwardly of said wall body of said insulator unit so as to disengage said resilient conducting strip from said grounding unit.

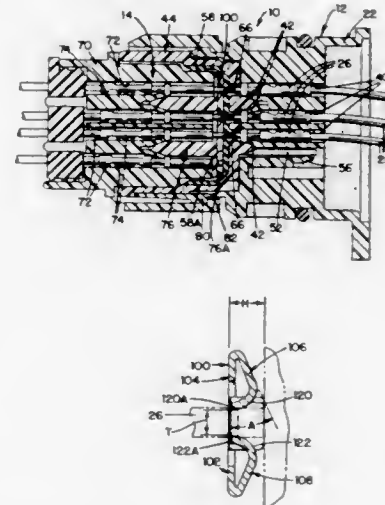
5,509,819

LOW PROFILE SPLICE BUSSING PLATE
William L. Stein, Sr., Warren, Ohio, and Robert W. Rimko, Transfer, Pa., assignors to General Motors Corporation, Detroit, Mich.

Filed Aug. 8, 1994, Ser. No. 287,555
Int. Cl.⁶ H01R 31/08

U.S. Cl. 439—189

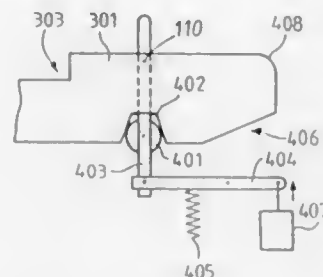
6 Claims



1. A low profile electrical bussing plate for electrically connecting at least one input pin terminal to a plurality of output pin terminals comprising:

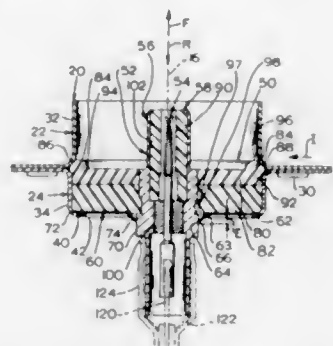
an elongated planar base plate having a plurality of spaced apart, generally rectangularly shaped openings therethrough, said opening being defined by opposed first and second side edges and opposed third and fourth side edges which face each other, respectively;
a plurality of spaced first and second arms respectively integral with said base plate along its opposite elongated sides and located transversely of said first and second side edges of said openings, respectively, said first and second arms being folded across said base plate toward each other and bent to provide arcuate portions which face each other,
said first and second arms at their free ends terminating adjacent a plane containing the base plate and being spaced inwardly from their adjacent first and second side edge of the rectangular opening, said first and second arms being spaced from each a transverse distance which is less than the maximum transverse dimension of the pin terminals, said arms being deflectable away from each other when a pin terminal is inserted therebetween to biasingly engage the pin terminals with a low terminal engage force,
and first and second sides respectively integral with said third and fourth side edges of said openings and extending perpendicularly to said base plate so as to straddle said first and second arms to aid in aligning said pin terminals to said bussing plate.

5,509,820
INTEGRATED CIRCUIT KEY AND CONNECTOR
NOTABLY FOR SUCH A KEY
 Nicolas Dedisse, Marseille, France, assignor to Gemplus Card International, Gemenos, France
 Filed Jul. 21, 1994, Ser. No. 278,460
 Claims priority, application France, Jul. 22, 1993, 93 09057
 Int. Cl.⁶ H01R 13/15
 U.S. Cl. 439—260 13 Claims



1. A connector for an electronic key provided with an integrated circuit, with flush contacts, designed to enable the exchange of information with a machine, the connector having a guide for the insertion of a key, a mechanism comprising a connection means in the form of a connection grid to ensure the connection with the integrated circuit and bolting means, wherein:
 the guide has a plate flamed by two flanges, the plate being provided with a scallop before which there is placed a snug against which the key abuts when it is slid under the plate, the contacts of the key being in the scallop,
 the mechanism comprising the connection grid is capable of getting positioned above the contacts in the scallop,
 and wherein the bolting means has a roller supported by a hinged arm placed below the plate, the roller being designed to get housed in a groove made beneath the key so as to block any movement of the key in the connector during the exchange of information.

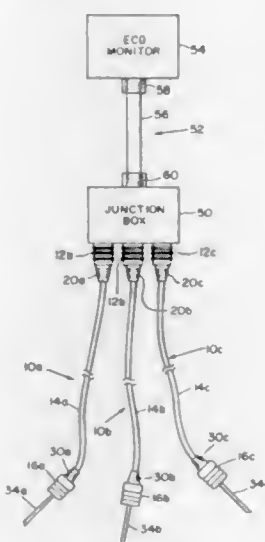
5,509,821
D-SUB CONNECTOR
 Robert W. Small, Courtice, and John P. van den Enden, Oshawa, both of, Canada, assignors to IIT Corporation, New York, N.Y.
 Filed Nov. 14, 1994, Ser. No. 338,927
 Int. Cl.⁶ H01R 13/52; 17/04
 U.S. Cl. 439—272 7 Claims



1. A connector which has an axis extending in forward and rearward directions and which has an electrically conductive shell assembly with a rear tubular part having a rear end that forms a rear wall having an opening, said connector including an insulator device lying in said shell assembly and at least one coaxial contact device lying in said insulator device, said coaxial contact device including coaxial inner and outer contacts and a dielectric separa-

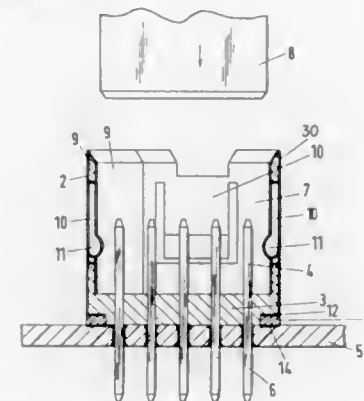
tor between them, wherein said coaxial outer contact is electrically connected to said shell assembly, characterized by:
 a ground plane formed by a sheet of electrically conductive material, said ground plane having an outer portion trapped between and contacting both said insulator device and said rear wall and having an inner portion that directly engages said coaxial outer contact.

5,509,822
ECG MONITOR SYSTEM
 Charles C. Negus; Stephen J. Linhares, both of Taunton, and Robert I. Rudko, Holliston, all of Mass., assignors to PLC Medical Systems, Inc., Milford, Mass.
 Continuation of Ser. No. 166,697, Dec. 14, 1993. This application May 30, 1995, Ser. No. 454,008
 Int. Cl.⁶ H01R 11/00
 U.S. Cl. 439—502 5 Claims



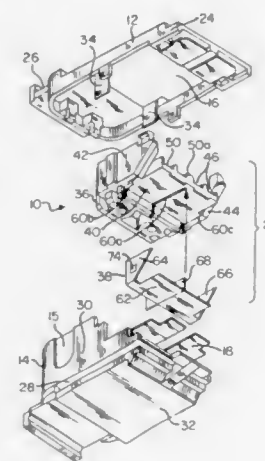
1. An ECG monitoring system comprising:
 an ECG monitor;
 a plurality of needle electrode systems each comprising:
 a connector connecting to an ECG monitor junction,
 a single integral needle electrode unit, and
 a lead connecting said connector with said needle electrode unit forming said needle electrode system as a single integral unit, said lead including a signal conductor;
 said connector having female sockets and a first end of said signal conductor, said single integral needle electrode unit comprising:
 a body portion, and
 an electrode needle extending from said body portion and being molded into said body portion for permanently attaching the electrode needle in the body portion, a second end of said signal conductor electrically contacting said needle within said body portion, wherein said electrode needle can be inserted in the body of a patient to convey ECG signals from the patient to the ECG monitor.

5,509,823
ELECTRICAL MATING CONNECTOR
 Dietmar Harting, Espelkamp; Karin Foerster, Luebbecke, and Guenter Pape, Bielefeld, all of, Germany, assignors to Harting Elektronik GmbH, Espelkamp, Germany
 Filed Nov. 28, 1994, Ser. No. 345,966
 Claims priority, application Germany, Dec. 2, 1993, 43 41 103.7
 Int. Cl.⁶ H01R 13/658
 U.S. Cl. 439—607 20 Claims



1. An electrical connector for a circuit board operable to be connected with a mating connector, the electrical connector comprising a connector body made of an insulating material, said connector body forming a recess having a bottom part and a recess wall means extending from said bottom part, said bottom part having passages, contact elements passing through circuit passages and extending into said recess, said bottom part being disposed on said circuit board, conductive sealing means between said connector body and said circuit board providing an electrically conductive seal means between said connector body and said circuit board, contact means on said recess wall means disposed to face said recess, and a conductive coating on said recess wall means and on said contact means, said contact means making electrical contact with an interconnected mating connector disposed in said recess.

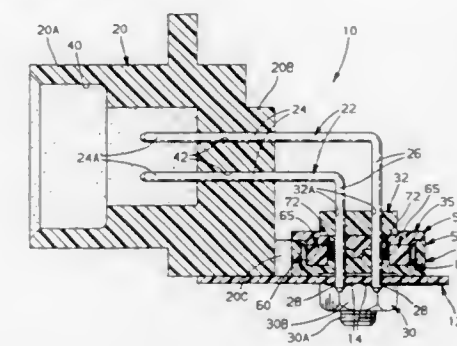
5,509,824
ENHANCED PERFORMANCE DATA CONNECTOR
 Julio F. Rodriguez, Collierville, Tenn.; Richard Podgalsky, Cranford, N.J., and Richard Marowsky, Collierville, Tenn., assignors to Thomas & Betts Corporation, Memphis, Tenn.
 Continuation of Ser. No. 13,857, Feb. 5, 1993, Pat. No. 5,376,021. This application Dec. 22, 1994, Ser. No. 362,025
 Int. Cl.⁶ H01R 13/648
 U.S. Cl. 439—608 19 Claims



1. A data connector comprising:

an insulative housing having a base, a cover and a conductive housing shield therein;
 an insulative contact holding member supporting a row of plural spaced electrical contacts thereon, said holding member being positioned within said insulative housing; and
 a discrete inner contact shield separate from and disposed within said housing shield having a central shield extension extending between at least two of said contacts, said contact shield including two side shield extensions extending therefrom, one said shield extension bounding each side of said row of contacts, said contact shield being electrically engaged with said housing shield, said contact holding member further including a pair of sidewalls bounding said row of contacts and a central dividing wall extending between at least two contacts, said sidewalls respectively supporting said side shield extensions, said central dividing wall including a slot therein, said central shield extension being accommodated in said slot in said dividing wall.

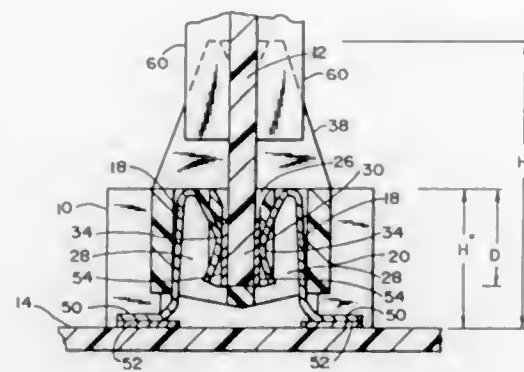
5,509,825
HEADER ASSEMBLY HAVING A QUICK CONNECT FILTER PACK
 Christopher G. Reider, Boardman; Ralph J. Polehonki, Vienna, and Bart T. Wilking, Carrollton, all of Ohio, assignors to General Motors Corporation, Detroit, Mich.
 Filed Nov. 14, 1994, Ser. No. 338,309
 Int. Cl.⁶ H01R 13/66
 U.S. Cl. 439—620 9 Claims



1. A filtered header assembly for connection to a printed circuit board having a plurality of circuit traces thereon comprising a connector housing for carrying a plurality of spaced pin terminals whose ends remote from the connector housing are adapted to be electrically connected to said circuit traces on said printed circuit board, and filter means including capacitors operatively connected with said pins and a ground for filtering electrical noise passing through said pins, the improvement being that said filter means comprises a filter pack subassembly which is simultaneously slidably connected to each of said plurality of pins, said filter pack subassembly including a housing means having a plurality of openings therethrough through which the pins extend, an array of spaced capacitors in said housing and located adjacent said pins and biasing means for biasing said array of capacitors into engagement with said pins.

5,509,826
VERY LOW PROFILE CARD EDGE CONNECTOR
 Robert C. White, Cliffside Park, N.J., assignor to Burndy Corporation, Norwalk, Conn.
 Filed Oct. 22, 1993, Ser. No. 142,172
 Int. Cl.⁶ H01R 23/70
 U.S. Cl. 439—637 17 Claims

1. A card edge connector comprising:
 a housing having a center section with a card edge receiving area, end supports located at opposite ends of the center



section, and support outriggers, the end supports each extending up past a top surface of the center section and having a slot for receiving a portion of a printed circuit board, the outriggers extending laterally outward from longitudinal sides of the center section at a bottom of the housing; and electrical contacts mounted to the housing.

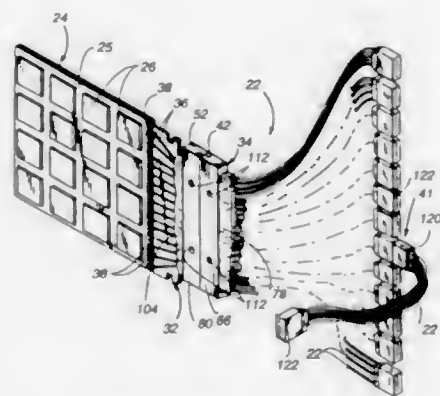
5,509,827
HIGH DENSITY, HIGH BANDWIDTH, COAXIAL CABLE, FLEXIBLE CIRCUIT AND CIRCUIT BOARD CONNECTION ASSEMBLY

Jon M. Huppenthal; Steven E. Garcia; James A. Harden, Jr., and Catherine A. Herzog, all of Colorado Springs, Colo., assignors to Cray Computer Corporation, Colorado Springs, Colo.

Filed Nov. 21, 1994, Ser. No. 342,850
Int. Cl.⁶ H01R 9/05; 9/07

U.S. Cl. 439—638

25 Claims



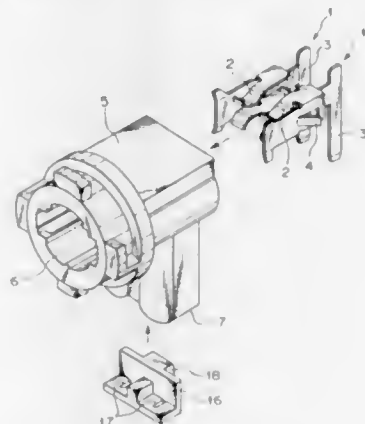
1. A connection assembly including a coaxial cable to microstrip flex circuit connector which interconnects a center conductor and a shielding conductor of a coaxial cable with a trace and a ground plane conductor of a microstrip flex circuit respectively, said coaxial cable to microstrip flex circuit connector comprising:

- a coaxial cable attachment portion mechanically attached to a plurality of coaxial cables, the coaxial cable attachment portion including a plurality of first electrical connectors, each of which is separately electrically connected to the center conductor of the coaxial cable and a plurality of second electrical connectors, each of which is electrically connected to at least one shielding conductor of the plurality of coaxial cables;
- a microstrip flex circuit attachment portion mechanically attached to a microstrip flex circuit having a plurality of traces, the microstrip flex circuit attachment portion including a plurality of third electrical connectors, each of which is separately electrically connected to a trace, and a plurality of fourth connectors, each of which is commonly connected to the ground plane conductor; and wherein:

the coaxial cable attachment portion and the microstrip flex circuit attachment portion mate with one another and when mated separately connect the first and third electrical connectors and the second and fourth electrical connectors.

5,509,828
L-SHAPED BULB SOCKET
Junji Muta, and Yoshiaki Furuta, both of Yokkaichi, Japan, assignors to Sumitomo Wiring Systems, Ltd., Japan
Filed Nov. 23, 1994, Ser. No. 344,489
Claims priority, application Japan, Nov. 25, 1993, 5-320945; Dec. 10, 1993, 5-341431
Int. Cl.⁶ H01R 13/436
U.S. Cl. 439—699.2

2 Claims



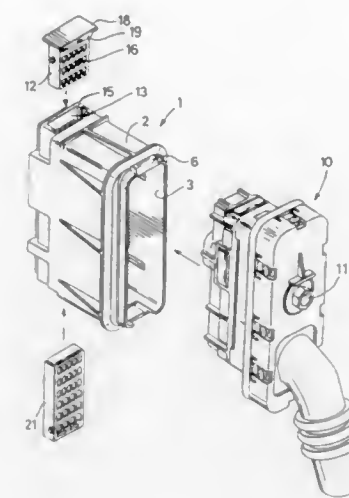
1. An L-shaped bulb socket comprising:
 - a housing having a bulb holding chamber, a connector chamber, a terminal insertion opening formed in a side wall of said connector chamber, and a retainer inlet port formed in a bottom wall of said connector chamber, said holding chamber being perpendicular to said connector chamber in said housing;
 - a pair of metal fixtures disposed in said chambers, each of said metal fixtures having a pair of bulb receiving pieces adapted to hold a respective terminal of a bulb and a coupling piece adapted to be connected to each terminal of a mating connector, said coupling piece being perpendicularly joined to said bulb receiving pieces; and
 - a retainer inserted through said retainer inlet port into an inner part of said connector chamber to be secured therein, said retainer being provided with apertures through which the respective coupling pieces pass.

5,509,829
RETAINER MOUNTING STRUCTURE OF CONNECTOR
Toshikazu Saba, Yokkaichi, Japan, assignor to Sumitomo Wiring Systems, Ltd., Mie, Japan
Filed Nov. 22, 1994, Ser. No. 346,232
Claims priority, application Japan, Nov. 25, 1993, 5-067942
Int. Cl.⁶ H01R 13/436

U.S. Cl. 439—752

11 Claims

1. A retainer mounting structure of a connector comprising:
 - a connector having metal terminals inserted respectively in cavities in said connector in a longitudinal direction, a retainer mounting hole in communication with said cavities extending inwardly from an outer surface of said connector in a direction normal to said longitudinal direction, an open end of said retainer mounting hole extending from the outer surface of said connector to form an extension portion, and
 - a retainer for retaining said metal terminals against withdrawal is fitted in said retainer mounting hole,



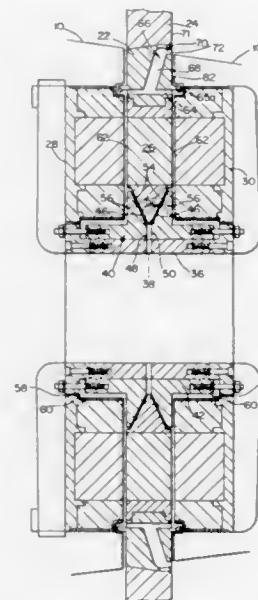
retainer having a flange that is abutted against the open end of the extension portion of said retainer mounting hole to close and seal said retainer mounting hole.

5,509,830
MARINE PROPULSOR COOLING AND LUBRICATING SYSTEM
Chester A. Garis, Jr., Gloucester, Va., assignor to Newport News Shipbuilding and Dry Dock Company, Newport News, Va.

Filed Aug. 23, 1994, Ser. No. 298,095
Int. Cl.⁶ B60L 11/02

U.S. Cl. 440—6

19 Claims



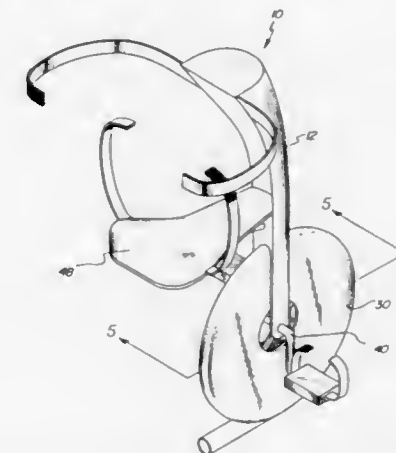
1. An improved cooling and lubricating system for a marine propulsor, the propulsor including an electric motor with a rotor, a bearing assembly supporting the rotor, and a blade assembly including a plurality of propulsor blades and a blade hub attached to the rotor, the cooling and lubricating system comprising:
 - an inlet means in said propulsor through which coolant/lubricant is supplied to the bearing assembly and the motor,
 - a passage means communicating with said inlet means through which the coolant/lubricant flows to cool and lubricate said bearing assembly and said motor, and
 - an outlet means communicating with said passage means located adjacent the trailing edge of the propulsor blade assembly

through which the coolant/lubricant is expelled, and wherein the outlet means is located in the trailing edge of the blade hub.

5,509,831
UNICYCLE FOR OPERATION IN WATER
Ida Gelbart, 64 Heritage Dr., San Rafael, Calif. 94901
Filed Aug. 14, 1995, Ser. No. 514,585
Int. Cl.⁶ B63H 16/20

U.S. Cl. 440—27

6 Claims



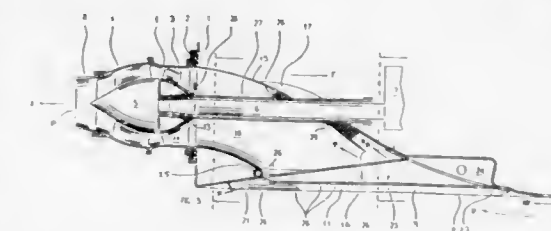
2. A unicycle for operation in water for remaining buoyant and propelling a user forward through water comprising, in combination:
 - a frame having buoyancy pads disposed therein, the frame having a yoke portion, the yoke portion having a pair of extending arms;
 - a hollow wheel having an intake opening formed through a central portion thereof, the hollow wheel having an impeller mechanism disposed therein, the hollow wheel having an exhaust pipe tangentially integral therewith extending outwardly therefrom, the hollow wheel positioned between the pair of extending arms of the yoke portion;
 - a pair of pedals rotatably coupling the hollow wheel to the pair of extending arms of the yoke through the intake opening;
 - a foam padded seat portion secured to the frame.

5,509,832
MARINE JET DRIVE
Paul W. Roos, 2033-F W. McNab Rd., Pompano Beach, Fla. 33069
Continuation-in-part of Ser. No. 699,336, May 13, 1991, Pat. No. 5,421,753, and a continuation-in-part of Ser. No. 338,651, Nov. 14, 1994. This application May 18, 1995, Ser. No. 443,728

U.S. Cl. 440—47

Int. Cl.⁶ B63H 11/103

15 Claims



1. A jet drive for propelling a vessel, comprising:
 - (a) a vessel engine;

- (b) a rotatable impeller coupled to the engine;
 (c) an impeller housing, the impeller being disposed therewithin;
 (d) a diffuser housing attached to the impeller housing;
 (e) a nozzle housing attached to the impeller housing;
 (f) a transom for supporting the impeller housing;
 (g) a fluid intake duct disposed in the drive forward of the impeller housing and having an intake opening and second opening, the second opening being connected to the transom, the intake opening being defined by a perimetrial edge of the duct, the edge having a first portion substantially flush with the bottom of the vessel and a second portion defining a trailing edge, the trailing edge being raised above the forward portion and a ramped surface part connecting the trailing edge and the lowest point of the transom, the ramp surface sloping downward fore to aft.

5,509,833

BOAT PROPULSION UNIT

Christian Rodskler, Torslanda, Sweden, assignor to AB Volvo Penta, Gothenburg, Sweden

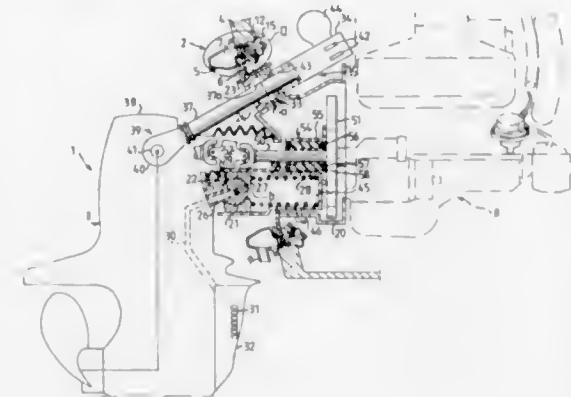
PCT No. PCT/SE93/00551, § 371 Date Feb. 1, 1995, § 102(e) Date Feb. 1, 1995, PCT Pub. No. WO94/00341, PCT Pub. Date Jan. 6, 1994

PCT Filed Jun. 22, 1993, Ser. No. 356,351

Claims priority, application Sweden, Jun. 22, 1992, 9201905 Int. Cl.⁶ B63H 20/08

U.S. Cl. 440—53

4 Claims



1. Boat propulsion unit intended to be suspended on the outside of a boat transom and driveably connected to an engine on the inside of the transom, said unit comprising a propeller drive shaft housing, a suspension arrangement intended to be fixedly secured to the transom, pivot means for pivotally connecting the drive shaft housing to the suspension arrangement to allow pivotal displacement of the drive shaft housing relative to the suspension arrangement about a first pivot axis in a vertical plane and a second pivot axis in a horizontal plane, steering means which is arranged to effect pivotal displacement of the drive shaft housing about said first axis, and trim and tilt means which is arranged to effect pivotal displacement of the drive shaft housing about said second axis, said suspension arrangement (2) including a frame member (5) which is intended to be fixed around an opening (12) in a boat transom (4), and a carrier (6) resiliently supported by the frame member and shaped so as to form a fly-wheel casing (20) adapted to be attached to an engine, said carrier covering the opening and supporting said pivot means.

5,509,834

BOAT PROPULSION UNIT

Christian Rodskler, Torslanda, Sweden, assignor to AB Volvo Penta, Gothenburg, Sweden

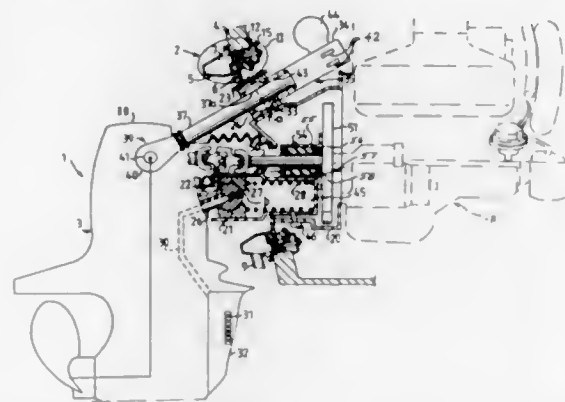
PCT No. PCT/SE93/00549, § 371 Date Feb. 1, 1995, § 102(e) Date Feb. 1, 1995, PCT Pub. No. WO94/00337, PCT Pub. Date Jan. 6, 1994

PCT Filed Jun. 22, 1993, Ser. No. 356,349

Claims priority, application Sweden, Jun. 22, 1992, 9201903 Int. Cl.⁶ B63H 5/12

U.S. Cl. 440—57

14 Claims



1. In a boat propulsion unit adapted to be suspended on the outside of a boat transom and driveably connected to an engine on the inside of the transom, said unit comprising a propeller drive shaft housing, a suspension arrangement adapted to be fixedly secured to the transom, pivot means which pivotally connects the drive shaft housing to the suspension arrangement to allow pivotal displacement of the drive shaft housing relative to the suspension arrangement about a pivot axis in a vertical plane and pivot axis in a horizontal plane, steering means which is arranged to effect pivotal displacement of the drive shaft housing about said first-mentioned axis, and trim and tilt means which is arranged to effect pivotal displacement of the drive shaft housing about said second-mentioned axis; the improvement wherein the pivot means comprises a first lower and a second upper universal joint (22, 24 resp.), of which the upper universal joint carries a powered actuator member (35) inclined to the horizontal and comprising a pair of components (34, 37) which are telescopically displaceable relative to each other and of which one of said components has a forked bracket (39) at an outer end, which bracket (39) grips an upper region (38) of the drive shaft housing (3) and is pivotally connected thereto for pivotal displacement about a horizontal pivot axis, the other component (34) of the actuator member (35) having an inner end at a distance from the upper universal joint, and at, or in the vicinity of, which end the other component has means (42) for connecting the component to a steering mechanism, by means of which the actuator member is displaceable about a pivot axis (a) lying in a vertical plane, thereby to pivot the drive shaft housing relative to the suspension arrangement.

5,509,835

TROLLING MOTOR QUICK-STOWAGE DEVICE

William A. Henderson, Starkville; Lynn E. Cook, III, Columbus, both of Miss., and Stephen P. Malak, Tulsa, Okla., assignors to Zebco Corporation, Tulsa, Okla.

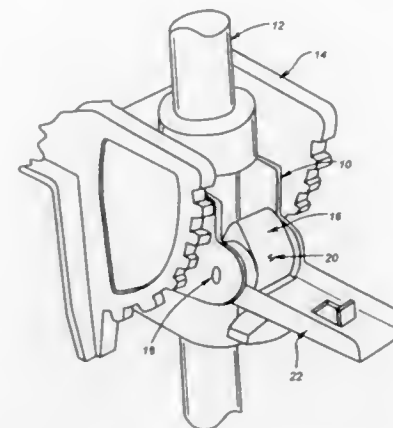
Filed Aug. 4, 1994, Ser. No. 285,854

Int. Cl.⁶ B63H 5/12

U.S. Cl. 440—63

12 Claims

1. A device for releasably locking a trolling motor in a desired position, comprising:
 means for supporting a trolling motor, wherein the trolling motor may be selectively moved in a direction substantially along its longitudinal axis at or between a first end position and a second end position, such that in the first end position,



the trolling motor propeller is in the water and in the second end position, the trolling motor propeller is out of the water; and
 means for selectively securing the trolling motor to said means for support;
 wherein said means for selectively securing the trolling motor comprises a cam which is mounted to a frame for selectively locking the trolling motor to said frame.

5,509,836

OUTBOARD MOTOR

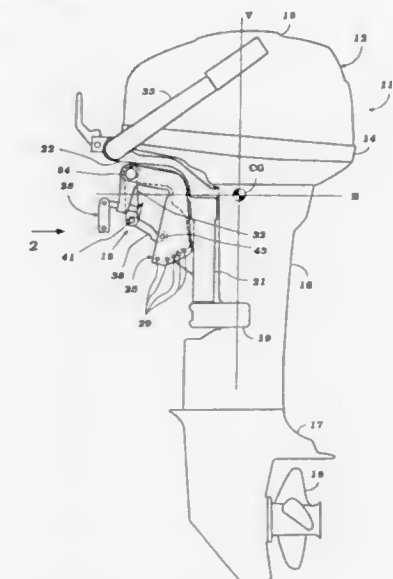
Takio Ogasawara, and Manabu Yamamoto, both of Hamamatsu, Japan, assignors to Sanshin Kogyo Kabushiki Kaisha, Hamamatsu, Japan

Filed Mar. 6, 1995, Ser. No. 399,207

Claims priority, application Japan, Mar. 7, 1994, 6-059830 Int. Cl.⁶ B63H 21/24

U.S. Cl. 440—76

10 Claims



1. An outboard motor having a power head containing a power internal combustion engine, a drive shaft housing and lower unit depending from said power head and containing a propulsion device driven by said internal combustion engine for propelling an associated watercraft, a swivel bracket pivotally connected to said drive shaft housing by a steering shaft for steering movement about an axis defined by said steering shaft, a clamping bracket comprised of a pair of spaced apart members adapted to be fixed to a transom of an associated watercraft for mounting said outboard motor on the watercraft, a horizontally extending trim pin pivotally connecting said clamping bracket to said swivel bracket for tilt and

trim movement of said outboard motor relative to the watercraft, a carrying handle disposed between said clamping bracket spaced apart members and depending from said tilt pin and having a gripping portion disposed forwardly of the center of gravity of said outboard motor and extending in a generally vertical direction for carrying of said outboard motor at the side of a user with his wrist in a normal position.

5,509,837

TRUSS SYSTEM ENGINE MOUNT FOR LIGHT WATERCRAFT

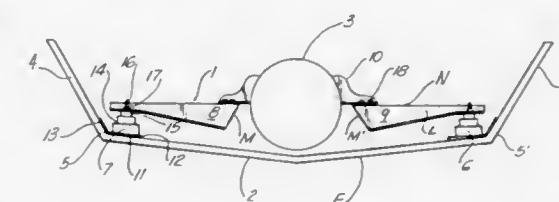
Walter E. Albright, Jr., 321 Magnolia La., Covington, La. 70433, and Tim Nowlin, 6815 Club Ridge Cir. 220, Memphis, Tenn. 38115

Filed Oct. 5, 1994, Ser. No. 318,281

Int. Cl.⁶ B63H 21/30

U.S. Cl. 440—111

4 Claims



1. A truss support system for mounting an inboard powerboat engine to a light marine craft having a hull having a longitudinal axis, the hull having side walls formed at opposing sides forming opposing chines, the chines juxtaposed the side walls and hull, the truss support comprising:

at least one beam support transversely situated relative to the longitudinal axis of said hull, said beam support having a mid-portion and two opposing end portions, said mid portion forming an engine mount means for mounting an engine, said engine mount means suspended above the longitudinal axis of the hull, so as to support said engine in spaced relationship above said hull, each of said opposing end portions being situated in spaced relationship above one of said opposing chines, and mounting means for mounting each of said opposing end portions to one of said chines in spaced relationship thereto, said mounting means further comprising a mounting bracket having a bracket base pad, said bracket base pad angled for bonding to both of a juxtaposed chine and side wall of said hull, a spacer member affixed to said bracket base pad, connection means for removeably connecting the distal end of said support beam to said mounting bracket, and dampening means juxtaposed said connection means and said bracket base pad, said dampening means for shock and vibration absorption.

5,509,838

LOADING/UNLOADING BUOY

Kare Breivik, Tau; Arne Smedal, Farvik, and Kare Syvertsen, Arendal, all of Norway, assignors to Den Norske Stats Oljeselskap A.S., Stavanger, Norway

PCT No. PCT/NO92/00056, § 371 Date Aug. 8, 1994, § 102(e) Date Aug. 8, 1994, PCT Pub. No. WO93/11033, PCT Pub. Date Jun. 10, 1993

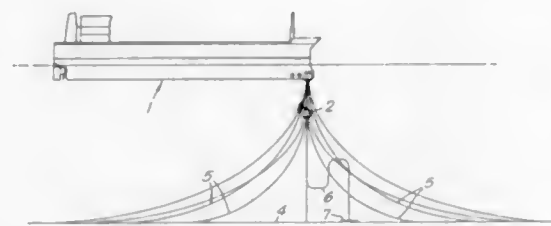
PCT Filed Mar. 30, 1992, Ser. No. 244,440

Claims priority, application Norway, Nov. 27, 1991, 914652 Int. Cl.⁶ B63B 27/34

U.S. Cl. 441—5

16 Claims

1. A buoy adapted for reception in a submerged downwardly open receiving space in a floating vessel for transfer of a flowable medium between a transfer line connected to said buoy and a tube system within said vessel, said buoy comprising:
 an outer buoyancy member,



means on said outer buoyancy member engageable by latch means within said receiving space for releasable securement of said buoy within said receiving space, at least a part of the outer shape of said outer buoyancy member being complementary to the inner shape of said receiving space, for forming a seal from the surrounding sea when said outer member is engaged in said space,

an inner member, comprising a tubular hollow shaft providing a passage for the flowable medium,

means rotatably mounting said inner member centrally in said outer member,

first and second connection means at respective ends of said passage for connection respectively to said transfer line and to said tube system, and

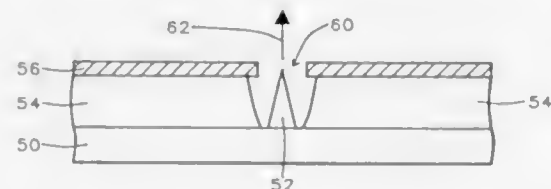
means on said buoy whereby said buoy can be hoisted into said receiving space by a line lowered therefrom.

5,509,839

SOFT LUMINESCENCE OF FIELD EMISSION DISPLAY
David N. Liu, Chutung, Taiwan, assignor to Industrial Technology Research Institute, Hsinchu, Taiwan
Filed Jul. 13, 1994, Ser. No. 274,416
Int. Cl.⁶ H01J 9/227

U.S. Cl. 445—24

6 Claims



1. A method of manufacturing a field emission device with a faceplate with soft luminescence, said faceplate to be mounted opposite to and parallel with a baseplate having a plurality of field emission microtips extending up from a substrate through openings formed in a sandwich structure of an insulating layer and a conductive layer, comprising the steps of:

forming an opaque layer over a glass plate;

patterning said opaque layer to form parallel patterns;

forming a conductive layer over said parallel patterns and over said glass plate;

patterning said conductive layer to form conductive patterns connected to and having a narrower width than said parallel patterns; and

forming layers of phosphorescent material over said conductive patterns and over said parallel patterns.

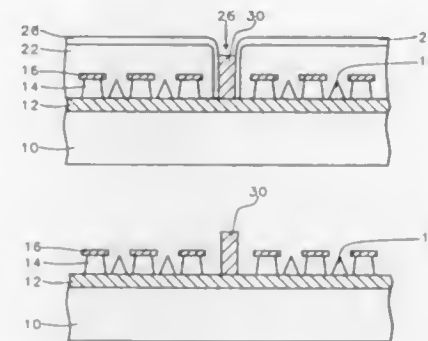
5,509,840
FABRICATION OF HIGH ASPECT RATIO SPACERS FOR FIELD EMISSION DISPLAY

Jammy C. Huang, Taipei, and David N. Liu, Hsinchu, both of, Taiwan, assignors to Industrial Technology Research Institute, Hsinchu, Taiwan

Filed Nov. 28, 1994, Ser. No. 345,942
Int. Cl.⁶ H01J 9/24

U.S. Cl. 445—24

33 Claims



1. A method of fabricating a field emission display having high aspect ratio spacers, comprising the steps of:

forming an array of field emission microtips over a substrate;

forming a layer of lithographic material over said array of field emission microtips;

forming openings in said layer of lithographic material;

forming a layer of non-outgassing material over the surface of said layer of lithographic material, including in said openings;

filling said openings with a non-outgassing spacer material; and

removing said layer of lithographic material and said layer of non-outgassing material.

5,509,841

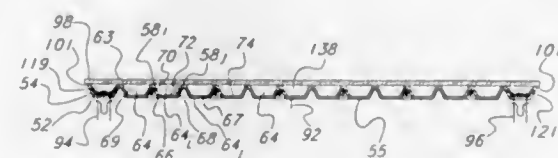
STAMPED METAL FLOURESCENT LAMP AND METHOD FOR MAKING

Mark D. Winsor, Olympia, Wash., assignor to Winsor Corporation, Seattle, Wash.

Division of Ser. No. 198,495, Feb. 18, 1994. This application
Apr. 4, 1995, Ser. No. 416,042
Int. Cl.⁶ H01J 9/24; 9/26

U.S. Cl. 445—26

19 Claims



10. A method of producing a planar fluorescent lamp comprising the steps of:

providing a metallic body material;

forming said body material into a formed body having a perimeter wall and a plurality of ridges therein, said ridges defining a channel having a first end and a second end;

coating substantially all of the interior of said stamped body with an insulative material;

placing a solder glass bead atop each of said ridges and atop the perimeter of the lamp body;

bonding a transparent first cover to said stamped body by heating the solder, such that said stamped body and said first cover form a first enclosure;

placing a material responsive to emit light energy in response to an electrical field within said first enclosure;

bonding a second cover in a fixed position overlaying said first cover with a gap between said first cover and said second

cover, such that said first cover and said second cover form at least two walls of a second enclosure;

placing a fluorescent material within said second enclosure;

fixedly attaching a pair of electrodes to said stamped body such that the electrodes extend into the first enclosure;

sealing said first enclosure to form a hermetically sealed enclosure; and

sealing the second enclosure.

focusing a plurality of excitation beams and introducing these excitation beams into a hermetically sealed atmosphere where electroconductive molecules are present; and

degrading the electroconductive molecules through excitation by the excitation beams in the hermetically sealed atmosphere to concurrently form needle-shaped materials on a substrate.

5,509,842

METHOD FOR PRE-STRESSING CRT TENSION MASK MATERIAL

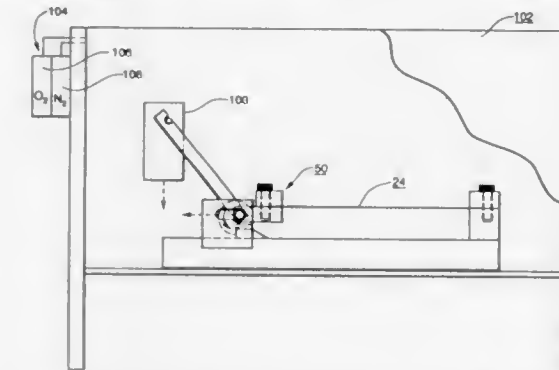
Richard W. Nosker, Princeton, N.J., assignor to RCA Thomson Licensing Corp., Princeton, N.J.

Filed Jun. 26, 1995, Ser. No. 494,660
Int. Cl.⁶ H01J 9/14

U.S. Cl. 445—37

10 Claims

U.S. Cl. 446—71



1. A method for pre-stressing CRT tension mask material to induce creep, including the steps of

a) applying a suitable force to said mask material to induce stress therein,

b) heating said mask material to an ultimate temperature and for a sufficient time, while under stress, to induce creep, and

c) cooling said mask material.

5,509,843

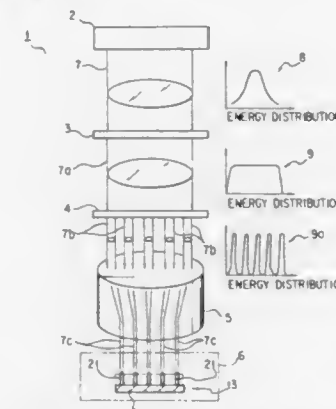
METHOD AND APPARATUS FOR MANUFACTURING NEEDLE SHAPED MATERIALS AND METHOD FOR MANUFACTURING A MICROEMITTER

Yoshiaki Akama, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed May 19, 1994, Ser. No. 246,332
Claims priority, application Japan, May 19, 1993, 5-117092
Int. Cl.⁶ H01J 1/30; 9/02

U.S. Cl. 445—50

17 Claims



1. A method for manufacturing needle-shaped materials on a substrate, comprising the steps of:

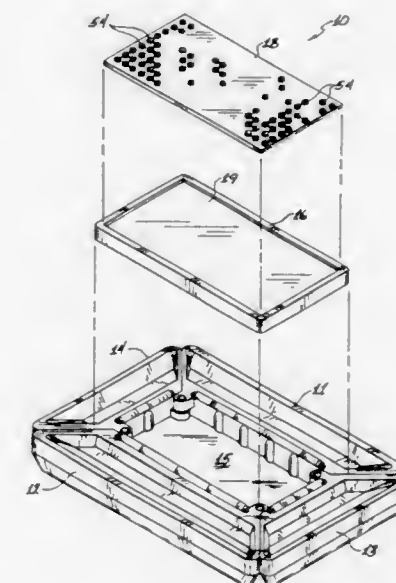
5,509,844
LEGLESS STORAGE AND PLAY TABLE FOR USE BY CHILDREN

Michael Poirier; Mariann Poirier; Evan Poirier, and Jordan Poirier, all of 61-37th Street, Toronto, Ontario M8W 3L5, Canada

Filed Dec. 30, 1994, Ser. No. 366,839
Int. Cl.⁶ A63H 33/00; 33/04; 33/30

U.S. Cl. 446—71

6 Claims



1. A legless storage and play table for use by children, comprising:

a first member operatively arranged to form a first side of said table, said first member having a trough-like section extending outwardly with respect to said table;

a second member operatively arranged to form a second side of said table in parallel spaced relationship to said first side, said second member having a trough-like section extending outwardly with respect to said table;

a third member operatively arranged to form a third side of said table positioned perpendicularly to said first and second sides, said third member having a trough-like section extending outwardly with respect to said table;

a fourth member operatively arranged to form a fourth side of said table in parallel spaced relationship to said third side, said fourth member having a trough-like section extending outwardly with respect to said table;

fastening means for connecting the four members together to form a rectangularly shaped table, wherein said fastening means comprise flexible mortises;

a bottom member operatively arranged to be secured to at least two of said side members;

wherein said four members and said bottom member define a storage chamber; and,

a top member having a plurality of tenons operatively arranged to engage said flexible mortises to secure said top member to the side members of the table.

5,509,845

Patent Not Issued For This Number

5,509,846

DISPOSABLE BIODEGRADABLE BEE HIVE

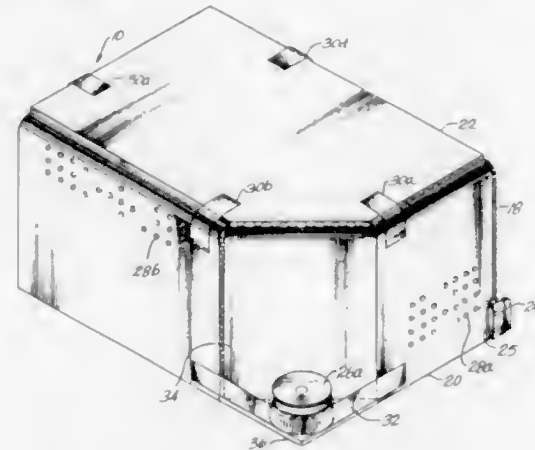
Thomas C. Kueneman, Freedom; Richard D. Nelson, and Steven D. Nelson, both of Watsonville, all of Calif., assignors to Bees West, Inc., Freedom, Calif.

Filed Nov. 28, 1994, Ser. No. 345,582

Int. Cl.⁶ A01K 47/00; 47/06

U.S. Cl. 449—11

12 Claims



1. A beehive comprising:
an enclosure formed of wax-coated cardboard;
an entrance/exit hole in the enclosure;
closure means for covering the entrance/exit hole in the enclosure;
ventilation holes in the enclosure, the holes being small relative to the size of a bee;
a nest pocket inside the enclosure; and
a float feeder comprising a main body, and
a feeder element, wherein the float feeder is mounted on the enclosure such that the main body of the feeder is external to the enclosure while the feeder element is internal to the enclosure.

5,509,847

CONTROL ROBOT

Makoto Jinno, Kanagawa, and Takashi Yoshimi, Tiba, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Division of Ser. No. 661,309, Feb. 27, 1991, Pat. No.

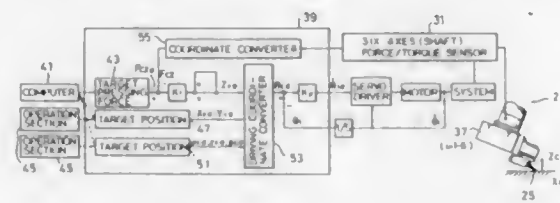
5,265,195. This application Apr. 20, 1993, Ser. No. 49,426

Claims priority, application Japan, Feb. 27, 1990, 2-44550; Jun. 7, 1990, 2-147497; Oct. 9, 1990, 2-269600

Int. Cl.⁶ B24B 49/02

U.S. Cl. 451—11

8 Claims



1. A force control robot for detecting pressing force to be applied from a machining tool attached at a robot arm to a work to be

machined, and controlling the detected pressing force to be a target pressing force, comprising:

- (a) detection means for detecting counterforce to the pressing force applied to the machining tool; and
(b) arithmetical operation means for obtaining moment about a center of gravity of the machining tool by shifting a detection position at which the counterforce is detected by the detection means to a center of gravity of the machining tool so that the detection point apparently overlaps the center of gravity, for calculating the pressing force applied from the machining tool to the work based on the moment, and for controlling operation of the machining tool so that the pressing force applied to the work substantially coincides with the target pressing force.

5,509,848

METHOD OF AND APPARATUS FOR POLISHING PAINTED SURFACES

Yoshimi Shimbara, Hiroshima, Japan, assignor to Mazda Motor Corporation, Hiroshima, Japan

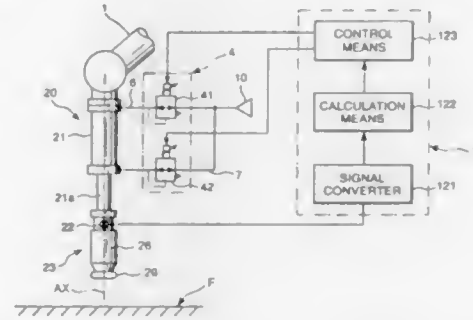
Filed Nov. 10, 1993, Ser. No. 149,814

Claims priority, application Japan, Nov. 10, 1992, 4-299692; Jan. 20, 1993, 5-007712

Int. Cl.⁶ B24B 49/00

U.S. Cl. 451—24

8 Claims



1. An apparatus for polishing a surface comprising:
a polishing tool connected so as to be directed perpendicularly to a surface;
a pressure cylinder for applying a predetermined polishing pressure and controlled by regulation of a pressure introduced into the pressure cylinder;
angle sensor means disposed between said pressure cylinder and said polishing tool for detecting an angular inclination of said polishing tool with respect to a horizontal plane; and
control means for (1) determining a difference between an effective load of said polishing tool, defined as a dead weight of said polishing tool when inclined at said angular inclination, and a standard load of said polishing tool, defined as a dead weight of said polishing tool when positioned vertically, and (2) regulating the pressure introduced into the pressure cylinder responsive to the determined difference.

5,509,849

BLAST NOZZLE FOR WATER INJECTION AND METHOD OF USING SAME FOR BLAST CLEANING SOLID SURFACES

William E. Spears, Jr., Lawrenceville, N.J., assignor to Church & Dwight Co., Inc., Princeton, N.J.

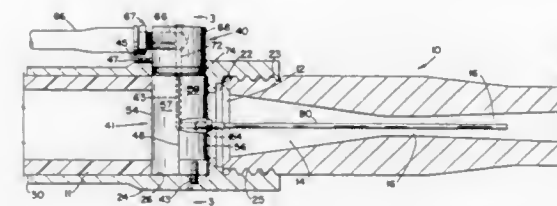
Filed Apr. 18, 1994, Ser. No. 229,468

Int. Cl.⁶ B24B 1/00; B24C 1/00

U.S. Cl. 451—40

16 Claims

1. An apparatus for directing a particulate abrasive against a targeted surface for cleaning contaminants therefrom, comprising:
a blast nozzle having a longitudinal bore therethrough for accelerating a stream of abrasive particles in compressed air, said bore



comprising an inlet for receiving said stream, a converging section immediately downstream of said inlet, an orifice downstream of said converging section and a diverging section downstream of said orifice, said diverging section leading to an outlet, and a water injection means for injecting a stream of pressurized water directly into the stream of abrasive particles and compressed air at a point downstream of said orifice and in said diverging section, said injection means injecting said water coaxially with said stream of abrasive particles and compressed air.

9. A process for blast cleaning a surface to remove contaminants therefrom comprising accelerating a stream of abrasive particles and compressed air through a blast nozzle, said blast nozzle comprising a longitudinal bore therethrough having an inlet, a converging section downstream of said inlet, an orifice downstream of said converging section and a diverging section downstream of said orifice leading to an outlet, injecting a pressurized water stream into said stream of abrasive particles and compressed air at a point downstream from said orifice and in said diverging section coaxially with the flow of said stream of abrasive particles and compressed air through said blast nozzle.

5,509,850

POLISHING APPARATUS

Izuru Morioka, and Kiyoshi Yui, both of Tokyo, Japan, assignors to Nihon Micro Coating Co., Ltd., Japan

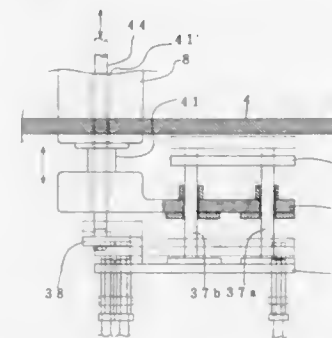
Filed Jun. 24, 1994, Ser. No. 265,281

Claims priority, application Japan, Dec. 13, 1993, 5-341224

Int. Cl.⁶ B24B 9/00; 5/00; 21/00

U.S. Cl. 451—168

7 Claims



1. In combination with a polishing tape, an apparatus for polishing an object with said tape, said apparatus comprising:
a motor having a rotary shaft which is tubular, having an axially extending throughhole therethrough;
an inner shaft slidably disposed inside said throughhole, both ends of said inner shaft protruding from said rotary shaft;
a first plate attached to one end of said inner shaft;
at least two guide rollers supported by said first plate for stretching said tape therebetween;
a second plate attached perpendicularly to said rotary shaft;
reciprocating means for moving said inner shaft reciprocatingly through said rotary shaft along said throughhole; and
connecting means for connecting said first and second plates such that said first and second plates can move selectively towards or away from each other while remaining parallel to each other.

5,509,851

MOISTURE-COLLECTING HOOD ASSEMBLY

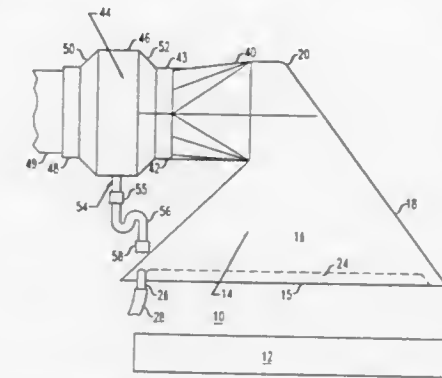
Albert V. Heuschkel, Skillman; Joseph W. Kaczorek, Neshaic Station, and Edward M. Olbrick, Ewing, all of N.J., assignors to AT&T Corp., Murray Hill, N.J.

Filed Dec. 1, 1994, Ser. No. 348,008

Int. Cl.⁶ B08B 15/02

U.S. Cl. 454—67

6 Claims



1. A moisture-collecting hood assembly comprising:
a hood having sides and ends that taper upwardly from an opening at the base of the hood, the opening in the hood overlying a vapor-generating machine;
a gutter inside of the hood that rims generally horizontally along the hood sides and ends for collecting moisture that may condense on the inside of the hood;
a first drainage means coupled to the gutter for draining the moisture collected in gutter
an exhaust port extending generally horizontally through one of the hood sides and hood ends above the level of the gutter;
moisture-collecting means having a hollow central portion and an inlet and outlet, each of a smaller cross-sectional area than the central portion for communication therewith, the inlet coupled to the exhaust port and the outlet coupled to an exhaust line that is negatively pressurized so that vapor in the hood will be exhausted through the moisture-collecting means and into the exhaust line while moisture in the exhausted vapor that condenses inside of the central portion will be collected at its bottom; and
second drainage means coupled to the bottom of the central portion of the moisture-collecting means for draining away the collected moisture.

5,509,852

AUTOMOBILE INTERIOR VENTILATOR WITH VOICE ACTIVATION

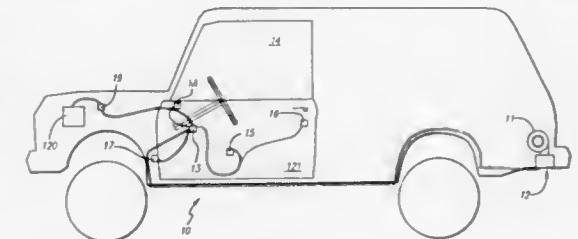
Darrell Clark, 1041 E El Freda, Tempe, Ariz.

Filed May 27, 1994, Ser. No. 250,288

Int. Cl.⁶ B60H 1/26

U.S. Cl. 454—75

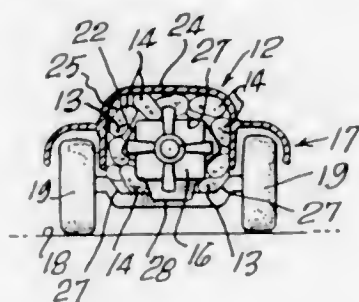
9 Claims



1. A process for ventilating the interior of an automobile comprising:
rolling down a window on a driver's side of a vehicle upon the receipt of an indication of the opening of a door on the driver's side of the vehicle;

activating a means for conveying air from the inside of a vehicle cabin to the outside, wherein the means for conveying air is located near the rear of the vehicle, such that outside air replaces the air conveyed from the inside of a vehicle cabin to the outside, and the outside air passes through a location where a driver sits to effect evaporation.

5,509,853
METHOD AND MANUFACTURE FOR PURIFYING THE ATMOSPHERE
Del Wells, 250 S. Orchard, Burbank, Calif. 91506
Filed Jul. 11, 1994, Ser. No. 272,934
Int. Cl.⁶ B60H 3/06; F24F 13/28
U.S. Cl. 454—370 12 Claims



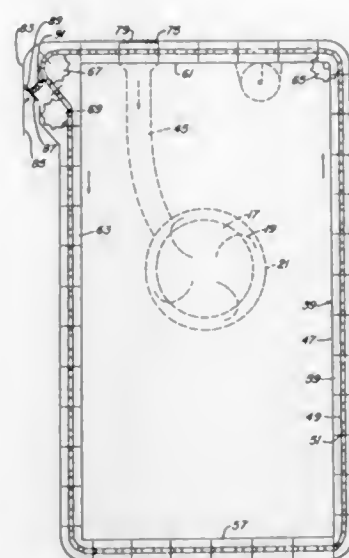
1. In combination with a vehicle adapted for moving through an atmosphere of ambient air that is polluted with particulate, an ambient air purifying means comprising a plurality of members having a filtering substance that entraps and retains the particulate, an envelope having a chamber within a mesh forming openings, a plurality of intersticed receptacles, said receptacles being loosely disposed and situated in the chamber of said envelope, said plurality of members being loosely-gathered-together and held in each of said receptacles for entrapping and retaining the particulate in the operation of the invention, said purifying means mounted amid said vehicle at at least one location exposing said purifying means to the flow of polluted ambient air in the movement of the vehicle through such air.

5,509,854
COMBINE ELEVATOR SYSTEM
Mark R. Underwood, Burr Oak, Kans., assignor to Deere & Company, Moline, Ill.
Division of Ser. No. 245,369, May 18, 1994, Pat. No. 5,453,050, which is a continuation-in-part of Ser. No. 80,291, Jun. 21, 1993, Pat. No. 5,380,247. This application Sep. 25, 1995, Ser. No. 533,644
Int. Cl.⁶ A01F 12/52 4 Claims

1. An improved method of returning tailings in a grain combine having a rotating threshing rotor which threshes grain from crop, a sieve section which separates chaff from the grain received from the rotor, a storage bin, a clean grain conveyor which transports clean grain which passes through the sieve section to the storage bin, and a tailings conveyor which transports partially threshed tailings which fail to pass through the sieve section to a chute located above the rotor, the tailings moving through the chute into the rotor for rethreshing, the method comprising:

providing a window in the tailings conveyor adjacent the chute and creating a downdraft due to rotation of the rotor to facilitate movement of the tailings through the chute.

3. An improved method of conveying grain products in a grain combine having a rotating threshing rotor which threshes grain from crop, a sieve section which separates chaff from the grain received from the rotor, and a storage bin, the method comprising:

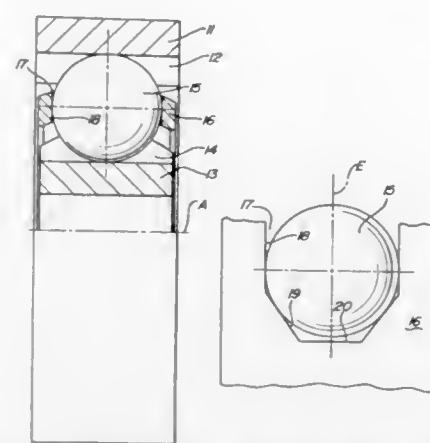


providing an elevator housing assembly which has a lower section extending below the sieve sections, an upper section extending over the storage bin, an ascending side section joining the upper and lower sections on one side of the combine, and a descending side section joining the upper and lower sections on another side of the combine, defining a continuous path; mounting a continuous drive linkage around the continuous path; mounting a plurality of spaced apart paddles to the linkage, defining compartments for conveying grain products picked up from the sieve section; providing a jammed product discharge chamber at the junction of the upper section and descending section of the elevator housing assembly, and providing the discharge chamber with a discharge opening on its lower end; mounting a trap door in the discharge chamber above the discharge opening; driving the linkage, receiving into the compartments grain products from the sieve section and transporting at least some of the grain products to the storage bin; and determining if an excessive quantity of the grain products enters the discharge chamber, then if so, opening the door and discharging the grain products in the discharge chamber onto the ground.

5,509,855
CONSTANT VELOCITY UNIVERSAL BALL JOINT WITH NOISE-REDUCING CAGE STOP FACES
Hans Wormbsäcker, Dreieich; Dieter Burghardt, Wiesbaden, and Wolfgang Löbel, Frankfurt, all of, Germany, assignors to GKN Automotive AG, Lohmar, Germany
Filed May 7, 1993, Ser. No. 59,826
Claims priority, application Germany, May 9, 1992, 42 15 218.6

Int. Cl.⁶ F16D 3/224 3 Claims

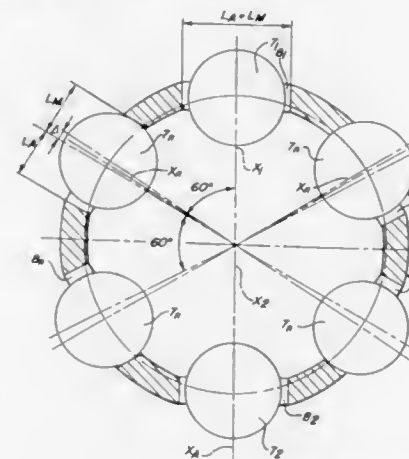
1. A constant velocity universal ball joint comprising: an outer joint part with substantially longitudinally extending outer ball tracks; an inner joint part with substantially longitudinally extending inner ball tracks, said tracks in the outer joint part and inner joint part being positioned radially opposite one another to form pairs; torque-transmitting balls being received in said track pairs; a ball cage including circumferentially distributed cage windows, said cage holding the balls in a common plane and guiding said balls on to the angle-bisecting plane when the joint is articulated, said cage windows having a greater extent



sion than said balls in the circumferential direction and narrowing at their ends, opposed flanks of said cage windows jointly forming a stop relative to the respective balls during a relative circumferential displacement between the ball cage and the balls.

5,509,856
CONSTANT VELOCITY UNIVERSAL BALL JOINT WITH ASYMMETRIC CAGE
Hans-Heinrich Welsch, Rodenbach, Germany, assignor to GKN Automotive AG, Lohmar, Germany
Filed Oct. 13, 1993, Ser. No. 135,747
Claims priority, application Germany, Oct. 14, 1992, 42 34 488.3

Int. Cl.⁶ F16D 3/224 5 Claims

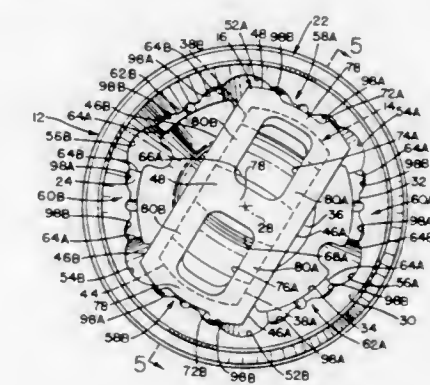


1. A constant velocity universal ball joint comprising: an outer joint part with first ball tracks in an inner recess of said outer joint parts; an inner joint part with second ball tracks on an outer surface of said inner joint part, the first and second tracks being uniformly circumferentially distributed and arranged opposite one another in pairs and each pair receiving a torque transmitting ball; a ball cage holding the balls in a common plane, said cage including windows whose number corresponds to the number of balls and in which the balls are arranged so as to be circumferentially movable, said ball cage windows having radial center lines bisecting their circumferential length, said ball cage windows being unevenly distributed across the cage circumference, said windows including at least one first window having a first radial center line, and further windows having further radial center lines respectively, said cage having a radial first reference axis through the cage center and a

transverse radial second reference axis through the cage center, perpendicularly intersecting said first reference axis, and reference radii with an equal angular spacing, each of said reference radii intersecting one of said windows, said first radial center line coinciding with said first reference axis; and one of said reference radii coinciding with said first reference axis, and all of said further center lines, which do not coincide with said second reference axis, having a shorter angular distance from said first reference axis than the one of said reference radii intersecting said windows.

5,509,857
CONSTANT VELOCITY UNIVERSAL JOINT
David C. Flaugh, Midland, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Dec. 17, 1993, Ser. No. 168,242
Int. Cl.⁶ F16D 3/224 2 Claims

U.S. Cl. 464—145

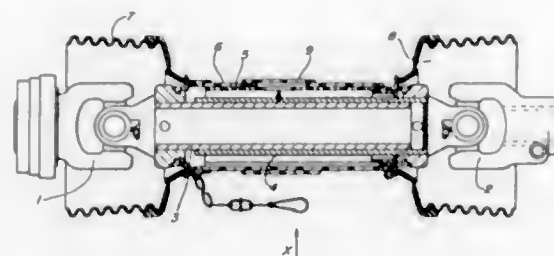


1. A non-stroking constant velocity universal joint comprising: an outer joint element having a cup with an open end symmetric about a longitudinal centerline of said outer joint element, a spherical inner wall terminating at a front edge at said open end of said cup, a plurality of internal ball grooves in said inner wall, and a plurality of partitions separating said internal ball grooves; a cage having a pair of side edges, a spherical outside surface between said edges adapted for disposition in and slidable coaction with said spherical inner wall of said cup, and a plurality of ball apertures for register with said internal ball grooves separated on opposite sides from said pair of side edges by a pair of axial webs of said cage; and means defining a pair of notches in said inner wall on opposite sides of a selected one of said plurality of partitions extending from said front edge to a centerplane of said inner wall perpendicular to said longitudinal centerline of said outer joint element for providing clearance for said pair of axial webs on opposite sides of said selected one of said plurality of ball apertures in said cage so that pair of axial webs do not obstruct translation of said cage into said cup.

5,509,858
DRIVESHAFT WITH CLOSABLE MAINTENANCE APERTURE IN PROTECTIVE TUBES
Hubert Grosse-Entrup, Lohmar, Germany, assignor to GKN Walterscheid GmbH, Lohmar, Germany
Filed May 19, 1994, Ser. No. 245,568
Claims priority, application Germany, May 22, 1993, 43 17 167.2

Int. Cl.⁶ A01B 71/08; F16P 1/00 6 Claims

1. A driveshaft for agricultural machinery comprising: two protective tubes arranged axially movable one inside the other and serving to cover length adjustable parts;



an aperture in each of said two protective tubes, and when the protective tubes are inside one another, said apertures are in an overlapping position to form a maintenance aperture;
a closing sleeve, with radial pretension, positioned on an outer tube of the two protective tubes, said closing sleeve, towards one of its two end faces, including a radially inwardly projecting cam which extends through the aperture in the outer protective tube, said cam projects towards the inner protective tube, which, when in an overlapping position with the aperture of the inner protective tube, said cam extends radially into said inner protective tube aperture and which, when said apertures do not overlap, said cam is supported on the outer face of the inner protective tube in a friction-generating manner.

5,509,859

LEASH WITH SOUND

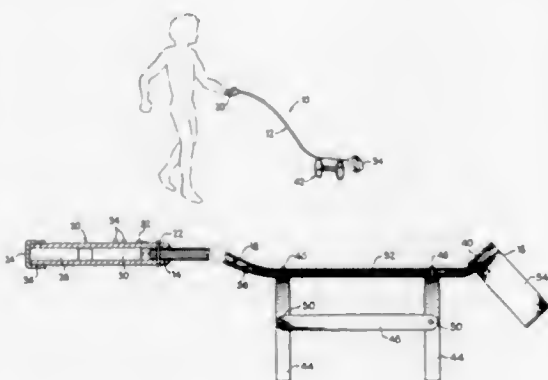
Daniel J. Klees, 224 W. Park St., Mundelein, Ill. 60060, and Terri Shepherd, Mundelein, Ill., assignors to Daniel J. Klees, Mundelein, Ill.

Filed Jul. 29, 1995, Ser. No. 496,601

Int. Cl.⁶ A63J 5/04

U.S. Cl. 472—64

8 Claims



I. A novelty item comprising:
an elongated, hollow member having opposed ends;
a handle adjacent one end of the member;
a collar adjacent the other end of the member opposite the handle;
a speaker carried adjacent the end of the member opposite the handle;
means obscuring the speaker from view;
electronic sound producing circuitry carried by the handle;
a battery power source;
means for electrically connecting the sound producing circuitry and the speaker carried within the elongated member and obscured from view; and
means for manually actuating the sound producing circuitry carried by the handle.

5,509,860

POWERSHIFT GEAR BOX, IN PARTICULAR TWO-SPEED EPICYCLIC GEAR BOX

Jürgen Legner, Friedrichshafen, Germany, assignor to ZF Friedrichshafen AG, Friedrichshafen, Germany
PCT No. PCT/EP93/02421, § 371 Date Jan. 25, 1995, § 102(e) Date Jan. 25, 1995, PCT Pub. No. WO94/07060, PCT Pub. Date Mar. 31, 1994

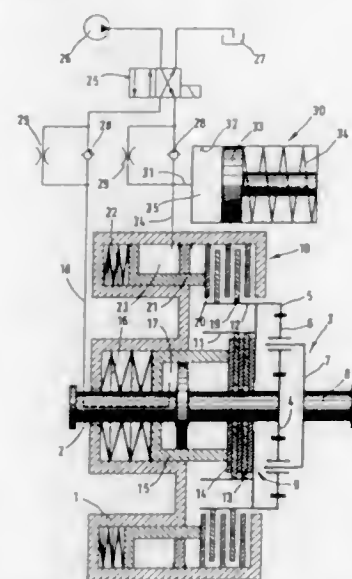
PCT Filed Sep. 8, 1993, Ser. No. 356,331

Claims priority, application Germany, Sep. 12, 1992, 42 30 622.1

Int. Cl.⁶ F16H 3/54; 61/06

U.S. Cl. 475—129

4 Claims



I. A powershift epicyclic transmission (3) having two speeds, the gear steps of which are alternatively engaged by hydraulically actuated friction clutches (9, 10), wherein friction elements (13, 14 and 19, 20) of said friction clutches (9, 10) are engaged by spring force (16, 22) and disengaged by oil pressure, wherein pipes (18, 24) lead to pressure chambers (17, 23) of said friction clutches (9, 10), check valves (28) having throttles (29) connected in parallel are inserted in said pipes (18, 24), wherein an accumulator (30) is attached to at least one of said pipes (18), which accumulator is filled with hydraulic fluid during disengagement of said friction clutch (9) and emptied via a throttle point (29) during engagement of said friction clutch (9) so that in at least one of said friction clutches (9 or 10) a full spring force (16 or 22) does not act upon said friction elements (13, 14 and 19, 20) after overcoming release play of said friction elements (13, 14 and 19, 20).

5,509,861

ECCENTRIC MOTION TRANSMITTING DEVICE WITH PINS GYRATING WITHIN RESPECTIVE STATIONARY CIRCULAR OPENINGS

Andrzej B. Wacinski, Massongex, Switzerland, assignor to Plumettaz SA, Bex, and Unipat AG, Glarus, both of, Switzerland

PCT No. PCT/GB93/00078, § 371 Date Sep. 14, 1994, § 102(e) Date Sep. 14, 1994, PCT Pub. No. WO93/14332, PCT Pub. Date Jul. 22, 1993

PCT Filed Jan. 14, 1993, Ser. No. 256,555

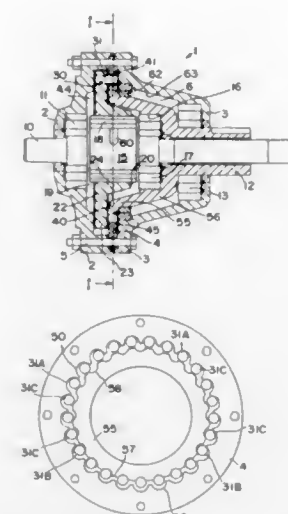
Claims priority, application United Kingdom, Jan. 18, 1992, 9201112

Int. Cl.⁶ F16H 1/32

U.S. Cl. 475—162

11 Claims

I. A motion transmitting device including a housing structure comprising gear means attached to an output shaft; a carrier rotatably supported on an input shaft driven eccentric, the carrier having a generally circular array of longitudinal pins mounted



to the carrier through the input face gears, said carrier absorbing the separating forces and said housing being free from the separating forces.

5,509,863

TRANSMISSION DEVICE, ESPECIALLY FOR BOAT MOTORS

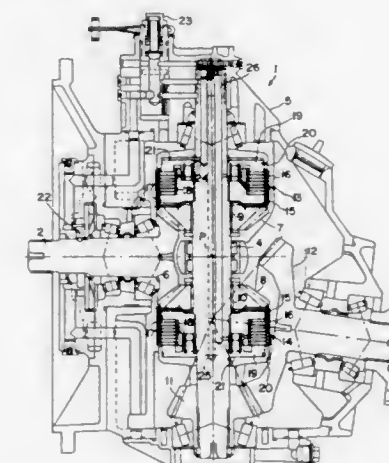
Staffan Månsson, Hjärtaby, and Benny Hedlund, Hönö, both of, Sweden, assignors to AB Volvo Penta, Gothenburg, Sweden
PCT No. PCT/SE92/00627, § 371 Date Mar. 8, 1994, § 102(e) Date Mar. 8, 1994, PCT Pub. No. WO93/05317, PCT Pub. Date Mar. 18, 1993

PCT Filed Sep. 11, 1992, Ser. No. 204,272

Claims priority, application Sweden, Sep. 12, 1991, 9102646 Int. Cl.⁶ F16H 3/14

U.S. Cl. 475—273

7 Claims



thereon such that the pins project from the carrier for intermittent engagement with the gear means; and a reaction plate fixed to the housing structure of the device and having a plurality of open mouthed openings for intermittent engagement with the pins and where the reaction plate and the carrier being constructed and disposed relative to each other such that relative gyratory movement transverse to the pin axes causes the pins and the gear means to engage and disengage to cause relative rotation of the gear means, wherein the respective dimensions of the pins and openings are such that each pin always engages the same opening.

5,509,862

RIGHT ANGLE DIFFERENTIAL DRIVE GEAR ASSEMBLY

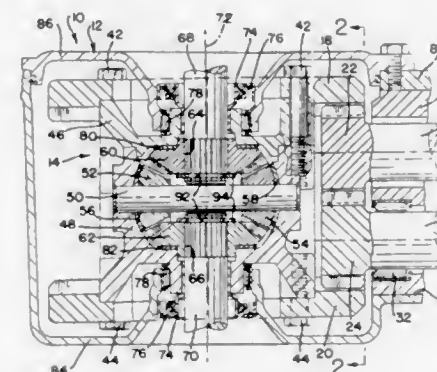
James F. Sherman, Brighton, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Dec. 19, 1994, Ser. No. 359,684

Int. Cl.⁶ F16H 37/06; 57/00; 48/06

U.S. Cl. 475—230

2 Claims



I. A right angle gear assembly comprising:

a housing;
an input shaft;
an idler shaft;
bearing means for rotatably mounting said input shaft and said idler shaft in said housing;
first and second gears meshing and disposed for continuous rotation with the input shaft and idler shaft, respectively, and generating separating forces on said meshing gears;
a gear carrier rotatably disposed in the housing; and
first and second input face gears secured TO said carrier and disposed in meshing relation with said first and second gears respectively at diametrically opposed locations on said first and second gears with the separating forces being transmitted

I. In a transmission device in an outboard drive unit for boats, comprising a first shaft having a first bevel gear wheel non-rotatably fixed on the shaft and a second shaft the rotational axis of which intersects the rotational axis of the first shaft and having two bevel gear wheels rotatably journaled on the second shaft and lockable on the second shaft by means of clutch means, said two gear wheels meshing with the first gear wheel, one of said shafts being an input shaft adapted to be connected to an engine, the other shaft being an intermediate shaft having a gear wheel meshing with a gear wheel on an output shaft; the improvement wherein the clutch means (13, 14) are multi-disk clutch means which are disposed outside a space formed between the rotatably journaled gear wheels (7, 8), the multi-disk clutch means (13, 14) being wet multi-disk clutches having disk packets compressible by a piston (19) for each packet, said piston being displaceable in a cylinder (20), which via an operating valve (23) communicates with a hydraulic pump (22) driven by one of said input and intermediate shafts (2, 4).

5,509,864

SPLIT RING AXIAL POSITIONER FOR PLANETARY GEAR ASSEMBLY

Kenneth C. Hauser, Canton, Mich., assignor to General Motors Corporation, Detroit, Mich.

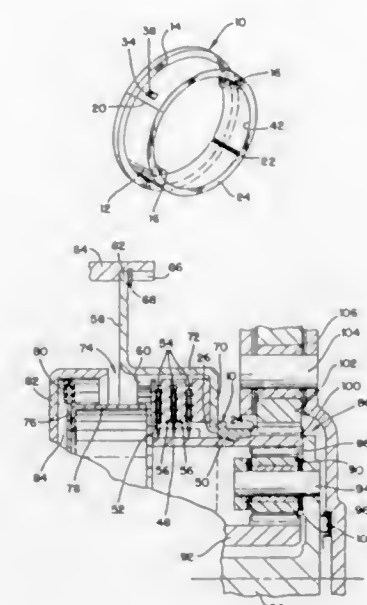
Filed Dec. 22, 1994, Ser. No. 362,225

Int. Cl.⁶ B25G 3/00; F16H 3/44; 57/08

U.S. Cl. 475—316

2 Claims

I. In combination, a gear assembly and positioner comprising:
a housing;
a friction engaging device having one portion drivingly connected with the housing;
a ring gear having a hub extension comprising another portion of the friction engaging device and a gear portion;



1. A power transmission comprising:
 an input shaft;
 a positioner disposed between the ring gear and the one portion comprising:
 an annular flange portion disposed for abutment with said one portion;
 a sleeve extending axially from the flange circumjacent a portion of the hub extension intermediate the one portion and the gear portion and having an end face disposed for abutment with the gear portion;
 an axial extending split extending through the flange portion and the sleeve;
 a hinge diametrically opposite the axial split for permitting opening, if the positioner at the split for motivating on the hub extension;
 hook and opening latching means for removably securing said positioner at the axial split, and locating means on said positioner and said hub for limiting rotary movement of the positioner relative to the hub, said positioner being disposed to maintain a minimum distance between the gear portion and the one portion.

5,509,865

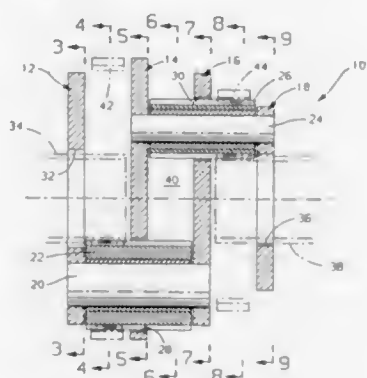
PLANET GEAR ASSEMBLY WITH A PLANETARY CARRIER

Arthur Hall, III, Cicero, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Dec. 14, 1994, Ser. No. 355,573
Int. Cl.⁶ F16H 57/08

U.S. Cl. 475—340

9 Claims



1. A power transmission comprising:
 an input shaft;

- an output shaft; and
 gear means for interconnecting the input shaft and the output shaft through a plurality of selectively actuated gear ratios, said gear means including a planetary gear assembly comprising:
 a planet carrier assembly having two sets of pinion gears disposed in intermeshing relation with one set of pinion gears rotatably disposed on a first set of support members secured in spaced first and second side plates, the other set of pinion gears being rotatably disposed on a second set of support members secured in third and fourth side plates, said third side plate being disposed axially between said first and second side plates and having openings formed therein to provide clearance for said one set of pinion gears, said second side plate being disposed between said third and fourth side plates and having openings formed therein to provide clearance for said other set of pinion gears, and said one set of pinion gears meshing with said other set of pinion gears only in a space between said second and third side plates; and
 means for connecting the side plates with the output shaft.

5,509,866

EPICYCLICAL GALACTIC CLUSTER GEARING SYSTEM

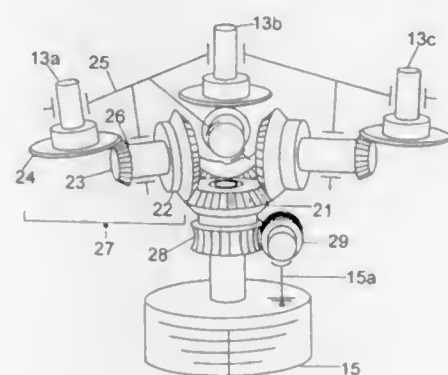
Gerald N. Weightman, Rockford, Ill., assignor to Univerg Research Netwrg, Ltd., Rockford, Ill.

Filed Jun. 28, 1994, Ser. No. 266,690

Int. Cl.⁶ F16H 3/50; 3/56; 3/68

U.S. Cl. 475—343

3 Claims



1. An epicyclic galactic cluster gearing system comprising:
 generally tubular stationary support member;
 single miter or bevel gear journaled about the central axis of said stationary support member;
 single worm gear member rigidly attached to and having its central axis conjunctive with the central axis of said single miter or bevel gear;
 single worm member intimately meshed with said single worm gear member;
 second stationary support member journaled about the central axis of said single worm member;
 a plurality of independent gear trains each said independent gear train having a proximate second miter or bevel gear generally perpendicularly intimately meshed with said single miter or bevel gear;
 a distal third miter or bevel gear having its central axis conjunctive with, parallel with, or at crossing axis with said second miter or bevel gear;
 a connecting joint string joining said proximate second miter or bevel gear about its central axis with the central axis of said distal third miter or bevel gear;
 a fourth miter or bevel gear generally perpendicularly intimately meshed with said distal third miter or bevel gear;
 a generally tubular protruding connecting means emanating from rear face of said fourth miter or bevel gear whereby the

central axis of said tubular protruding connecting means is conjunctive with the central axis of said fourth miter or bevel gear;

- a rotatable tentacled support member having its central axis conjunctive with the central axis of said single miter or bevel gear whereby said tentacled support member gives journaled support to single miter or bevel gear and to pluralities of independent gear trains.

5,509,867

ENGINE FLYWHEEL TORQUE DETERMINATION METHOD/SYSTEM

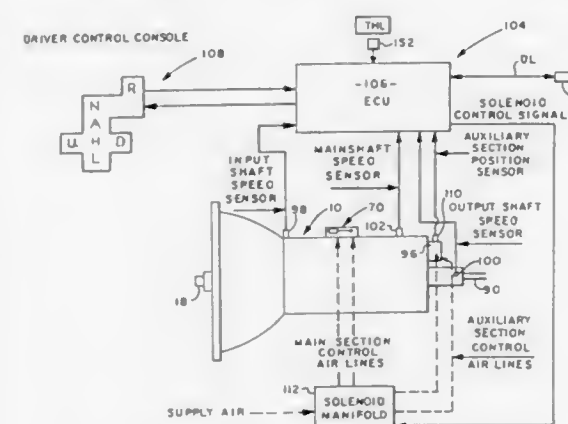
Thomas A. Genise, Dearborn, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Filed May 16, 1994, Ser. No. 242,825

Int. Cl.⁶ B60K 41/08

U.S. Cl. 477—120

34 Claims



1. A method for controlling a vehicular automated system including determining a value of a control parameter (T_{FW}) indicative of engine flywheel torque of a vehicular internal combustion engine (E) in a vehicular automated mechanical transmission system comprising a fuel throttle-controlled internal combustion engine (E), a multiple-speed change-gear mechanical transmission (10) having an input shaft (16) and an output shaft (90) adapted to drive vehicular drive wheels, said input shaft drivingly connected to said engine by a master friction clutch (C) and a control unit (106) for receiving input signals, including an input signal (ES, IS) indicative of input shaft or engine rotational speed, and for processing said signals in accordance with predetermined logic rules to determine control parameters and to issue command output signals to transmission system actuators, including means for controlling fueling of the engine and means (70) for controlling shifting of the transmission, said method characterized by:

- determining a relationship $((dES/dt \text{ rate}) = A + (B * T_{ACCES}))$ between engine deceleration rate ($dES/dt \text{ rate}$) and accessory torque (T_{ACCES});
 determining a value of a control parameter ($dES/dt \text{ rate}$) indicative of engine deceleration rate;
 determining a value of a control parameter (T_{ACCES}) indicative of accessory torque as a function of said relationship between accessory torque and engine deceleration rate and said value of a control parameter indicative of engine deceleration rate;
 determining a value of said control parameter indicative of flywheel torque (T_{FW}) as a function of the value of said control parameter indicative of accessory torque (T_{ACCES}); and
 controlling said vehicular automated system as a function of the value of said control parameter indicative of flywheel torque.

5,509,868

GOVERNOR INTERLOCK VALVE

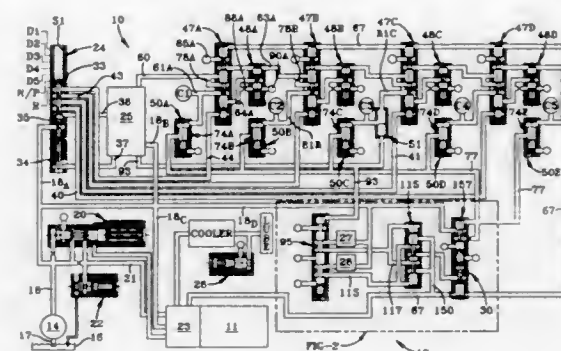
James R. Eaton, Carmel, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Sep. 13, 1994, Ser. No. 304,892

Int. Cl.⁶ F16H 61/26

U.S. Cl. 477—130

2 Claims



1. A transmission shift control comprising:
 regulator valve means for providing a trim pressure fluid for a plurality of accumulators through a boost control valve having a plug means;
 said plug means having first and second ends;
 shuttle valve means for selectively directing pressurized fluid to said first and second ends of said plug means and for directing pressurized fluid to a governor passage;
 first and second solenoid valve means;
 a single interlock valve for selectively directing pressurized fluid from said first solenoid valve means through said shuttle valve means to said first end of said plug means and said governor passage and for selectively directing pressurized fluid from said second solenoid valve means through said shuttle valve means to said second end of said plug means when the pressurized fluid from said first solenoid valve means is at a greater pressure level than the pressurized fluid from said second solenoid valve means; and
 said plug means being responsive to the fluid from said interlock valve to switch the fluid from said first end of said plug means when the pressure level of the fluid directed from said second solenoid valve means is greater than the fluid directed from said first solenoid valve means.

5,509,869

ISOTONIC CERVICAL EXERCISE DEVICE

Bruce W. Miller, P.O. Box 20267, Tampa, Fla. 33622

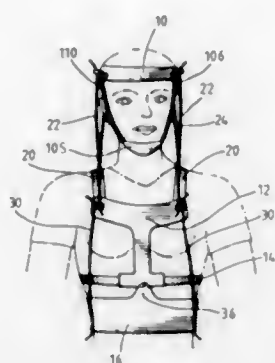
Continuation-in-part of Ser. No. 208,991, Mar. 10, 1994, abandoned, which is a continuation-in-part of Ser. No. 134,800, Oct. 12, 1993, Pat. No. 5,336,139, which is a continuation-in-part of Ser. No. 29,874, Mar. 11, 1993, abandoned. This application Mar. 3, 1995, Ser. No. 398,575

Int. Cl.⁶ A63B 23/025

U.S. Cl. 482—10

32 Claims

1. A medical device for the rehabilitation of the cervical spine of a user comprising:
 cranial support means adapted to removably engage a cranial area of said user, said
 cranial support means having a front, back, and two sides;
 front and back tension control means connected to each other; and
 at least four tensioning means connecting said cranial support means to said front and
 back tension control means, a first of said tensioning means connecting said front of said cranial support means to said front tension control means, a second of said tensioning means connecting said back of said cranial support means to said back tension control means, and a third and a fourth of said tensioning means disposed approximately equidis-



tant from said second tensioning means on opposite sides thereof and connecting said cranial support means to said front and back tension control means.

5,509,870

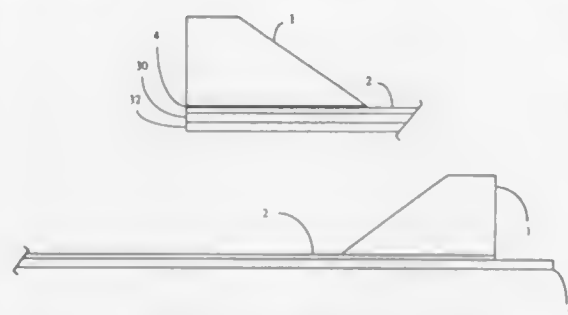
VARIABLE RESISTANCE SLIDE BOARD

Stephen N. Lloyd, 219 Warfield Dr., Newark, Del. 19713
Continuation-in-part of Ser. No. 871,129, Apr. 20, 1992, abandoned. This application May 14, 1993, Ser. No. 61,018

Int. Cl.⁶ A63B 22/00

U.S. Cl. 482—51

47 Claims



1. A variable resistance slide board comprising a thin flexible sheet having an upper glide surface and a compressible mat having an area about as large as the area of said sheet, said sheet being mounted on and supported by said mat, said sheet being made of a material which is supple and deflectable and deformable under load to conform to said mat, and said mat consisting of sections having different compressibility characteristics.

5,509,871

MECHANICAL SURFBOARD SIMULATOR

Chris S. Giovanni, 1016 Banyan Way, Pacifica, Calif. 94044
Filed Nov. 2, 1994, Ser. No. 333,285

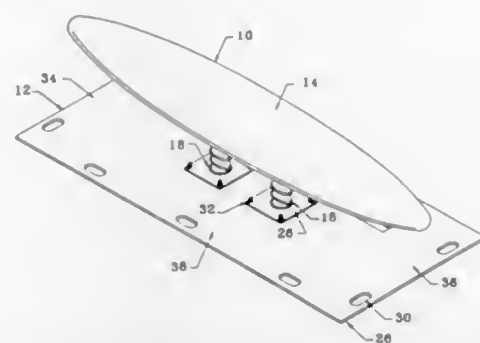
Int. Cl.⁶ A63B 69/18

U.S. Cl. 482—51

8 Claims

1. A surfboard simulator device for training users in the sport of surfing comprising:

- a base adapted for placement on a ground surface;
- a surfboard unit including an elongated surfboard, the surfboard unit having a topside and an underside, wherein the topside has an area equivalent to an actual surfboard with a size sufficient to allow placement and free movement of a user's feet;
- an interconnection means for interconnecting the underside of the surfboard unit with the base wherein the interconnection means has mechanical means for allowing limited articulation between the surfboard unit and the base, and wherein the mechanical means for allowing limited articulation comprises a spring assembly, wherein the surfboard has a longitudinal



axis and the spring assembly has bias means for providing greater stability for fore and aft pitch along the longitudinal axis of the surfboard than side-to-side roll transverse to the axis of the surfboard, wherein the bias means has a force of bias on the longitudinal axis of the surfboard comparatively greater than the bias transverse to the axis of the surfboard that simulates the degree of bias of an actual surfboard in aquatic conditions.

5,509,872

TREADMILL HAVING COMPACT MOTOR STRUCTURE

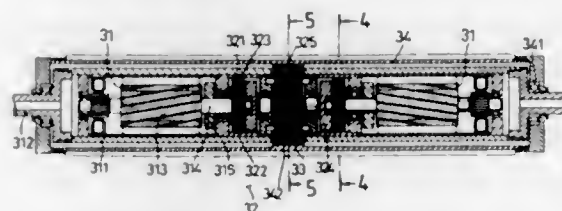
Victor Chen, 9F, No. 26, Sec. 2, Min Chuan East Road, Taipei, Taiwan

Filed Mar. 24, 1995, Ser. No. 410,282

Int. Cl.⁶ A63B 22/02

U.S. Cl. 482—54

2 Claims



1. A running machine, comprising:

- a base;
- a handrail coupled to said base;
- a pair of longitudinally spaced rollers rotatably coupled to said base, one of said rollers being motor driven;
- an endless belt extending between said pair of rollers for displacement thereon responsive to rotation of said motor driven roller, said motor driven roller including (1) two motors, each of said motors having an output shaft extending from a rotor thereof, (2) a motor housing provided for containing said two motors and having a respective hollow shaft tube extending respectively from each of two ends of said motor housing, (3) two sets of sun and planet gear units respectively coupled to said two motors, each of said sets of sun and planet gear units being located inward of a respective motor, (4) a plurality of transmitting gears located between said two motors, and (5) a rotatable cylinder surrounding said motor housing, each said sun and planet gear unit including a sun gear, three planet gears engaged with said sun gear, and a ring having an inner toothed surface engaged with said three planet gears, said sun gear being coupled to said rotor output shaft of a respective motor for rotation therewith, said three planet gears having respective shafts connected pivotally to a bracket, said bracket having a center rod extending therefrom, said center rod having a gear portion formed in an outer surface thereof for engagement with said plurality of transmitting gears, said rotatable cylinder surrounding said motor housing and having an annular inner toothed surface disposed at a center portion thereof for engagement with said plurality of transmitting gears, said rotatable cylinder having two ends pivotally connected respectively to said hollow shaft tubes by means of

bearings, said motor driven roller being coupled to said base by means of said hollow shaft tubes;
a flat plate member coupled to said base between said pair of rollers for supporting said endless belt thereon; and,
means for lubricating an undersurface of said endless belt coupled to said base.

5,509,873

EXERCISE DEVICE WITH ADJUSTABLE RESISTANCE

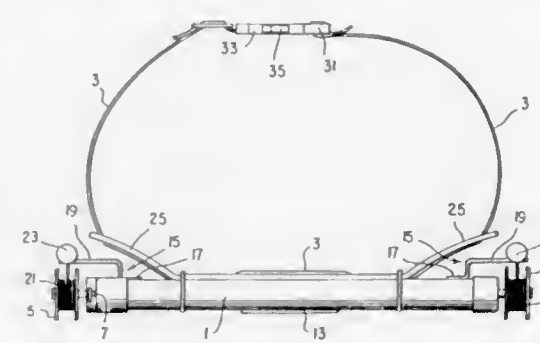
Joshua A. Corn, 555 E. William Ste. 21C, Ann Arbor, Mich. 48104

Filed Nov. 24, 1993, Ser. No. 156,712

Int. Cl.⁶ A63B 23/12; 21/16

U.S. Cl. 482—74

21 Claims



1. An exercise device useful as an accessory in running or aerobics, comprising:

- (a) a plurality of inelastic, retractable cords, each terminating in a handgrip;
- (b) retracting means for retracting said cords;
- (c) separate, adjustable resistance means for providing resistance to each of said cords, as said cords are being withdrawn from said retracting means wherein said resistance means operate independently of each other; and
- (d) support means for supporting said retracting means on the waist of the user.

5,509,874

STILT ASSEMBLY HAVING ADJUSTABLE MECHANISM

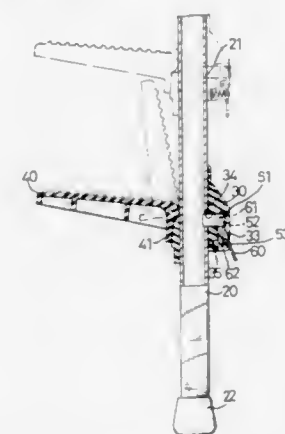
Ming-Tsu Shih, No. 60, Chen Pin Road, Tai Pin Cheng Tai-chung, Taiwan

Filed Mar. 24, 1995, Ser. No. 410,511

Int. Cl.⁶ A63B 25/00

U.S. Cl. 482—75

1 Claim



1. A stilt assembly comprising:
at least one tube including a plurality of holes formed therein,

a sleeve including an opening formed therein for slidably engaging on said tube, said sleeve including a wall member having an orifice formed therein and having a recess formed therein and communicating with said orifice,
a catch slidably engaging in said orifice of said sleeve,
a lever including a middle portion pivotally supported in said recess at a pivot pin and including a first end for engaging with said catch and including a second end, said first end being caused to rotate about said pivot pin in order to move said catch when said second end of said lever is rotated about said pivot pin,
means for biasing said second end of said lever away from said sleeve, and
a foot support including a first end pivotally coupled to said sleeve distal to said wall member and including a downward extending stop for engaging with said sleeve,
said catch being engaged with either of said holes of said tube when said second end of said lever is biased away from said sleeve by said biasing means.

5,509,875

EXERCISE APPARATUS

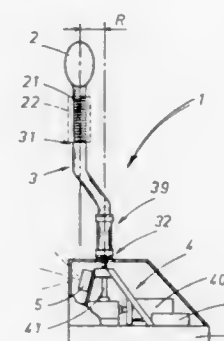
Massimo Moretti, Via Eynard, 37, 48024 Massalombarda (Ravenna), Italy

Filed Aug. 17, 1994, Ser. No. 291,662

Int. Cl.⁶ A63B 69/34

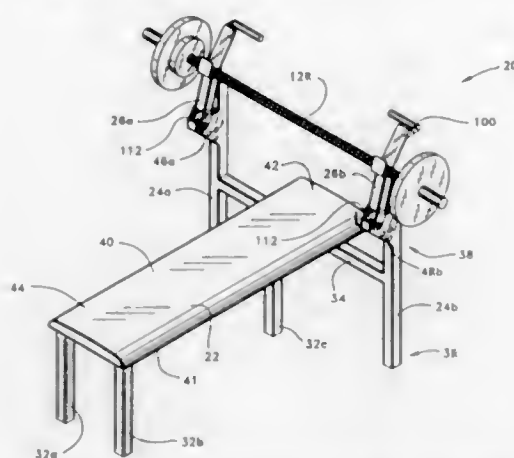
U.S. Cl. 482—90

3 Claims



1. A martial arts training device comprising:
a target means configured to receive blows from an athlete,
a vertically oriented rigid support arm having an upper most first end connected to the target element and a second lower end, the support arm having at least two vertically oriented sections being offset from each other by an intermediate arm section, thereby positioning the vertically oriented sections and each respective end of said support arm in distinct vertical planes of alignment,
a clutch coupling device,
a drive means,
said drive means comprising a motor and drive shaft, the shaft being connected to said second lower end of the support arm by the clutch coupling device, the drive means being capable of imparting a clockwise counter clockwise rotational motion to the support arm and the clutch coupling device being configured to rotatably release the supporting arm from the shaft, in the event of the target element being subjected to stresses of any value greater than a predetermined limit,
sensing means capable of detecting the movement of an athlete, and;
electronic processing means linking the sensing to the drive means, wherein the drive means is activated in response to the detection of movement of an athlete and wherein the drive means is activated in response to a selected program or random sequence generated by said processing means.

5,509,876
WEIGHT-BAR SUPPORT STRUCTURE WITH
RETRACTABLE ARMS
 Gilbert Reyes, 4960 Spanish Heights Dr., Las Vegas, Nev. 89113
 Filed Dec. 2, 1994, Ser. No. 349,749
 Int. Cl.⁶ A63B 21/078
 U.S. Cl. 482—104 33 Claims



1. A bench-press exercise apparatus in which a user reclines on a platform facing upwardly, grasps a weight-bar with both hands and repeatedly moves his arms between a lowered position in which the bar is immediately above his chest and an elevated position, said apparatus comprising:

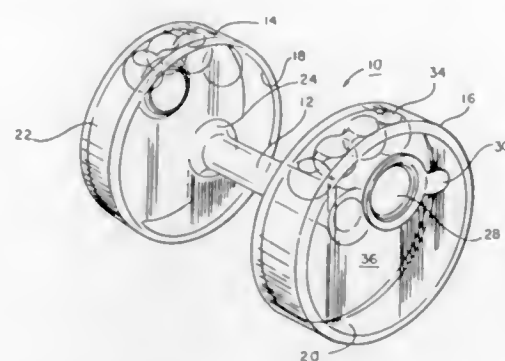
a support structure;
 a generally horizontal, elongate, user-supporting platform extending outwardly from the support structure;
 first and second arms positioned near a head end of the platform on opposing sides of the platform each pivotally mounted at a lower portion of said arm to the support structure, the upper portion of each of said arms being movable in a vertical plane between a raised retracted position above the head end of the platform and a lower light-off position more toward the opposite end of the platform;

first and second cradle means for retaining the weight-bar in a generally horizontal position above the platform mounted at an upper portion of the first and second arms, respectively; and

return means for automatically moving said arms from said lift-off position to said retracted position when a weight-bar is removed from said arms in said lift-off position whereby a user may recline on the platform and remove a weight bar from the cradle means in the lift-off position above the user's chest, whereupon the cradle means will be moved to the retracted position above the user's head by the return means.

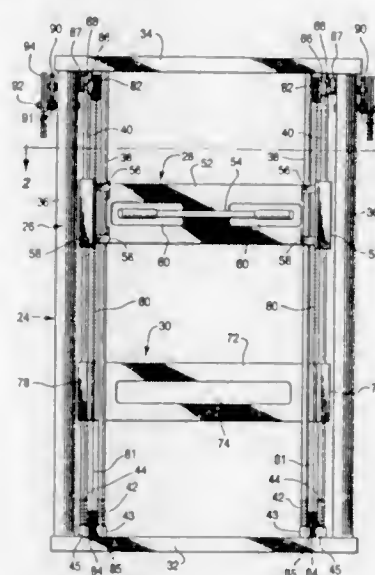
5,509,877
PORTABLE WEIGHT LIFTING DEVICE
 Charles L. Adams, 990 Haltom Rd., Fort Worth, Tex. 76117
 Filed Jan. 27, 1995, Ser. No. 379,760
 Int. Cl.⁶ A63B 21/075 17 Claims

1. A weight lifting device for exercise comprising:
 a handle;
 a pair of fluid impermeable hollow chambers disposed at opposite ends of the handle for holding a weighting fluid, each chamber having a sealable opening for accessing the interior of the hollow chamber;
 a closure member for sealing each opening of the chamber;
 at least one fluid displacement member which locates within the interior of each chamber, the at least one fluid displacement member displacing a selected volume of the weighting fluid within each chamber so that the volume of fluid required to fill the chambers can be varied to thus vary the weight of the device; and



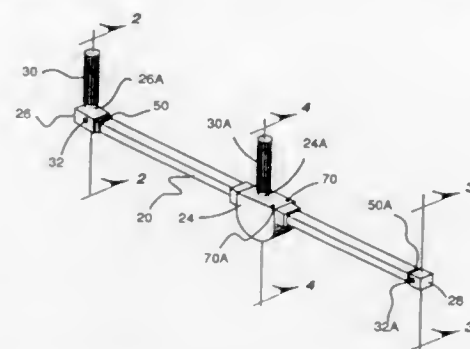
wherein the fluid displacement members are hollow, fluid impermeable bodies.

5,509,878
RESIST/ASSIST EXERCISER AND ITS USE
 Craig Denega, 13063 Townsend Rd., Philadelphia, Pa. 19154,
 and John F. Dalton, 329 Devonshire Rd., Devon, Pa. 19333
 Division of Ser. No. 640,988, Jan. 14, 1991, Pat. No. 5,304,108.
 This application Mar. 18, 1994, Ser. No. 215,038
 Int. Cl.⁶ A63B 21/22; 21/08 12 Claims



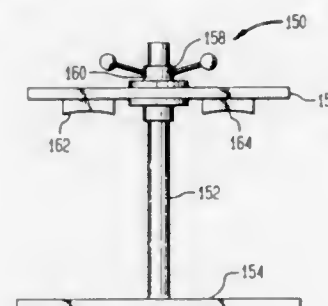
1. An exercise apparatus for providing a user with a resist segment followed by an assist segment, the apparatus comprising:
 (a) a thrust receiver having user interface means capable of displacement along an exercise stroke;
 (b) an inertial element for providing a resisting force to displacement of said thrust receiver, said inertial element comprising a hydraulic assembly, said inertial element further comprising means for storing energy generated during the resist segment of said exercise stroke, and further comprising means for dissipation of the stored energy by the user against said thrust receiver during the assist segment of said exercise stroke, whereby stored energy is totally depleted at the completion of said exercise stroke; and
 (c) a linkage assembly for linking said thrust receiver in a driving and driven relationship to said inertial element.

5,509,879
PORTABLE EXERCISER WITH A CONSTANT
RESISTANCE
 Ignacio Lanzagorta, 5644 Westheimer #141, Houston, Tex. 77056-7788
 Filed Jul. 22, 1994, Ser. No. 279,045
 Int. Cl.⁶ A63B 21/012 18 Claims



1. A portable exercise device comprising:
 a housing;
 a shaft slidably disposed through said housing;
 a gear rotatably disposed within said housing, said gear engaging said shaft and rotating in a first direction when said housing moves in a second direction relative to said shaft;
 a first member frictionally coupled to said gear when said gear rotates in the first direction;
 a second member frictionally coupled to said gear when said gear rotates in a third direction and wherein said gear rotates in the third direction when said housing moves in a fourth direction relative to said shaft; and
 said first member is frictionlessly coupled to said gear when said gear rotates in the third direction.

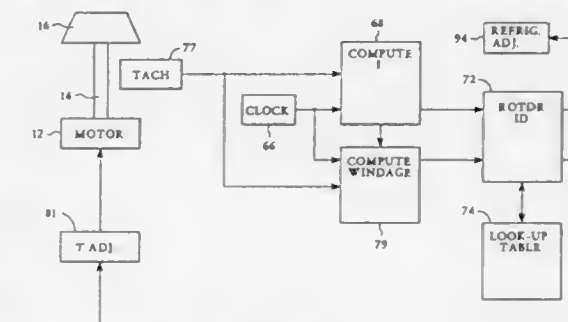
5,509,880
APPARATUS FOR EXERCISE, BODY STRETCHING,
NEUROMUSCULAR AND OTHER ORTHOPEDIC
MOVEMENTS
 Richard B. Becker, Short Hills, N.J., and David D. Gilbert, New York, N.Y., assignors to Yogi Pogl Inc., New York, N.Y.
 Division of Ser. No. 67,679, May 26, 1993, Pat. No. 5,356,362.
 This application Oct. 17, 1994, Ser. No. 323,544
 Int. Cl.⁶ A63B 21/00 1 Claim



1. An exercise and stretching apparatus, comprising:
 a base having at least one vertical upright,
 a cross bar having a first end and a second end and an opening positioned between said ends sized to allow the upright to slide there-through when positioned on the upright, said cross-bar further including means for engaging the legs of a user,
 a retainer, said retainer including:
 a sleeve slidably mounted on the upright

a spool mechanically associated with said sleeve, engaging the cross-bar to the upright and;
 a collar associated with the retainer to vertically displace the retainer thereby vertically displacing the cross bar; the collar further includes a threaded portion and a bearing portion attached to a spool, and wherein the threaded portion cooperates with threading on the upright.

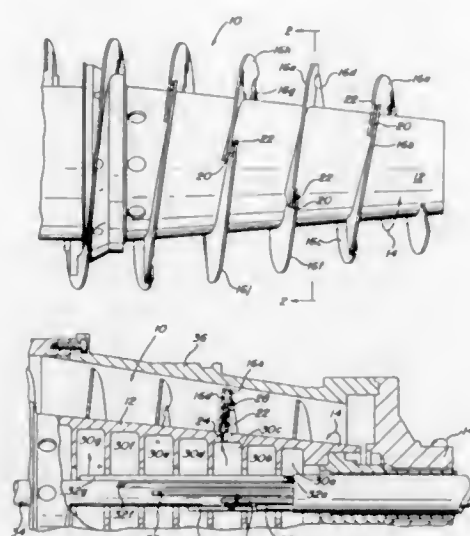
5,509,881
CENTRIFUGE ROTOR IDENTIFICATION AND
REFRIGERATION CONTROL SYSTEM BASED ON
WINDAGE
 Thomas D. Sharples, Atherton, Calif., assignor to Beckman Instruments, Inc., Fullerton, Calif.
 Filed Jul. 7, 1994, Ser. No. 271,836
 Int. Cl.⁶ B04B 13/00 17 Claims



6. A centrifuge system comprising:
 drive means for rotatably supporting any one of a plurality of rotor models;
 first means for measuring inertia of a rotor supported by said drive means;
 first decision means, responsive to said first means, for reducing possible rotor models to which said supported rotor can be identified based upon known inertial values of said plurality of rotor models, defining a first subset of said plurality of rotor models;
 second means, responsive to said drive means and said first means, for measuring windage of said supported rotor; and
 second decision means, responsive to said second means, for reducing possible rotor models to which said supported rotor can be identified based upon known windage values of said plurality of rotor models, defining a second subset of a plurality of rotor models, with said second subset including less models than said first subset.

5,509,882
DECANTER CENTRIFUGE HAVING AN OFFSET
CONVEYOR FLIGHT TO AID RINSING
 John W. Caldwell, Glenside, Pa., assignor to Tetra Laval Holdings & Finance S.A., Switzerland
 Filed Sep. 12, 1994, Ser. No. 304,073
 Int. Cl.⁶ B04B 1/20; 11/00 20 Claims

1. In a centrifuge of the type having a rotatable screw conveyor therein, the screw conveyor comprising:
 a central longitudinally-extending hub;
 a conveyor flight having at least two conveyor flight portions which form a spiral along at least a portion of the axial length of the central hub, the conveyor flight extending outward from the central hub to a distal end, at least one of the conveyor flight portions being axially offset with respect to and overlapping a portion of another conveyor flight portion;
 spacer means positioned within the offset between two of the conveyor flight portions, the spacer means and the offset of the conveyor flight portions forming a channel; and



means for introducing a rinse liquid into the channel from the conveyor hub.

5,509,883

TUBULAR ROLL FOR A PAPER MACHINE OR EQUIVALENT WITH GLIDE-BEARINGS

Juhani Niskanen, Onlunsalo; Pekka Kivioja, Muurame; Juha Lahtinen; Esa Lensu, both of Jyväskylä, and Esa Salvamäki, Muurame, all of, Finland, assignors to Valmet Paper Machinery, Inc., Helsinki, Finland

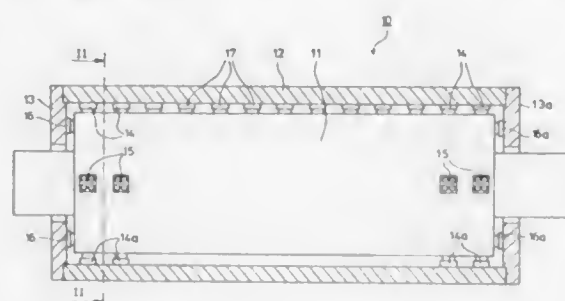
Filed May 2, 1994, Ser. No. 236,644

Claims priority, application Finland, Mar. 9, 1994, 941107

Int. Cl.⁶ B23P 15/00

U.S. Cl. 492—20

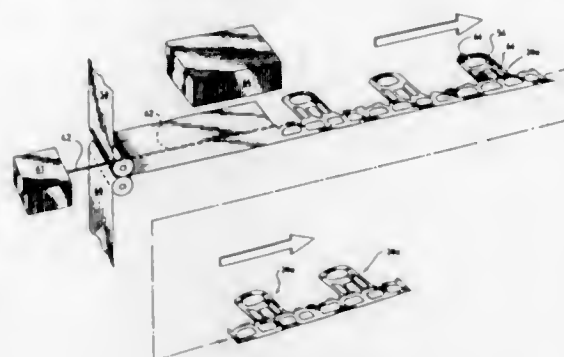
25 Claims



1. In a tubular roll for a paper machine or equivalent, comprising a stationary roll axle, a roll mantle, glide-bearing members for supporting said roll mantle on said roll axle, said glide-bearing members acting on an inner face of said roll mantle or roll ends of said roll under hydraulic pressure provided by a pressure medium, and loading means for supporting and loading said roll mantle in a main loading direction, the improvement comprising:

at least one pair of said glide-bearing members for supporting the roll mantle in opposite radial and/or axial directions substantially transverse to the main loading direction, and regulation means coupled to said pair of glide-bearing members, said regulation means regulating the flow of the pressure medium to each of said pair of glide-bearing members such that an external force applied to the roll mantle in a direction parallel to the supporting direction of said glide-bearing members is counteracted.

5,509,884
CONTAINER CARRIER
James A. Broskow, Buffalo Grove, Ill., assignor to Illinois Tool Works Inc., Glenview, Ill.
Division of Ser. No. 230,308, Apr. 20, 1994. This application Mar. 15, 1995, Ser. No. 404,535
Int. Cl.⁶ B31B 1/14; B65D 71/00; B32B 31/18
U.S. Cl. 493—346 5 Claims



1. A method for making a carrier for carrying containers comprising the steps of: providing a first sheet of plastic material and a second sheet of plastic material juxtaposed over and substantially in planar contact with said first sheet; bonding selected regions of said sheets together longitudinally; and simultaneously stamping coterminous areas of said juxtaposed first and second sheets of plastic material to form a shaped carrier having annular bands for carrying containers.

5,509,885
CREASING APPARATUS

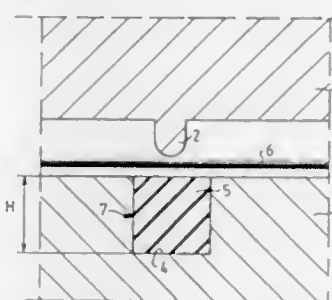
John-Erik Brunlid, Lund, Sweden, assignor to Tetra Alfa Holdings & Finance S.A., Pully, Switzerland
Continuation of Ser. No. 912,988, Jul. 14, 1992, abandoned.

This application Sep. 29, 1993, Ser. No. 128,566

Claims priority, application Sweden, Aug. 8, 1991, 9102313
Int. Cl.⁶ B31B 1/25

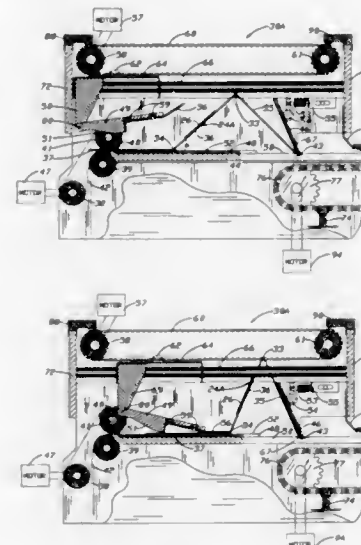
U.S. Cl. 493—396

10 Claims



1. A creasing apparatus comprising: a male part provided with one or more bars; a female part corresponding to the male part, the female part having a surface and being provided with one or more grooves formed in the surface adapted to receive the bars; and one or more elastic material elements inlaid in the grooves of the female part, the elastic material elements being compressible by the bars, when packaging material is positioned between the bars and the elastic material elements and the bars are received in the grooves, such that the elastic material elements are held in contact with one side of the packaging material to reduce stress in the packaging material, wherein the elements have at least two T-shaped end pieces which are inlaid in the grooves of the female part such that the elements are locked in the grooves.

5,509,886
CARD PACKAGE PRODUCTION SYSTEM WITH MODULAR CARRIER FOLDING APPARATUS FOR MULTIPLE FORMS
Gregory S. Hill, Lake Zurich; Jeffrey L. Hill, Mundelein, both of Ill., and Robert J. Bretl, Menominee, Mich., assignors to Dynetics Engineering Corporation, Lincolnshire, Ill.
Continuation-in-part of Ser. No. 19,865, Feb. 19, 1993, abandoned. This application Mar. 24, 1993, Ser. No. 36,439
Int. Cl.⁶ B65H 45/14; 45/20; 45/04
U.S. Cl. 493—419 27 Claims



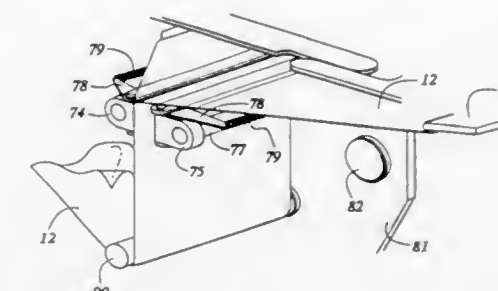
1. In a card package production system for producing card packages with cards mounted to a bifold carrier form with a body and a pair of parallel, spaced, first and second preweakened fold lines dividing the body into a leading end section, a middle section and a lagging end section, the improvement being a card carrier form folding apparatus, comprising: means for defining a folding path; a stop member in the folding path; and means for moving the bifold carrier form along the folding path and into the stop member to buckle the leading end section and the middle section away from the folding path along said first preweakened fold line therebetween and to simultaneously fold the bifold carrier form along said second preweakened fold line between the middle section and the lagging end section.

5,509,887
APPARATUS FOR POCKETED COIL CONSTRUCTION HAVING IMPROVED TRACKING CHARACTERISTICS
Rusland J. Smith, Roaring Brooks Township, Pa., assignor to Simmons Company, Atlanta, Ga.
Continuation of Ser. No. 3,259, Jan. 12, 1993, abandoned, which is a division of Ser. No. 637,290, Jan. 3, 1991, Pat. No. 5,186,435. This application Apr. 17, 1995, Ser. No. 424,552
Int. Cl.⁶ B31F 1/00

U.S. Cl. 493—439

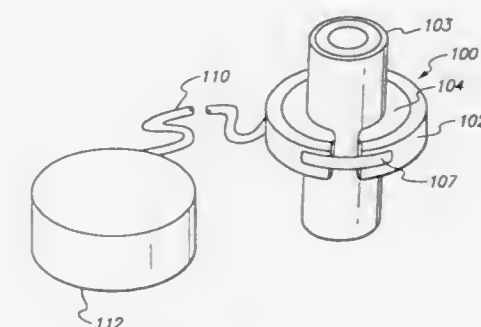
7 Claims

1. An apparatus for manufacturing a pocketed innerspring construction for a mattress comprising: (a) means for drawing a length of fabric having a substantially uniform width from a roll of said fabric; (b) a folding plate having a substantially horizontal, planar surface extending from an upstream end thereof to a downstream end, said downstream end of said surface having tapering lead folding edges converging at a downstream end point; (c) means for urging said length of fabric from said upstream end to said downstream end of said surface and for causing said fabric to pass over said folding edges on the downstream



end of said surface with the downstream end point essentially in contact with the center of said fabric width so that said fabric folds substantially in half along its length with the width of the folded fabric being substantially one-half of the width of the fabric and with the two free longitudinal edges of said fabric being in general alignment; (d) a pair of inwardly-biased, pivotably mounted folding fingers positioned below said surface and having a gap therebetween to receive said folded fabric passing over said folding edges of said surface, said folding fingers being structured to pinch together to maintain a bias against fabric passing therebetween to enable accurate folding of said fabric with said longitudinal edges being in substantial registration and alignment; (e) means for inserting coil springs between said folded fabric halves and for joining said fabric in a manner such that said coil springs are contained within pockets in said fabric; and (f) means for connecting said pocketed coil springs together to form an innerspring construction.

5,509,888
CONTROLLER VALVE DEVICE AND METHOD
Paul L. Miller, Minnetonka, Minn., assignor to Conceptek Corporation, Wilmington, D.C.
Filed Jul. 26, 1994, Ser. No. 281,226
Int. Cl.⁶ A61F 2/00
U.S. Cl. 600—29 30 Claims



1. A controllable valve apparatus for operation about a constrictable passageway, comprising: A. a flexible, formable, tubular housing adapted to be positioned around the passageway, including: (i) an extensible inner chamber extending at least partially along an outer surface of the housing, and (ii) at least one magnetic flux inductor device proximal to the inner chamber; B. a control device in communication with the magnetic flux inductor device for selectively activating the magnetic flux inductor device; and C. a quantity of a magnetorheological material responsive to activation of the magnetic flux inductor and contained within the inner chamber to cause the magnetorheological material to outwardly extend the inner chamber and constrict the passageway.

5,509,889

PRODUCT AND METHOD TO TREAT FEMALE INCONTINENCE

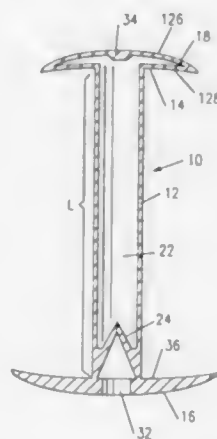
Irvin M. Kalb, 327 Alta Ave., Santa Monica, Calif. 90402; Robert H. Shaw, 243 Peck Dr., Beverly Hills, Calif. 90212, and Michael J. Ram, One Horseshoe Rd., Bell Canyon, Calif. 91307

Continuation-in-part of Ser. No. 284,260, Aug. 2, 1994, which is a continuation-in-part of Ser. No. 888,597, Oct. 4, 1994, Pat. No. 5,352,182. This application Jun. 6, 1995, Ser. No. 471,788

Int. Cl.⁶ A61F 2/02

U.S. Cl. 600—30

3 Claims



1. A urinary drainage catheter for placement in the female urethra, the urethra having an exterior opening at the point of exit from the body and an interior opening at the point of entry into the urinary bladder, the catheter comprising a hollow shaft, a holding portion on a first end of the shaft and a cap on a second end of the shaft, wherein:

the shaft has a length sized to approximate the length of the urethra and an outer diameter approximating the diameter of the urethra such that the shaft does not extend beyond the exterior of the urethra,

the holding portion having

- a) upper and lower struts separated by openings therebetween so that fluid in the bladder can enter the shaft, and
- b) a width greater than the outer diameter of the shaft, the width of the holding portion being reducible so that the holding portion can be readily passed through the urethra,

lower struts of said holding portion resting against the interior end of the urethra, and

the cap having a width greater than the outer diameter of the shaft, an upper surface of said crown resting against the exterior opening of the urethra, no portion of the urinary catheter extending exterior of the urethra cap.

5,509,890

HEART RETRACTOR

Shigeru Kazama, 2-6-3, Naruse, Machida, Tokyo, Japan
Filed Nov. 14, 1994, Ser. No. 340,030

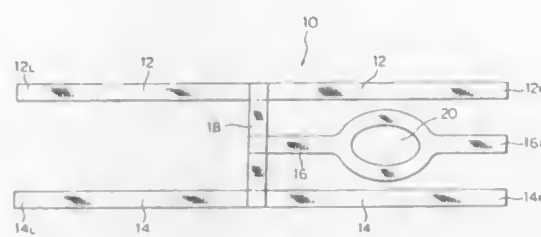
Claims priority, application Japan, Dec. 16, 1993, 5-075050 U

Int. Cl.⁶ A61F 2/00

U.S. Cl. 600—37

5 Claims

1. A heart retractor for use in a coronary bypass operation comprising a pair of upper and lower parallel long tapes, a short tape having an opening arranged between the upper and lower tapes, and a longitudinal tape for connecting the upper and lower long tapes and the short tape in parallel with each other.



5,509,891

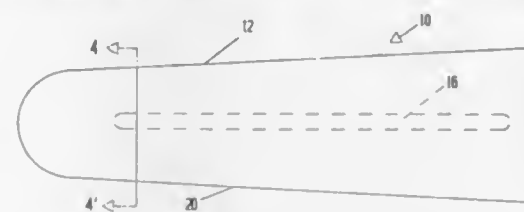
PROTHESIS FOR MALE DYSFUNCTION

Paul A. DeRudder, 1125 E. 17th St., Santa Ana, Calif. 92701
Filed Dec. 19, 1994, Ser. No. 358,695

Int. Cl.⁶ A61F 5/41

U.S. Cl. 600—39

16 Claims



1. A reinforced form-supporting penile prosthesis which comprises:

- a tubular condom sheath formed of a latex rubber film having a thickness from 0.2 to 2 millimeters; and
- at least two stiffeners, each having a width to thickness ratio from 5 to 20 which extend entirely longitudinally along said tubular condom sheath and parallel to each other, spaced apart by an angular increment from 30° to 180°, and which are embedded with their thickness within the thickness of said film and are formed of thin, flexible sheet material sufficiently flexible and said latex rubber being sufficiently elastic to permit said stiffeners to coil,

whereby said prosthesis can be rolled and unrolled between stable coiled and stable extended configurations.

5,509,892

ENDOSCOPIC INSTRUMENT

Ludwig Bonnet, Knittlingen, Germany, assignor to Richard Wolf GmbH, Knittlingen, Germany

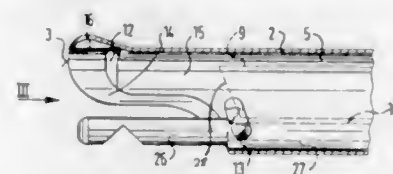
Filed May 31, 1994, Ser. No. 251,770

Claims priority, application Germany, Nov. 30, 1993, 93 18 282.1

Int. Cl.⁶ A61B 1/00

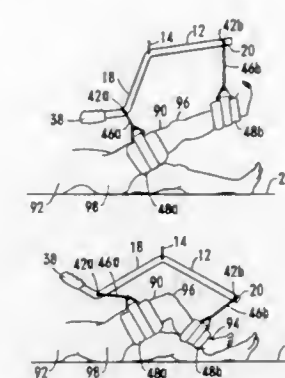
U.S. Cl. 600—156

11 Claims



1. An endoscopic instrument (1) with proximal and distal ends, comprising an outer shaft (2) with an oval cross-sectional contour

and an inner shaft (5) guided on the inside of the outer shaft, said inner shaft having a cross-sectional outer contour differing from the inside of the outer shaft so as to form a free space (11) between them for conveying fluids, said inner shaft (5) being provided near its distal end (3) with outwardly projecting flanges (12, 13) which close off the free space (11) formed between the inner shaft (5) and the outer shaft (2) for conveying fluids, said inner shaft having a further canal (20) for conveying fluids and having a passageway for examination optics (9) and for a treatment instrument (10), wherein the cross-sectional contour of the inner shaft is formed of two semi-circular arcs (6, 7) with different diameters, with their openings facing each other, and connected by two approximately straight sides (8), and wherein the inner shaft is so dimensioned that its outer contour contacts the inside of the outer shaft at three points in a linear manner along essentially the entire shaft length.



5,509,893

SPECULUM

Victor M. Pracas, Waroona, Australia, assignor to Meditech International Pty Ltd., Australia

PCT No. PCT/AU92/00261, § 371 Date Dec. 1, 1993, § 102(e)
Date Dec. 1, 1993, PCT Pub. No. WO92/21279, PCT Pub.
Date Dec. 10, 1992

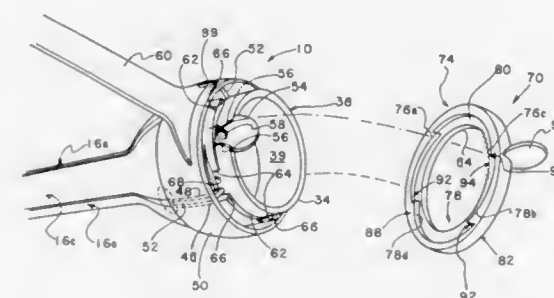
PCT Filed Jun. 5, 1992, Ser. No. 162,030

Claims priority, application Australia, Jun. 6, 1991, PK6539;
Feb. 3, 1992, PL0637; WIPO, Jun. 5, 1992, WO92/21279

Int. Cl.⁶ A61B 1/00; 1/32

U.S. Cl. 600—224

34 Claims



1. A speculum comprising:

dilator means for insertion into a body cavity of a patient, said dilator means comprising at least two pivotal two blade members, each blade member being curved in a direction transverse to its length and having a rear terminating end which is provided with a substantially wedge shaped portion; and opening means being movable for opening said dilator means to dilate said body cavity, wherein said opening means is provided with arcuate portions which contact and bear against the substantially wedge shaped portions of said blade members when said opening means is moved in a first direction to cause said blade members to pivot such that said dilator means opens to dilate said body cavity.

5,509,894

LEG SUSPENSION METHOD FOR FLEXION AND EXTENSION EXERCISE OF THE KNEE OR HIP JOINT

Bradley R. Mason, Olivenhain, and Jeffrey T. Mason, Escondido, both of Calif., assignors to Breg, Inc., Vista, Calif.
Continuation-in-part of Ser. No. 974,980, Nov. 12, 1992, Pat. No. 5,303,716. This application Apr. 18, 1994, Ser. No. 228,653

Int. Cl.⁶ A61H 1/00

U.S. Cl. 601—34

3 Claims

1. A method for performing flexion and extension exercise on a leg of a subject comprising:

positioning a subject having a leg to be exercised on a support surface, the leg including an upper leg, a lower leg, a knee joint, and a hip joint;
mounting a bar above the leg, said bar having a longitudinal axis, a proximal segment, and a distal segment;
rotatably engaging said bar with a fulcrum positioned between said proximal and distal segments;
suspending the upper leg from said proximal segment of said bar;
suspending the lower leg from said distal segment of said bar; and
driving said bar about said fulcrum in a first direction of rotation within a substantially vertical plane to lower the upper leg and raise the lower leg, the knee joint thereby attaining an extension position;
driving said bar about said fulcrum in a second direction of rotation opposite said first direction of rotation to raise the upper leg and lower the lower leg, the knee joint thereby attaining a flexion position.

5,509,895

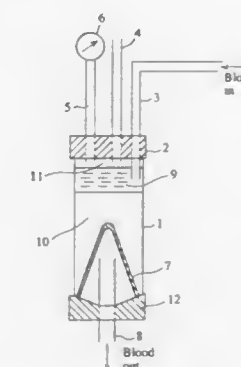
AIR TRAP CHAMBER DEVICE FOR BLOOD DIALYSIS CIRCUIT CONTAINING AN ANTICOAGULANT COMPOSITION

Yasuhisa Noguchi, Ibaraki, and Toshio Kasama, Tokyo, both of Japan, assignors to NOF Corporation, Tokyo, Japan
Division of Ser. No. 167,221, Dec. 14, 1993, Pat. No. 5,421,815. This application Jun. 5, 1995, Ser. No. 460,990

Int. Cl.⁶ A61M 37/00

U.S. Cl. 604—4

7 Claims



1. An air trap chamber device for a blood dialysis circuit comprising a vessel for storing blood dialysed by a dialysis unit, an inlet tube for introducing the blood treated with dialysis into a liquid in said vessel selected from the group consisting of a layer of an anticoagulant composition composed of 0.0001 to 5.0 parts by weight of an antioxidant and 100 parts by weight of a fatty acid derivative in liquid form at ambient temperature, and the blood, measurement means for measuring pressure of air in the vessel lying above said layer of the anticoagulant composition, adjust-

ment means for adjusting pressure of the air and an outlet tube for conducting the blood treated with dialysis out of said vessel.

5,509,896 ENHANCEMENT OF THROMBOLYSIS WITH EXTERNAL ULTRASOUND

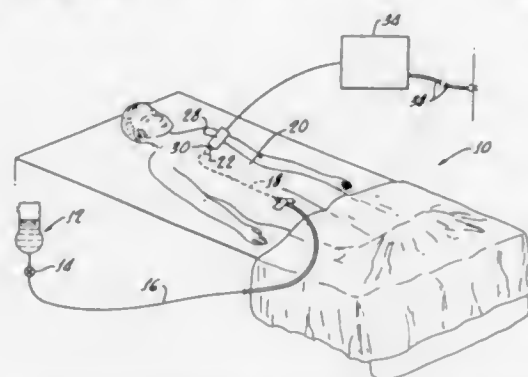
Robert E. Carter, Arlington, Mass., assignor to Coraje, Inc., San Francisco, Calif.

Filed Sep. 9, 1994, Ser. No. 303,858

Int. Cl.⁶ A61N 1/30

U.S. Cl. 604—21

7 Claims



1. A method for enhancing thrombolytic action of a thrombolytic agent, said method comprising the steps of:

- (a) injecting a thrombolytic agent proximate a thrombosis disposed in a vessel within a body; and
- (b) directing ultrasonic energy, generated exterior to the body, at the thrombosis with proximate thrombolytic agent, of sufficient energy to increase the thrombolytic action of the thrombolytic agent, said ultrasonic energy being less than about 100 Kz at less than about 50 watts power.

5,509,897

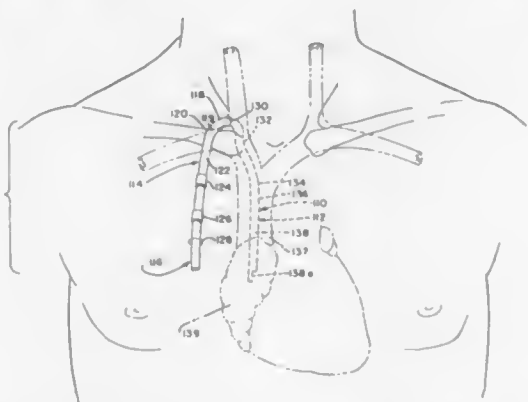
MULTIPLE LUMEN CATHETER FOR HEMODIALYSIS
Zbylut J. Twardowski, John C. Van Stone, and W. Kirt Nichols, all of Columbia, Mo., assignors to The Curators of the University of Missouri, Columbia, Mo.

Division of Ser. No. 45,016, Apr. 8, 1993, Pat. No. 5,405,320, which is a continuation-in-part of Ser. No. 772,613, Oct. 8, 1991, Pat. No. 5,211,983, which is a continuation of Ser. No. 461,684, Jan. 8, 1990, abandoned. This application Feb. 15, 1995, Ser. No. 389,283

Int. Cl.⁶ A61M 3/00

U.S. Cl. 604—43

7 Claims



1. The method of implanting a catheter in communication with a blood vessel of a patient, said catheter defining a pair of lumens to

permit simultaneous withdrawal and replacement of blood to and from the patient, comprising the step of implanting said catheter in the patient with a proximal portion of the catheter extending through a surgically created tunnel, and a distal portion of said catheter extending through the venous system of said patient. So that the distal tip of said catheter occupies the right atrium of the heart of the patient, said catheter, in its unstressed, as-manufactured configuration being of substantial U-shape and defining a central catheter arc and a pair of relatively straight catheter end portions respectively comprising said proximal and distal portions, said catheter penetrating the wall of the vein of said venous system at a position along said U-shaped arc, said catheter substantially occupying said unstressed, as-manufactured configuration in both said venous system and said surgical tunnel, said catheter having a proximal end which extends outwardly from the skin of said patient.

5,509,898

CONTAINER FOR THERAPEUTIC USE

Keinosuke Isono, Kawaguchi, and Tatsuo Suzuki, Machida, both of Japan, assignors to Material Engineering Technology Laboratory, Inc., Tokyo, Japan

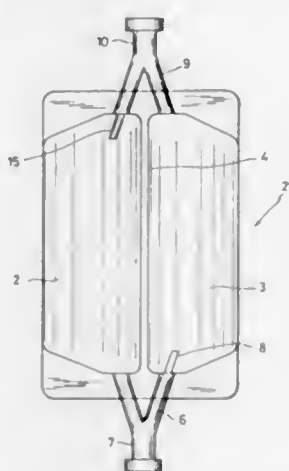
Filed May 6, 1994, Ser. No. 239,133

Claims priority, application Japan, May 10, 1993, 5-132729; May 12, 1993, 5-133836

Int. Cl.⁶ A61M 37/00

U.S. Cl. 604—87

6 Claims



1. A therapeutic container suitable for use in a closed therapy system, said container hermetically enclosing plural contents in a mutually-isolated state and upon use, permitting discharge of the contents in a mixed state, the therapeutic container comprising:

- suspending means formed in one end of said container;
- an outlet member disposed at an opposite end of said container and adapted to discharge said contents;
- a plural number of compartments formed within said container, each of said compartments being separated from one another by an isolation zone provided therebetween, said isolation zone extending from said one end of said container to said opposite end of said container, said compartments individually enclosing said respective contents therein;
- a first communication passage formed within said outlet member and communicated with said respective compartments, said first communication passage being equipped with first openable closing means, through which said outlet member and said compartments are communicable; and
- a second communication passage arranged at a location proximal to said suspending means and communicated with said respective compartments, said second communication passage being provided with second openable closing means, through which said second communication passage and said compartments are communicable;

wherein upon use, at least one of said first and second closing means is opened and said container is suspended by said suspending means, whereby the respective contents can be discharged in the mixed state through said outlet member.

5,509,899

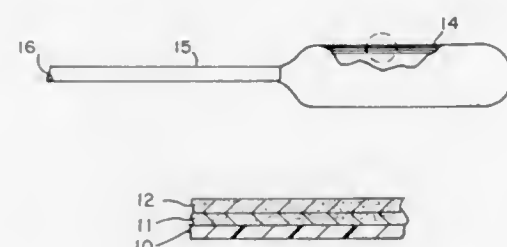
MEDICAL DEVICE WITH LUBRICAIOUS COATING
You-Ling Fan, East Brunswick; Lawrence Martin, Bridgewater, both of N.J.; Ronald A. Sahatjian, Lexington, and Steven A. Schultz, Northboro, both of Mass., assignors to Boston Scientific Corp., Natick, Mass.

Filed Sep. 22, 1994, Ser. No. 310,730

Int. Cl.⁶ A61M 29/00

U.S. Cl. 604—96

25 Claims



1. A medical device for insertion into the body of a mammal, comprising a first polymeric surface which is at least periodically subjected to contacting with a second polymeric surface; said first polymeric surface comprising:

- (A) a first hydrophilic coating disposed on said first polymeric surface; and
 - (B) a lubricious, blood-compatible second coating comprising a polyalkylene glycol or alkoxy polyalkylene glycol having a molecular weight of from about 100 to 30,000 grams per gram mole, said blood-compatible coating disposed at least partially upon and adhering to said first coating,
- wherein said second coating is present to inhibit said first surface and said second surface from adhering to each other.

5,509,900

APPARATUS AND METHOD FOR RETAINING A CATHETER IN A BLOOD VESSEL IN A FIXED POSITION

Thomas R. Kirkman, 14716 NE. 87th St., Redmond, Wash. 98052

Continuation-in-part of Ser. No. 844,715, Mar. 2, 1992, abandoned, and Ser. No. 25,165, Mar. 19, 1993, abandoned. This application Oct. 15, 1993, Ser. No. 137,619

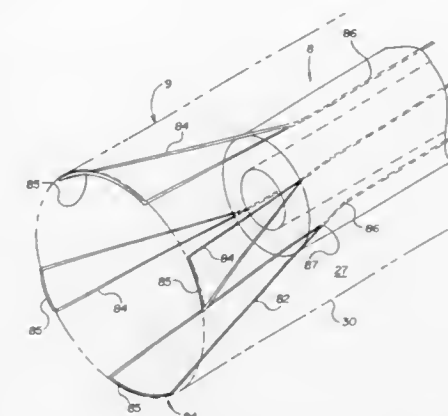
Int. Cl.⁶ A61M 29/00

U.S. Cl. 604—104

18 Claims

1. A catheter adapted for insertion into a blood vessel having blood flowing therethrough, comprising:

- a catheter having a proximal end, a distal end, a tip at the distal end, a guideway extending from the proximal end to the distal end of the catheter and an internal passageway for permitting fluid to pass through the catheter;
- a tip positioning means located at a distal end of the catheter for positioning the distal end of the catheter within the blood flow to maintain the tip of the catheter in a spaced relationship from the wall of the blood vessel and prevent the tip of the catheter from repeatedly contacting the wall of the blood vessel, but without substantially obstructing the fluid flow of blood through the blood vessel; and
- withdrawal means for withdrawing the positioning means towards the catheter tip, the withdrawing means including at least one control member within the guideway running from the proximal end to the distal end of the catheter, the position-



ing means being extendible and retractable by manipulation of the withdrawal means at the proximal end of the catheter for permitting an operator to withdraw or deploy the positioning means.

5,509,901

CONTROLLED PRESSURE FLUID DELIVERY DEVICE
Zoran Milijasevic, P.O. Box 1678, Chatswood, NSW 2067, Australia

PCT No. PCT/AU91/00460, § 371 Date Jun. 2, 1993, § 102(c) Date Jun. 2, 1993, PCT Pub. No. WO92/05830, PCT Pub. Date Apr. 16, 1992

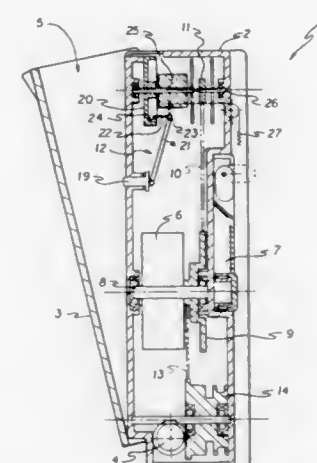
PCT Filed Oct. 4, 1991, Ser. No. 30,266

Claims priority, application Australia, Oct. 5, 1990, PK 2661

Int. Cl.⁶ A61M 1/00

U.S. Cl. 604—153

18 Claims



1. A pressure control device for use with a flexible walled fluid carrying container, the device being adapted to control the pressure of fluid in the container within a predetermined pressure range whether the fluid is being discharged from the container or not, the pressure control device being suitable for use with a fluid flow controller which controls the flow rate of fluid being discharged from the container, the pressure control device including:

- a housing having a chamber therein for receiving the fluid carrying container;
- pressure generating means which is movable so as to apply a force on the fluid carrying container for generating pressure in the fluid within the container;

drive means operatively connected to a power source so as to be able to adopt either an activated condition or a deactivated condition, said drive means operatively connected to said pressure generating means so that when in the activated condition it causes movement of said pressure generating means to apply a force on said container and in the deactivated condition, movement of the pressure generating means ceases;

pressure monitoring means for monitoring the pressure of the fluid within said container, the monitoring means including sensor means which is adapted to engage the wall of the container; and

control means which is responsive to said monitoring means and operable to cause said drive means to adopt either the activated condition or the deactivated condition, the arrangement being such that in operation the drive means is being activated or deactivated so that the pressure of the fluid within the container is maintained within the predetermined pressure range.

5,509,902

SUBCUTANEOUS CATHETER STABILIZING DEVICES AND METHODS FOR SECURING A CATHETER USING THE SAME

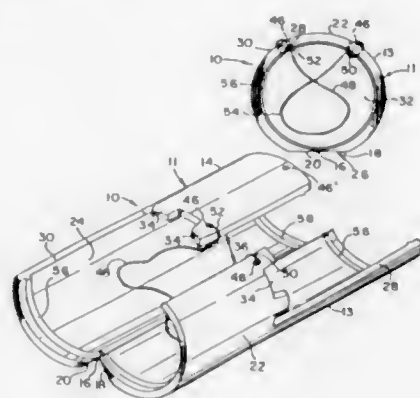
J. Daniel Raulerson, 1205 Belleville Ave., Brewton, Ala. 36426

Filed Jul. 25, 1994, Ser. No. 280,044

Int. Cl.⁶ A61M 5/32; 2/04

U.S. Cl. 604—175

18 Claims



1. A locatable device for subcutaneous securement of a catheter in an area to be catheterized, comprising:

- (a) a first arcuate member having an exterior surface, an interior surface, and a side surface;
- (b) a second arcuate member having an exterior surface, an interior surface, and a side surface;
- (c) a hinge interconnected between the first arcuate member and the second arcuate member such that the first arcuate member is movable with respect to the second arcuate member between a closed position wherein the side surface of the first arcuate member and the side surface of the second arcuate member are coupled in facing relationship forming a tubular base, said tubular base dimensioned for subcutaneous placement and defining a passage extending longitudinally there-through for receiving a catheter therein and an open position wherein the first and second arcuate members are uncoupled and at least partially spaced from each other, the side surface of the first arcuate member and the side surface of the second arcuate member being releasably lockable in the closed position; and

(d) a connecting material extending within the passage, the material having a first end fastened to the first arcuate member and a second end fastened to the second arcuate member, the connecting material configured for forming a tightened loop at least partially around a catheter received in the passage thereby securing the catheter within the device and maintaining free flow of bodily fluid through the catheter.

5,509,903

SYRINGE HAVING A FLEXIBLE COLLAR

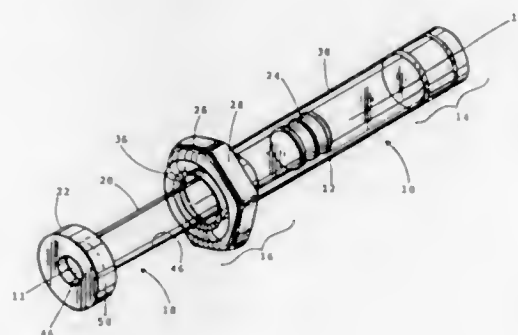
Dennis T. Grendahl, 2070 Shoreline Dr., Orono, Minn. 55391, and Fritz D. Harnsberger, Santa Barbara, Calif., assignors to Dennis T. Grendahl, Orono, Minn.

Filed Nov. 19, 1992, Ser. No. 978,812

Int. Cl.⁶ A61M 5/00

U.S. Cl. 604—187

9 Claims



1. A syringe comprising:

- a plunger;
- a substantially rigid cylindrical body, said body having an axis, an outer surface and an inner surface, a nozzle end, and a plunger end, the plunger end having an outwardly flared flange, the flange having a radial leading surface, and a lip, the leading surface of the flange blending the outer surface of the syringe body with said flange lip, the plunger end the syringe body having disposed thereabout;
- a flexible, conformable finger grip collar, said collar having inner and outer surfaces and being substantially radially symmetric with respect to said axis, said inner surface being concave and being adapted to cooperate with the leading surface of said flange to prevent said body from passing through said collar, the outer surface of said collar defining a continuous multiplicity of radially disposed facets and a finger contacting surface, said facets being substantially flat whereby the facets prevent the syringe from rolling when the syringe is placed upon a horizontal surface and the collar disposes the axis of the syringe at an angle with respect to a horizontal surface upon which the syringe may be placed.

5,509,904

REMOTE DRUG INJECTION DEVICE

Benjamin Kilham, P.O. Box 37, Lyme, N.H. 03768

Filed Aug. 23, 1994, Ser. No. 294,885

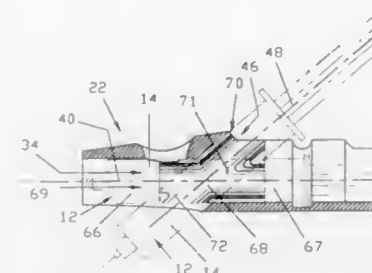
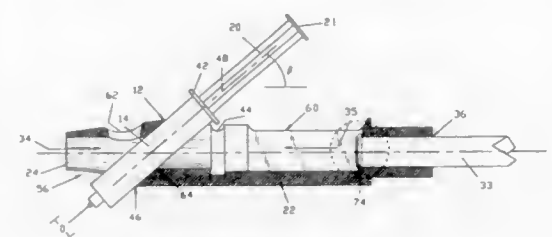
Int. Cl.⁶ A61M 5/32

U.S. Cl. 604—192

15 Claims

1. A remote drug injecting device for remotely administering a drug to an animal which can employ a standard hypodermic syringe having a barrel and a plunger which slidably engages the barrel, comprising:

- a tube having a front rim, a rear rim and a tube axis, said tube having;
- a syringe section having a longitudinal cylindrical syringe engaging passage configured to grippably engage the syringe,



a plunger section having a plunger passage having a cross section configured to accommodate the plunger, and a rear section having a rear passage.

said longitudinal cylindrical syringe engaging passage, said plunger passage, and said rear passage lying on said tube axis;

a cylindrical syringe insertion passage passing through said syringe section of said tube, said cylindrical syringe insertion passage having a central axis which intersects said tube axis providing an intersection between said longitudinal cylindrical syringe engaging passage and said cylindrical syringe insertion passage, said cylindrical syringe insertion passage being contoured to be slidably engaged by the syringe and said intersection providing two paired protrusions which extend into said intersection;

a bottom syringe passage opening extending from said front rim of said tube and joining said cylindrical syringe insertion passage;

a top syringe passage opening extending from said cylindrical syringe insertion passage into said plunger section;

a plunger section opening continuing said top syringe passage opening into said plunger section; and

a shaft slidably engaging said rear passage of said tube.

5,509,905

INJECTOR DISPLAY

Peter Michel, Burgdorf, Switzerland, assignor to Medimpex Ets, Liechtenstein

PCT No. PCT/CH93/00038, § 371 Date Oct. 13, 1993, § 102(e) Date Oct. 13, 1993, PCT Pub. No. WO93/16743, PCT Pub. Date Sep. 2, 1993

PCT Filed Feb. 12, 1993, Ser. No. 133,125

Claims priority, application Switzerland, Feb. 24, 1992, 00555/92

Int. Cl.⁶ A61M 5/00

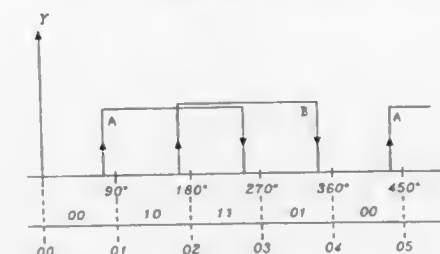
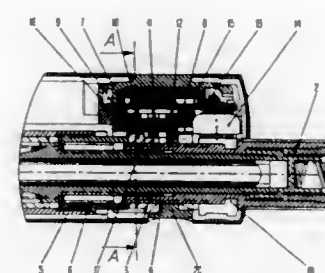
U.S. Cl. 604—207

11 Claims

1. An injection device and display for expelling doses of liquid from a liquid-containing ampoule having a plunger therein and for displaying the status of the dosage and remaining liquid comprising the combination of

a generally cylindrical housing having a longitudinal axis; an operating head having an axially extending cylindrical part, said head and cylindrical part being rotatably carried in said housing;

means in said housing and cylindrical part for permitting axial displacement of said cylindrical part relative to said housing only at selected angular positions of said head and cylindrical part to expel a dose of liquid from said ampoule, said cylin-



drical part being axially movable between a rest position and a fully depressed end position;

a liquid-crystal display on said housing;

first switch means operated by rotation of said head for producing signals representative of rotation of said head to said angular positions and of direction of rotation; second switch means for producing signals representative of axial displacement of said cylindrical part relative to said housing; and printed circuit means having a battery, said printed circuit means being connected to receive said signals from said first and second switch means and to operate said display,

said signals from said first switch means in one direction of rotation being added by said printed circuit means and signals in an opposite direction being subtracted to thereby determine a number of doses, and

said signals from said second switch means being accumulated to indicate a number of expelled doses.

5,509,906

PLUNGERLESS SYRINGE

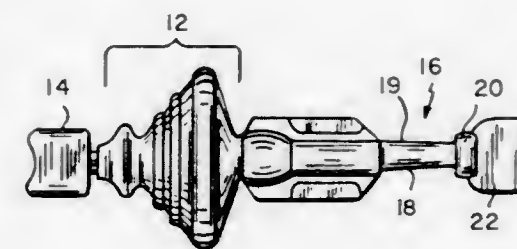
Richard Q. Poynter, Palm Beach, Fla., assignor to HealthStar Pharmaceutical Services, Inc., Riviera Beach, Fla.

Filed May 2, 1995, Ser. No. 431,686

Int. Cl.⁶ A61M 1/00

U.S. Cl. 604—212

3 Claims



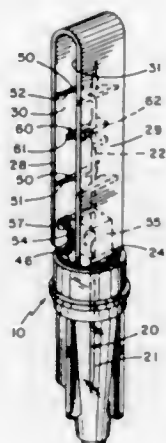
1. A plungerless syringe which comprises:

a collapsible body having a wall containing fluid to be dispensed, a sealed dispensing tip secured to the body, means secured to the body to apply pressure to the body and means to control the collapse of the body which means comprises a plurality of rings, the rings concentrically arrayed on the surface of the body wall, a first ring adapted to be received within and frictionally secured to a second succeeding ring when the body is collapsed and to remain releasably secured thereto.

5,509,907
SYRINGE NEEDLE GUARD ASSEMBLY
 Al Bevilacqua, Naperville, Ill., assignor to Med-Safe Products, Inc., New Lenox, Ill.
 Filed Mar. 17, 1996, Ser. No. 405,724
 Int. Cl.⁶ A61M 5/32

U.S. Cl. 604—263

13 Claims



1. A syringe needle guard assembly for a syringe having an ejection hub adapted to allow fluid to be ejected therethrough from the syringe comprising: a hypodermic needle retaining body having an inlet side longitudinally spaced from an outlet side and adapted to be attached to the ejection hub of the syringe to receive fluid therefrom to said inlet side of said body, a hypodermic needle retained longitudinally in and through said body with an inlet portion and an outlet portion respectively extending from said inlet and outlet sides of said body to allow fluid to flow longitudinally therethrough between said body inlet and outlet sides, a needle outlet guard having a longitudinal cavity adapted to receive said needle outlet portion therinto for guarding said needle, a hinge portion pivotally securing said outlet guard to said body at a lateral side thereof and adjacent said outlet side of said body, to allow said needle outlet guard to pivot to and away from said needle outlet portion for respectively positioning said guard over and away from said needle, said needle outlet guard having means for retaining said outlet guard over said outlet needle portion to guard said needle portion, and a needle inlet guard having an internal cavity adapted to receive said inlet portion of said retaining body and said hinge of said outlet guard therinto for guarding said inlet needle portion and retaining and positioning said inlet and outlet needle guards on said needle body.

5,509,908
ANGULAR SHEATH INTRODUCER
 Richard A. Hillstead, Duluth, Ga., and Joseph B. Muhlestein, Bountiful, Utah, assignors to Novoste Corporation, Norcross, Ga.

Filed Apr. 21, 1994, Ser. No. 230,614

Int. Cl.⁶ A61M 5/00

U.S. Cl. 604—264

15 Claims

1. A hemostatic sheath introducer, comprising:
 a tubular body having a first curved lumen extending therethrough and a top and a bottom end said first lumen tapering from said top to said bottom, said top being angled with respect to said bottom;
 a cap having an opening therein sized to be fitted onto said top end;
 an elastomeric valve having an opening and a slit defined therein adapted for receiving an elongated member in a slidably sealable relationship, said valve being receivable within said top and maintained in place by said cap;
 a cannula extending from said bottom, said cannula being in fluid communication with said first lumen and said cannula being offset from the center of said body; and,

a sideport comprising a second lumen extending laterally from said first lumen to said sidewall and a boss extending outward from a sideport comprising a second lumen extending laterally from said first lumen and a boss extending outward from said body, and said second lumen being in fluid communication with said first lumen.

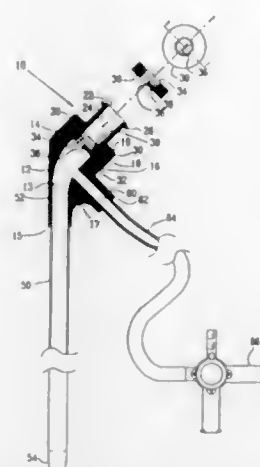
5,509,909
BENT CHEST TUBE ASSEMBLY
 Grant G. Moy, 890 Jackson St., San Francisco, Calif. 94133
 Filed Oct. 6, 1994, Ser. No. 319,032
 Int. Cl.⁶ A61M 25/00

U.S. Cl. 604—281

15 Claims



1. A chest tube assembly constructed and arranged for insertion into the pleural cavity, comprising:
 an elongated catheter having a generally straight proximal portion and a generally straight distal portion, said catheter having a central lumen extending the length thereof and communicating with an open distal end thereof, said catheter being of pre-formed shape such that, when free from external forces, a longitudinal axis of said distal portion forms an angle of approximately 90° with a longitudinal axis of the proximal portion of the catheter; and
 a trocar constructed and arranged to be slidably disposed within said central lumen to selectively project from said open distal end of said catheter,



said catheter being constructed and arranged such that (1) when said trocar is disposed in said central lumen, said catheter is straightened, thereby aligning the longitudinal axis of said distal portion with the longitudinal axis of the proximal portion, and (2) when said trocar is removed from said distal portion of said catheter, said catheter bends, returning to said pre-formed shape.

5,509,910
METHOD OF SOFT TIP ATTACHMENT FOR THIN WALLED CATHETERS
 Peter A. Lunn, Beverly, Mass., assignor to Medtronic, Inc., Minneapolis, Minn.

Filed May 2, 1994, Ser. No. 236,765

Int. Cl.⁶ A61M 25/00

U.S. Cl. 604—282

18 Claims



1. A catheter comprising:
 (a) an elongated soft tip segment having a proximal end and a distal end, the soft tip segment defining at least one lumen;
 (b) an elongated transition segment having a proximal end and a distal end, the transition segment defining at least one lumen, the distal end of the transition segment having at least one angular section, the proximal end of the transition segment having at least one angular section;
 (c) an elongated catheter shaft defining at least one lumen, the catheter shaft having a proximal end, a distal end, and a distal end portion, the distal end portion being shaped to mate with the proximal end of the transition segment, the distal end portion being bonded to the proximal end of the transition segment; and
 (d) the proximal end of the soft tip segment being shaped to mate with the distal end of the transition segment, the proximal end being bonded to the distal end of the transition segment.

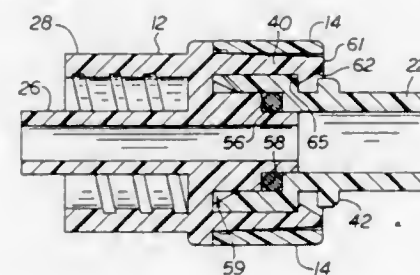
5,509,911
ROTATING ADAPTER FOR A CATHETERIZATION SYSTEM
 Joseph R. Cottone, Sr., Marietta, and Anthony J. Cottone, Ball Ground, both of Ga., assignors to Maxxim Medical, Inc., Sugar Lane, Tex.

Filed Nov. 27, 1992, Ser. No. 982,498

Int. Cl.⁶ A61M 25/00

U.S. Cl. 604—283

30 Claims



1. In a catheterization system including a stem having at one end an outer section with a diameter greater than the diameter of an inner section of the stem, and an outer shoulder formed at the juncture of the outer section and the inner section, a rotating adapter for rotatably connecting to the stem, the combination thereof comprising:
 a collar;

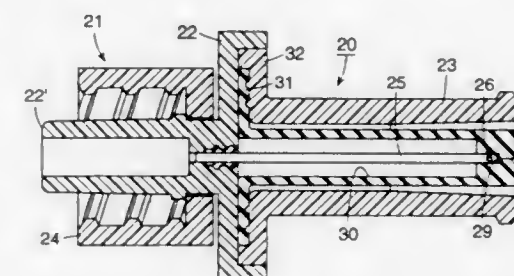
an inner fluid-carrying tube extending within said collar;
 an inner annular shoulder protruding diametrically outwardly from said inner fluid-carrying tube;
 an O-ring disposed between said inner annular shoulder and the interior of the stem, said O-ring being compressed between said inner annular shoulder and the stem when the stem and said collar are mated;
 expansion means on said collar for enabling temporary radial expansion of said collar to permit the stem to be inserted into said collar and to retract said radial expansion after the stem has been inserted into said collar;
 capture means on said collar for securely capturing said collar on the stem; and
 reinforcer means for inhibiting unwanted radial expansion of said collar after the stem and said collar have been mated.

5,509,912
CONNECTOR
 Vincent L. Vaillancourt, Livingston, and John J. Welter, Ocean, both of N.J., assignors to VLV Associates, East Hanover, N.J.
 Continuation-in-part of Ser. No. 328,045, Oct. 24, 1994. This application Dec. 29, 1994, Ser. No. 365,900

Int. Cl.⁶ A61M 5/00

U.S. Cl. 604—283

33 Claims



1. A connector for intravascular and urological use comprising a hollow needle having a closed rounded distal end and at least one opening in a side of said distal end for passage of fluid; and
 a septum receiving said hollow needle therein in sealed relation, said septum having a transverse wall and a recess slidably receiving said closed end of said hollow needle, said septum and said needle being relatively movable to permit passage of said distal end of said needle through said wall of said septum.

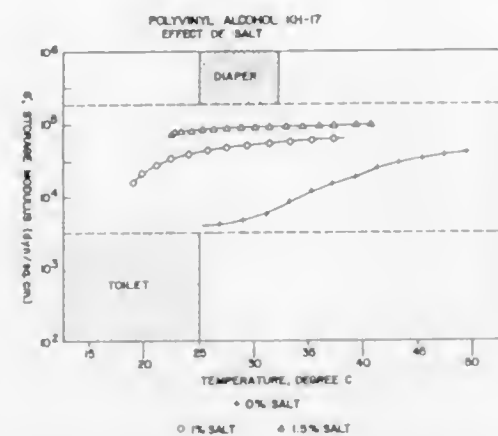
5,509,913
FLUSHABLE COMPOSITIONS
 Richard S. Yeo, Dunwoody, Ga., assignor to Kimberly-Clark Corporation, Neenah, Wis.
 Continuation of Ser. No. 386,247, Feb. 9, 1995, abandoned, which is a continuation of Ser. No. 168,807, Dec. 16, 1993, abandoned. This application Aug. 18, 1995, Ser. No. 516,967

Int. Cl.⁶ A61F 13/15; 13/20

U.S. Cl. 604—364

19 Claims

1. A flushable composition comprising,
 a temperature sensitive water soluble polymer, in combination with means for altering the temperature at which the polymer is water soluble, the means comprising a salt admixed with the polymer in an amount sufficient to render the polymer



reversibly water insoluble in the presence of body waste fluids having a temperature above approximately 25° C., but soluble or dispersible in the presence of normal tap water having a temperature below approximately 23° C.

5,509,914

THIN FLEXIBLE SANITARY NAPKIN

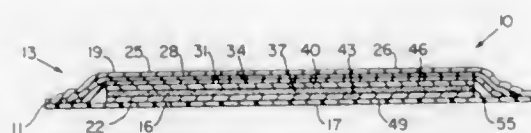
Thomas W. Osborn, III, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 960,176, Oct. 8, 1992, Pat. No. 5,383,869, which is a continuation of Ser. No. 688,755, Apr. 22, 1991, abandoned, which is a continuation of Ser. No. 570,231, Aug. 20, 1990, Pat. No. 5,009,653, which is a continuation of Ser. No. 293,606, Jan. 4, 1989, Pat. No. 4,950,264, which is a continuation-in-part of Ser. No. 175,559, Mar. 31, 1988, abandoned. This application Sep. 17, 1993, Ser. No. 122,850

Int. Cl. A61F 13/15; 13/20

U.S. Cl. 604—368

11 Claims



1. An absorbent article comprising: absorbent means capable of absorbing body exudate, said absorbent means comprising:
 - (a) means for providing containment of a superabsorbent polymer material; and
 - (b) superabsorbent polymer material,
 said absorbent means containing from about 60% to about 100% by weight of said absorbent means of said superabsorbent polymer material, said absorbent means being about 22.0 cm long, less than or equal to about 8.0 cm wide at its widest portion, and being less than or equal to about 2.0 mm in thickness,

the total capacity of the absorbent article being at least 40.0 grams.

5,509,915

THIN ABSORBENT ARTICLE HAVING RAPID UPTAKE OF LIQUID

William D. Hanson, Neenah; Lynn C. Brud; Shannon K. Byerly, both of Appleton, all of Wis.; Clifford J. Ellis, Woodstock, Ga.; Rob D. Everett, Appleton, Wis.; Barbara A. Gossen, Neenah, Wis.; Violet M. Grube, Appleton, Wis.; David G. Iwanski, Menasha, Wis.; David L. LeMahieu, Appleton, Wis.; Jian Qin, Appleton, Wis.; Robert A. Stevens, Appleton, Wis.; Tom K. Wentzel, Kimberly, Wis.; Sandra M. Yarbrough, Appleton, Wis.; David L. Zenker, Neenah, Wis., and MaryAnn Zunker, Oshkosh, Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.

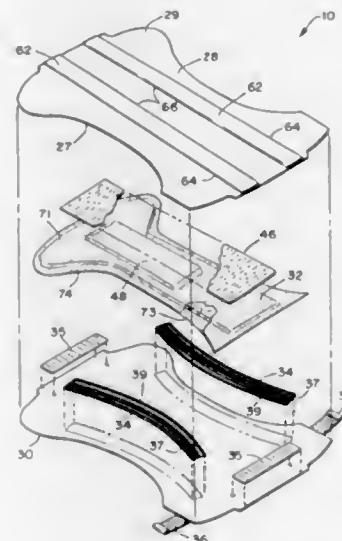
Continuation of Ser. No. 757,760, Sep. 11, 1991, abandoned.

This application Jul. 22, 1993, Ser. No. 96,654

Int. Cl. A61F 13/20

U.S. Cl. 604—378

52 Claims



1. An absorbent article, comprising:
 - a backsheet layer;
 - a fibrous, liquid permeable topsheet layer for positioning against a wearer's skin, said topsheet layer having length and width dimensions and disposed in facing relation with said backsheet layer;
 - an absorbent retention portion which is interposed between said backsheet layer and topsheet layer, said retention portion having length and width dimensions smaller than corresponding dimensions of said topsheet layer and comprising a matrix of substantially hydrophilic fibers having a distribution of high-absorbency particles therein, said hydrophilic fibers and high-absorbency particles provided in a fiber-to-particle ratio which is not more than about 70:30 and is not less than about 30:70 by weight;
 - a fibrous surge management layer which is arranged to transport liquid therethrough and includes bicomponent fibers having a denier of not more than about 3 d, said surge management layer having a facing surface thereof located in an adjacent, facing relation with at least one major, facing surface of said topsheet layer and thereby arranged to transport liquid between said facing surface of said surge management layer and said adjacent facing surface of said topsheet layer;
 - a multi-element wrapsheet which is located between said backsheet layer and said surge management layer and is placed adjacent major surfaces of said retention portion; said multi-element wrapsheet including a bodyside wrap layer and a separate outside wrap layer, each of which extends past all or some peripheral edges of said fiber matrix to provide an outwardly protruding flange-type bonding region over which an entire or partial periphery of the bodyside wrap layer is connected to an entire or partial periphery of the outside wrap layer.

5,509,916

LASER-ASSISTED ELECTROSURGERY SYSTEM

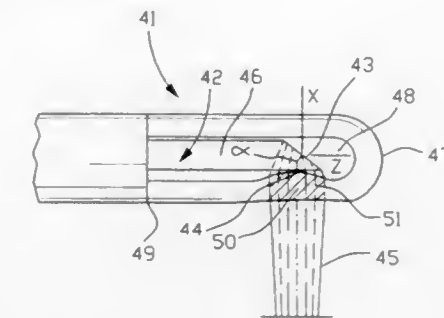
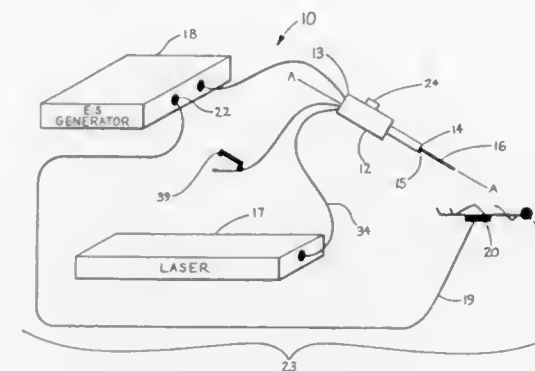
Kenneth D. Taylor, Broomfield, Colo., assignor to Valleylab Inc., Boulder, Colo.

Filed Aug. 12, 1994, Ser. No. 289,958

Int. Cl. A61B 17/32

U.S. Cl. 606—13

7 Claims



bi-directional lens for focusing said output beam as it exits said device into a surrounding medium.

5,509,918

METHOD AND APPARATUS FOR DRILLING A CURVED BORE IN AN OBJECT

Jack W. Romano, Seattle, Wash., assignor to David Romano, Seattle, Wash.

Filed May 11, 1993, Ser. No. 59,834

Int. Cl. A61B 17/56

U.S. Cl. 606—80

29 Claims



29. A method for drilling a bore in an object comprising the steps of:
 - (a) providing rotational drive forces to two separate cutting members, each of such cutting members being mounted in a common housing for movement relatively toward and away from each other;
 - (b) moving one of the cutting members along a curved path through the object; and
 - (c) moving the other cutting member along a path through the object which intersects the curved path, the cutting members being moved along their respective paths in coordinated timed fashion such that one of the cutting members moves first to and then away from a point of intersection of the paths, followed by movement of the other cutting member to the point of intersection to complete the bore, without the cutting members interfering with each other.

5,509,917

LENSED CAPS FOR RADIAL MEDICAL LASER DELIVERY DEVICES

Walter Cecchetti, Padova, and Stefano Guazzieri, Venice, both of, Italy, assignors to CeramOptec Industries, Inc., East Longmeadow, Mass.

Filed Jun. 28, 1994, Ser. No. 265,058

Int. Cl. A61B 17/36

U.S. Cl. 606—15

8 Claims

1. A medical laser delivery device comprising:
 - an optical fiber terminated at a proximal end so that it can be connected to a medical laser source, and with a distal end having a prismatic cut fiber tip for sideways directing of an output beam by total reflection;
 - said fiber's distal end enclosed by a cap whose open end is bonded to said fiber so as to create a gas pocket around said prismatic cut fiber tip; and
 - a sector of said cap, lying within said output beam direction, being converted, after said cap is bonded to said fiber, into a

5,509,919

APPARATUS FOR GUIDING A REAMING INSTRUMENT

Merry A. Young, 540 N. Mulford, #2, Rockford, Ill. 61107

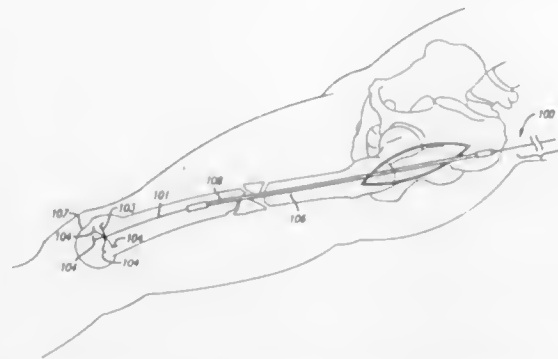
Filed Sep. 24, 1993, Ser. No. 125,690

Int. Cl. A61B 17/56

U.S. Cl. 606—80

11 Claims

7. A guide rod assembly for reaming a medullary canal of a bone and for placement of a guide rod into said medullary canal comprising:
 - at least one hollow reaming instrument;
 - an elongated rod having an external surface of a substantially constant diameter along its length, said substantially constant diameter being of a size smaller than the internal diameter of said at least one hollow reaming instrument so that said rod can serve as a guide for said at least one remaining instrument;



said elongated rod having a smoothly shaped distal end to facilitate movement of said elongated rod through bone material within an unreamed medullary canal of said bone during placement of said elongated rod in said canal;

a retention mechanism for holding said elongated rod in a desired position in said medullary canal during retraction of a hollow reaming instrument out of said medullary canal wherein said reaming instrument is being guided by said elongated rod during said retraction;

said retention mechanism including at least one member movable from a first position within said substantially constant diameter of said external surface to a second position outside said substantially constant diameter of said external surface such that said at least one member extends beyond said external surface of said elongated rod so as to come into contact with material in said bone and thereby hold said elongated rod in said desired position during retraction of said at least one reaming instrument; and,

said retention mechanism disposed at a distal end of said elongated rod.

5,509,920

SURGICAL HEMOSTATIC CLIP

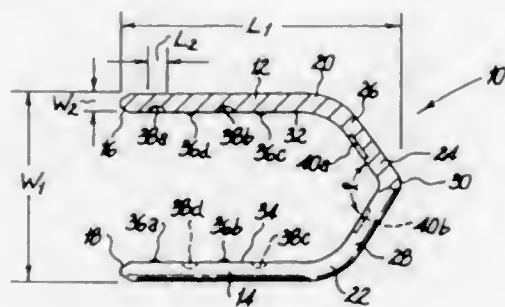
Paul J. Phillips, Middlebury; Mark S. Peyser, Monroe, and John Webster, Cromwell, all of Conn., assignors to United States Surgical Corporation, Norwalk, Conn.

Continuation of Ser. No. 48,467, Apr. 16, 1993, abandoned. This application Aug. 1, 1994, Ser. No. 283,949

Int. Cl.⁶ A61B 17/04

U.S. Cl. 606—157

29 Claims



1. A hemostatic clip for application to body tissue comprising: a unitary clip body defining first and second opposed elongated leg portions and a connecting bail portion, each of said first and second leg portions having opposed side walls defining opposing boundaries and an elongated tissue contacting surface defined thereon, said tissue contacting surface of said

first leg portion having a plurality of longitudinally spaced apart protuberances provided thereon and disposed within said opposing boundaries defined by said opposed side walls of said first leg portion, said tissue contacting surface of said second leg portion having a plurality of longitudinally spaced apart recessed areas provided therein and disposed within said opposing boundaries defined by said opposed side walls of said second leg portion in juxtaposed alignment with said protuberances, said protuberances being dimensioned and configured to urge body tissue into said recessed areas during the application of said hemostatic clip so as to inhibit longitudinal and transverse movement of said hemostatic clip relative to the body tissue to which it is applied without causing trauma thereto, wherein each recessed area has a lengthwise dimension which exceeds a lengthwise dimension of each protuberance by a factor of at least two.

5,509,921

SAFE EAR WAX REMOVER

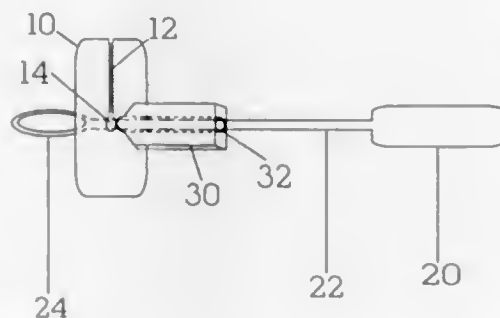
Manuel L. Karell, 3573-22 St., San Francisco, Calif. 94114
Continuation-in-part of Ser. No. 153,880, Nov. 17, 1993, Pat. No. 5,334,212. This application Jun. 13, 1994, Ser. No.

258,760

Int. Cl.⁶ A61F 11/00

U.S. Cl. 606—162

12 Claims



1. An apparatus to remove wax from the ear comprising: a shaft having distal and proximal ends, wherein said distal end has a means to extract wax and said proximal end has a handle for manipulation;

a stopper positioned between distal end and handle, surrounding said shaft and wherein said stopper has a slit ending in a central hole to allow said means to extract wax to be inserted into and through said slit thereby allowing shaft to rest in central hole

an adjuster, positioned between stopper and handle, slidable, surrounding said shaft and having a hole sufficiently small to cause increased friction onto said shaft, thereby requiring an external force to move adjuster position on shaft; wherein, said means to extract wax, said stopper and said adjuster will act as a functional unit when inserted into the ear canal, preventing said means to extract wax from being inserted too far into the ear canal, thereby preventing ear drum injury as the wax is removed.

5,509,922

ENDOSCOPIC SURGICAL INSTRUMENT

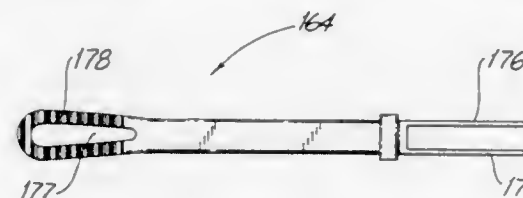
Ernie Aranyi, Easton; Paul A. Matula, Brookfield; Henry Bolanos, East Norwalk, and Frank M. Rende, III, Stamford, all of Conn., assignors to United States Surgical Corporation, Norwalk, Conn.

Continuation of Ser. No. 68,588, May 26, 1993, abandoned, which is a continuation of Ser. No. 780,273, Oct. 18, 1991, abandoned, which is a continuation-in-part of Ser. No. 593,670, Oct. 5, 1990, abandoned. This application Nov. 1, 1994, Ser. No. 333,123

Int. Cl.⁶ A61B 17/00

U.S. Cl. 606—205

8 Claims



1. An endoscopic surgical instrument comprising: a handle assembly including a stationary handle and a pivoting handle;

a body assembly including a pair of coaxial members attached at one end to said handle assembly and defining a generally longitudinal axis, said body assembly comprising a rigid inner rod member extending longitudinally and positioned within an outer tube member, said inner rod member slidable longitudinally in proximal and distal directions relative to said outer tube member in response to movement of said pivoting handle and terminating at a second end portion in a bearing surface;

a tool mechanism comprising first and second elongated grasping jaw members extending distally and being pivotally secured to a second end of said outer tube member for pivotable movement about a common pivot axis, said tool mechanism being provided with an elongated camming surface which is adapted to be slidably engaged directly by said bearing surface of said inner rod member;

wherein movement of said pivoting handle slides said inner rod member in relation to said outer tube member, such that said bearing surface of said inner rod member slidably engages and travels over said elongated camming surface of said tool mechanism when said inner rod member is moved distally and proximally to pivot said tool mechanism to respectively open and close said elongated grasping jaw members;

said first elongated grasping jaw member having a first generally planar base surface at a proximal portion, a first opening formed completely therethrough in a direction non-parallel to the axis of elongation at a location distal of said first generally planar base surface, and at least one first row of atraumatic teeth adjacent said first opening, said at least one first row of atraumatic teeth projecting beyond said first generally planar base surface toward said second elongated grasping jaw member; and

said second elongated grasping jaw member having a second generally planar base surface positioned opposite said first generally planar base surface, a second opening formed completely therethrough in a direction non-parallel to the axis of elongation at a location distal of said second generally planar base surface and at least one second row of atraumatic teeth adjacent said second opening, said at least one second row of atraumatic teeth projecting beyond said second generally planar base surface toward said first elongated grasping jaw member, said at least one second row of atraumatic teeth meshing and interfitting directly with said at least one first row of atraumatic teeth of said first elongated grasping jaw member upon pivoting said elongated grasping jaw members into a closed position whereby, when said elongated grasping jaw members are pivoted to said closed position, said first and second generally planar base surfaces form a tissue reception

portion of a generally rectangular cross section in a plane defined by said generally longitudinal axis and an axis perpendicular to said common pivot axis and said generally longitudinal axis, said tissue reception portion cooperative with said first and second openings to receive excess tissue.

5,509,923

DEVICE FOR DISSECTING, GRASPING, OR CUTTING AN OBJECT

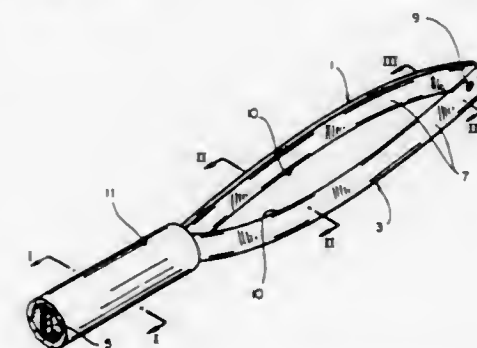
Lee M. Middleman, Portola Valley, and Walter R. Pyka, Redwood City, both of Calif., assignors to Raychem Corporation, Menlo Park, Calif.

Continuation-in-part of Ser. No. 594,770, Oct. 9, 1990, abandoned, which is a continuation-in-part of Ser. No. 394,463, Aug. 16, 1989, abandoned. This application Dec. 21, 1990, Ser. No. 631,809

Int. Cl.⁶ A61B 17/00

U.S. Cl. 606—207

21 Claims



1. A device for dissecting an object which comprises at least two elongate elements, positioned alongside one another, each having a body portion and an end portion, the end portions of the elements including means for:

i. being capable of being splayed apart from one another when free of transverse constraint to dissect said object from surrounding material; and

ii. being capable of being moved toward one another; wherein a portion of at least one of the elements is formed from a pseudoelastic material.

5,509,924

EPICARDIAL STIMULATION ELECTRODE WITH ENERGY DIRECTING CAPABILITY

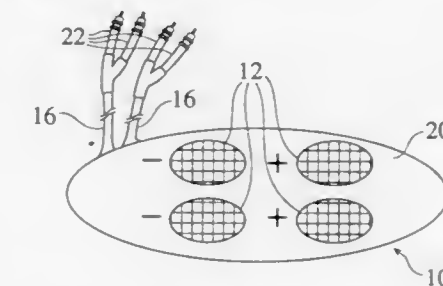
Paul M. Paspas, Santa Clara, and Peter A. Altman, Woodside, both of Calif., assignors to Ventritex, Inc., Sunnyvale, Calif.

Filed Apr. 12, 1994, Ser. No. 226,741

Int. Cl.⁶ A61N 1/05

U.S. Cl. 607—5

24 Claims



1. An implantable epicardial cardiac stimulation electrode for delivering defibrillation energy to a patient's heart comprising: an insulative backing having an outer periphery;

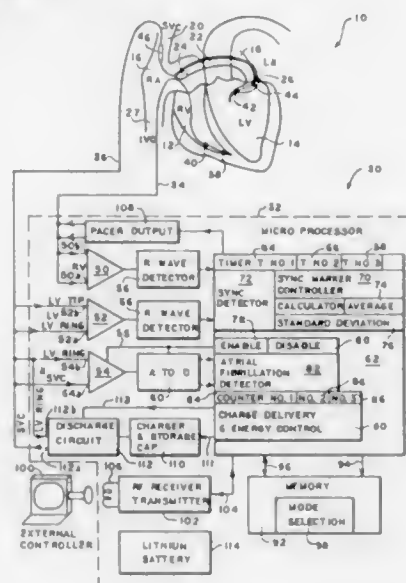
a conductive portion on one surface of said insulative backing and having an outer edge located away from said insulative backing outer periphery by an amount capable of shielding said patient's body from at least a portion of said defibrillation energy; and
wherein said conductive portion outer edge is spaced from said insulative backing outer periphery by an average of at least two centimeters.

5,509,925 ATRIAL FIBRILLATION DETECTOR AND DEFIBRILLATOR USING THE SAME

John M. Adams, Issaquah, and Clifton A. Alferness, Redmond, both of Wash., assignors to InControl, Inc., Redmond, Wash. Continuation of Ser. No. 297,145, Aug. 29, 1994, Pat. No. 5,403,354, which is a continuation of Ser. No. 96,029, Jul. 22, 1993, abandoned, which is a continuation of Ser. No. 685,130, Apr. 12, 1991, Pat. No. 5,282,837. This application Nov. 29, 1994, Ser. No. 346,484
Int. Cl.⁶ A61N 1/39

U.S. Cl. 607—5

8 Claims



1. In a defibrillator for applying cardioverting electrical energy to a heart when the heart is in need of cardioversion, an atrial fibrillation detector comprising:
sensing means for sensing ventricular activity of the heart;
and,
means responsive solely to said ventricular activity of the heart for detecting probability of atrial fibrillation.

5,509,926 IMPLANTABLE MEDICAL DEVICE HAVING MEANS FOR SUPPRESSING THERMALLY INDUCED SIGNALS FROM PIEZOELECTRIC SENSORS AND METHOD THEREOF

Said Mortazavi, Sherman Oaks, and Gene A. Bornzin, Camarillo, both of Calif., assignors to Pacesetter, Inc., Sylmar, Calif.

Filed Feb. 6, 1995, Ser. No. 384,167
Int. Cl.⁶ A61N 1/365

U.S. Cl. 607—19

23 Claims

1. A rate-responsive pacemaker comprising:
a piezoelectric sensor for generating sensor signals, the sensor signals including signals representative of physical activity and thermally induced signals;



pulse generating circuitry for generating pacing pulses at an adjustable rate;
processor circuitry for determining the rate at which the pulse generating circuitry generates pacing pulses in accordance with sensor signals generated by the piezoelectric sensor; and
pyroelectric suppressor circuitry, coupled to the piezoelectric sensor and to the processor circuitry, for substantially limiting the sensor signals received by the processor circuitry to the signals representative of physical activity.

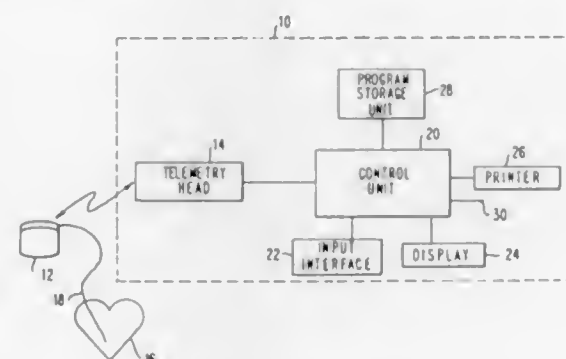
5,509,927 PROGRAMMING SYSTEM HAVING MEANS FOR RECORDING AND ANALYZING A PATIENT'S CARDIAC SIGNAL

Andrew E. Epstein, Birmingham, Ala.; James L. Duncan, Alpharetta, Ga.; Paul A. Levine, Santa Clarita, and Jason A. Sholder, Beverly Hills, both of Calif., assignors to Pacesetter, Inc., Sylmar, Calif.

Continuation of Ser. No. 113,540, Aug. 27, 1993, Pat. No. 5,421,830. This application Feb. 1, 1995, Ser. No. 381,799
Int. Cl.⁶ A61N 1/37

U.S. Cl. 607—32

8 Claims



1. A programming system for programming and optimizing a plurality of programmed parameters for use in a cardiac stimulating device, the cardiac stimulating device being capable of applying a corresponding therapy to a patient's heart based on the plurality of programmed parameters, the programming system comprising:

means for recording a patient's cardiac signal over a predetermined time interval for playback;
means for playing back such cardiac signal;
first telemetry means for telemetering the recorded cardiac signal; and
external programmer means comprising:
second telemetering means for receiving the telemetered recorded cardiac signal; and
means for analyzing the response of the cardiac stimulating device to the played back cardiac signal based on the plurality of programmed parameters.

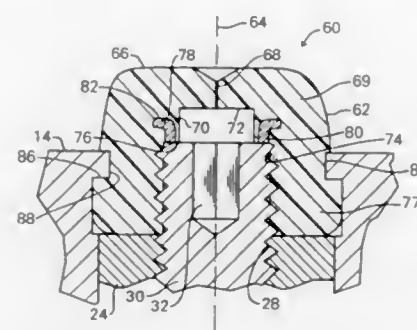
5,509,928 INTERNALLY SUPPORTED SELF-SEALING SEPTUM

Alfred D. Acken, Sylmar, Calif., assignor to Pacesetter, Inc., Sylmar, Calif.

Filed Mar. 2, 1995, Ser. No. 398,581
Int. Cl.⁶ A61N 1/375

U.S. Cl. 607—037

13 Claims



1. In an implantable medical device including a housing enclosing a receptacle for receiving a pacing lead connector pin, the receptacle including a connector block having a threaded aperture for receiving a setscrew for securing the connector pin to the connector block, a self-sealing septum adapted to be mounted on said housing for isolating the setscrew, the septum comprising a generally cylindrical elastomer body having a central axis and including a self-sealing passage coaxial with said axis for receiving a tool for driving the setscrew, the body of the septum containing a generally ring-shaped stiffener element positioned substantially coaxial of said axis, the stiffener element preventing damage to the septum as a result of insertion of the setscrew driving tool in the septum passage.

5,509,929 URETHRAL PROBE AND APPARATUS FOR THE THERAPEUTIC TREATMENT OF THE PROSTATE BY THERMOTHERAPY

Gérard Hascoet, Paris; François Lacoste, Lyons; Muriel Calhaud, Venissieux; Marian Devonec, Miribel, and Paul Perrin, Lyons, all of, France, assignors to Technomed Medical Systems, Vaulx-en-Velin, France

Continuation-in-part of Ser. No. 667,847, Mar. 12, 1991, Pat. No. 5,234,004, which is a continuation-in-part of Ser. No. 438,741, Nov. 17, 1989, abandoned. This application Oct. 6, 1992, Ser. No. 957,400

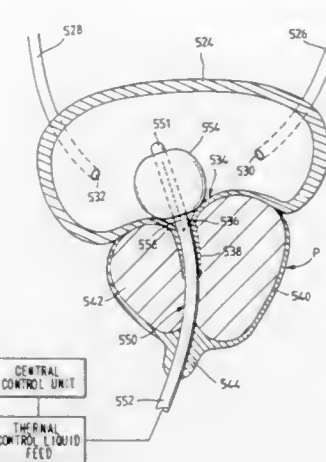
Claims priority, application France, Nov. 21, 1988, 88 15126; Japan, Mar. 12, 1990, 90 03121; Jul. 6, 1992, 92 08319

Int. Cl.⁶ A61N 5/02

U.S. Cl. 607—101

35 Claims

1. A urethral probe, comprising: an elongated tubular body having a front part, a middle part and a rear part; microwave antenna means connectable to an external microwave generating device for emitting microwaves, the probe being insertable into a prostate and bladder; and means for positioning the probe into a working position in which the middle part is in the prostate and the front part projects from the middle part into the bladder, the microwave antenna means having a primary active heating part arranged in the probe at a predetermined distance from a distal end of the front part so that in the working position microwave radiation is directed onto prostatic tissues situated mainly at a level of the bladder neck.



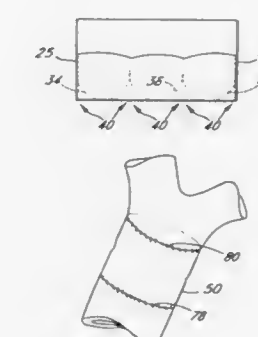
5,509,930 STENTLESS HEART VALVE

Jack W. Love, Santa Barbara, Calif., assignor to Autogenics, Newbury Park, Calif.

Filed Dec. 17, 1993, Ser. No. 170,002
Int. Cl.⁶ A61F 2/24; 2/76

U.S. Cl. 623—2

30 Claims



2. A stentless prosthetic heart valve formed from tissue removed from a patient during open heart surgery, said heart valve comprising:

a single piece of autologous tissue substantially entirely forming said heart valve, inner and outer layers of said tissue having a common fold, said layers secured to each other along two lines extending distally from said fold to form three segments of tissue, each segment having opposing corners at said fold, said inner and outer layers secured together along an arc formed in each segment, said arc sealing the corners of said segments of tissue from bloodflow through said valve to prevent stagnation of blood in said valve during the operation thereof, said folded tissue having opposing ends, said opposing ends being parallel to said two distally extending lines, said opposing ends being joined together to form an annular, self-supporting heart valve in which the three segments of inner tissue form three coapting valve cusps.

5,509,931
RAVEL-RESISTANT SELF-SUPPORTING WOVEN
VASCULAR GRAFT

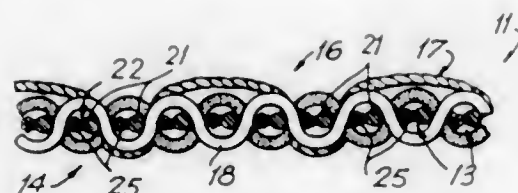
Peter J. Schmitt, Garnerville, N.Y., assignor to Meadox Medicals, Inc., Oakland, N.J.

Continuation of Ser. No. 875,876, Apr. 29, 1992, Pat. No. 5,282,846, which is a division of Ser. No. 573,947, Aug. 28, 1990, abandoned. This application Jan. 28, 1994, Ser. No. 188,560

Int. Cl.⁶ A61F 2/06

U.S. Cl. 623—1

27 Claims



- I. A ravel-resistant and self-supporting tubular synthetic fabric vascular graft resistant to kinking, comprising:
 - a plurality of warp yarns woven with at least one filling yarn to form a weave;
 - the filling yarn including a stiffening component in the weave which is heat set in a rounded condition to render the tubular graft self supporting; and
 - the weave including a low melting temperature fusible component having a melting temperature lower than the other yarns to bond to adjacent yarns when heat set.

5,509,932
FIXED TISSUE MEDICAL DEVICES COMPRISING
ALBUMIN-BINDING DYES

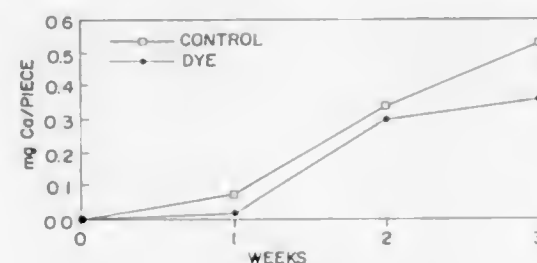
James R. Keogh, 1201 Frank Ct., Maplewood, Minn. 55109; David A. Pearson, 7717 Beard Ave. North, Brooklyn Park, Minn. 55443, and John W. Eaton, 76 Bulson Rd., Troy, N.Y. 12180

Filed Apr. 8, 1993, Ser. No. 44,846

Int. Cl.⁶ A61F 2/02

U.S. Cl. 623—11

32 Claims



- I. An implantable medical device comprising fixed tissue incorporating an amount of an albumin-binding dye effective to form a

coating of endogenous albumin on said device when said device is in contact with a physiological fluid containing albumin.

5,509,933
MEDICAL IMPLANTS OF HOT WORKED, HIGH
STRENGTH, BIOCOMPATIBLE, LOW MODULUS
TITANIUM ALLOYS

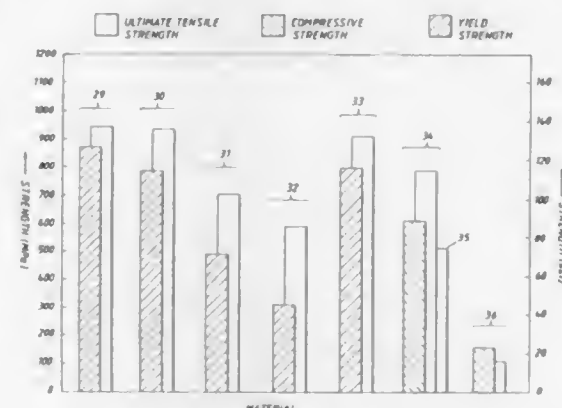
James A. Davidson, Germantown, and Ajit K. Mishra, Memphis, both of Tenn., assignors to Smith & Nephew Richards, Inc., Memphis, Tenn.

Continuation-in-part of Ser. No. 986,280, Dec. 7, 1992, abandoned, which is a continuation-in-part of Ser. No. 647,453, Jan. 28, 1991, Pat. No. 5,169,597, which is a continuation of Ser. No. 454,181, Dec. 21, 1989, abandoned. This application Mar. 24, 1993, Ser. No. 36,414

Int. Cl.⁶ A61F 2/28; 5/00; 2/36

U.S. Cl. 623—16

40 Claims



- I. A biocompatible medical implant of low modulus and high strength for implantation into a recipient's body where it is subject to varying loads imposed by physical forces and corrosive effects of body fluids, said medical implant comprising:

a metallic alloy, said metallic alloy comprising a grain structure that results from said alloy having been subjected to metallurgical treatment steps comprising:

- (i) heating to a temperature in the range of from 100 ° C. below a B-transus temperature of the alloy to above the B-transus temperature;
- (ii) hot working the alloy to produce a hot worked alloy;
- (iii) rapidly quenching the hot worked alloy; and
- (iv) aging the alloy at a temperature and for a time sufficient to develop strength in the alloy that is greater than an alloy of identical wt % composition that has not been subjected to said metallurgical treatment steps;

wherein the metallic alloy comprises as components: titanium; from about 10 to about 20 wt. % niobium; an amount of zirconium in solution in the alloy sufficient to act as a beta stabilizer by slowing the transformation of beta; and wherein the alloy is substantially free of toxic elements, said toxic elements being aluminum, vanadium, cobalt, nickel, molybdenum and chromium, except such amounts of said toxic elements as may occur as impurities in the components and contaminants as a result of processing, the amounts of said impurities and contaminants being insignificant to cause adverse effect on the recipient's body.

5,509,934
PROSTHETIC KNEE TIBIAL COMPONENT
CONSTRUCTED OF SYNTHETIC POLYMERIC
MATERIAL

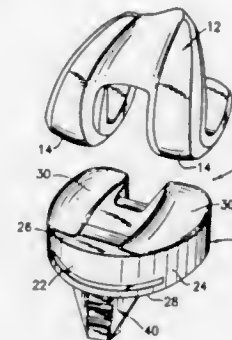
Robert C. Cohen, Rockaway Township, N.J., assignor to Osteonics Corp., Allendale, N.J.

Continuation of Ser. No. 145,295, Oct. 29, 1993, abandoned, which is a continuation of Ser. No. 946,011, Sep. 15, 1992, abandoned, which is a continuation of Ser. No. 843,648, Feb. 28, 1992, abandoned. This application Dec. 7, 1994, Ser. No. 351,552

Int. Cl.⁶ A61F 2/38

U.S. Cl. 623—20

14 Claims



- I. A tibial component constructed of a unitary member of synthetic polymeric material for use in a prosthetic knee implant including a femoral component having condylar elements, the tibial component including a bearing portion having an upper surface for confronting the femoral component and a lower surface for engaging the proximal tibia, the tibial component comprising: condylar bearing surface portions along the upper surface of the bearing portion for engaging the condylar elements of the femoral component and accepting the load imposed by the condylar elements of the femoral component during service; and

a keel projecting in an axial direction downwardly from a proximal end at the lower surface of the bearing portion to a distal end spaced away from the lower surface, the keel including a pair of flanges extending in the axial direction and establishing a generally V-shaped overall cross-sectional configuration in planes transverse to the axial direction, the V-shaped cross-sectional configuration having an apex located essentially centrally of the bearing portion along the medial-lateral direction; the flanges each having an inner edge located adjacent the apex, and an outer edge spaced away from the apex in a medial-lateral direction and extending in a posterior direction from the inner edge toward the outer edge such that the flanges make an angle with one another so as to be placed beneath the bearing surface portions and being tapered axially such that the outer edges extend generally from the lower surface of the bearing portion at the proximal end of the keel to the apex at the distal end of the keel to establish gussets for reinforcing the bearing portion against the load imposed by the condylar elements of the femoral component and stabilizing the keel during service.

5,509,935
INTRAMEDULLARY IMPLANT WITH OPTIMIZED
GEOMETRIC STIFFNESS

Dominic R. Fosco, and R. Steven Boggan, both of Cordova, Tenn., assignors to Wright Medical Technology, Inc., Arlington, Tenn.

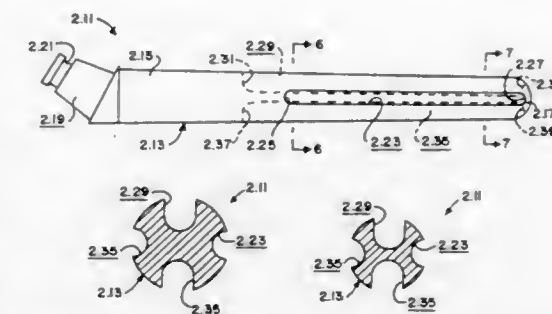
Filed Feb. 16, 1994, Ser. No. 194,284

Int. Cl.⁶ A61F 2/32

U.S. Cl. 623—22

20 Claims

- I. An intramedullary implant comprising an elongated body member having a first end and a second end and having a geomet-



ric stiffness; first groove means in said body member extending between said first and second ends of said body member for varying the geometric stiffness of said body member; and second groove means in said body member extending between said first and second ends of said body member a greater distance than said first groove means for varying the geometric stiffness of said body member; said first and second groove means being disconnected from one another and having contours; said contour of said first groove means having a cross-sectional area; said contour of said second groove means having a cross-sectional area; said cross-sectional area of said contour of said first groove means being different than said cross-sectional area of said contour of said second groove means for allowing the geometric stiffness of said body member to be optimally varied.

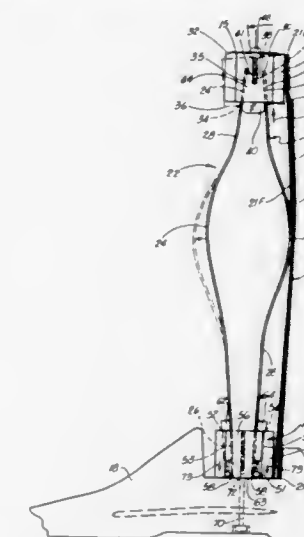
5,509,936
DUAL LEAF SPRING STRUT SYSTEM
Albert F. Rappoport, P.O. Box 3256, Santa Monica, Calif. 90408, and Jerome P. Voisin, 145 Agos St., Houma, La. 70363

Filed Jun. 30, 1994, Ser. No. 268,336

Int. Cl.⁶ A61F 2/60

U.S. Cl. 623—27

15 Claims



- I. An improved lower leg prosthesis, comprising:
 - a) an upper end, having a cavity formed therein, for securing to a prosthetic knee joint or socket;
 - b) a lower end for securing to a prosthetic ankle joint;
 - c) a pair of leaf spring members extending between the upper and lower ends of the prosthesis, and secured within the cavity of the upper end of the prosthesis;
 - d) means associated with each of the leaf spring members for providing flexion of the leaf springs during the walking movements; and
 - e) wedge means positionable in the upper and lower ends of the prosthesis for engaging the upper and lower ends of the leaf

spring members within the upper and lower ends of the prosthesis, respectively.

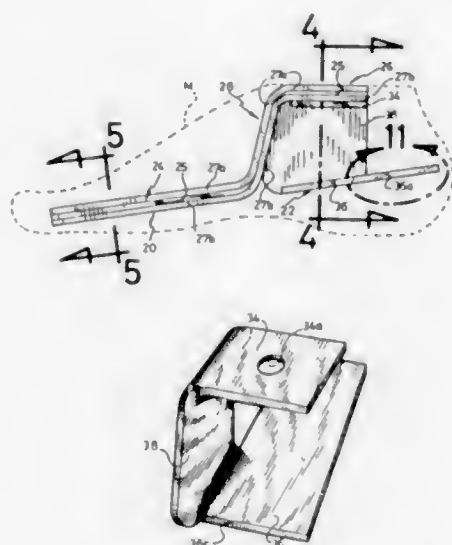
5,509,937 PROSTHETIC FOOT WITH ENHANCED HEEL CONTROL

Paul Allard, Pierrefonds; Jean Dansereau, Ste-Thérèse; François Trudeau, and Rony Herrera, both of Montréal, all of, Canada, assignors to Université De Montréal, Montréal, Canada

Continuation-in-part of Ser. No. 181,028, Jan. 14, 1994, Pat. No. 5,425,781. This application Apr. 11, 1995, Ser. No. 420,161 Int. Cl.⁶ A61F 2/66

U.S. Cl. 623—55

13 Claims



1. A resilient prosthetic foot keel comprising:

- a unitary spatula member, defining an elongated, lower, fore and aft extending forefoot member, an upper fore and aft extending rear member, and a generally wavy intermediate member integrally transversely joining said forefoot and rear members in an axially offset fashion;
 - a generally arcuate unitary heel member, defining a flat top heel part, a bottom heel part, and an intermediate heel part transversely integrally interconnecting said top and bottom heel parts; and
 - attachment means, fixedly interconnecting said top heel part to said spatula rear member;
- wherein a generally open pocket is defined by said heel member and by said spatula intermediate and rear members, said pocket opening both rearwardly of the foot keel and laterally outwardly thereof on the side opposite said intermediate heel

part, and wherein the shape of said open pocket is resiliently deformable responsively to the cyclical loads sustained by the spatula forefoot member and bottom heel part during the wearer's gait.

5,509,938 PROSTHETIC FOOT INCORPORATING ADJUSTABLE BLADDER

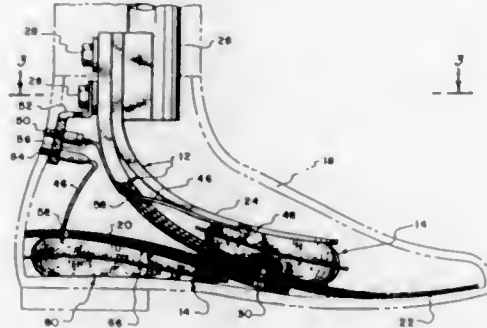
Van L. Phillips, 5499 Avenida Maravillas, Rancho Santa Fe, Calif. 92067

Continuation of Ser. No. 951,857, Sep. 28, 1992, abandoned, which is a continuation of Ser. No. 662,783, Feb. 28, 1991, Pat. No. 5,290,319. This application Jan. 4, 1994, Ser. No. 177,703

Int. Cl.⁶ A61F 2/62; 2/66

U.S. Cl. 623—56

17 Claims



12. A foot prosthesis for supporting an amputee relative to a ground surface, said foot prosthesis comprising:

- a flexible forefoot member extending downward and forward from a substantially vertical section adapted to support said amputee to a distal end adapted to contact said ground surface, said forefoot member having a cross-sectional configuration that is substantially more flexible in the fore-and-aft direction than in the side-to-side direction such that it is capable of supporting said amputee and of providing energy storage and release during normal walking or running activities;
- an auxiliary support member extending downward and forward relative to said forefoot member so as to define a space between said auxiliary support member and said forefoot member, said auxiliary support member having a substantially free distal end which is adapted to move in a transitory manner relative to said distal end of said forefoot member during normal walking or running activities; and
- a bladder positioned in said space formed between said forefoot member and said auxiliary support member such that when a load is placed on said forefoot member, said bladder is compressed between said forefoot member and said auxiliary support member, wherein the cooperation of said bladder, said forefoot member and said auxiliary support member determines the prosthetic foot's energy storage and release characteristics.

CHEMICAL

5,509,939 SOIL-RELEASE PROCESS

Jack R. Kirchner, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 843,886, Feb. 28, 1992, abandoned, and a continuation-in-part of Ser. No. 166,331, Dec. 10, 1993, Pat. No. 5,411,766, which is a continuation of Ser. No. 52,421, Mar. 30, 1993, abandoned, which is a continuation of Ser. No. 815,753, Jan. 2, 1992, abandoned, which is a continuation-in-part of Ser. No. 459,040, Dec. 29, 1989, abandoned. This application Oct. 17, 1994, Ser. No. 323,984

Int. Cl.⁶ D06M 15/576

U.S. Cl. 8—115.51

12 Claims

1. A process for imparting oil-, water- and soil-repellency and soil-release properties to a substrate which comprises applying to the substrate a self-emulsifiable or self-dispersible aqueous composition comprising at least one urea linkage-containing alkoxypolyoxyalkylene fluorocarbamate comprising a product prepared by reacting (a) at least one polyisocyanate which contains at least three isocyanate groups per molecule, (b) at least one fluorocarbamate reagent which contains per molecule a single functional group which has at least one reactive Zerewitinoff hydrogen atom and at least two carbon atoms each of which contains at least two fluorine atoms, said fluorocarbamate reagent reacting with about 7% to about 24% of said isocyanate groups, (c) at least one hydrophilic, water-soluble reagent which contains per molecule a single functional group which has at least one reactive Zerewitinoff hydrogen atom, said hydrophilic, water-soluble reagent reacting with about 8% to about 37% of said isocyanate groups, and (d) at least one reagent which contains at least one reactive Zerewitinoff hydrogen atom and which on reaction with an isocyanate group yields functionality which has abeyant chemical reactivity with fibrous substrates which contain reactive Zerewitinoff hydrogen atoms, said reagent which yields said abeyant chemical reactivity reacting with about 15% to about 60% of said isocyanate groups, and thereafter with (e) water, the equivalent weight of said polyisocyanate and said reagents (b), (c) and (d) being such that said reagents react with 55% to 95% of said isocyanate groups, and water reacts with all of the remaining isocyanate groups, wherein said substrate is selected from fibers, yarns, fabrics, and other articles made therefrom, all of which are derived from natural polymeric materials, modified natural polymeric materials, or synthetic polymeric materials, or from blends of any of said polymeric materials and other porous materials which will absorb and transport low surface tension liquids either on their surfaces or in their interstices by capillary action.

5,509,940 PROCESSES AND COMPOSITIONS FOR DYEING HYDROPHOBIC POLYMER PRODUCTS WITH DISPERSE DYES AND TERPENE/TERPENOID SOLVENTS

Jack J. Zbar, Marietta; Robert B. Collier, Cobutta, and Philip G. Carlson, Dalton, all of Ga., assignors to Arrow Engineering, Inc., Dalton, Ga.

Continuation of Ser. No. 841,424, Feb. 26, 1992, abandoned.

This application Oct. 27, 1994, Ser. No. 330,217

Int. Cl.⁶ C09B 67/00; D06P 1/16; 3/26; 3/54

U.S. Cl. 8—617

22 Claims

15. A composition for dyeing polyester fibers or nylon fibers, comprising an amount of hydrophobic disperse dye effective to dye the fibers, an amount of a terpene/terpenoid solvent effective to completely dissolve the hydrophobic disperse dye, water and an amount of an emulsifier effective to disperse the terpene/terpenoid solvent and hydrophobic disperse dye in water, wherein the terpene/terpenoid solvent is one or more terpene hydrocarbons, one or more terpenoid hydrocarbons, or a mixture of one or more terpene hydrocarbons with one or more terpenoid hydrocarbons.

5,509,941 MORDANT COMPOSITION FOR NATURAL DYE PROCESSES

Sally Gurley, Boulder, Colo., assignor to Allegro Natural Dyes LLC, Longmont, Colo.

Continuation-in-part of Ser. No. 59,544, May 10, 1993, Pat. No. 5,403,362. This application Mar. 31, 1995, Ser. No. 414,341

Int. Cl.⁶ D06P 5/22; 67/00; 1/34

U.S. Cl. 8—625

10 Claims

1. A composition comprising a mordant for dyeing fibers which is a colloidal suspension of aluminum hydroxide in aqueous medium formed by adding an aluminum sulfate salt to sodium or potassium carbonate in aqueous solution at a weight ratio of about 7:1 aluminum sulfate salt to carbonate salt, wherein the aluminum concentration in said suspension is between about 0.003 to about 2.44 weight percent of water.

5,509,942 MANUFACTURE OF TUBULAR FUEL CELLS WITH STRUCTURAL CURRENT COLLECTORS

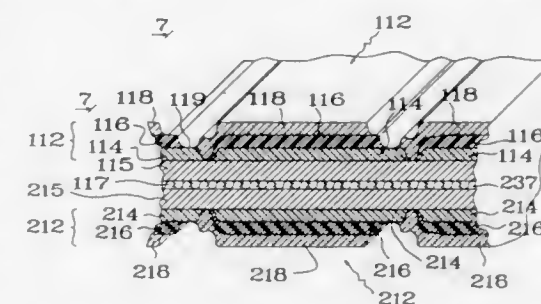
Cleveland E. Dodge, R.D. 1, Box 7, Pownal, Vt. 05261

Continuation-in-part of Ser. No. 15,411, Feb. 9, 1993, Pat. No. 5,336,570, which is a continuation-in-part of Ser. No. 929,706, Aug. 12, 1992, abandoned. This application Aug. 4, 1994, Ser. No. 286,131

Int. Cl.⁶ H01M 6/00

U.S. Cl. 29—623.2

18 Claims



1. A method of making a hydrogen fuel cell, comprising the steps of:

- providing a first hollow member defining an interior space and having a peripheral surface, the first hollow member for receiving a hydrogen containing gas and being effective for passing the hydrogen containing gas from the interior space to the peripheral surface;
- winding a first conductive winding around the first hollow member to form an anode, the first conductive winding having a catalyst effective for decomposing hydrogen molecules from the hydrogen containing gas into H⁺ ions;
- disposing an electrolyte member around the anode; and
- winding a second conductive winding around the electrolyte member to form a cathode, the second conductive winding having a catalyst effective for decomposing oxygen molecules in an oxygen containing gas into oxygen atoms.

5,509,943 MOTOR FUEL DETERGENT ADDITIVES-HYDROCARBYLOXYPOLYETHER ALLOPHONATE ESTERS OF 2-HYDROXY ETHANE

Sheldon Herbstman, New City, and Constance A. Cadorette, Newburgh, both of N.Y., assignors to Texaco Inc., White Plains, N.Y.

Division of Ser. No. 938,807, Sep. 1, 1992, Pat. No. 5,393,914.

This application Jan. 11, 1995, Ser. No. 371,253

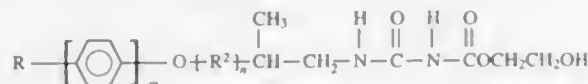
Int. Cl.⁶ C10L 1/22

U.S. Cl. 44—387

8 Claims

1. A motor fuel composition comprising:

- (a) a major portion of a hydrocarbon fuel boiling in the range between 90° F. and 370° F.; and
 (b) a minor amount, sufficient to reduce the formation of deposits on intake valves, of an allophanate ester comprising a compound of formula



where R is a C₆-C₂₅ alkyl group, R² is a C₂ to C₄ oxyalkylene group, m is 0 or 1, and n is a number between about 5 and about 30.

5,509,944 STABILIZATION OF GASOLINE AND GASOLINE MIXTURES

Ramray A. Venkatadri, and R. G. Presenti, both of Houston, Tex., assignors to Exxon Chemical Patents Inc., Linden, N.J.
 Filed Aug. 9, 1994, Ser. No. 287,783

Int. Cl.⁶ C10L 1/24

U.S. Cl. 44-430

1 Claim

1. A method of treating gasoline containing unsaturated hydrocarbons to inhibit gum formation which comprises introducing into the gasoline from 10 to 100 ppm of antioxidant components comprising

- (a) from 80 to 99 wt % of a blend of a di-sec-butyl-p-phenylenediamine and a 2,4,6-tert. butyl phenol, and
 (b) from 1 to 20 wt % of dimethylsulfoxide, the sulfur of the dimethylsulfoxide being present in the gasoline at a concentration less than 5 ppm.

5,509,945 MILD DESULFURIZATION OF SULFUR-BEARING MATERIALS

John G. Verkade, Ames, Iowa, and Thyagarajan Mohan, Tamil Nadu, Ind., assignors to Iowa State University Research Foundation, Inc., Ames, Iowa

Continuation-in-part of Ser. No. 263,553, Jun. 22, 1994, Pat. No. 5,437,696. This application Jun. 5, 1995, Ser. No. 463,307

Int. Cl.⁶ C10L 9/00; 9/02

U.S. Cl. 44-622

20 Claims

1. A method for the removal of sulfur from a sulfur-bearing material comprising contacting a sample of the sulfur-bearing material with a protonic acid and an organophosphorus compound of the formula PR₃ or P(OR)₃, wherein each R is independently an aliphatic or aromatic group, for a time sufficient to remove at least a portion of the sulfur.

5,509,946 INDOOR AIR FILTER

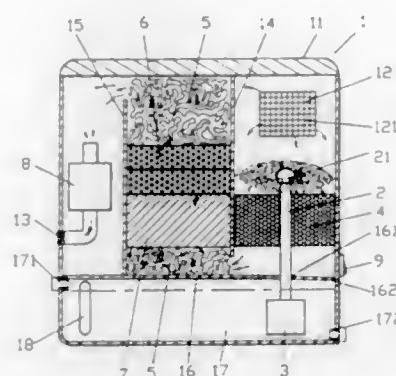
Kung-Ming Chu, No. 18, Kal An 6th St., Tainan, Taiwan
 Filed Jan. 27, 1995, Ser. No. 380,008

Int. Cl.⁶ B01D 47/00

U.S. Cl. 55-233

2 Claims

1. An indoor air filter, comprising:
 a housing having a cover, an air inlet, and an air outlet;
 a filter screen disposed between said inlet and said outlet;
 a water tank disposed in a bottom portion of said housing, said tank having a cover;
 a water pump disposed within said water tank;
 a conduit having a first end operatively coupled to said water pump, said conduit extending upwardly from said water pump, through an aperture in said water tank cover and through said filter screen, said conduit having a second end distal from said first end located between said inlet and said filter screen;



means for spraying water coupled to said conduit second end, said water tank cover having an opening for permitting the sprayed water to return to said water tank;

a first partition located between said filter screen and said outlet, said first partition extending downwardly from said housing cover and leaving an aperture between said first partition and said water tank cover;

a second partition located between said first partition and said outlet, said second partition extending upwardly from said water tank cover and leaving an aperture between said second partition and said housing cover, said first and second partitions defining an air circulation section therebetween;

a first turbulent board disposed within a lower portion of said air circulation section;

a second turbulent board disposed within an upper portion of said air circulation section;

a foam filter disposed between said first and second turbulent boards;

an active charcoal filter disposed between said foam filter and said second turbulent board, said first and second turbulent boards, said foam filter and said active charcoal filter being disposed within said circulation section such that air passing through said circulation section must pass through said turbulent boards, said foam filter and said charcoal filter; and,

an air pump positioned between said second turbulent board and said air outlet for drawing air into said air inlet, through said air circulation section and for forcing the air out said air outlet.

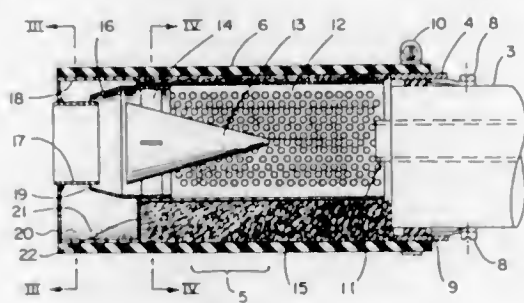
5,509,947 SUPPLEMENTAL SPARK ARRESTER AND SILENCER

John E. Burton, 707 W. Court St., Ludington, Mich. 49431
 Filed Apr. 4, 1994, Ser. No. 222,538

Int. Cl.⁶ B01D 45/00

U.S. Cl. 55-276

14 Claims



1. A supplemental silencer for use with an existing silencer having a housing comprising:

a silencer means for reducing noise generated by an exhaust stream exiting the exhaust outlet of the existing silencer;

an elastomeric outer shell around said silencer means and secured directly to the housing of the existing silencer such that said exhaust stream is forced to flow from the exhaust

outlet through said silencer means, said shell being sufficiently pliable to conform to a variety of differently shaped housings; and
 a securing means for securing said shell to the housing.

5,509,948 DISPOSABLE TWO-STAGE AIR CLEANER

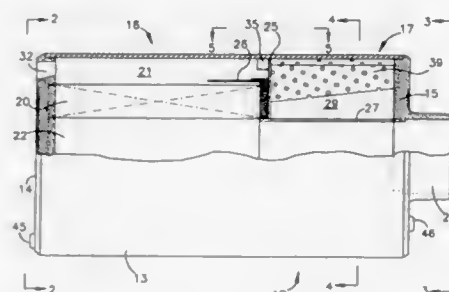
Dennis B. Keller, Salem, and Donald R. Denton, Chagrin Falls, both of Ohio, assignors to Air-Maze Corporation, Stow, Ohio

Filed May 6, 1994, Ser. No. 238,913

Int. Cl.⁶ B01D 50/00

U.S. Cl. 55-337

5 Claims



1. An air cleaner, which comprises:

a housing including a separation chamber, an air inlet to the separation chamber, a dirt collection chamber, and an air outlet;

a filter element between the separation chamber and the air outlet;

a flow director associated with the air inlet for moving the air in a circular pattern in the separation chamber, whereby dirt is thrown outwardly by centrifugal force; and

an air scavenging system including
 a first passage for withdrawing dirt-laden air from the separation chamber into a dirt collection chamber,

a flow retarder in the dirt collection chamber for slowing the velocity of the dirt-laden air entering the dirt collection chamber through the first passage to allow dirt to fall from the air, and

a second passage separate from the first passage and located in an annular zone spaced radially inward from said first passage for allowing air in the dirt collection chamber to exit back to the air separation chamber.

5,509,949 APPARATUS FOR VENTING A TRANSMISSION

James D. Gluys, Portage; Dazy O. Ozomaro, Kalamazoo; John G. Mulvihill, Portage, all of Mich., and Gerald E. Maddocks, Guelph, Canada, assignors to Eaton Corporation, Cleveland, Ohio

Filed Sep. 19, 1994, Ser. No. 308,735

Int. Cl.⁶ B01D 50/00

U.S. Cl. 55-385.3

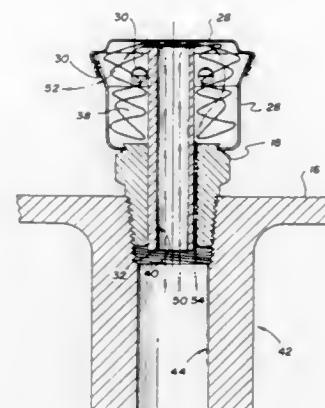
19 Claims

12. A system for venting a vehicular transmission containing a lubricating fluid so as to allow pressure equalization within and without the transmission while reducing expulsion of the lubricating fluid therefrom, the system comprising:

a housing adapted for mounting to the transmission, the housing having an annular protrusion with an interior threaded region and having an inside diameter sized to resist formation of a film of the lubricating fluid thereacross;

a base portion having an exterior threaded region adapted for engagement with the interior threaded region;

a cylinder adapted to receive a filter, the cylinder having a first end secured to the base portion and also having at least one aperture positioned on its circumference;



a cover extending over a second end of the cylinder and secured to the cylinder;

a standpipe having a first end disposed substantially within the base portion and secured thereto, and a second end extending beyond the at least one aperture within the cylinder; and

a filter disposed within the cylinder and extending over the second end of the standpipe.

5,509,950 FILTER DEVICE FOR THE FILTRATION OF GASES AND/OR FLUIDS

Peter van de Graaf, Den Bosch, and Jos Valkenburg, Rotterdam, both of Netherlands, assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

PCT No. PCT/US93/05140, § 371 Date Dec. 2, 1994, § 102(e) Date Dec. 2, 1994, PCT Pub. No. WO94/01200, PCT Pub. Date Jan. 20, 1994

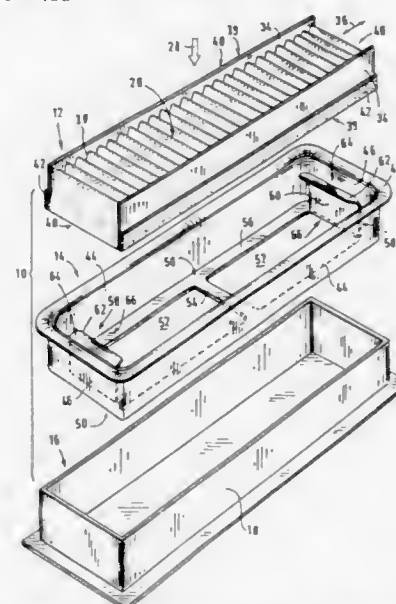
PCT Filed May 28, 1993, Ser. No. 347,370

Claims priority, application Germany, Jul. 11, 1992, 9209362

Int. Cl.⁶ B01D 46/00

U.S. Cl. 55-486

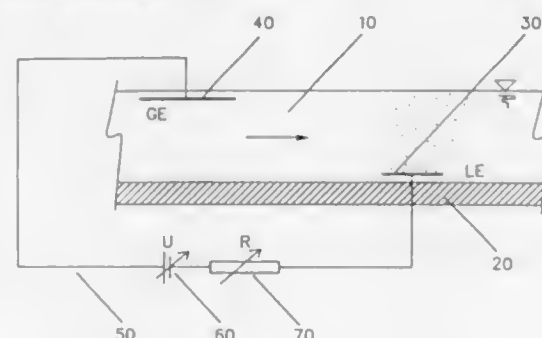
13 Claims



1. A filter device for the filtration of gases and fluids comprising:
 a filter element having two longitudinal sides and two transverse sides comprising a filter medium, pleated in a zig-zag manner in a pleating direction, and two thermoplastic stabilizing strips, wherein said filter medium, on said two longitudinal sides extending in the pleating direction, is provided with said stabilizing strips for stabilizing the zig-zag shaped pleated configuration of the filter medium, said stabilizing strips being

bonded to two longitudinal edges of the filter medium along the entire longitudinal sides of the filter element,
 a filter element holding frame having longitudinal and transverse frame portions and top and bottom faces said top face being adapted for insertion of the filter element therein and for removal of the filter element therefrom, said filter element holding frame having receiving means for inserting therein and removing therefrom two end portions of the filter element filter medium at the filter element transverse sides,
 a sealing medium being arranged between the filter element and the filter element holding frame,
 wherein when the filter element is inserted in the filter element holding frame the sealing medium is in abutment with inner sides of said longitudinal frame portions of the filter element holding frame and the two end portions of the filter medium on the filter element transverse sides are inserted in said receiving means provided on said transverse frame portions of the filter element holding frame so that the filter element can be freely removed and disposed of without disposing of the filter element holding frame.

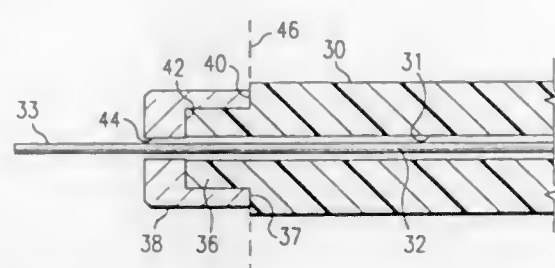
5,509,951
PROCESS FOR FINING OXIDE MELTS
 Friedrich G. K. Baucke, and Thomas Pfeiffer, Mainz, both of, Germany, assignors to Schott Glaswerke, Mainz, Germany
 Filed Mar. 8, 1993, Ser. No. 27,530
 Claims priority, application Germany, Mar. 6, 1992, 42 07 059.7
 Int. Cl.⁶ C03B 5/225
 U.S. Cl. 65—134.6 12 Claims



I. In a process for fining oxide melts, comprising applying an electric voltage to a fining electrode and a counterelectrode, immersing the fining electrode completely in the oxide melt so as to electrolytically generate oxygen in situ as a fining gas for the removal of unwanted gases from the oxide melt, the improvement comprising contacting the counterelectrode with the oxide melt and with sufficient O₂ dissolved in said oxide melt to prevent precipitation by electrolysis of components of said oxide melt onto said counterelectrode wherein the counterelectrode is immersed near the surface of said oxide melt where there is sufficient dissolved O₂ to prevent said precipitation by electrolysis of components of said oxide melt onto said counterelectrode.

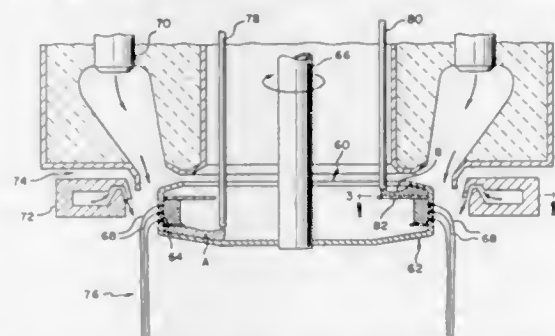
5,509,952
METHOD FOR BONDING A FIBER TO A SLEEVE FOR FIBER OPTIC PACKAGING APPLICATIONS
 Andrew J. Moore; David L. Ma; Robert L. Bontz, and Harry B. Bonham, Jr., all of Plano, Tex., assignors to Alcatel Network Systems, Inc., Richardson, Tex.
 Continuation of Ser. No. 980,246, Nov. 23, 1992, abandoned.
 This application Jun. 6, 1994, Ser. No. 254,438
 Int. Cl.⁶ C03B 23/20
 U.S. Cl. 65—406 13 Claims

I. A method of hermetically sealing an end of a sleeve having an axial channel and a fiber extending through said axial channel and



having a distal fiber tip extending outward from said end wherein a gap is formed between said fiber and said axial channel proximate said sleeve end, comprising the steps of:
 configuring said end of said sleeve to comprise a nonplanar end;
 disposing a hermetic sealing member adjacent said nonplanar end of said sleeve wherein said fiber extends through said hermetic sealing member, wherein said sealing member is preformed to comprise a preformed end having a shape which is an entire inverse profile of said nonplanar end, and wherein said disposing step comprises disposing said preformed end to fully mate with and be in abutment with said nonplanar end;
 heating said hermetic sealing member to a first temperature sufficient to cause said hermetic sealing member to flow adjacent said nonplanar end of said sleeve; and
 cooling said hermetic sealing member to a second temperature less than said first temperature, wherein a nonplanar interface is formed between said sleeve end and said hermetic sealing member and wherein said hermetic sealing member hermetically seals said gap proximate said sleeve end.

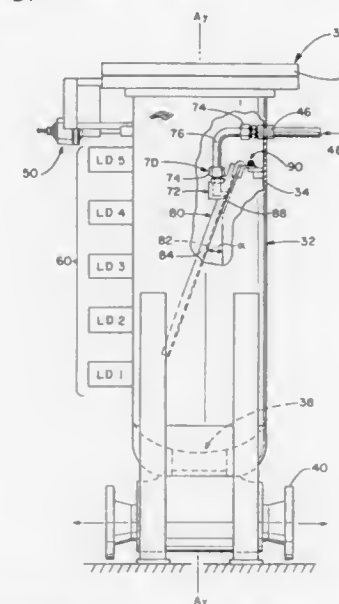
5,509,953
SPINNER FOR MANUFACTURING DUAL-COMPONENT FIBERS
 Patrick M. Gavin, Newark, Ohio, assignor to Owens-Corning Fiberglass Technology, Inc., Summit, Ill.
 Filed May 2, 1994, Ser. No. 236,062
 Int. Cl.⁶ C03B 37/073
 U.S. Cl. 65—502 25 Claims



I. Apparatus for making dual component fibers comprising:
 a) a spinner having a peripheral wall with an internal surface and an external surface and a bottom wall, and further including orifices located in said peripheral wall for centrifuging dual component fibers, said spinner being divided into a series of compartments by baffles positioned interiorly of said peripheral wall;
 b) equipment for supplying first and second molten thermoplastic materials to said spinner;
 c) a first divider for directing said first molten thermoplastic materials against said peripheral wall and into alternate ones of said compartments, said first divider including a first plate abutting said peripheral wall and having a series of first orifices therein spaced to provide access for said first molten material to flow into said alternate ones of said compartments and a second divider for directing said second molten thermoplastic materials against said peripheral wall and into remaining ones of said compartments, said second divider including

a second plate abutting said peripheral wall and having a series of second orifices therein spaced to provide access for said second molten material to flow into said remaining ones of said compartments; and
 d) passages extending through said peripheral wall and communicating with said compartments and said orifices in said peripheral wall so as to permit flow of said first and second materials from said compartments to said orifices in said peripheral wall of said spinner.

5,509,954
METHOD AND APPARATUS FOR DEGASSING HIGH VISCOSITY FLUIDS
 Gary A. Derian, Westlake; Herman E. Turner, Jr., Wellington, and Robert D. Schneider, Vermilion, all of Ohio, assignors to Nordson Corporation, Westlake, Ohio
 Filed Mar. 28, 1994, Ser. No. 218,727
 Int. Cl.⁶ B01D 19/00
 U.S. Cl. 95—24 28 Claims

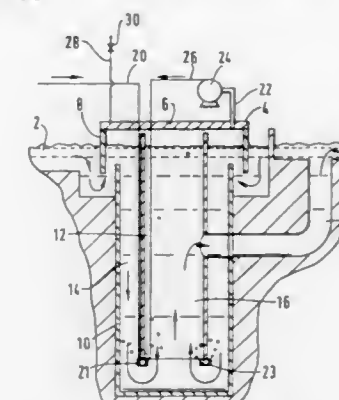


23. A method of degassing a viscous fluid comprising the steps of:
 (a) drawing a vacuum within a chamber;
 (b) dispensing the viscous fluid within the chamber through a wide-slotted nozzle opening to spread the fluid such as to cause at least some entrapped gas bubbles to burst;
 (c) causing the dispensed fluid to flow downwardly across a defined inclined longitudinal channel comprising a bottom slide surface and a pair of longitudinally extending side walls to effect laminar flow as it moves to a collection reservoir within the chamber;
 (d) holding the fluid within the collection reservoir for a sufficient length of time such that any entrapped gas bubbles are drawn off; and
 (e) removing fluid material from the collection reservoir and the chamber.

25. An apparatus for degassing viscous fluids comprising:
 a chamber having an inlet at a top end for receiving a source of a viscous fluid under pressure;
 a means connected to the chamber for drawing and controlling a vacuum within the chamber;
 a wide-slotted nozzle means, coupled to the inlet, for dispensing and spreading the fluid such that at least some entrapped gaseous bubbles burst;
 a channel means comprising a bottom slide surface and a pair of longitudinally extending side walls, receiving the dispensed fluid, for directing the fluid downwardly across an inclined defined channel surface which effects laminar flow thereof;
 a collection reservoir for collecting the laminar flow of fluid;

a means for varying the rate at which fluid is dispensed within the chamber for varying the fluid level within the collection reservoir; and
 an outlet means for removing the fluid from the collection reservoir.

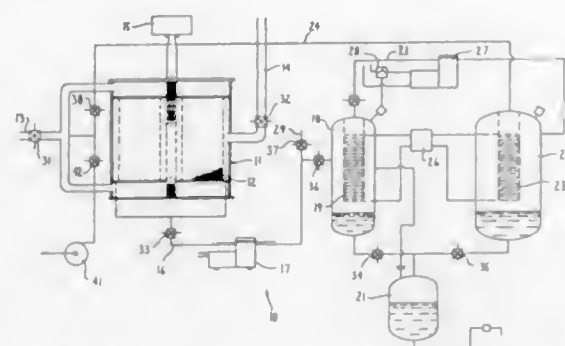
5,509,955
TREATMENT OF LIQUIDS
 Michael E. Garrett, Woking, and Arthur G. Boon, Stevenage, both of, England, assignors to The BOC Group plc, Windlesham, England
 Filed Aug. 9, 1993, Ser. No. 104,316
 Claims priority, application United Kingdom, Aug. 17, 1992, 92174804; Sep. 4, 1992, 92187673
 Int. Cl.⁶ B01D 53/04; 19/00
 U.S. Cl. 95—96 11 Claims



I. A method of dissolving a gas in a liquid comprising the steps of:
 a) passing the liquid under a gas-tight enclosure;
 b) causing the liquid to descend at a first velocity as a stream within the gas-tight enclosure through a first passageway;
 c) passing bubbles of the gas at a second velocity from a source up through the descending liquid stream to dissolve the gas in the liquid stream to thereby form a gas-liquid stream, said second velocity exceeding said first velocity;
 d) causing the gas-liquid stream to ascend through a second passageway within the gas-tight enclosure; and
 e) passing bubbles of said gas up through the ascending gas-liquid stream in said second passageway to dissolve a further quantity of said gas in the gas-liquid stream and to balance the liquid density and avoid excess pressure drop in the descending and ascending streams.

5,509,956
REGENERATIVE APPARATUS FOR RECOVERY OF VOLATILES
 Stephen H. Opperman, Ludington, Mich., and Mark S. Arsenault, Crestwood, Ky., assignors to Horizon Holdings, Inc., Crestwood, Ky.
 Filed Jul. 8, 1994, Ser. No. 273,048
 Int. Cl.⁶ B01D 53/04; 53/12
 U.S. Cl. 95—109 25 Claims

I. A process for removing contaminants in volatile form from a particulate adsorption media, comprising the steps of:
 providing a large plurality of particles of adsorbent media within an annular media chamber so as to define a media bed, said adsorbent media containing contaminants adsorbed therein;
 providing an elongate tubular waveguide which extends coaxially through and is surrounded by said media chamber;
 supplying microwave energy into the interior of said waveguide and then emitting such microwave energy radially outwardly through the waveguide both circumferentially and axially thereof to provide for reasonably uniform heating within the



media chamber to effect release of the contaminants from the adsorption media; and applying a suction to said media chamber to withdraw the volatiles therefrom.

5,509,957

INK COMPOSITIONS

Vien V. Toan, Lentigny; Hugh S. Laver, Reinach, and David G. Leppard, Marly, all of, Switzerland, assignors to Ciba-Geigy Corporation, Tarrytown, N.Y.

Filed Nov. 4, 1993, Ser. No. 147,706

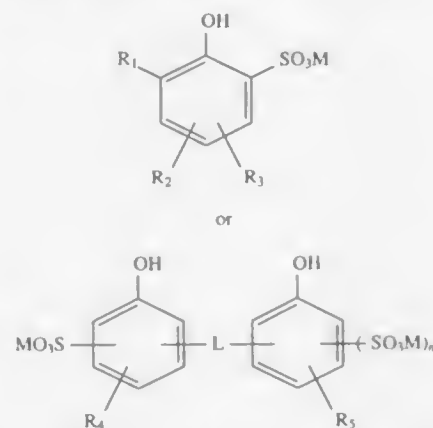
Claims priority, application Switzerland, Nov. 9, 1992, 3456/92

Int. Cl.⁶ C09D 11/16

U.S. Cl. 106—20 R

11 Claims

1. An ink composition containing as stabiliser at least one water-soluble compound of formula



wherein R_1 is H, C_1 - C_{18} alkyl, C_7 - C_9 phenylalkyl, phenyl or a group of formula III



R_2 is H, C_1 - C_{18} alkyl, C_7 - C_9 phenylalkyl, phenyl, a group of formula III or group of formula IV $-\text{CH}_2\text{CH}_2\text{COOR}_6$ (IV); R_3 is H, C_1 - C_4 alkyl;

M is H, an alkali metal ion or a group $(R_7)(R_8)(R_9)(R_{10})N$; wherein R_7 , R_8 , R_9 and R_{10} are each independently of one another H, unsubstituted C_1 - C_4 alkyl or C_1 - C_4 alkyl which is substituted by 1 to 3 OH groups, C_3 - C_{20} alkyl which is interrupted by one or more than one oxygen atom, or are allyl, cyclopentyl, cyclohexyl, phenyl, benzyl or tolyl; L is a direct bond, $-\text{C}(\text{R}_{11})(\text{R}_{12})-$ or $-\text{S}-$;

wherein R_{11} and R_{12} are each independently of the other H or C_1 - C_8 alkyl; or R_{11} and R_{12} , together with the linking carbon atom, form a cyclopentylene, cyclohexylene or cycloheptylene ring, each unsubstituted or substituted by 1 to 3 C_1 - C_4 alkyl groups;

R_4 and R_5 are each independently of the other H or C_1 - C_8 alkyl; R_6 is M, unsubstituted C_1 - C_4 alkyl or C_1 - C_4 alkyl which is substituted by one $-\text{OH}$ group, or is C_3 - C_{20} alkyl which is interrupted by one or more than one oxygen atom; and n is 0 or 1.

5,509,958

COATING SOLUTION SUITABLE FOR THE MANUFACTURE OF A MAGNESIUM OXIDE LAYER AND A METHOD OF MANUFACTURING SUCH A LAYER

Renaat E. Van de Leest, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 28, 1995, Ser. No. 395,743

Claims priority, application European Pat. Off., Feb. 28, 1994, 94200507

Int. Cl.⁶ C09D 5/25; C03C 17/28

U.S. Cl. 106—287.26

9 Claims

1. A coating solution which can suitably be used to manufacture a magnesium-oxide layer on a glass substrate by curing, said coating solution comprising a solvent as well as a magnesium compound, characterized in that the magnesium compound is obtainable by, in succession, partially acetylating and partially hydrolysing a magnesium-dialkoxide compound of the formula $\text{Mg}(\text{OR})_2$, thereby forming the magnesium compound of the formula $\text{Mg}(\text{OH})_x(\text{OR})_y(\text{OAc})_z$, wherein

R is a C_1 - C_5 alkyl group, and OAc is an acetyl or acetylacetate group, and wherein $0 < x < 1$
 $0 < y < 1$
 $0 < z < 1$, and $x + y + z = 2$.

5,509,959

PRECURSOR COATING COMPOSITIONS SUITABLE FOR SPRAYING WITH SUPERCRITICAL FLUIDS AS DILUENTS

Kenneth A. Nielsen, Charleston, and Charles W. Glancy, South Charleston, both of W. Va., assignors to Union Carbide Chemicals & Plastics Technology Corporation, Danbury, Conn.

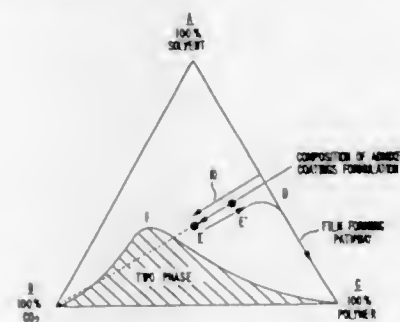
Continuation of Ser. No. 327,484, Mar. 22, 1989, abandoned.

This application Apr. 15, 1991, Ser. No. 684,490

Int. Cl.⁶ C09D 5/00; 201/00

U.S. Cl. 106—287.35

32 Claims



1. A precursor coating composition suitable for admixture with at least one supercritical fluid which admixture is then to be sprayed comprising a liquid mixture of:

- a solids fraction containing at least one polymeric compound capable of forming a coating on a substrate; and
- a solvent fraction containing at least one solvent in which said at least one polymeric compound is at least partially soluble, said solvent fraction having a composition containing a weight % solvent distribution and relative evaporation rates of:

5,509,962

CEMENT CONTAINING ACTIVATED BELITE

Fulvio J. Tang, Mundelein, Ill., assignor to Construction Technology Laboratories, Inc., Skokie, Ill.

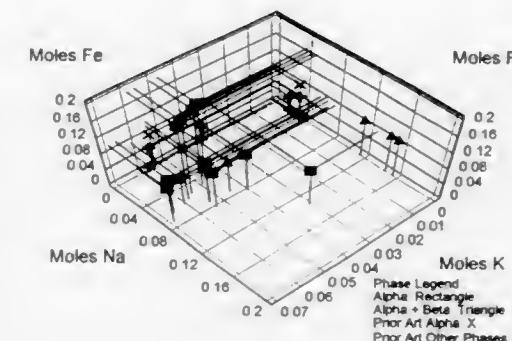
Filed May 20, 1994, Ser. No. 246,806

Int. Cl.⁶ C04B 07/04

U.S. Cl. 106—733

21 Claims

- said liquid mixture having:
- a viscosity of less than about 6000 centipoise and having less than about 400 grams of solvent fraction per liter of mixture;
 - a solubility with at least one supercritical fluid, above the critical temperature and pressure of the supercritical fluid, of greater than 5% by weight of supercritical fluid in said mixture;
 - a viscosity of less than about 300 centipoise when admixed with a sufficient amount of the at least one supercritical fluid, above the critical temperature and pressure of the supercritical fluid, so as to render the mixture suitable for spray application; and
 - a solubility with the supercritical fluid in the non-supercritical state, at 25° C. and one atmosphere absolute pressure of said fluid, of less than about 0.8% by weight of fluid in said mixture.



1. A cementitious clinker consisting essentially of an alpha belite phase and a ferrite phase, said clinker composition consisting of about 0.04–0.13 moles Na, 0.03–0.07 moles K, 0.09–0.18 moles Fe, about 1.9 moles Ca and about 0.9 moles Si.

5,509,960

COMPOSITE PIGMENTARY MATERIAL

Leslie A. Simpson, Normanby; John Robb, Fairfield; Banford Jonathan, Hartburn; Paul E. Dietz, Hartlepool, and John Temperley, Sedgfield, all of, England, assignors to Tioxide Group Services Limited, United Kingdom

Filed May 12, 1993, Ser. No. 59,754

Claims priority, application United Kingdom, Jun. 4, 1992, 9211822

Int. Cl.⁶ C09C 1/36

U.S. Cl. 106—437

28 Claims

1. A composite particulate pigmentary material comprising an aqueous dispersion of composite particles comprising an association of at least two chemically distinct materials wherein the particles of a first material carry a positive surface charge and the particles of a second material carry a negative surface charge, the charge, the particles of the first material being held in association with particles of the second material as a result of said surface charge wherein said aqueous dispersion contains at least 35% by weight of said composite particles, said first material is an inorganic pigment or extender having an average particle size in the range of 0.02 to 0.5 micron and at least one of said positive surface charges and said negative surface charges is generated by preparing an aqueous dispersion of said first material or said second material at a pH value which produces said surface charge.

5,509,961

MEDIUM BED MORTAR

Ross Cilia, 265 Hoover Drive, Pickering, Ontario, Canada

Filed Feb. 7, 1994, Ser. No. 193,652

Int. Cl.⁶ C04B 14/20

U.S. Cl. 106—716

15 Claims

1. A medium bed mortar dry mix for preparation of a medium bed mortar for setting of large tiles comprising a dry powdered thin-set mortar composition and an expanded vermiculite of an average particle size of 1/4 inch to 1/2 inch, the thin set mortar composition and vermiculite being present in a weight ratio of about 25 to 1 to about 75 to 1 respectively, the presence of the vermiculite in the medium bed mortar dry mix increasing the open time of the medium bed mortar prepared therefrom to allow longer working times.

- A seed supply and a stand having a surface;
- a rotary actuator mounted on said surface, said rotary actuator having a rotary shaft;
- a rotary arm fixed to said rotary shaft of said rotary actuator; cylinders fixed to both ends of the rotary arm so that a rod of each cylinder is downward, each cylinder moving vertically; first and second seed sucking nozzles attached to a respective lower end of each rod;
- a pipe connected to each seed sucking nozzle, said pipe communicating with a positive air pressure source and a negative air pressure source;
- a seed stirring case mounted on one side of said stand, said seed stirring case including a seed vessel having an opening and said seed vessel accommodating seeds, said seed vessel is disposed in communication with the first seed sucking nozzle at a rotating end;

a stirring mechanism mounted on said one side of said stand, said stirring mechanism for stirring seeds in said seed vessel so that the seeds float; and

a gel extruding mechanism mounted on another side of said stand, said gel extruding mechanism for coating apparatus comprising: for extruding gel and coating a seed, said gel extruding mechanism disposed below the second seed sucking nozzle at the rotating end,

wherein said rotary arm rotates by 180° to locate said seed sucking nozzles at positions corresponding to said stirring case and said gel extruding mechanism and when said first seed sucking nozzle is at said position corresponding to said stirring case, said cylinder of said first seed sucking nozzle moves vertically downward wherein said first seed sucking nozzle is lowered into said opening of said seed vessel to retrieve a seed to be coated by gel extruding mechanism.

5,509,964
APPARATUS AND METHOD FOR APPLYING A COATING TO GLASS USING A SCREEN PRINTING PROCESS

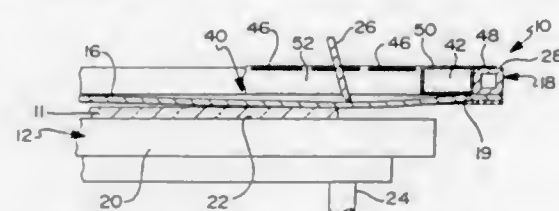
Premakaran T. Boaz, Livonia, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Aug. 25, 1994, Ser. No. 295,574

Int. Cl.⁶ B05C 3/00; 13/00

U.S. Cl. 118—58

12 Claims



1. An apparatus for applying a coating to glass, said apparatus comprising:

a support surface for supporting a glass pane;

a print screen having a screen support frame defining a perimeter of said print screen disposed above said support surface to apply a coating over said print screen, said print screen being deflected into contact with the glass pane at a plurality of points thereon and the coating being moved over said print screen to deposit the coating on the glass pane when said print screen is so deflected; and

a vapor manifold disposed within the perimeter of said print screen defined by said screen support frame and coupled to a source of vapor, wherein said vapor manifold has a hollow interior and includes at least one inlet in fluid communication with the source of vapor and a plurality of exit ports disposed about said vapor manifold and spaced from the perimeter of said print screen by a width defined by said vapor manifold, said vapor manifold distributing the vapor from the source through said inlet and said hollow interior and out said exit ports to create a vapor blanket over said print screen.

5,509,965
PREFORM COATING APPARATUS AND METHOD

Ivan L. Harry; Louis M. Silva, both of Nashua, and Donald Zelonis, Manchester, all of N.H., assignors to Continental PET Technologies, Inc., Del.

Continuation-in-part of Ser. No. 853,419, Mar. 18, 1992, abandoned. This application Apr. 15, 1993, Ser. No. 48,145

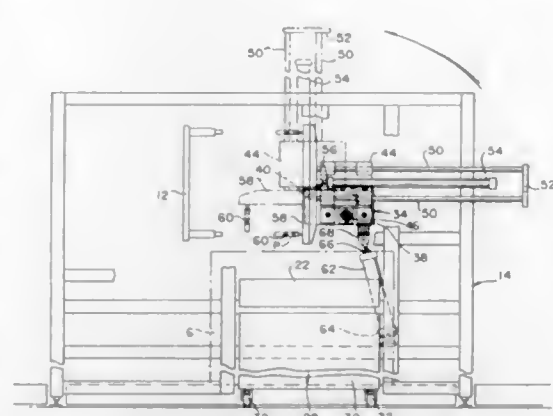
Int. Cl.⁶ B05C 3/10

U.S. Cl. 118—423

26 Claims

1. An apparatus for cooling, coating and collecting a batch of preforms comprising:

a carrier plate for holding a batch of soft thermoplastic preforms without the preforms touching one another;



a support structure for moving the carrier plate between a coating tank for coating the preforms and a collection apparatus for receiving coated preforms, the collection apparatus being disposed on a longitudinal axis lying in a horizontal plane;

the support structure including a transverse slide for moving the carrier plate along an axis transverse with respect to the longitudinal axis from a preform-loading position over the collection apparatus to a preform-coating position over the coating tank, the transverse axis lying in the horizontal plane, the carrier plate being pivotally mounted on the transverse slide so as to be movable from a substantially vertical position wherein the carrier plate, in the preform loading position, receives a batch of uncoated preforms from a molding apparatus, to a substantially horizontal position for insertion of the preforms into the coating tank and later release of the coated preforms into the collection apparatus,

the support structure further including a second slide for moving the carrier plate along a third axis substantially perpendicular to the horizontal plane, wherein the carrier plate is lowered over the coating tank for coating the preforms and lowered over the collection apparatus for release of the coated preforms onto the collection apparatus from a reduced preform drop height; and

releasable grippers for supporting a batch of soft thermoplastic preforms without deformation on the carrier plate, the grippers having a closed position for retaining the preforms when the carrier plate is either vertically or horizontally disposed, and an open position for receiving uncoated preforms and releasing the coated preforms after coating.

5,509,966
GRAPHIC ARTS MATERIAL EXTRUSION DEVICE

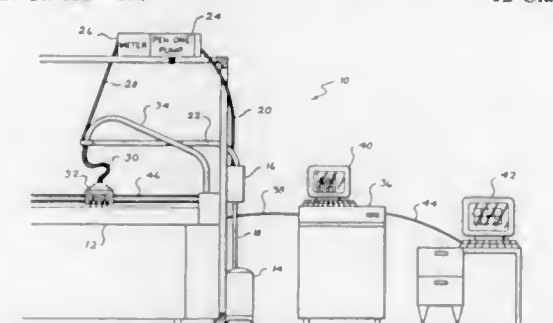
Richard H. Sykes, 3823 N. Marshfield, Chicago, Ill. 60613

Filed Oct. 22, 1993, Ser. No. 142,791

Int. Cl.⁶ B05C 11/00; 5/00; B05B 9/04

U.S. Cl. 118—697

12 Claims



1. A graphic arts material extrusion device comprising:

a plot table means for supporting a surface below a nozzle to be decorated thereby;

a container for maintaining a thicotropic substance under pressure;

a displacement pump connected to said container for extruding metered amounts of the thicotropic substance;

a nozzle connected to said displacement pump for extruding the pressurized thicotropic substance;

a seamless connection at said container comprising polytetrafluoroethylene tubing passing continuously through a sacrificial tube which resides within a modified press lock tube coupling connected to said container, the tubing connecting said container to said displacement pump and said nozzle; and

said plot table means having means for mounting said nozzle such that it controls said nozzle and the surface with respect to movements in a first X direction and in a second Y direction along the surface, said nozzle depositing the thicotropic substance on the surface in multiple dimensions.

5,509,967
HEAT TREATMENT APPARATUS

Mitsunuke Kyogoku, and Osamu Honma, both of Tama, Japan, assignors to ASM Japan K.K., Tokyo, Japan

PCT No. PCT/J193/01661, § 371 Date Sep. 19, 1994, § 102(e)

Date Sep. 19, 1994, PCT Pub. No. WO94/11899, PCT Pub.

Date May 26, 1994

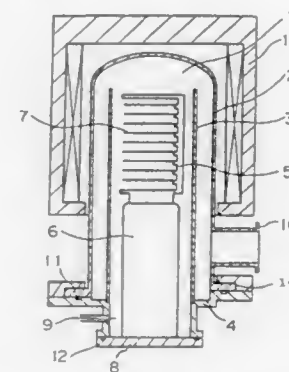
PCT Filed Nov. 12, 1993, Ser. No. 256,505

Claims priority, application Japan, Nov. 13, 1992, 4-327616

Int. Cl.⁶ C23C 16/00

U.S. Cl. 118—724

2 Claims



1. A heat treatment apparatus, which is part of low pressure CVD apparatus, comprising:

a wall of a reaction chamber made of a high purity material such as quartz;

a heater for heating said reaction chamber formed by said wall, said heater being positioned around said wall;

a manifold connected to one open end of said wall;

a flange configured to shield an opening of said manifold, the flange defining a vacuum chamber with said wall and said manifold; and

an outlet provided on said wall between said heater and the open end of said wall for evacuating the inside of said reaction chamber.

5,509,968
DECONTAMINATION OF ORTHOPAEDIC IMPLANTS

James M. Carr, Cos Cob, Conn., assignor to New York Society For The Ruptured And Crippled Maintaining The Hospital For Special Surgery, New York, N.Y.

Filed Feb. 3, 1994, Ser. No. 191,434

Int. Cl.⁶ B08B 3/04; 3/08; 3/12

U.S. Cl. 134—1

19 Claims

1. A process for decontaminating the surface of a medical implant which has been exposed to animal protein and/or bone tissue, and thereby exposed to lipids and bone salts, which comprises the sequential steps of:

- (1) Immersing the surface in a bath containing a detergent suitable for emulsifying lipids at an elevated temperature, to remove lipids from the contaminated implant surface;
- (2) immersing the surface in a bath containing an acidic agent capable of removing bone salts, to remove bone salts from the contaminated medical implant surface; and
- (3) Immersing the surface in a hypochlorite bath.

5,509,969
ABATEMENT PROCESS FOR CONTAMINANTS

John Grawe, 6726 General Diaz, New Orleans, La. 70002

Continuation of Ser. No. 914,386, Jul. 17, 1992, Pat. No. 5,421,897, which is a continuation of Ser. No. 92,427, Jul. 19, 1993, abandoned. This application Aug. 3, 1994, Ser. No.

283,176

Int. Cl.⁶ B08B 7/00

U.S. Cl. 134—2

28 Claims

1. A process for substantially cleaning a surface that has been treated with a chemical paint remover, wherein said chemical paint remover comprises an organic, acidic or basic compound, and wherein said surface is contaminated with said compound, said process comprising the steps of:

(A) applying a liquid-state composition to said surface, wherein said liquid-state composition comprises:

- (i) a polymeric component and
- (ii) an agent selected from the group consisting of an absorbant, an acid-neutralizing agent, and a base-neutralizing agent; and wherein said liquid-state composition has a cleaning capacity of about 0.10;

(B) allowing said liquid-state composition to interact with said compound to form a product and to solidify into a solid-state matrix, thereby sequestering said product in said solid-state matrix; and

(C) removing said solid-state matrix from said surface.

5,509,970
METHOD OF CLEANING SEMICONDUCTOR SUBSTRATE USING AN AQUEOUS ACID SOLUTION

Yoshimi Shiramizu, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Sep. 19, 1994, Ser. No. 308,302

Claims priority, application Japan, Sep. 21, 1993, 5-234600

Int. Cl.⁶ C23G 1/02; 1/14

U.S. Cl. 134—3

4 Claims

1. A method of cleaning a semiconductor substrate, comprising the steps of:

- providing a cleaning solution containing an aqueous acid solution containing 0.0001–0.001 weight % of ammonia based on a conversion of an amount of ammonium hydroxide and 1–10 weight % of hydrogen fluoride; and
- immersing a semiconductor substrate in said cleaning solution.

5,509,971
PROCESS FOR REMOVING COATINGS FROM HARD SURFACES

Lawrence Kirschner, Flanders, N.J., assignor to Church & Dwight Co., Inc., Princeton, N.J.

Division of Ser. No. 149,306, Nov. 8, 1993, which is a continuation-in-part of Ser. No. 854,204, Mar. 20, 1992, abandoned. This application Jan. 27, 1995, Ser. No. 379,284

Int. Cl.⁶ B08B 3/00; 5/00; 7/00

U.S. Cl. 134—7

10 Claims

1. A process for removing coatings from hard surfaces comprising blasting said surfaces with a free-flowing particulate blast media entrained in a pressurized fluid, said blast media comprising a major amount of relatively soft granular abrasive particles which have a Mohs hardness of less than 4.0 and a minor amount of

free-flowing, separate relatively hard granular abrasive particles which have a hardness of greater than 5.0 on the Mohs scale, said granular abrasives having a particle size of from about 10 to about 2000 microns and being devoid of crystalline silica material.

5,509,972

AIR-CONDITIONER CLEANING METHOD

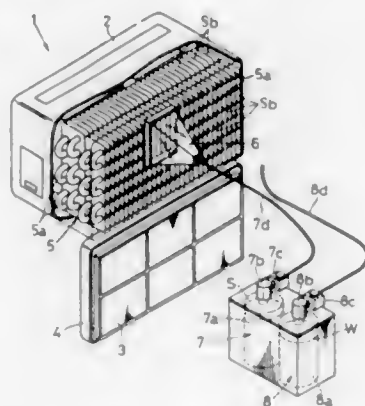
Yasumasa Akazawa, 2-8-14, Higashi Shinmachi, Matsubara Osaka; Taiko Kital, 2-1423-8 Kami Ishikricho, Higashi Osaka; Katsuyuki Sasaki, 4-3-2 Amami Minami, Matsubara Osaka, and Takeo Karashima, 2-8-24, Kyomachibori, Nishiku, Osaka, all of Japan

Filed Jun. 27, 1994, Ser. No. 266,956

Int. Cl.⁶ B08B 3/00

U.S. Cl. 134-26

8 Claims



1. A method of cleaning cooling fins and pipes of an air conditioner, said cooling fins and pipes forming an open surface to atmosphere, said method comprising the steps of:
tightly fitting a liquid proof shield against said open surface and enclosing an area of said cooling fins and pipes so as to prevent fluids from splashing outside of said area;
applying a detergent through said shield and against selected parts of said area with sufficient force and volume to penetrate selected parts of said cooling fins and pipes in said area without any splashing of said detergent outside of said area; and
thereafter applying a rinsing fluid through said shield and against said selected parts of said area with sufficient force and volume to rinse off said detergent from said selected parts of said cooling fins and pipes in said selected parts of said area and without any splashing of said rinsing fluid outside of said area.

5,509,973

ROOF PANEL AND ROOF STRUCTURE WITH SOLAR BATTERIES

Osamu Ishikawa; Naoko Oya; Michio Sasaki, and Akio Miwa, all of Tokyo, Japan, assignors to Misawa Homes Co., Ltd., and Shin Nikkei Company, Ltd., both of Tokyo, Japan

Filed Apr. 6, 1994, Ser. No. 223,507

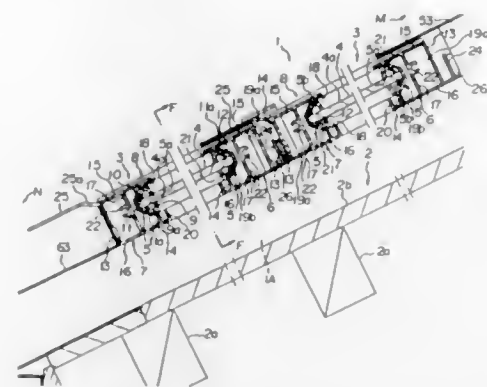
Claims priority, application Japan, Apr. 8, 1993, 5-082249; Apr. 8, 1993, 5-082250; Apr. 8, 1993, 5-082251

Int. Cl.⁶ E04D 13/18

U.S. Cl. 136-251

16 Claims

1. A roof panel with a solar array for mounting on top of a roof comprising:
a base panel adapted to be disposed on the roof to extend in the direction of the roof pitch and having a plurality of substantially parallel gutter-shaped support rails secured to the base panel to extend in the direction of roof pitch;
said support rails each have a two-stage structure including a gutter section capable of accommodating an associated por-



tion of each said frame and a cylindrical section formed under and integral with said gutter section; and
a plurality of solar array panels disposed over said base panel, each solar array panel including a solar array and a frame mounted around said solar array, said frame being supported such that it is sealably connected to associated ones of said support rails.

5,509,974

ETCH CONTROL SEAL FOR DISSOLVED WAFER PROCESS

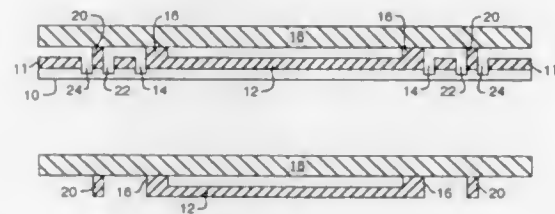
Kenneth M. Hays, Anaheim, Calif., assignor to Rockwell International Corporation, Seal Beach, Calif.

Continuation-in-part of Ser. No. 229,501, Apr. 19, 1994, Pat. No. 5,437,739. This application May 2, 1995, Ser. No. 434,153

Int. Cl.⁶ H01L 29/12

U.S. Cl. 148-33.3

15 Claims



1. An etch control seal for a microstructure fabrication process, comprising:
a first substrate dissolvable in a selective etch;
a microstructure formed on said first substrate;
a trench surrounding said microstructure on said first substrate;
a bonding area on said first substrate surrounding said microstructure and said trench;
a second substrate having raised areas bonded to selected areas of said microstructure and to said bonding area on said first substrate; and
said microstructure and said second substrate having greater resistance to said selective etch than said first substrate, said raised areas of said second substrate bonded to said bonding area protecting said microstructure from said selective etch during a process of dissolving said first substrate in said selective etch.

5,509,975

SOFT MAGNETIC BULKY ALLOY AND METHOD OF MANUFACTURING THE SAME

Akinori Kojima, Sendai; Katsuaki Hangai, Nagaoka; Shoji Yoshida, Nakanoshima; Akihiro Makino, Nagaoka; Tsuyoshi Masumoto, and Akihisa Inoue, both of Sendai, all of Japan, assignors to Alps Electric Co., Ltd.; Tsuyoshi Masumoto, and Akihisa Inoue, Tokyo, Japan

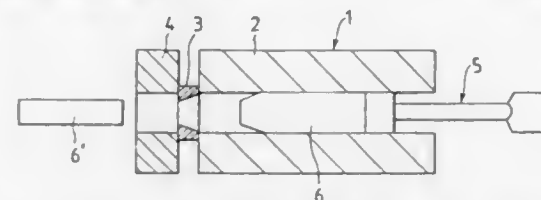
Division of Ser. No. 212,638, Mar. 14, 1994, abandoned. This application Sep. 27, 1994, Ser. No. 312,847

Claims priority, application Japan, Mar. 15, 1993, 5-54224; Ser. 30, 1993, 5-245709; Feb. 3, 1994, 6-11980

Int. Cl.⁶ H01F 1/12

U.S. Cl. 148-104

22 Claims



1. A method of manufacturing an extrusion from amorphous magnetic alloy powder, the amorphous magnetic alloy powder having a softening temperature and a crystallization temperature, the softening temperature being lower than the crystallization temperature, the method comprising the steps of:
heating the amorphous magnetic alloy powder to a first temperature; and
extruding the heated amorphous magnetic alloy powder at a pressure such that frictional heat generated during extrusion causes the amorphous magnetic alloy powder to increase from the first temperature to a second temperature, the second temperature being a maximum temperature achieved by the amorphous magnetic alloy powder during extrusion; wherein the second temperature is between the softening temperature and the crystallization temperature such that the extruded magnetic alloy does not include a crystalline phase.

5,509,976

METHOD FOR PRODUCING A GRAIN-ORIENTED ELECTRICAL STEEL SHEET HAVING A MIRROR SURFACE AND IMPROVED CORE LOSS

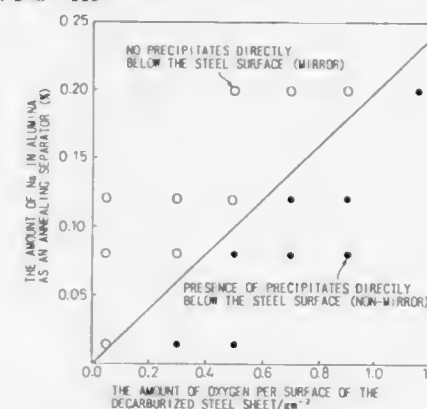
Shuichi Yamazaki; Yoshiyuki Ushigami, both of Futsu; Hiroyasu Fujii, Kitakyushu, and Kenichi Murakami, Futsu, all of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Jul. 17, 1995, Ser. No. 503,112

Int. Cl.⁶ H01F 1/14

U.S. Cl. 148-113

7 Claims



1. In a method for producing a grain-oriented electrical steel sheet having a mirror surface containing 0.8 to 4.8% of Si in the form of a strip which has been subjected to a conventional series of operations including hot rolling with or without annealing, cold rolling once or at least twice with intermediate annealing to obtain

a final thickness, decarburization annealing with or without nitriding treatment, coating with an annealing separator mainly containing non-hydrating oxide, and final annealing, the improvement comprising:

satisfying the relationship

$$[A] > 0.2 \times [O]$$

where [A] is the total concentration of alkali metal content in the annealing separator (weight %), and [O] is the amount of oxygen contained in the steel sheet just prior to the final annealing (g/m²).

5,509,977

HIGH STRENGTH HOT ROLLED STEEL PLATES AND SHEETS EXCELLENT IN UNIFORM ELONGATION AFTER COLD WORKING AND PROCESS FOR PRODUCING THE SAME

Seinosuke Yano; Koh Moriyama; Takashi Harabuchi; Yoshikazu Nakano; Hiroshi Mochiki, and Kimio Nagata, all of Kitakyushu, Japan, assignors to Japan Casting & Forging Corporation, and Nippon Steel Corporation, both of Tokyo, Japan

PCT No. PCT/JP93/01580, § 371 Date Jun. 24, 1994, § 102(c) Date Jun. 24, 1994, PCT Pub. No. WO94/10355, PCT Pub. Date May 11, 1994

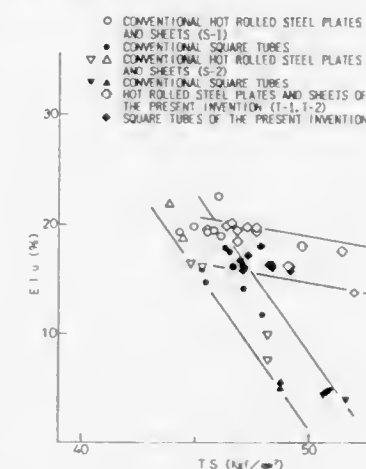
PCT Filed Oct. 29, 1993, Ser. No. 256,224

Claims priority, application Japan, Oct. 30, 1992, 4-292352

Int. Cl.⁶ C22C 38/14; C21D 7/13; 8/02

U.S. Cl. 148-328

8 Claims



1. High strength hot rolled steel plates and sheets excellent in uniform elongation after cold working, containing from 0.04 to 0.25% by weight of C, from 0.0050 to 0.0150% by weight of N and from 0.003 to 0.050% of Ti, having a carbon equivalent (Ceq.) defined by the formula described below of 0.10 to 0.45% and a pearlite phase in an amount of 5 to 20% in terms of area fraction, and containing from 0.0008 to 0.015% by weight of TiN having an average particle size exceeding 1 μm and dispersed therein:

$$Ceq = C + Si/24 + Mn/6 + Ni/40 + Cr/5 + Mo/4 + V/14.$$

5,509,978

HIGH STRENGTH AND ANTI-CORROSIVE ALUMINUM-BASED ALLOY

Tsuyoshi Masumoto; Akihisa Inoue, both of Sendai, and Yuma Horio, Hamamatsu, all of Japan, assignors to Yamaha Corporation, Japan

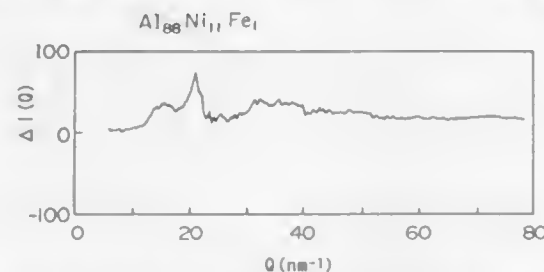
Continuation-in-part of Ser. No. 101,948, Aug. 4, 1993, abandoned. This application Feb. 9, 1995, Ser. No. 385,915

Claims priority, application Japan, Aug. 5, 1992, 4-209115; Aug. 5, 1992, 4-209116; Mar. 2, 1993, 5-041528

Int. Cl.⁶ C22C 21/00

U.S. Cl. 148—403

18 Claims



1. High strength and anti-corrosive aluminum-based alloy essentially consisting of an amorphous structure, said aluminum based alloy represented by the general formula $Al_xM_yR_z$, wherein M is at least one metal element selected from the group consisting of Ti, V, Cr, Mn, Fe, Co, Cu, Zr, Nb, Mo and Ni, and R is at least one element selected from the group consisting of Y, Ce, La, Nd and Mm (misch metal); in said formula, x, y and z represent the composition ratio, and are atomic percentages satisfying the relationships of $x+y+z=100$, $64.5 \leq x \leq 95$, $5 \leq y \leq 35$, and $0 < z \leq 0.4$ and said aluminum-based alloy having a positive value of differential intensity profile for any value of the wave number vector.

5,509,979

TITANIUM ALLOY AND METHOD FOR PRODUCTION THEREOF

Minami Kimura, Tokyo, Japan, assignor to Orient Watch Co., Ltd., Tokyo, Japan

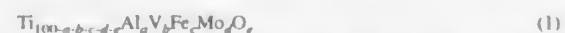
Filed Dec. 1, 1994, Ser. No. 352,792

Claims priority, application Japan, Dec. 1, 1993, 5-329941 Int. Cl.⁶ C22C 14/00

U.S. Cl. 148—421

1 Claim

1. A titanium alloy obtained by heat-treating a titanium alloy material having a composition represented by the following formula 1 and characterized by possessing an equiaxial two-phase ($\alpha+\beta$) structure having an average crystal grain size in the range of from 1 μ m to 10 μ m



(wherein a, b, c, d, and e are weight percents and respectively satisfy the relations, $3.0 \leq a \leq 5.0$, $2.1 \leq b \leq 3.7$, $0.85 \leq c \leq 3.15$, $0.85 \leq d \leq 3.15$, and $0.06 \leq e \leq 0.20$) and

which has been formed in to a prescribed shape and size and finished to a mirror surface.

5,509,980

CYCLIC OVERAGEING HEAT TREATMENT FOR DUCTILITY AND WELDABILITY IMPROVEMENT OF NICKEL-BASED SUPERALLOYS

Leong-Chew Lim, Singapore, Singapore, assignor to National University of Singapore, Singapore, Singapore

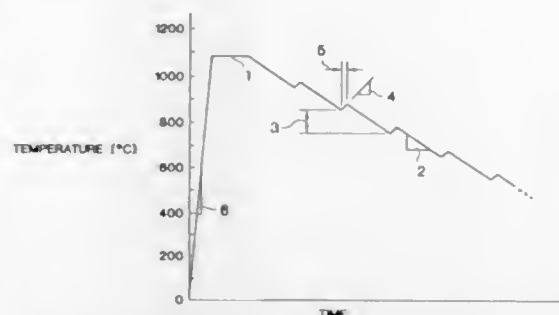
Filed Aug. 17, 1994, Ser. No. 291,823

Int. Cl.⁶ C22F 1/10

U.S. Cl. 148—524

16 Claims

1. A pre-weld overageing heat treatment for nickel-based superalloys, comprising:



- heating a nickel-based superalloy to solutionization temperature for a period of time sufficient to dissolve a strengthening gamma prime phase of the microstructure of said nickel-based superalloy to produce a heated nickel-based superalloy;
- cooling said heated nickel-based superalloy at a rate of cooling that is slow enough to allow reprecipitation of said gamma prime phase as coarse particles; and
- interrupting said cooling with intermittent heating cycles that cause at least a partial dissolution of gamma prime phase formed during the cooling, wherein said intermittent heating is at a rate or rates, and for a duration or durations, sufficient to obtain predominantly coarse equiaxed gamma prime precipitates in said microstructure.

5,509,981

HYBRID ROCKET FUEL

David L. Dean, New Market, Ala., assignor to McDonnell Douglas Corporation

Filed Feb. 18, 1994, Ser. No. 198,350

Int. Cl.⁶ C06B 45/10

U.S. Cl. 149—19.4

34 Claims

18. A fuel substance for hybrid rocket propulsion comprising hexamethylenetetramine and an elastomeric binder system, said hexamethylenetetramine being present in an amount of about 60% to about 83% based on the total weight of the fuel.

5,509,982

CAMOUFLAGE NETTING AND A METHOD AND APPARATUS FOR ITS MANUFACTURE

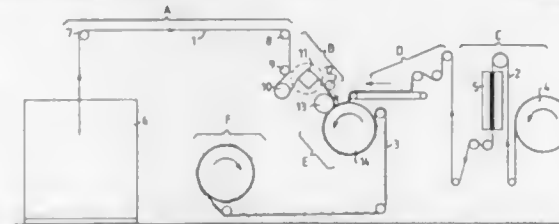
Hermann Thuswaldner, and Sören Andersson, both of Gamleby, Sweden, assignors to Barracuda Technologies AB, Gamleby, Sweden

Division of Ser. No. 690,999, Jun. 28, 1991. This application May 22, 1995, Ser. No. 446,401

Claims priority, application Sweden, Nov. 6, 1989, 8903709 Int. Cl.⁶ A46D 1/00

U.S. Cl. 156—72

2 Claims



1. A method for mutually joining web material exhibiting periodic string parts and garnishing material, comprising the steps of guiding the web material and the garnishing material onto an endless rotating path having provided therein apertures which correspond to the periodicity of the web material, urging the garnishing material down by said string parts to form loops in the garnishing material, said material being urged down beyond pairs of electrodes located at said apertures; moving the electrodes of said electrode pairs towards one another; applying a high frequency alternating voltage between said electrode pairs, wherein

the garnishing material caught between the electrodes is fused together; moving apart the electrodes of said electrode pairs; and removing the web material together with garnishing material fastened thereto from the endless, rotating path.

5,509,983

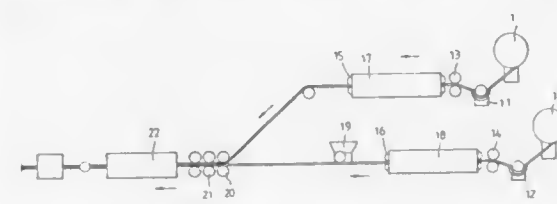
METHOD OF MAKING FIRE-RESISTING SYNTHETIC BOARDS

Te-Fang Yu, No. 622, Chien Kung Rd., Kaohsiung, Taiwan
Filed Jul. 28, 1995, Ser. No. 508,887

Int. Cl.⁶ B05D 3/02

U.S. Cl. 156—79

1 Claim



1. A process for making fire-resisting synthetic board, comprising the steps of:

- preparing a coating material by: (i) grinding dried clay into powder and then using a screen to filter impurities from the clay powder thus obtained; (ii) mixing 40–60% of the clay powder thus obtained with 20–40% urea, 5–10% water, 1–5% stabilizing agent, 5–10% latex, 10–15% sodium chloride, and 5–10% pigment to form a mixture; (iii) putting the mixture thus obtained into a mixing tank and adding a bubble eliminating agent to the mixing tank for mixing with the mixture into the desired coating material;
- preparing an intermediate bonding material by: (i) grinding dried clay into powder and then using a screen to filter impurities from the clay powder thus obtained; (ii) mixing 50–70% of the clay powder thus obtained with 20–35% urea, 5–10% water, 5–10% sodium chloride, and 1–5% stabilizing agent;
- dipping two pieces of fabric into the prepared coating material;
- squeezing the coated fabrics to a predetermined thickness;
- drying the coated fabrics;
- bonding the dried, coated fabrics together by interposing a layer of the intermediate bonding material between the dried, coated fabrics; and then squeezing the dried, coated fabrics together with the intermediate bonding material therebetween, so as to form a blank board; and
- drying and squeezing the blank board in a kiln, causing the layer of the intermediate bonding material to foam into a foamed structure.

5,509,984

METHOD OF APPLYING PUMPABLE DESICCATED MASTIC FOR AN INSULATING GLASS UNIT

Paul J. Meyer, New Brighton, and Anne Spinks, Hugo, both of Minn., assignors to H. B. Fuller Licensing & Financing, Inc., Arden Hills, Minn.

Division of Ser. No. 31,602, Mar. 15, 1993. This application Oct. 21, 1994, Ser. No. 327,187

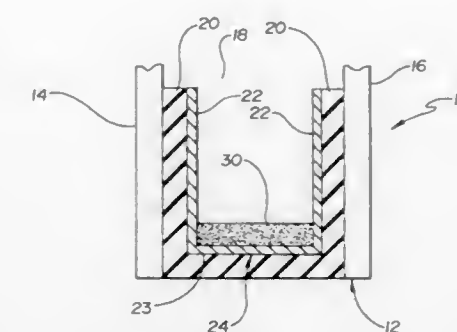
Int. Cl.⁶ B32B 17/00

U.S. Cl. 156—107

29 Claims

1. A method of applying a desiccating material layer to an edge assembly for an insulating glass unit, the edge assembly comprising a U-channel spacer opening into the interior of the insulating glass unit, the method comprising:

- heating a thermoplastic mastic formulation to a temperature of about 88°–121° C.,
- pumping the formulation through an applicator onto the U-channel spacer and



allowing the formulation to cool to ambient temperature to thereby form said desiccating material layer, the formulation comprising:

- 4–30 weight % of the formulation of a film former selected from the group consisting of polyisobutylene polymers having a weight average molecular weight in the range of about 35,000 to about 60,000, and mixtures of such polymers with minor amounts of a butyl rubber having a weight average molecular weight of up to about 500,000;
- 20–50 weight % of the formulation of a non-crystalline homopolymer, copolymer, terpolymer or graft copolymer comprising polypropylene;
- 0–20 weight % of the formulation of a low volatile UV stable tackifier compatible with the film former and polypropylene components; and
- 20–50 weight % of the formulation of an adsorbent component comprising 20–50% by weight of the formulation of a moisture or moisture and volatile organic chemical adsorbing material, and 0–10% by weight of the formulation of an adsorbent of volatile organic compounds.

5,509,985

METHOD FOR COMBINING A TENSIONED ELASTIC GARTER WITH A SUBSTRATE

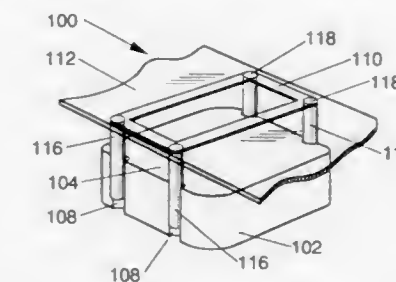
Ronald W. Kock, Wyoming, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Division of Ser. No. 132,730, Oct. 6, 1993, Pat. No. 5,393,360. This application Oct. 5, 1994, Ser. No. 318,596

Int. Cl.⁶ A61F 13/15

U.S. Cl. 156—160

9 Claims



1. A method of combining a tensioned elastic garter with a substrate, said method comprising the steps of:

- wrapping a tensioned elastic garter about a mandrel, said mandrel having a top surface and side walls depending from said top surface, said tensioned garter positioned on said mandrel below said top surface and about said side walls of said mandrel, said side walls having recessed portions across which said tensioned garter spans;
- placing a substrate against said top surface of said mandrel; and
- securing said tensioned garter to said substrate with sealing tools which are disposed in said recessed portions of said mandrel side walls while said tensioned garter is held by said mandrel in a predetermined shape.

5,509,986

PROCESS FOR PREPARING AN IGNITION RESISTANT CARBONACEOUS MATERIAL COMPRISING A MELT BLOWING OR SPUNBONDING STEP, A RADIATION STEP AND A CARBONIZING STEP

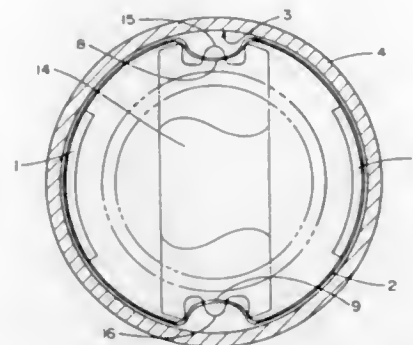
Francis P. McCullough, Jr., Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Filed Aug. 22, 1994, Ser. No. 294,239

Int. Cl.⁶ D04H 3/16; D01C 5/00; C01B 31/00; D29C 47/88
U.S. Cl. 156—167 11 Claims

1. A method for preparing an ignition resistant carbonaceous material from an acrylic precursor material, comprising the steps of:

- 1) exposing a meltblown or spunbonded acrylic precursor material to ionizing radiation at an intensity of from 0.1 to 10 megarads so as to crosslink said acrylic material, and then
- 2) heat treating said irradiated acrylic material in an inert atmosphere for a time and temperature sufficient to increase the carbon content of said irradiated material to form said carbonaceous material having a carbon content of from about 65% to less than about 92%, an oxygen content of less than about 2%, and a specific resistivity of from about 10^{-1} to about 10^{10} ohm-cm.



bonding the material to the substrate; forming said substrate and said material into a substantially partly tubular configuration having an inner surface and an outer surface, said material being on the inner surface; shaping said partly tubular configuration in a manner whereby said partly tubular configuration is expandable in diameter; inserting said partly tubular configuration substantially coaxially into said tube with the outer surface of said partly tubular configuration in proximity with said inner surface of said tube, wherein said tube is a bore tube of magnets for a superconducting supercollider; and applying hoop compression stress to said inner surface of said partly tubular configuration, thereby forcing said partly tubular configuration against said inner surface of said tube.

5,509,987

METHOD FOR PRODUCING A BONDED MULTIWEB PRODUCT

Ake L. Dahlquist, Dixon, Ill., assignor to Dixonweb Printing Company, Dixon, Ill.

Division of Ser. No. 782,219, Oct. 24, 1991, Pat. No. 5,296,066, which is a continuation-in-part of Ser. No. 704,170, May 22, 1991, abandoned. This application Mar. 21, 1994, Ser. No. 215,445

The portion of the term of this patent subsequent to Mar. 22, 2011, has been disclaimed.

Int. Cl.⁶ B31F 1/00; B32B 31/00

U.S. Cl. 156—201 12 Claims



1. A method for producing a multiweb folded product having an unfolded width greater than the width of any single web forming a part thereof comprising the steps of:

- conveying a first printed web along a first path of travel; simultaneously conveying a second printed web along a second path of travel;
- longitudinally folding the first web to form a first longitudinal web attaching panel and a first web viewing panel;
- bringing said first and second webs into vertical registry; and thereafter
- longitudinally joining said second web to said attaching panel after said folding step to form a longitudinal gutterless joint between the webs.

5,509,988

METHOD OF AFFIXING MATERIAL ON A SUBSTRATE TO THE INNER SURFACE OF A TUBE

Joseph A. O'Toole, Massapequa, and Douglas W. Sedgley, Bethpage, both of N.Y., assignors to Northrop Grumman Corporation, Los Angeles, Calif.

Filed Jun. 2, 1994, Ser. No. 252,744

Int. Cl.⁶ B29C 63/26

U.S. Cl. 156—220 11 Claims

1. A method of affixing a material on a substrate to the inner surface of a tube, said method comprising the steps of

**5,509,989
METHOD FOR PRODUCING DECORATIVE LAMINATE FINISHES**

Clayton Tuubl, P.O. Box 1869, Orange Park, Fla. 32067-1869

Filed Aug. 19, 1993, Ser. No. 108,247

Int. Cl.⁶ B44C 1/16

U.S. Cl. 156—238 12 Claims

1. A method for the production of a laminate comprising a decorative film on a substrate, said method comprising:

- A. providing an aqueous bath;
- B. applying a relatively minor amount of a lacquer colorant to the surface of said bath;
- C. partially drying said colorant to produce a flexible film;
- D. causing a surface of a first substrate to contact and releasably adhere to a surface of said film;
- E. separating the resultant, temporary laminate from said aqueous bath; and
- F. contacting and fixedly adhering said partially-dried film to a surface of a second substrate to produce a final laminate.

5,509,990

PROCESS FOR PRODUCING A MULTILAYER MOLDED ARTICLE

Shohel Masul, Aichi; Masahito Matsumoto, Osaka; Nobuhiro Usui, Osaka; Toshihiro Hosokawa, Osaka, and Ryuichi Ishitsubo, Osaka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Continuation of Ser. No. 883,907, May 13, 1992, abandoned, which is a continuation of Ser. No. 457,313, Dec. 26, 1989, abandoned. This application Dec. 29, 1993, Ser. No. 174,757

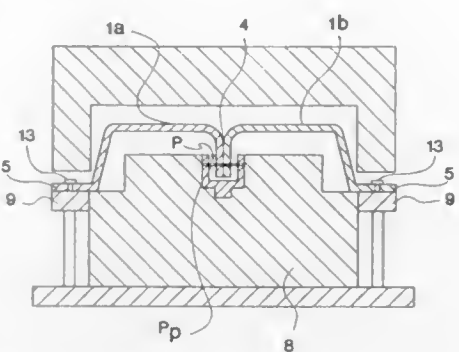
Claims priority, application Japan, Dec. 27, 1988, 334088

Int. Cl.⁶ B29C 39/12; 33/14; 33/42

U.S. Cl. 156—242 9 Claims

1. A process for producing a multilayer molded article comprising a resin body and at least two sheets of skin materials which are 1a laminated adjacently on one surface of the resin body, which process comprises the steps of:

- mating an edge part of one of the skin materials with an adjacent edge part of another of the skin materials;



clamping the mated edge parts of said skin materials with clamping means, said clamping means having a receiving opening for receiving and securing the edge parts of the skin materials therein, wherein the receiving opening includes pins disposed across said opening and through the edge parts of the skin materials so as to secure said edge parts in said clamping means;

inserting said clamping means into an engaging groove provide in a first mold which opposes a second mold;

spreading the skin materials between said first and second molds;

supplying a mass of resin melt between the skin materials and the first mold; and

closing the first and second molds to form the multilayer molded article, wherein said mated edge parts of said skin materials are formed so as to be within the interior of said multilayer molded article;

wherein said receiving opening is a groove having alternating wide and narrow portions, said wide portions being conduits for allowing resin melt to pass therethrough.

**5,509,991
METHOD OF PRODUCING AN OPTICAL DISK HAVING AN INTEGRATED LABEL LAYER**

Hwan-Moon Choi, Seoul, Rep. of Korea, assignor to Daewoo Electronics Co., Ltd., Seoul, Rep. of Korea

Filed Aug. 31, 1994, Ser. No. 299,180

Claims priority, application Rep. of Korea, Aug. 31, 1993, 1993-17210

Int. Cl.⁶ B29D 17/00

U.S. Cl. 156—245 4 Claims



1. A method of producing an optical recording medium, capable of allowing a label image to be formed on the optical recording medium during the manufacturing thereof, the method comprising the steps of:

- (a) preparing a recording surface on a master;
- (b) forming a facing surface on a stamper by molding the stamper onto the master, wherein the facing surface corresponds to the recording surface;
- (c) separating the stamper with the facing surface from the master;

- (d) providing a plurality of recording grooves on a surface of a substrate capable of storing data/information in an optically readable condition using the facing surface of the stamper;
- (e) separating the substrate from the stamper;
- (f) depositing a label layer on a portion of the surface of the substrate with the plurality of recording grooves in a desired pattern and a reflection layer on the remaining portion of the surface of the substrate with the plurality of the recording grooves; and
- (g) depositing a transparent protective layer on the label layer and the reflection layer to thereby form said optical recording medium, having the label image formed thereon, wherein the label and the reflection layers are made of materials having a same reflexivity in a wavelength range of a laser beam used in recording the data/information on the optical recording medium.

5,509,992

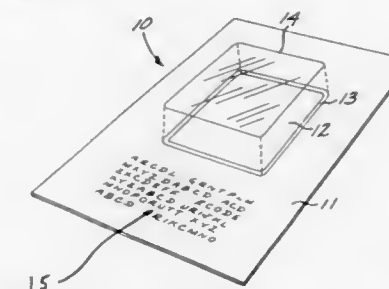
METHOD OF MANUFACTURING A LITHOGRAPHICALLY PRINTED PRODUCT

Herbert R. Axelrod, One T.F.H. Plz., Neptune, N.J. 07753

Continuation of Ser. No. 83,083, Jun. 25, 1993, which is a division of Ser. No. 762,394, Sep. 18, 1991, Pat. No. 5,249,828. This application Aug. 23, 1994, Ser. No. 294,423

Int. Cl.⁶ B32B 31/00

U.S. Cl. 156—277 1 Claim



1. A method for manufacturing a lithographically printed book which visually simulates a conventional photograph adhesively secured to a portion of a book page bearing printed words, comprising:

- lithographically printing upon a surface of said book page a photographic print on a first portion of an opaque substrate which also carries printed words on a second portion thereof;
- printing a border on said opaque substrate around said print between said photographic print and said words; and
- applying a transparent film only on said first portion of said opaque substrate in registry with said print and said border.

5,509,993

PROCESS FOR THE PREPARATION OF A METAL AND GRAPHITE LAMINATE

Alfred Hirschvogel, Achsheim, Germany, assignor to Sigr Great Lakes Carbon GmbH, Wiesbaden, Germany

Filed Mar. 24, 1994, Ser. No. 217,598

Claims priority, application Germany, Mar. 25, 1993, 43 09 700.6

Int. Cl.⁶ C09J 1/00

U.S. Cl. 156—326 42 Claims

1. In a process for the preparation of a laminate being formed of at least one layer of a metal having a surface and at least one layer of graphite having a surface and being produced by pressing expanded graphite, which includes forming a non-detachable bond over all of the surfaces between the metal and the graphite, the improvement which comprises:

- wetting at least one of the surfaces to be bonded with at least one contact surface-active substance having no adhesive character and being selected from the group consisting of organo-

silicon compounds, perfluorinated compounds and metal soaps, and providing the surface-active substance in a thickness not less than 10 nm and not more than 1000 nm; and bringing the surfaces to be bonded together into contact with each other and bonding the surfaces together at a temperature of minimally 30° C. and maximally 400° C. and a pressure of minimally 1 MPa and maximally 200 MPa.

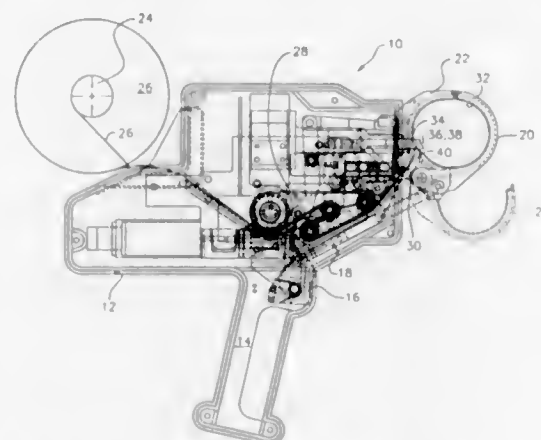
5,509,994 GUN FOR TIE WRAPPING BUNDLES OF ELONGATED ARTICLES

Matthew M. Recchia, Coram; Joseph J. Hernandez, Patchogue; Anwar K. Chitayat, Ft. Salagona, and John A. Sehlmeier, Mt. Sinai, all of N.Y., assignors to Anorad Corporation, Hauppauge, N.Y.

Filed Jun. 2, 1994, Ser. No. 252,997

Int. Cl.⁶ B65B 13/32

U.S. Cl. 156—468



1. A tie wrap device for tightly winding a tape loop of a polymeric material tape encirclingly around a bundle of longitudinally arrayed articles, said device comprising

a pair of jaws movable between an open condition wherein the jaws are positioned to gird the article bundle to a closed condition in which the jaws present an encirclement of the bundle so that a tape feed from a tape stock can be advanced around an inner periphery of the jaws in a bundle encircling loose tape loop that includes overlap of a tape leading end length with stock length remote from the said tape leading end,

means for tightening the loose loop in a tight closely encircling course about the said article bundle

an ultra sonic heating horn having a knurled tip end proximal an exterior side location of the tape overlap,

a clamp having a front face adjacent said heating horn and positioned adjacent below the said tape overlap exterior side location, and

a pair of anvils having face surfaces positionable in facing relation to an inner side location of the tape overlap and movable to urge at least some of the tape overlap at the exterior side location thereof into tight contact with at least a part of the heating horn tip end, the anvil face surfaces and the horn tip end being configured and disposed such that other parts of the tape overlap at the exterior side thereof are closely proximal the horn tip end,

said heating horn tip end having at least one inward recess therein extending transversely of the horn tip end and a further inward recess extending longitudinally therein, said recesses accommodating at least some of said other parts of the tape overlap thereby to obviate tight contact of said some other parts with the horn tip end,

said ultra sonic heating horn being operable to effect sufficient heating of the tape overlap part in tight contact with the horn tip end to cause melt coalescence of the material in the tape

overlap part which upon cooling establishes weldment of at least part of the tape stock leading edge length to at least part of the remote length part, the ultra sonic heating horn being operable to effect at least some molecular alignment disruption in the tape material at the tape overlap exterior side proximal the horn tip end but not in tight contact therewith so that where so disrupted the tape material is weakened sufficiently to allow separation of tape stock upstream of the weldment from the loop along a substantially non residue leaving break course effected with a pulling force applied to the tape stock in a direction upstream of the weldment, said further recess being wider at a top end of the horn tip end than at a bottom end of said horn tip end.

5,509,995 PROCESS FOR ANISOTROPICALLY ETCHING SEMICONDUCTOR MATERIAL

Hae S. Park, Kyoungki, Rep. of Korea, assignor to Hyundai Electronics Industries Co. Ltd., Kyoungki, Rep. of Korea

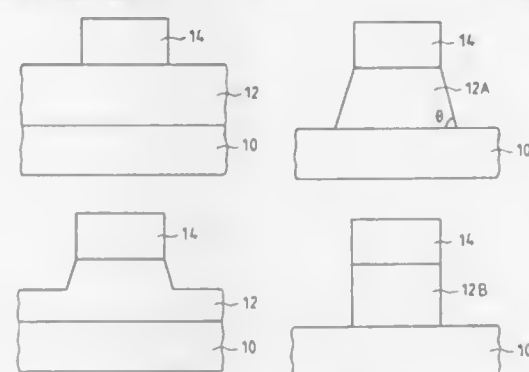
Filed May 25, 1994, Ser. No. 248,754

Claims priority, application Rep. of Korea, May 26, 1993, 93-09164

Int. Cl.⁶ H01L 21/306

U.S. Cl. 156—643.1

5 Claims



1. A process of anisotropically etching a semiconductor layer formed to be interposed between a layer and a photoresist pattern on a semiconductor substrate and partially exposed by the photoresist pattern, comprising:

a primary etching step of slantly etching the exposed portion of the semiconductor layer at an angle by using a primary plasma gas ionized by an electric field, thereby selectively exposing the lower layer; and

a secondary etching step of directly applying a secondary plasma gas ionized by the electric field to sloped surfaces of the semiconductor layer formed at the primary etching step and scattering the secondary plasma gas toward the sloped surfaces of the semiconductor layer by the exposed portion of the lower layer, whereby the sloped surfaces of the semiconductor layer are vertically etched.

5,509,996 METHOD OF FOR EVAPORATING AND COOLING LIQUID

Gad Assaf, Rehovot, Israel, assignor to Geophysical Engineering Company, Seattle, Wash.

Continuation of Ser. No. 376,035, Jul. 6, 1989, abandoned.

This application Jun. 5, 1991, Ser. No. 711,403

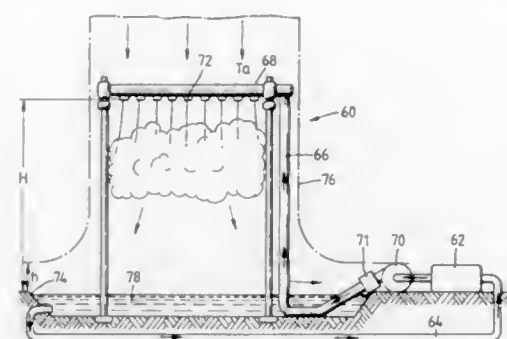
Claims priority, application Israel, Jul. 12, 1988, 87088

Int. Cl.⁶ B01D 1/14; 1/16

U.S. Cl. 159—48.2

20 Claims

1. A method for evaporating a starting solution to produce an end solution by spraying said starting solution into a gaseous medium under the conditions that the heat content of the starting solution in contact with the gaseous medium is smaller than the



heat content of the gaseous medium; the duration of contact is such that most of the evaporation of solution takes place under conditions of constant enthalpy; and the vapor pressure of the gaseous medium is less than the vapor pressure of the liquid/gas interface of the end solution comprising the step of: spraying the starting solution supplied by delivering means using a pump through spray heads, each spray head comprising a stationary member having a plurality of holes the radii of which are not less than 0.025 mm and the distance between them being at least 0.3 mm for producing a shower of starting solution droplets of substantially constant radius substantially independent of spray head operating pressure.

16. A method for cooling a liquid by spraying said liquid into a gaseous medium under the conditions that the heat content of the liquid is larger than the heat content of the gaseous medium; and the mixing ratio m of the liquid to gas is greater than 0.1 comprising the step of: spraying the liquid supplied by delivering means using a pump through spray heads, each spray head comprising a stationary member having a plurality of holes the radii of which are not less than 0.1 mm and the distance between them being at least 0.3 mm for producing a shower of liquid droplets of substantially constant radius substantially independent of spray head operating pressure.

5,509,997 METHOD OF RECOVERING ENERGY FROM WASTE LIQUORS FROM PULP PROCESSES

Marjo Kuusio, and Samuli Nikkanen, both of Varkaus, Finland, assignors to A. Ahlstrom Corporation, Finland

PCT No. PCT/FI92/00315, § 371 Date May 12, 1994, § 102(e) Date May 12, 1994, PCT Pub. No. WO93/11297, PCT Pub. Date Jun. 10, 1993

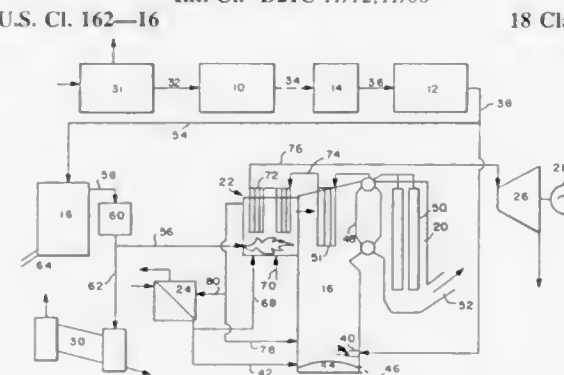
PCT Filed Nov. 25, 1992, Ser. No. 240,776

Claims priority, application Finland, Nov. 26, 1991, 915551

Int. Cl.⁶ D21C 11/12; 11/06

U.S. Cl. 162—16

18 Claims



1. A method of recovering energy from waste liquors from cellulose pulp processes, utilizing a recovery boiler and a superheating boiler, and comprising the steps of:

(a) dividing a main stream of waste liquor from cellulose pulp processing into first and second streams;

(b) combusting the first stream of waste liquor in the recovery boiler to produce steam, and feeding the steam so produced to the superheating boiler;

(c) gasifying the second stream of waste liquor to produce a combustion gas and an inorganic fraction; and

(d) burning said combustion gas from step (c) in the superheating boiler to superheat the steam from step (b), the combustion gas from step (c) providing substantially the only source of fuel for superheating the steam in the superheating boiler; and wherein step (d) is practiced to superheat the steam to a pressure of 100 bar or greater and a temperature of greater than 520° C.

5,509,998 METHOD AND APPARATUS FOR CLARIFYING GREEN LIQUOR

Kent Strid, Järbo, and Rolf Oswaldson, Gävle, both of, Sweden, assignors to Götaverken Energy Aktiebolag, Gothenburg, Sweden

PCT No. PCT/SE91/00786, § 371 Date Oct. 28, 1993, § 102(e) Date Oct. 28, 1993, PCT Pub. No. WO92/09742, PCT Pub. Date Jun. 11, 1992

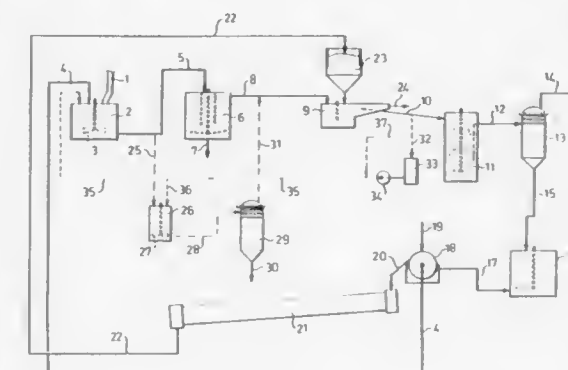
PCT Filed Nov. 20, 1991, Ser. No. 64,154

Claims priority, application Sweden, Nov. 21, 1990, 9003697

Int. Cl.⁶ D21C 11/00

U.S. Cl. 162—29

7 Claims



1. A process for producing green liquor with improved sedimentation and filtration properties in a chemicals recovery plan of a sulphate pulp mill comprising:

introducing weak liquor and melt into a soda dissolver in order to form unclarified green liquor;

directing a flow of unclarified green liquor from the soda dissolver to a clarifier to remove solid particles from the unclarified green liquor so as to produce clarified green liquor;

directing a flow of clarified green liquor from the clarifier to a lime slaker;

introducing a supply of lime into the lime slaker along with the clarified green liquor from the clarifier;

directing a flow of slaked lime from the lime slaker to a causticizing tank; and

re-directing a partial portion of the flow of slaked lime, prior to the causticizing tank, to one of the soda dissolver and a mixing tank interposed in the flow path of green liquor from the soda dissolver to the lime slaker to improve the removal of solid particles from the unclarified green liquor, wherein the partial portion of the flow of slaked lime corresponds to approximately 3% of the total flow from the lime slaker to the causticizing tank.

5,509,999

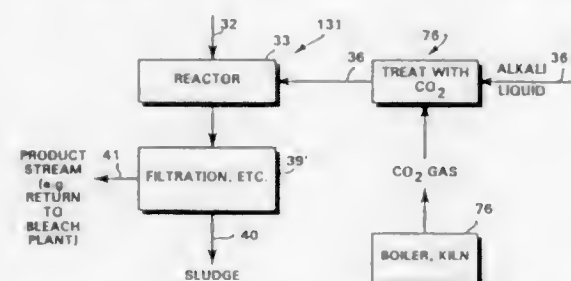
TREATMENT OF BLEACH PLANT EFFLUENTS
Hans G. Lindberg, Glens Falls, N.Y., assignor to Kamyr, Inc., Del.

Continuation-in-part of Ser. No. 113,645, Aug. 31, 1993, which is a continuation-in-part of Ser. No. 35,478, Mar. 24, 1993, Pat. No. 5,401,362. This application Feb. 14, 1994, Ser. No. 195,139

Int. Cl.⁶ D21C 11/00

U.S. Cl. 162—29

20 Claims



1. A method of removing bleaching-chemical-consuming metals from treatment fluids in a cellulose pulp mill having a bleach plant, comprising the steps of substantially continuously:

- (a) treating digested pulp in an acidic or neutral stage to dissolve metals;
- (b) washing or thickening the pulp immediately after step (a) to produce a filtrate containing dissolved metals;
- (c) treating an alkali liquid containing bleaching chemical-consuming sulfides with carbon dioxide to reduce the sulfide content and to increase the carbonate content of the alkali liquid;
- (d) using the alkali liquid produced in step (c) to adjust the pH of the filtrate from step (b) to cause dissolved metals to precipitate as solids in the pH adjusted filtrate;
- (e) removing the precipitated solids from the filtrate; and
- (f) using the reduced metal content filtrate from step (e) in the bleach plant of the pulp mill.

5,510,000

PAPER PRODUCTS CONTAINING A VEGETABLE OIL BASED CHEMICAL SOFTENING COMPOSITION

Dean V. Phan, West Chester, and Paul D. Trokhan, Hamilton, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

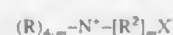
Filed Sep. 20, 1994, Ser. No. 308,896

Int. Cl.⁶ D21H 21/22

U.S. Cl. 162—111

22 Claims

1. A soft tissue paper product comprising:
(a) cellulose paper making fibers; and
(b) from about 0.005% to about 5.0% by weight of said cellulose paper making fibers of a quaternary ammonium softening compound having the formula:



wherein
m is 2;

each R is a C₁-C₆ alkyl group, hydroxyalkyl group, hydrocarbyl group, substituted hydrocarbyl group, benzyl group, or mixtures thereof;

X⁻ is any softener-compatible anion;

wherein each of the R² portion of the softening compound is derived from C₁₂-C₂₄ fatty acyl groups having an Iodine Value of from greater than about 5 to less than about 100, wherein the majority of said fatty acyl groups are derived from vegetable oil sources, and wherein the majority of said fatty acyl groups contain a C₁₈-C₂₄ chain length.

5,510,001

METHOD FOR INCREASING THE INTERNAL BULK OF THROUGHDRYED TISSUE

Michael A. Hermans, Neenah; Fung-Jou Chen, Appleton; Harry L. Spiegelberg, Appleton; Bernhardt E. Kressner, Appleton, and Janice G. Nielsen, Appleton, all of Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.

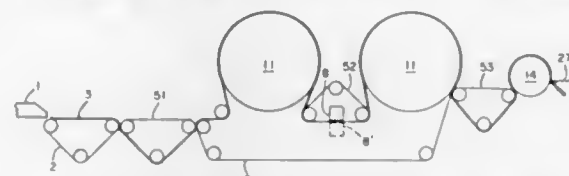
Division of Ser. No. 66,188, May 21, 1993, Pat. No. 5,411,636.

This application Sep. 14, 1994, Ser. No. 307,988

Int. Cl.⁶ D21F 11/00

U.S. Cl. 162—113

5 Claims



1. A method for making a throughdried tissue product comprising:

- (a) depositing an aqueous suspension of papermaking fibers onto an endless forming fabric to form a wet web;
- (b) transferring the wet web to a throughdryer fabric and partially drying the web in a first throughdryer to a consistency of from about 28% to about 45%;
- (c) sandwiching the partially-dried web between the throughdryer fabric and a coarse fabric;
- (d) deflecting the web to substantially conform the web to the contour of the coarse fabric;
- (e) carrying the web on the throughdryer fabric over a second throughdryer to dry the web to a consistency of about 85% or greater;
- (f) transferring the throughdried web to a Yankee dryer; and
- (g) creping the web.

5,510,002

METHOD FOR INCREASING THE INTERNAL BULK OF WET-PRESSED TISSUE

Michael A. Hermans, Neenah; Fung-Jou Chen, Appleton; Harry L. Spiegelberg, Appleton; Bernhardt E. Kressner, Appleton, and Janice G. Nielsen, Appleton, all of Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.

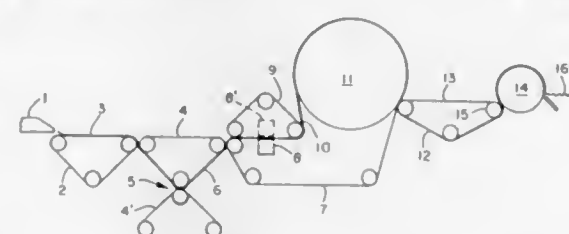
Division of Ser. No. 66,188, May 21, 1993, Pat. No. 5,411,636.

This application Sep. 14, 1994, Ser. No. 307,990

Int. Cl.⁶ D21H 27/02

U.S. Cl. 162—113

6 Claims



1. A method for making a tissue product comprising:

- (a) depositing an aqueous suspension of papermaking fibers onto an endless forming fabric to form a wet web;
- (b) transferring the wet web to a papermaking felt;
- (c) pressing the web to a consistency of about 30 percent or greater;
- (d) transferring the web to a coarse fabric;
- (e) pneumatically deflecting the web to substantially conform the web to the contour of the coarse fabric, wherein the Normalized Debonded Void Thickness of the web is increased about 10 percent or greater;
- (f) throughdrying the web to a consistency of from about 30% to about 90% while supported on the coarse fabric;
- (g) transferring the throughdried web from the coarse fabric to a fine transfer fabric;

- (h) transferring the web to a Yankee dryer to final dry the web; and
- (i) creping the web.

5,510,003

METHOD OF SIZING AND AQUEOUS SIZING DISPERSION

Anthony R. Colasurdo, Marietta, Ga.; Ian R. Hiskens; Nicholas S. Morgan, both of Bristol, England, and Karen J. Smith, Woodstock, Ga., assignors to Eka Nobel AB, Bohus, Sweden

Filed Jul. 20, 1994, Ser. No. 277,851

Int. Cl.⁶ D21H 21/16

U.S. Cl. 162—158

20 Claims

1. A method of sizing cellulose fiber based products containing precipitated calcium carbonate as a filler which comprises dewatering and drying an aqueous suspension of cellulose fiber containing pulp in the presence of an aqueous dispersion of a rosin-based sizing agent which comprises a rosin component and from 5 to 75% by weight based on the rosin-based sizing agent of a rosin ester component, and an aqueous dispersion of a cellulose-reactive sizing agent, wherein the weight ratio of rosin-based sizing agent to cellulose-reactive sizing agent is from 1:1 to 20:1, and forming said pulp into the desired cellulose fiber based product.

5,510,004

AZETIDINIUM POLYMERS FOR IMPROVING WET STRENGTH OF PAPER

Anthony J. Allen, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

Filed Dec. 1, 1994, Ser. No. 347,921

Int. Cl.⁶ D21H 21/20

U.S. Cl. 162—168.2

70 Claims

1. A process for making paper with increased wet strength comprising:

- (a) providing an aqueous pulp slurry;
 - (b) forming the aqueous pulp slurry into a sheet; and
 - (c) drying the sheet;
- wherein there is added to the aqueous pulp slurry or to the sheet at a size press, or both, an aqueous solution of a polymer or copolymer of N,N-diallyl-3-hydroxy azetidinium halide wherein at least 15 mole percent of the monomer units present in the copolymer are derived from N,N-diallyl-3-hydroxy azetidinium halide;

wherein said polymer or copolymer is added at a level of at least about 0.1% on a dry basis based on the dry weight of the pulp; and

wherein said aqueous polymer or copolymer solution contains organic halide by-products comprised of 1,3-dihalo-2-propanol, 2,3-dihalo-1-propanol and 3-halo-1,2-propanediol at a level of less than about 10,000 ppm based on the dry weight of polymer.

5,510,005

VENTURI HEADBOX FOR A PAPERMAKING MACHINE

Brian D. Glingerich, Covington, Va., assignor to Westvaco Corporation, New York, N.Y.

Filed Jul. 25, 1994, Ser. No. 279,427

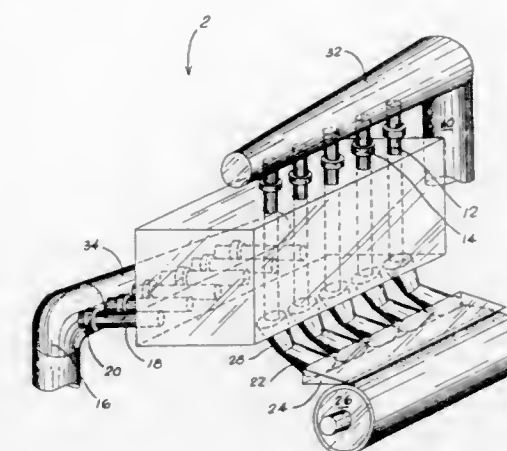
Int. Cl.⁶ D21F 1/02

U.S. Cl. 162—343

5 Claims

1. A venturi headbox for a papermaking machine, wherein said headbox is structured for having a pulp flowing from an upstream to a downstream direction and is comprised of:

- a headbox chamber;
- a pulp inlet means located upstream of said headbox chamber for delivering pulp to said headbox;
- a white water inlet means located adjacent to said pulp inlet means for delivering white water to said headbox chamber;



a venturi manifold means having a plurality of venturis located downstream of and spaced transversely across said headbox chamber;

a slice means located downstream of said venturi manifold means; wherein said pulp inlet means is further comprised of: a pulp flow regulating means located upstream of said headbox chamber;

a pulp header means located upstream of said pulp flow regulating means and said headbox chamber; and

a pulp conduit means having a plurality of pulp conduits spaced transversely across said headbox chamber and operatively connected to said pulp header means, said pulp flow regulating means and said headbox chamber; and each venturi being located adjacent to a respective pulp conduit.

5,510,006

PROCESS FOR SEPARATION OF VANILLIN BY MEANS OF AZEOTROPIC DISTILLATION WITH DIBENZYL ETHER

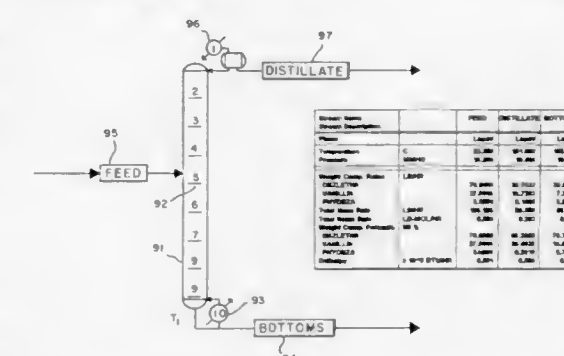
Thomas Jones, Rabway; Jeffrey L. Finner, Maplewood, and Joseph Arvizzigno, Scotch Plains, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Filed May 25, 1995, Ser. No. 450,303

Int. Cl.⁶ B01D 3/36

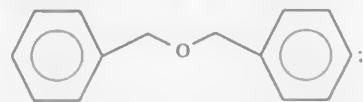
U.S. Cl. 203—48

4 Claims



from a mixture of (i) vanillin and (ii) a second organic chemical forming a single liquid phase with said vanillin at a temperature of from 20° C. up to 50° C. at 1 atmosphere pressure which comprises:

- (1) distilling a mixture of vanillin and said second organic chemical in the presence of an azeotrope forming agent which is dibenzyl ether having the structure:



- (2) recovering a single phase mixture of vanillin and dibenzyl ether azeotroping agent as overhead distillation product and said second organic chemical from a still pot;
- (3) separating said vanillin from said dibenzyl ether azeotrope forming agent by cooling said single phase mixture of vanillin and dibenzyl ether whereby vanillin crystals precipitate from said mixture of vanillin and dibenzyl ether; and
- (4) separating said vanillin crystals from said single phase mixture of vanillin and dibenzyl ether.

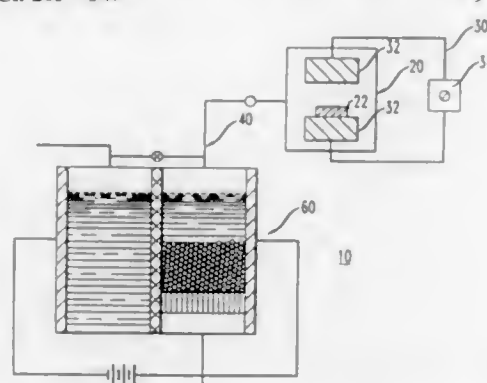
5,510,007

ELECTROCHEMICAL GENERATION OF SILANE
Gardy Cadet; Ronald A. Holland, both of Orange; James W. Mitchell, Somerset, and Jorge L. Valdes, Redminster, all of N.J., assignors to AT&T Corp., Murray Hill, N.J.

Filed Aug. 31, 1994, Ser. No. 299,701

Int. Cl.⁶ C25B 1/00; C23C 16/00; H05H 1/02; 1/24
U.S. Cl. 205—549

9 Claims



1. A process for fabrication of an article having at least one article region including elemental silicon, a silicon alloy, or a silicon compound, the process comprising:

- generating a silane by electrochemical reaction of a solid precursor material including silicon in an electrochemical cell which generates H⁺ species, the generated H⁺ species reacting with silicon from the precursor material to form a silane, using the silane to deposit an article region which includes elemental silicon, a silicon alloy, or a silicon compound.

5,510,008

STABLE ANODES FOR ALUMINIUM PRODUCTION CELLS

Jainagesh A. Sekhar, 2310 E. Hill Ave., Cincinnati, Ohio 45208; James J. Liu, 506 Riddle Rd., Cincinnati, Ohio 45220, and Jean-Jacques Duruz, Rue de Hesse 4, 1204 Geneva, Switzerland

Filed Oct. 21, 1994, Ser. No. 327,322

Int. Cl.⁶ C25C 3/12

U.S. Cl. 205—384

15 Claims

1. An anode for the electrowinning of aluminium by the electrolysis of alumina dissolved in a molten fluoride electrolyte, comprising:

a porous combustion synthesis product of particulate nickel, aluminium and iron, or particulate nickel, aluminium, iron and copper, containing metallic and intermetallic phases, and an in-situ formed composite oxide surface produced by anodically polarizing the combustion synthesis product in a molten fluoride electrolyte containing dissolved alumina, said in-situ formed composite oxide surface comprising an iron-rich relatively dense outer portion, and an aluminate-rich relatively porous inner portion.

15. A method of electrowinning aluminium by the electrolysis of alumina in a molten fluoride electrolyte, comprising the step of: electrolyzing said molten fluoride electrolyte containing dissolved alumina to produce aluminium in an aluminium production cell using the anode of claim 1.

5,510,009

ELECTROLYZED WATER PRODUCING METHOD AND APPARATUS

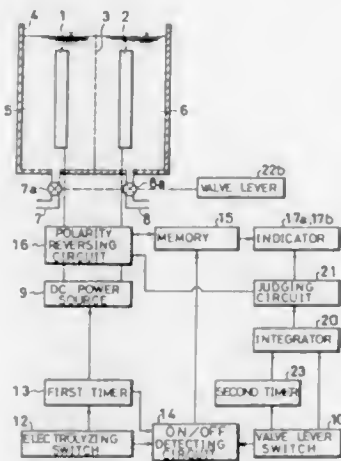
Kazuyoshi Arai, Atsugi; Ichiro Shoda, Ischarya; Naoshi Kohno, Atsugi; Takayuki Sato, Hadano, and Yoko Okamoto, Hiratsuka, all of Japan, assignors to Miz Co., Ltd., Kanagawa, Japan

Filed Jul. 29, 1994, Ser. No. 283,286

Int. Cl.⁶ C02F 1/461

U.S. Cl. 205—746

6 Claims



1. A method of producing electrolyzed water comprising the steps of:

- filling at least two electrolyzing chambers with subject water to be electrolyzed;
- connecting an electrode plate provided in one of said electrolyzing chambers to an anodes and connecting an electrode plate provided in the other of said electrolyzing chambers to a cathode;
- applying a voltage to said subject water and producing electrolyzed water in said electrolyzing chambers;
- indicating whether said electrolyzed water produced in each of the electrolyzing chambers is electrolyzed acidic water or electrolyzed alkaline water;
- discharging said electrolyzed water out of said electrolyzing chambers;
- filling the electrolyzing chambers with new subject water to be electrolyzed;
- connecting said electrode plate provided in the one of said electrolyzing chambers to the cathode, and connecting said electrode plate provided in the other of said electrolyzing chambers to the anode; and
- applying a voltage to said new subject water and producing electrolyzed water in said electrolyzing chambers.

5,510,010

COPPER ARTICLE WITH PROTECTIVE COATING
Richard G. Kobor, Syracuse, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

Filed Mar. 1, 1994, Ser. No. 203,813

Int. Cl.⁶ C25D 13/00

U.S. Cl. 204—488

5 Claims

1. A method of protecting a copper heat exchanger against corrosion that includes the steps of:

- providing a copper heat exchanger which contains a plurality of spaced apart fins,
- precleaning and degreasing exposed surfaces of said heat exchanger followed by immersing the heat exchanger in an acid bath to remove unwanted oxides from the exposed surfaces, and then washing the heat exchanger with water,
- immersing the heat exchanger in an aqueous oxidizing bath for a period of time sufficient to establish a uniform black oxide covering exposed surfaces of the heat exchanger,
- rinsing said heat exchanger after the oxidizing step in successive baths of cold water, hot water, and deionized water, and electrocoating said oxidized surfaces with a non-conductive acrylic paint to provide a continuous protective barrier over said exposed surfaces against corrosion.

5,510,011

METHOD FOR FORMING A FUNCTIONAL DEPOSITED FILM BY BIAS SPUTTERING PROCESS AT A RELATIVELY LOW SUBSTRATE TEMPERATURE

Nobuyuki Okamura, and Atsushi Yamagami, both of Kawasaki, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 149,230, Nov. 9, 1993, abandoned.

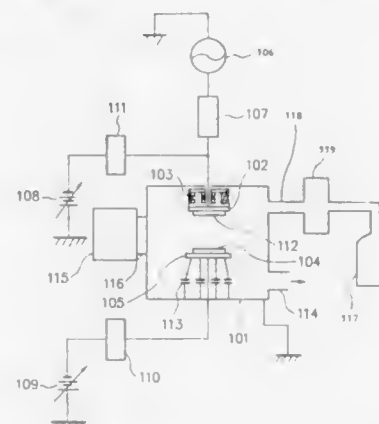
This application Dec. 22, 1994, Ser. No. 362,750

Claims priority, application Japan, Nov. 9, 1992, 4-298893; Oct. 29, 1993, 4-292459

Int. Cl.⁶ C23C 14/34

U.S. Cl. 204—192.3

10 Claims



1. A process for forming a functional epitaxial film on a substrate by a bias sputtering method comprising generating a plasma of a sputtering gas between a target electrode having a target thereon and a substrate electrode having a substrate for film formation thereon in a vacuum vessel with the use of a high frequency energy with a frequency of 50 MHz to 300 MHz from a high frequency power source and sputtering said target with said plasma while applying a direct current voltage from a direct current power source to at least one of said target electrode and said substrate electrode thereby causing the formation of a film on said substrate, wherein a deposition step and a non-deposition step are alternately repeated, said deposition step comprising sputtering said target with said plasma while irradiating said substrate with ions of said plasma while depositing a film on said substrate, and said non-deposition step comprising irradiating said substrate with ions of said plasma without sputtering said target, thereby forming a high quality functional epitaxial film on said substrate.

5,510,012

METHOD FOR PRODUCING A DECORATIVE GOLD ALLOY COATING

Siegfried Schulz, Hanau, Germany; Christoph Daube, Tsukuba, Japan; Alfred Belz, Erlensee, and Andreas Rack, Hanau, both of Germany, assignors to Leybold Aktiengesellschaft, Hanau, Germany

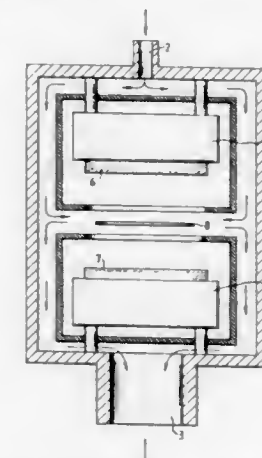
Filed May 27, 1992, Ser. No. 888,825

Claims priority, application Germany, Feb. 19, 1992, 42 05 017.0

Int. Cl.⁶ C23C 14/34

U.S. Cl. 204—192.15

5 Claims



1. A method for the application of a gold alloy coating having physical properties on a substrate by means of a PVD process, comprising the steps of:

- introducing nitrogen having a concentration and a composition in a reaction chamber;
- reactively sputtering onto said substrate a plurality of particles from a target made of gold alloyed with vanadium, whereby said gold alloy coating includes vanadium nitride; and
- varying said concentration of nitrogen during said sputtering step to influence said physical properties of said gold alloy coating resulting from said sputtering step.

5,510,013

LAYER SYSTEM FOR ELECTROCHEMICAL PROBES

Werner Hippe, Gladbeck; Günter Meyer, Essen, and Martin Reinke, Dortmund, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

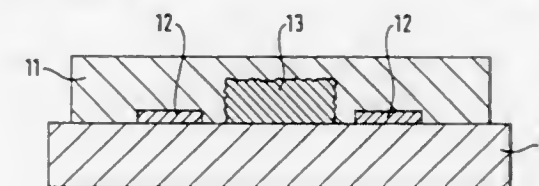
Continuation of Ser. No. 120,580, Sep. 10, 1993, abandoned.

This application Feb. 3, 1995, Ser. No. 383,196

Int. Cl.⁶ G01N 27/26

U.S. Cl. 204—426

18 Claims



1. A layer system for a semi-conductor resistance measuring sensor, comprising a ceramic substrate; electrodes applied on said ceramic substrate; a sensor layer arranged over said electrodes; and means for improving adherence of said sensor layer to said substrate, said means including at least one adherence improving layer portion located under and extending upwardly into said sensor layer, said at least one layer portion extending along at least one of said electrodes and also sintered with said substrate, said at least one layer portion being composed of a material which has at least one layer portion being composed of a same material as said substrate and thereby good adhesive strength is provided between

said at least one layer portion and said substrate after sintering of said at least one layer portion and said substrate.

5,510,014 METHOD FOR REGENERATING TIN OR TIN ALLOY ELECTROPLATING

Hiro Yoshi Murayama, Tokyo, Japan, assignor to Mac Dermid, Incorporated, Waterbury, Conn.

Filed Sep. 1, 1995, Ser. No. 522,972

Claims priority, application Japan, Sep. 7, 1994, 6-248239

Int. Cl.⁶ C25D 21/18

U.S. Cl. 205—101

8 Claims

1. A method for regenerating a tin or tin alloy electroplating bath, which method comprises adding a coagulant comprising a water-soluble polymer and a polymeric flocculant to an aged tin or tin alloy electroplating bath containing sludge, then agitating the bath, allowing the sludge to coagulate with the coagulant and form a floc sludge to be precipitated, and separating the precipitated floc.

5,510,015 PROCESS FOR OBTAINING A RANGE OF COLOURS OF THE VISIBLE SPECTRUM USING ELECTROLYSIS ON ANODIZED ALUMINIUM

Dionisio R. Martinez, Navarra, Spain; Mores A. Basaly, Marietta, Ga., and Davide Perina, Milan, Italy, assignors to Novamax Technologies Holdings, Inc., Ontario, Canada

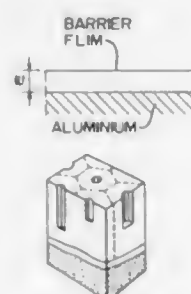
Filed Dec. 30, 1993, Ser. No. 175,948

Claims priority, application Spain, Dec. 31, 1992, 9202672

Int. Cl.⁶ C25D 11/20; 11/22

U.S. Cl. 205—173

10 Claims



1. A process for obtaining a range of colors of the visible spectrum using electrolysis on anodized aluminum, comprising a first phase to form an anodic film which comprises a barrier film, a second phase to modify the barrier film and a third phase to deposit metallic particles on the barrier film, wherein:

a thickness in excess of 0.3 μm is obtained during the first phase of formation of the anodic film;

the second phase includes electrolytic modification of a crystalline lattice of the barrier film which is carried out in an electrolyte, applying a voltage and a current density; and

the third phase is carried out by an electrolytic deposition of metallic particles in order to increase internal reflections under a deposit of metallic particles, and wherein:

the electrolyte used in said electrolytic modification of the crystalline lattice of the barrier film has a dissolving power in aluminum oxide equivalent to a solution of sulphuric acid at a concentration of less than 12 g/l and at room temperature in a range between 20° and 25° C.;

obtaining of the various colors is effected by said electrolytically modifying the crystalline lattice of the barrier film and then electrolytically depositing metallic particles, and wherein

said electrolytic modification of the crystalline lattice of the barrier film depends on:

peak voltages of positive and negative semi-cycles of an AC-Complex current applied,

average voltages of the positive and negative semi-cycles of the AC-Complex current applied, and wherein

the average voltages of the positive and negative semi-cycles of the AC-Complex current applied are less than 7 volts.

the average voltages of the positive and negative semi-cycles of the AC-Complex current applied are less than 7 volts.

5,510,016 GASOLINE UPGRADING PROCESS

Timothy T. Hilbert, Sewell; Dominick N. Mazzone, Wenonah, and Michael S. Sarli, Haddonfield, all of N.J., assignors to Mobil Oil Corporation, Fairfax, Va.

Continuation-in-part of Ser. No. 850,106, Mar. 12, 1992, Pat. No. 5,409,596, which is a continuation-in-part of Ser. No. 745,311, Aug. 15, 1991, Pat. No. 5,346,609. This application

Sep. 9, 1994, Ser. No. 303,909

Int. Cl.⁶ C10G 69/02

U.S. Cl. 208—89

20 Claims

1. In a process of upgrading a cracked, olefinic sulfur-containing feed fraction boiling in the gasoline boiling range by contacting the cracked, olefinic sulfur-containing feed fraction with a hydrosulfurization catalyst in a first reaction zone, operating under a combination of elevated temperature, elevated pressure and an atmosphere comprising hydrogen, to produce an intermediate product comprising a normally liquid fraction which has a reduced sulfur content and a reduced octane number as compared to the feed; contacting at least the gasoline boiling range portion of the intermediate product in a second reaction zone with a catalyst comprising shaped particles of an acidic zeolite, to convert the gasoline boiling range portion of the intermediate product to a product comprising a fraction boiling in the gasoline boiling range having a higher octane number than the gasoline boiling range fraction of the intermediate product, the improvement comprising the use as the catalyst in the second reaction zone of a catalyst comprising shaped particles of a self-bound acidic zeolite.

5,510,017 PIPE LIQUID/GAS SEPARATOR HAVING VANE SETS

Enver A. Abdullayev, Baku, Azerbaijan, assignor to Merpro Azgaz Limited, Scotland

PCT No. PCT/GB93/01091, § 371 Date Jan. 18, 1995, § 102(e)

Date Jan. 18, 1995, PCT Pub. No. WO93/24204, PCT Pub. Date Dec. 9, 1993

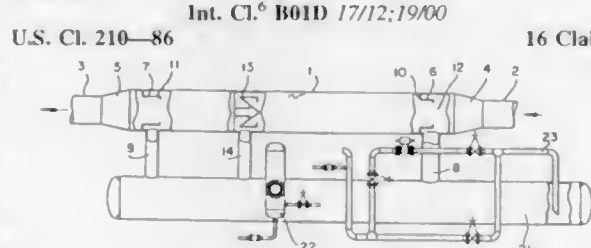
PCT Filed May 26, 1993, Ser. No. 307,823

Claims priority, application United Kingdom, Jun. 2, 1992, 9211663

Int. Cl.⁶ B01D 17/12; 19/00

U.S. Cl. 210—86

16 Claims



1. A liquid/gas separator suitable for use with a supply pipe containing a liquid/gas mixture, said separator comprising:

a pipe section (1) having an inlet portion that is connectable, in use, to an upstream part (2) of the supply pipe to receive the liquid/gas mixture, said pipe section having an outlet portion spaced from said inlet portion along an axis of said pipe section, said outlet portion being connectable, in use, to a downstream part (3) of the supply pipe to discharge gas that is substantially free of liquid;

a first drain (8) coupled to said pipe section proximate to said inlet portion for draining liquid, from said pipe section, that has undergone preliminary separation from the gas;

a plurality of fixed vanes (15,16) arranged in a pair of vane sets positioned in said pipe section downstream of said first drain, said vane sets being mounted in said pipe section with respect to said axis of said pipe section to form a radially inner vane set that intercepts a central portion of the liquid/gas mixture in

said pipe section and an adjacent radially outer vane set that intercepts a peripheral portion of the liquid/gas mixture in said pipe section, the vanes of each of said vane sets being oriented with respect to said axis to impart a swirl to the liquid/gas mixture around said axis causing further separation of the liquid from the gas; and

a second drain (9) downstream of said vanes for draining, from said pipe section, liquid that is separated from the gas by said vanes.

10. A separator according to claim 1 further including a third drain coupled to said pipe section proximate to said plurality of vanes for draining liquid from said pipe section.

11. A separator according to claim 10 further including a tank coupled to said drains for receiving the separated liquid drained from said pipe section.

12. A separator according to claim 11 further including means for monitoring and controlling the level of liquid in said tank.

5,510,018 SYSTEM TO RE-CIRCULATE TREATMENT MATERIAL IN PROCESSES OF SURFACE TREATMENT AND FINISHING

Giorgio Rey, Udine, Italy, assignor to Danieli & C. Officine Meccaniche SpA, Buttrio, Italy

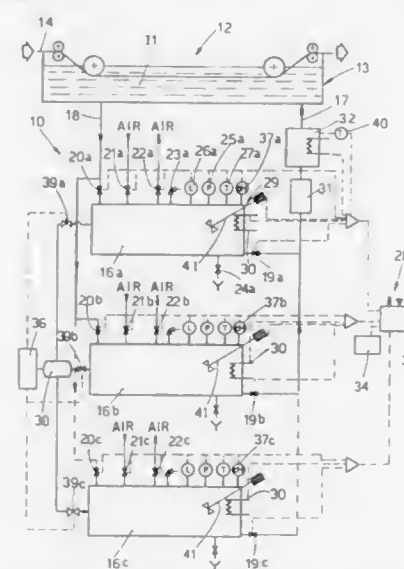
Filed Nov. 23, 1994, Ser. No. 346,304

Claims priority, application Italy, Nov. 30, 1993, UD93A0240; Apr. 8, 1994, UD94A0059

Int. Cl.⁶ B01D 17/12; B05C 3/12; 11/10

U.S. Cl. 210—97

22 Claims



1. A recirculation system to recirculate treatment material in processes of surface treatment and finishing, comprising:

a dip tank containing a liquid treating material, the dip tank connected to a discharge conduit for discharging treating material therefrom by gravity and a feeder conduit for feeding treating material thereto and comprising means for passing metallic objects through the tank;

a source of gaseous fluid under pressure; and

at least two vessels operably connected in parallel to one another and being provided below the dip tank, each of the at least two vessels being hermetically sealable, being resistant to pressure and being connected to the discharge conduit through an openable inlet closure means, to the feeder conduit through an openable outlet closure means, and to the source of gaseous fluid through an inlet valve, each of the at least two vessels communicating with a bleeder valve to discharge gaseous fluid from the vessel, wherein each vessel has a first filling condition for receiving therein the liquid treating material discharged by gravity from the dip tank through the discharge conduit and a second emptying condition for emptying

tying liquid treating material therefrom and propelling the liquid treating material to the dip tank through the feeder conduit by pressure of the gaseous fluid.

16. Re-circulation system as in claim 1, in which the respective closure means are associated with means to clean abrasive impurities.

5,510,019 BUBBLE SEPARATING APPARATUS

Junsuke Yabumoto, Atsugi, and Masanori Hirose, Kawasaki, both of Japan, assignors to Mitsubishi Oil Co., Ltd., Tokyo, Japan

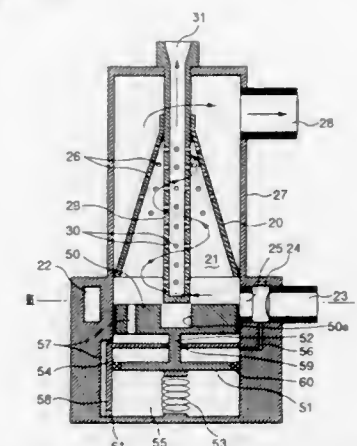
Filed Jul. 27, 1994, Ser. No. 280,941

Claims priority, application Japan, Jul. 30, 1993, 5-190440; Feb. 22, 1994, 6-046601

Int. Cl.⁶ B01D 17/12; 17/038; 19/00

U.S. Cl. 210—137

19 Claims



1. A vortical flow type bubble separating apparatus comprising: a container having a circular cross-section, a predetermined axial length and closed axial ends, said container defining a substantially cone-shaped vortical flow chamber having a lower larger diameter end;

a plurality of holes formed in a predetermined region in the vicinity of the upper half of the peripheral wall of said container for discharging a reduced bubble fraction of a liquid from said vortical flow chamber;

an outer casing surrounding said container and receiving the liquid discharged from said vortical flow chamber through said holes for guiding the received liquid to an outlet;

a center conduit pipe disposed within said vortical flow chamber and extending substantially along the center axis of said vortical flow chamber;

a plurality of orifices formed through said center conduit pipe within said chamber for removing a bubble containing fraction from said vortical flow chamber for discharging;

an annular preliminary vortical flow passage substantially surrounded by solid walls and extending substantially the entire circumference of the larger diameter end portion of said container, said preliminary vortical flow passage being separated from said vortical flow chamber by said peripheral wall of said container;

a single opening defined through said peripheral wall of said vortical flow chamber and providing communication between said vortical flow chamber and said preliminary vortical flow passage, said opening being provided at a substantially downstream end of said preliminary vortical flow passage, and said opening being designed for introducing the liquid into said vortical flow chamber from said preliminary vortical flow passage in a substantially tangential direction to said vortical flow chamber; and

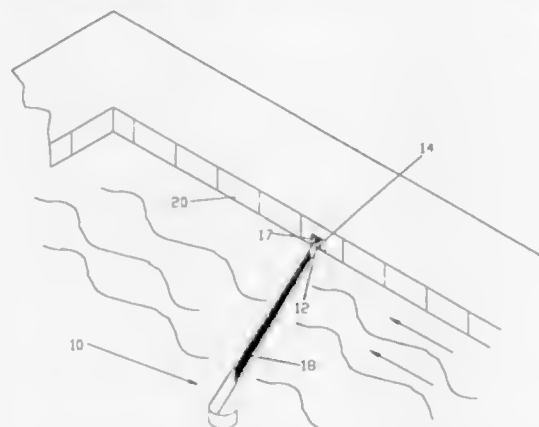
a flow guide member provided at the end of said preliminary vortical flow passage in the vicinity of said opening for guiding liquid flow into said vortical flow chamber with little angular deflection.

2. An apparatus as set forth in claim 1, further comprising a liquid supply regulation mechanism responsive to a pressure difference between a liquid pressure at an inlet of said preliminary vortical flow passage and a liquid pressure in said vortical flow chamber for regulating a flow velocity of the liquid as introduced into said vortical flow chamber.

5,510,020
SWIMMING POOL SKIMMER
Robert Gronlund, 2730 Auburn Ave., Port Charlotte, Fla. 33948

Filed Sep. 23, 1994, Ser. No. 311,114
Int. Cl.⁶ E04H 4/16
U.S. Cl. 210—169

3 Claims



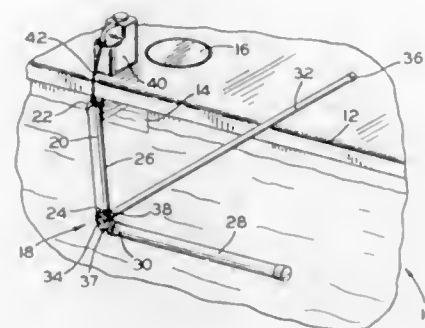
1. A swimming pool water skimming apparatus for directing large objects as well as all debris and scum from the water surface of a swimming pool filled with water, said water circulating in a counter-clockwise direction and said pool having a water skimming weir therein, said weir having top and bottom surfaces and a first and a second sidewall, said apparatus comprising:

- a skimmer arm having a mounting end, an opposite end, and an opening along the length and width of said skimmer arm between said mounting end and said opposite end,
- a pair of spring loaded pins assembled in said mounting end for locking said mounting end between the top and bottom surfaces of said swimming pool weir opening,
- a shaped block affixed to said mounting end and placed against said first sidewall of said weir for holding said skimmer arm at a 60° angle horizontal to the swimming pool weir opening and horizontal to said water surface, and
- a screen fitted within said skimmer arm opening to permit some water flow to continue circulating for filtering debris from the pool water flow and directing the debris into the swimming pool weir opening, and
- hooked end means affixed to said opposite end for directing some of the current flow along said skimmer arm toward the swimming pool weir, thereby carrying debris and scum away from said screen and into said weir.

5,510,021
PORTABLE BUOYANT SKIMMING APPARATUS FOR SWIMMING POOLS
William K. Potthast, 5114 E. 127th Ave., Tampa, Fla. 33637
Filed Jan. 19, 1995, Ser. No. 375,495
Int. Cl.⁶ E04H 4/12
U.S. Cl. 210—169

14 Claims

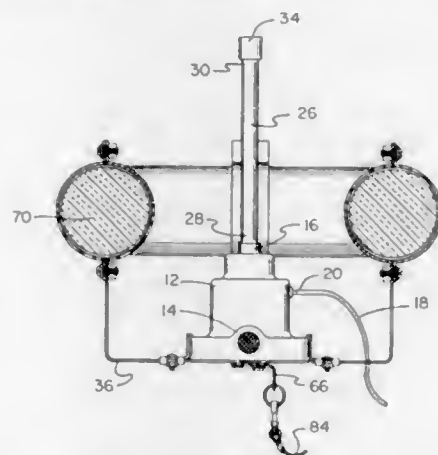
1. A portable skimming apparatus to remove surface debris from a swimming pool filled with water having a circulating water filtration system with a filtration inlet located in a pool wall, said skimming apparatus comprising:



- (a) A first elongate buoyant member having an inlet end, a junction end, and a debris edge extending longitudinally along said first member;
- (b) A second elongate buoyant member having a junction end coupled to the junction end of said first member to planarly connect said first and second members at an obtuse angle;
- (c) A means for temporarily securing the inlet end of said first member to the pool wall at the filtration inlet; and
- (d) An elongate support member having a fixed end pivotally connected to the junction end of said first member, said elongate support member having a free end to facilitate movement of said support member from a closed position parallel to said first member to an open position at an acute angle to said first member, the free end temporarily engaging the top edge of the pool wall whereby said elongate support member may be moved to an open position to temporarily secure the skimming apparatus in the pool and direct floating debris circulated by the filtration system along the debris edge of said first member to the filtration inlet, and whereby said elongate support member may be moved to a closed position to facilitate the removal and storage of the skimming apparatus.

5,510,022
POND AERATOR
Jerry W. Mullis, 5337 Coppage Rd., Hahira, Ga. 31632
Filed May 16, 1994, Ser. No. 243,262
Int. Cl.⁶ C02F 3/02; B01F 3/04
U.S. Cl. 210—170

1 Claim



- 1. A pond aerator for aerating and circulating water in a body of water comprising, in combination: an electric and submersible sump pump having an inlet adapted for receiving water external thereto and an outlet adapted for transmitting pumped water therefrom; an electrical power cable having one end coupled to the sump pump for transmitting energy thereto for pumping and the other end extended from the sump pump and adapted to be connected to an external power source for receiving energy;

a rigid spraying tube having a first end coupled to the outlet of the sump pump and a second end extended upwards therefrom;

a spray nozzle removably coupleable to the second end of the spraying tube for generating a spray configuration;

a bracket assembly further comprising:

- two rigid rails perpendicularly disposed across each other and coupled together to define a point of intersection, each rail having symmetrically opposed segments disposed about the point of intersection, each segment having a tip end, a first intermediate location between the tip end and point of intersection, and a second intermediate location between the tip end and the first intermediate location, a first section laterally extended from the point of intersection to the first intermediate location, a second section upwardly extended from the first intermediate location to the second intermediate location, and a third section upwardly extended in curvature to define an essentially C-shaped and outwardly extended holder section;

four hooks, each hook having a bottom end coupled to the first section of a segment of a rail and an upwardly extended and inwardly curved top end adapted to be secured to the sump pump such that the hooks in combination hold the sump pump in a stationary position on the bracket assembly at the point of intersection;

four C-shaped and inwardly extended complimentary holder sections, each complimentary holder section coupled to a holder section of the bracket assembly to create a loop; and an anchor point extended downwards from the point of intersection;

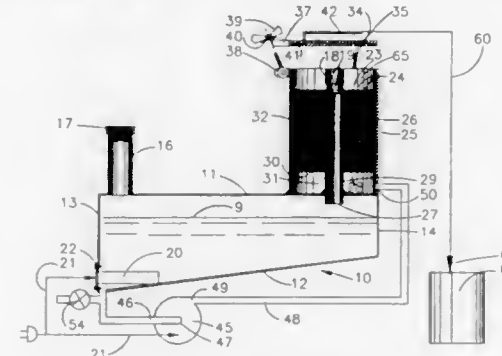
a generally annular and tubular float disposed through and coupled within loops of the bracket assembly with the float adapted for keeping the inlet of the sump pump submerged in a body of water and the nozzle raised above the body of water;

an anchor having a generally semi-circular foot at one end, a ring at the other end, and a tapered cylindrical leg extended therebetween with the anchor adapted to be positioned at the bottom of a body of water below the sump pump; and

an anchor line having a snap swivel on one end connected to the ring of the anchor and a snap swivel on the other end extended upwards and connected to the anchor point of the bracket assembly for keeping the sump pump from drifting from a given location.

5,510,023
OIL RECYCLING APPARATUS WITH A RECIRCULATING FILTRATION LINE
John I. Taylor, 501 W. First St., Pittsburg, Kans. 66762
Filed Aug. 8, 1994, Ser. No. 288,739
Int. Cl.⁶ B01D 35/18
U.S. Cl. 210—180

5 Claims



- 1. An oil recycling apparatus comprising:
 - a. a reservoir having sides, inlet means, outlet means, a bottom and a top;
 - b. tube means attached to said reservoir top defining a closed bottom, said tube means having a removable top and a pipe

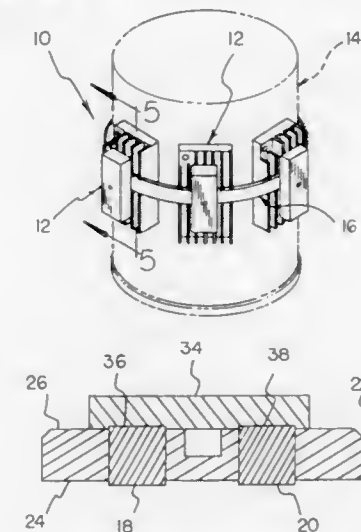
axially disposed therein, said axial pipe having a first end extending through said reservoir top placing the interior of said tube means in fluid flow communication with the interior of said reservoir by way of openings in a second end;

- c. upper and lower filter element retaining means positioned within said tube means and each having a first opening to accommodate said axial pipe and a plurality of second openings to provide a passage for said oil;
- d. pump means having an inlet connected to said reservoir bottom and an outlet connected to said tube means between said reservoir top and said lower filter element retaining means for pumping oil from said reservoir to said tube means;
- e. temperature control means mounted through said reservoir in a manner to heat said oil; and
- f. filter element means disposed within said tube means between said element retaining means and around said axial pipe, said lower retaining means being spaced a distance from said reservoir top and said upper retaining means being spaced a distance below said openings in said pipe;

whereby oil added to said reservoir is pumped from the bottom of said reservoir to said tube means, then, passing through said plurality of openings in said lower retaining means, through said filter element means, through said upper retaining means, into said pipe openings, and back to said reservoir, having first been heated by said temperature control means.

5,510,024
FILTER CARTRIDGE MAGNETIC ATTACHMENT
Joseph C. Caiozza, 321 W. Market St., Long Beach, N.Y. 11561
Filed Sep. 30, 1994, Ser. No. 316,551
Int. Cl.⁶ B01D 35/06
U.S. Cl. 210—186

10 Claims



- 9. A filter cartridge magnetic attachment comprising:
 - a magnetic attraction means coupleable to an exterior of a filter cartridge for magnetically attracting and retaining metallic particles within said filter cartridge, said magnetic attraction means comprising a heat sink having a first aperture extending therethrough spaced from a second aperture extending therethrough, said heat sink including a substantially planar base plate having a plurality of heat fins projecting substantially orthogonally therefrom, with said heat fins being separated by a transverse slot extending thereacross permitting a passage of said strap means over said base plate; a first magnet positioned within said first aperture of said heat sink, said first magnet having a first end and a second end; a second magnet positioned within said second aperture of said heat sink, said second magnet having a first end and a second end, and a shunt coupled to said first ends of said magnets for coupling magnetic flux directed from said first ends of said magnets together, thereby increasing magnetic flux directed

from said second ends of said magnets, said magnets being substantially cylindrical in shape and having a diameter of a first distance with said magnets being spaced apart said first distance, said base plate of said heat sink further including an exterior perimeter edge from which said magnets are spaced, said magnets being spaced a second distance from said exterior perimeter edge, with said second distance being approximately equal to one half of said first distance, wherein said shunt comprises an elongated bar member having a height equal to said first distance, said bar member having a first recess directed thereto receiving said first end of said first magnet, and a second recess directed into said bar member receiving said first end of said second magnet;

and,

a strap means for securing said magnetic attraction means to said filter cartridge, said strap means comprising an elongated flexible strap having a plurality of serrations extending therealong; a releasable lock secured to a first end of said flexible strap for receiving a second end of said strap therewithin to engage said serrations and lock said second end of said strap means proximal to said first end thereof.

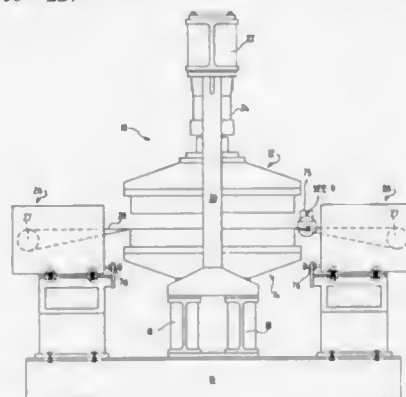
5,510,025

FILTER APPARATUS AND METHOD

Steve C. Benesi, 611 McClay Rd., Novato, Calif. 94947
Continuation-in-part of Ser. No. 864,524, Apr. 7, 1992, Pat. No. 5,292,434. This application Sep. 30, 1994, Ser. No. 316,120
Int. Cl.⁶ B01D 37/00

U.S. Cl. 210—227

10 Claims



1. A filter apparatus for pressure filtering fluid slurry materials containing liquid and solid materials in a plurality of stacked filtration chambers and for creating a substantially dry filter cake of said solid materials in each of said chambers, said apparatus having mechanical means for simultaneously opening and closing each of said filter chambers including means for maintaining said chambers closed and under pressure during filtering operations and for opening said chambers after filtering has been completed, characterized by:

means establishing each of said filter chambers, each chamber including an upper plate member and a lower plate member, said upper and lower plate members having recessed portions and peripheral sidewalls defining respective chamber areas, said upper and lower plates being relatively movable toward and away from each other to engage said peripheral sidewalls of said upper and lower plate members under pressure and to form one of said plurality of said filter chambers by mating said recessed portions, said lower plate and said upper plate of adjacent stacked chambers being joined to move as a unit during closing and opening of said filter chambers,

mechanical means for producing relative movement of said upper and lower plate members with respect to each other to engage and separate said peripheral sidewalls to form said filter chamber and for maintaining a mechanical pressure engagement of said peripheral walls when said peripheral walls are engaged, said mechanical means including means for simultaneously opening and closing each of said stacked

filter chambers by producing separate relative movement between said upper and lower plate members forming each chamber while moving each upper plate member proportionately different distances with respect to adjacent upper plate members,

entry port means into each of said upper plate members for passage of fluid material including said fluid slurry material into said recessed portion of said upper plate member in each of said stacked filter chambers,

exit port means from each of said lower plate members for passage of fluid materials from said recessed portion of said lower plate member in each of said stacked filter chambers, a grate member within said recessed portion of each of said lower plate members,

a porous belt filter medium positioned between said upper and lower plate members in each of said stacked filter chambers and contacting said grate within said lower plate members, said belt filter medium having lateral dimensions at least as large as the largest lateral dimensions of said peripheral sidewalls of said upper and lower plate members, said belt filter medium being positioned and aligned to be pressed between said pressure engaged sidewalls of said upper and lower plate members and on said grate when said upper and lower plates mate to form said stacked filter chambers,

belt drive means for positioning and removing said belt filter medium from between said upper and lower plate members of each of said stacked filter chambers when said upper and lower plates are separated,

means for passing fluids including said fluid slurry material into said entry port means of each of said upper plate members in said stacked filter chambers,

and control means

- for controlling said belt filter medium belt drive means,
- for controlling said mechanical means for producing relative movement of said upper and lower plate members to cause said simultaneous movement of said upper and lower plate members in said stacked filter chambers,
- for maintaining said mechanical engagement of said upper and lower plate members under pressure, and
- for controlling passing of fluids including said fluid slurry material into said entry port means,

whereby said fluid slurry materials enter said entry port means for each of said chambers of said stacked filter chambers and liquids from said slurry materials pass through said belt filter medium in each of said stacked filter chambers and exit through said exit port means from each of said stacked filter chambers while solids in said fluid slurry material are retained in said each chamber on said belt filter medium until said upper and lower plate members are simultaneously separated, said solids being formed as a substantially dry filter cake and being removed simultaneously from each of said stacked filter chambers with said belt filter medium after said plate members are separated, and said substantially dry filter cake being removed from said belt filter medium after said belt filter medium is removed from between said upper and lower plate members in each of said stacked filter chambers.

5,510,026

FILTERING ARRANGEMENT INCLUDING A NON-REENTRANT SHAPE

Stephen A. Geibel, Cortland; Scott D. Hopkins, Dryden; William L. Murphy, Homer; and John D. Miller, Ithaca, all of N.Y., assignors to Pall Corporation, East Hills, N.Y.

Continuation of Ser. No. 888,206, May 26, 1992, abandoned.

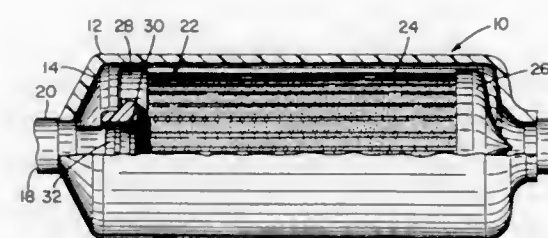
This application Mar. 22, 1995, Ser. No. 408,191

Int. Cl.⁶ B01D 27/08

U.S. Cl. 210—232

62 Claims

1. A filter arrangement comprising a fitting including a portion having a non-reentrant shape and a filter assembly mounted to the fitting, the filter assembly including a filter and an end cap mounted to the filter and having an end cap wall defining a bore, the end cap being expandable to a first size at a first predetermined temperature wherein the bore is large enough to accept the non-



reentrant portion of the fitting and being contractible to a second size at a second predetermined temperature wherein the wall of the end cap is sealed tightly about the non-reentrant portion of the fitting.

5,510,027

CONCENTRIC ANNULAR FILTERS FOR PURIFYING WATER

Alvaro R. Tejada, 7 W. 108th St., New York, N.Y. 10025

Filed Apr. 18, 1995, Ser. No. 423,707

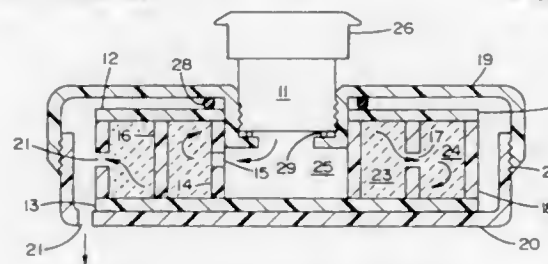
Int. Cl.⁶ B01D 1/28

U.S. Cl. 210—282

10 Claims

U.S. Cl. 210—307

17 Claims



1. A detachable and portable filter apparatus for water purification that may be easily and quickly connected and removed from a water faucet for domestic and travel purposes, said apparatus comprising:

- a snap coupling for releasably attaching said water purification apparatus to said water faucet, said snap coupling providing an inlet path for water to be filtered and a support means for suspending the apparatus from said water faucet, said snap coupling providing quick release when said apparatus is detached from said water faucet for travel purposes;
- a disk shaped housing member, said housing member having a chamber for receiving water to be filtered from said snap coupling inlet path, said housing member having a diameter and a height, with the diameter greater than the height, said housing member having:
 - an upper member attached to said snap coupling, said upper member having a housing inlet for receiving water to be filtered from said snap coupling inlet path;
 - a lower member attached to said upper member, said lower member defining a water discharge opening in a lowermost surface thereof;
- a removable and disposable filter unit mounted in said housing member, said filter unit having at least one circular baffle, said filter unit providing a plurality of bi-directional annular flow paths for water as it passes through said filter unit, said filter unit comprising:
 - an inner circular sidewall which defines an inlet chamber for receiving water to be filtered from said housing inlet, said inner circular sidewall having a first orifice through which water to be filtered flows;
 - at least one circular baffle concentric to and surrounding said inner circular sidewall, said baffle having a second orifice disposed 180 degrees from said first orifice;
 - an outer circular sidewall concentric to and surrounding said at least one circular baffle, said outer circular sidewall having a third orifice disposed 180 degrees from said second orifice, said third orifice defining an outlet of said filter unit for discharging filtered water into said housing

5,510,028

DEVICE FOR SEPARATING LIQUIDS

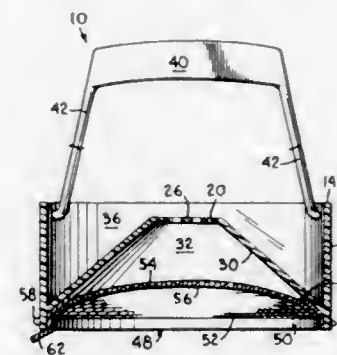
Delmar A. Kuhlman, 208 S. Bleckley Dr., Wichita, Kans. 67207

Filed Sep. 19, 1994, Ser. No. 308,849

Int. Cl.⁶ C02F 1/40

U.S. Cl. 210—307

17 Claims



1. A device for separating liquids comprising:

- a side wall enclosing an interior space;
- a bottom connected to said side wall adjacent a lower edge of said side wall, said bottom having an aperture formed therein at a position above said lower edge, said bottom extending upwardly and inwardly toward said aperture such that as the device is forced downwardly into a combination of liquids, a liquid floating on top of another different liquid is forced through said aperture and contained by said side wall and said bottom; and
- a screen filter positioned adjacent said lower edge of said side wall such that liquid passes through said screen filter before reaching said aperture.

5,510,029

FILTER COVER ASSEMBLY WITH DUAL CONCENTRIC LIQUID PASSAGES

Robert Benian, West Bloomfield, Mich., assignor to Benian Filter Company, Inc., West Bloomfield, Mich.

Division of Ser. No. 11,507, Jan. 29, 1993, Pat. No. 5,301,880, which is a division of Ser. No. 900,003, Jun. 17, 1992, Pat. No. 5,203,998. This application Jan. 10, 1994, Ser. No. 179,184

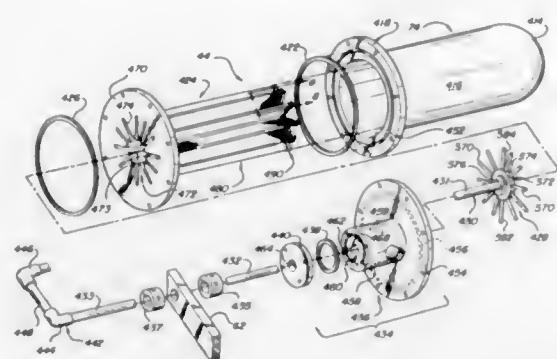
Int. Cl.⁶ B01D 35/22; B01P 35/16

U.S. Cl. 210—333.01

19 Claims

1. A filter cover assembly for a pressurized filter device comprising:

- a filter cover plate having a central bore for receiving a fluid delivery member and having a plurality of fluid ports arranged therearound for delivering fluid;



- a fluid delivery member passing through the central bore, the fluid delivery member being operable to reciprocate with respect to the filter cover plate while delivering a quantity of fluid therethrough;
- a generally cylindrical head section having an inner fluid passage, a port communicating with a wall of the head section, and a guide means for receiving the fluid delivery member; and
- a generally cylindrical pressure cap mounted to the generally cylindrical head section.

5,510,030

FILTER APPARATUS FOR FLOWABLE MATERIAL

Helmut Bacher, Bruck/Hausleiten 17; Helmut Schulz, Badstrasse 20, both of St. Florian, and Georg Wendelin, Waldbothenweg 84, Linz, all of, Austria

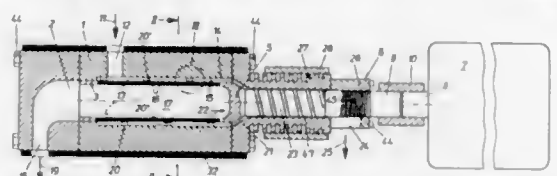
PCT No. PCT/AT93/00019, § 371 Date Jul. 25, 1994, § 102(e) Date Jul. 25, 1994, PCT Pub. No. WO93/15819, PCT Pub. Date Aug. 19, 1993

PCT Filed Feb. 12, 1993, Ser. No. 256,814

Claims priority, application Austria, Feb. 14, 1992, A256/92 Int. Cl.⁶ B01D 33/46

U.S. Cl. 210—397

15 Claims



1. Filter apparatus for filtering a flowable material containing solid particle impurities comprising:

- a housing including a cylindrical internal cavity, said cavity having first and second opposite ends and a cylindrical inner surface, an inlet opening extending through said cylindrical inner surface for pressurized introduction of said flowable material into said cavity, an outlet opening for filtered material at said first end, a cylindrical outlet passage having opposite first and second ends and a cylindrical inner surface, wherein the first end of said passage is in communication with the second end of said cavity and the second end is open, and an exit opening for solid particle impurities extending through the cylindrical inner surface of said outlet passage adjacent the second end thereof;
- a hollow cylindrical filter element received in said cavity, said filter element including an open end adjacent said outlet opening of said housing and a closed end adjacent said outlet passage, said filter element being rotationally symmetrical with respect to its longitudinal axis and having a plurality of openings in a peripheral surface thereof for receiving said flowable material, said flowable material passing through said plurality of openings into said hollow space wherein said solid particle impurities are retained on said peripheral surface of said filter element within an annular gap formed between said outer peripheral surface of said filter element and the cylindrical inner surface of said cavity, said filter element

comprising a cylindrical screen carrier member having a plurality of channels extending radially with respect to said longitudinal axis of said filter element, and further comprising a screen member received over the outer periphery of the screen carrier member, said screen member having a thickness that is less than said screen carrier member and further having a plurality of openings which have a diameter which is less than the diameter of said channels;

drive means for rotating said filter element around its longitudinal axis, said drive means including a drive shaft connected to the closed end of said filter element for rotation thereof, said drive shaft extending through the second open end of said outlet passage and including threads on an outer peripheral surface thereof, wherein said threads are positioned adjacent a portion of the cylindrical inner surface of said outlet passage that is adjacent to said exit opening and the second open end of said outlet passage, said threads acting as a seal so that said solid particle impurities which are carried toward said exit opening leave said housing through said exit opening; and

a plurality of arcuate scraper elements individually mounted to the cavity wall of the housing, each of said scraper elements including an arcuate scraping edge which extends into said annular gap and engages the peripheral surface of said filter element for removing said solid particle impurities from said peripheral surface, said scraper elements being mounted to said cavity wall such that said arcuate scraping edges of said scraper elements are disposed along a helical line which extends around the peripheral surface of the filter element, said helical line being arranged for guiding said impurities toward said exit opening as said filter element is rotated; and means for securing each of said scraper elements against rotation in said housing.

5,510,031

FAUCET ASSEMBLY WITH REPLACEABLE FILTER

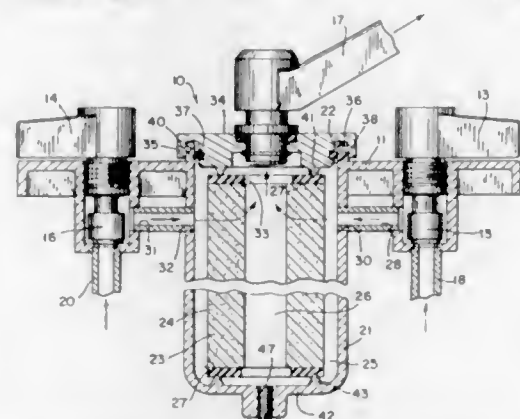
Edmund R. Knauf, Jr., Sheboygan, and Robert G. Schumacher, II, Sheboygan Falls, both of Wis., assignors to AmeTek, Inc., Sheboygan, Wis.

Filed Sep. 13, 1994, Ser. No. 305,485

Int. Cl.⁶ B01D 27/08; 27/10

U.S. Cl. 210—460

9 Claims



1. A faucet assembly with a replaceable filter apparatus comprising:

- a water faucet adapted to be mounted on a sink or a similar countertop mounting surface and receiving a supply of water;
- a filter housing attached to depend downwardly from the underside of the mounting surface below the faucet, said housing defining a filter element opening;
- a faucet base including a housing end cap detachably attaching the faucet to said filter element opening;
- a replaceable filter element insertable into said filter housing; and
- means for connecting the water supply to the filter housing to cause the water to pass through the filter element before discharge through the faucet.

5,510,032

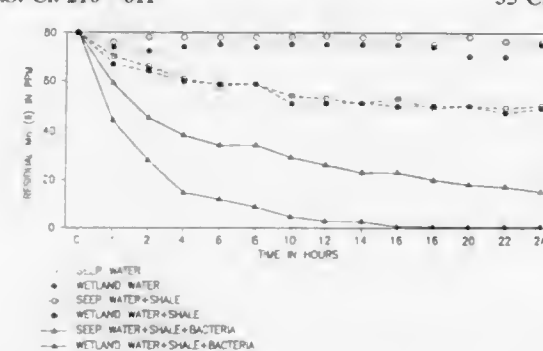
PROCESS FOR TREATING AQUEOUS SOLUTIONS CONTAINING INDUSTRIAL WASTES

William J. Vail, 15711 Winslow St. SW., Cumberland, Md. 21542, and Robert K. Riley, Broad St., Midland, Md. 21542 Continuation-in-part of Ser. No. 169,741, Dec. 17, 1993, Pat. No. 5,441,641, which is a continuation of Ser. No. 912,814, Jul. 13, 1992, abandoned. This application Oct. 7, 1994, Ser. No. 319,983

Int. Cl.⁶ C02F 3/34

U.S. Cl. 210—611

35 Claims



1. A process for reducing the concentration of water soluble metal ions in an aqueous solution containing the same, said process comprising the steps of:

- providing an aqueous solution having contained therein a concentration of water soluble metal ions;
- providing a porous matrix containing cultured populations of aerobic metal oxidizing bacteria from the genus Metallogenium, said bacteria being capable of metabolizing said water soluble metal ions in said aqueous solution into water insoluble metal oxides, said porous matrix being provided under aerobic conditions; and
- passing said aqueous solution through said porous matrix in a continuous fashion so as to allow said bacteria to metabolize said metal ions in said aqueous solution into water insoluble metal oxides, which are substantially retained on said porous matrix, thereby resulting in a reduction in the concentration of said water soluble metal ions in said aqueous solution.

5,510,033

ELECTROKINETIC TRANSPORT OF MICROORGANISMS IN SITU FOR DEGRADING CONTAMINANTS

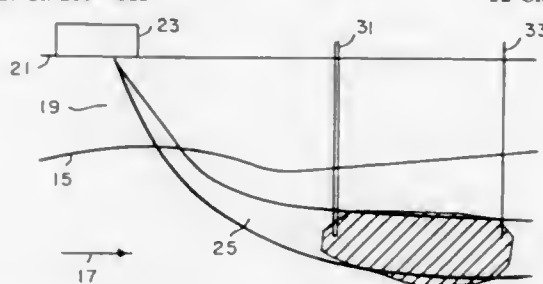
Burt D. Ensley, Newton, Pa., and Mary F. DeFlaun, Hamilton Twp., N.J., assignors to Envirogen, Inc., Lawrenceville, N.J. Continuation of Ser. No. 978,540, Nov. 19, 1992, abandoned.

This application Dec. 6, 1994, Ser. No. 350,500

Int. Cl.⁶ C02F 3/34; B09B 1/00

U.S. Cl. 210—611

12 Claims



1. A method of removing one or more chemicals from an aquifer solids comprising the steps of imposing an electric current on an aquifer, said aquifer having one or more chemicals associated with aquifer solids in a first area of said aquifer said aquifer having one or more microorganisms capable of degrading said one or more chemicals said one or more microorganisms having position in a second area of said aquifer, said one or more microorganisms

capable of degrading said one or more chemicals and said electric current capable of imparting movement on said one or more microorganisms to move said one or more microorganisms from a second area to said first area to degrade said one or more chemicals.

5,510,034

METHOD FOR TREATING FLUIDS

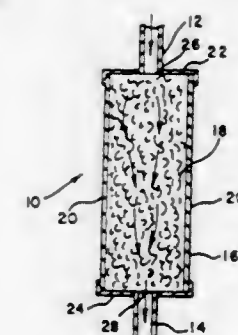
Don E. Heskett, Constantine, Mich., assignor to KDF Fluid Treatment, Inc., Three Rivers, Mich.

Continuation of Ser. No. 239,339, May 6, 1994, Pat. No. 5,433,856, which is a continuation of Ser. No. 98,463, Jul. 28, 1993, Pat. No. 5,314,623, which is a division of Ser. No. 980,316, Nov. 19, 1992, Pat. No. 5,275,737, which is a continuation of Ser. No. 528,682, May 24, 1990, abandoned, which is a continuation-in-part of Ser. No. 352,719, May 12, 1989, abandoned, which is a continuation of Ser. No. 205,628, May 31, 1988, abandoned, which is a continuation of Ser. No. 779,226, Sep. 23, 1985, abandoned, which is a continuation of Ser. No. 605,652, Apr. 30, 1984, abandoned. This application Mar. 29, 1995, Ser. No. 411,588

Int. Cl.⁶ C02F 1/28; 1/70; 1/72

U.S. Cl. 210—638

20 Claims



1. A method for reducing the concentration of a metal in liquids, said method comprising contacting a liquid containing at least one metal selected from the group consisting of aluminum, arsenic, barium, cadmium, chromium, copper, iron, lead, selenium, manganese, gold and silver with a finely divided metal comprising an alloy of copper and zinc, and wherein the ratio by weight of said copper to said zinc is between about 1:9 and about 9:1.

5,510,035

METHOD OF SEPARATING SODIUM HYDROXIDE FROM WHITE LIQUOR

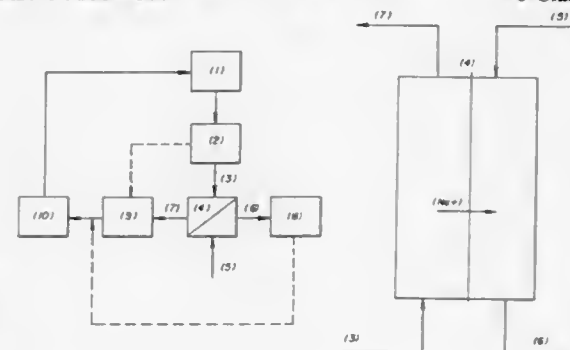
Marjo Törönen, Rauha, and Hannu Kurittu, Imatra, both of, Finland, assignors to Enso-Gutzeit Oy, Imatra, Finland Filed Oct. 18, 1994, Ser. No. 325,655

Claims priority, application Finland, Oct. 20, 1993, 934632

Int. Cl.⁶ B01D 11/00

U.S. Cl. 210—644

6 Claims



1. A method of processing white liquor comprising removing white liquor obtained from the causticization step of a pulp mill, the white liquor comprising sodium hydroxide and sodium sulfide, separating sodium hydroxide from said white liquor either entirely or partly by means of membrane diffusion dialysis.

5,510,036

PROCESS FOR TREATMENT OF AQUEOUS SOLUTIONS OF POLYHYDRIC ALCOHOLS

Peter M. Woycieles, Woodbury; Aleksel V. Gershun, Danbury, and Stephen M. Woodward, Lakeside, all of Conn., assignors to Prestone Products Corporation, Danbury, Conn.

Continuation of Ser. No. 564,262, Aug. 8, 1990, Pat. No. 5,223,144. This application Jun. 28, 1993, Ser. No. 83,959

Int. Cl.⁶ G02F 9/00

U.S. Cl. 210—664

30 Claims

1. A process for the treatment of an aqueous antifreeze/coolant composition obtained from the cooling system of internal combustion engines containing between about 5 weight percent and about 95 weight percent of a polyhydric alcohol selected from the group consisting of ethylene glycol, diethylene glycol and propylene glycol and mixtures thereof and containing at least one solubilized heavy metal species selected from the group consisting of lead, molybdenum, iron, zinc, and copper, wherein said process comprises the following steps:

- adjusting the pH of said aqueous antifreeze/coolant composition to between about 4.0 and about 7.5 by addition of an effective amount of a pH adjusting agent to form a pH-adjusted composition and adding an effective amount of a precipitating agent effective in forming a precipitate of said heavy metal species;
- adding to said pH-adjusting composition an effective amount of at least one of a coagulating agent and a flocculating agent to form a heavy metal containing precipitate;
- passing said pH-adjusted composition of step (ii) and said heavy metal containing precipitate through a first filtration means capable of removing species having a size greater than about 100 microns;
- passing said pH-adjusted composition of step (iii) through a second filtration means capable of removing species greater than about 40.0 microns;
- passing the pH-adjusted composition from step (iv) through an organic separation means effective in removing organic compounds from said polyhydric alcohol of said pH-adjusted composition;
- passing said pH-adjusted composition through a third filtration means capable of removing species greater than about 5 microns; and
- passing said pH-adjusted composition of step (vi) through a cation exchange means effective in the removal of at least one solubilized heavy metal species present in said pH-adjusted composition from step (vi).

5,510,037

REGENERATION OF USED CLEANING SOLUTION

Gilles Tastayre, c/o Ecochimie Ltée, 1777 - E, de Nobel, Sainte Julie de Vercheres, Quebec, Canada

Continuation of Ser. No. 17,400, Feb. 12, 1993, abandoned.

This application Oct. 18, 1994, Ser. No. 324,492

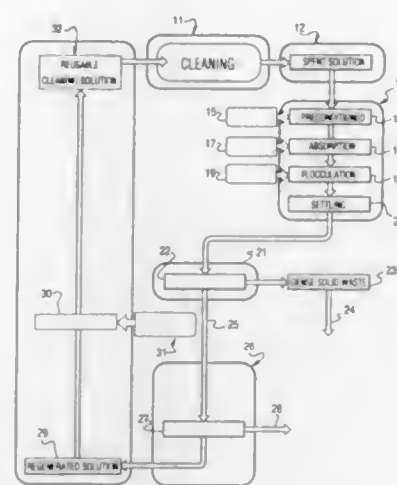
Int. Cl.⁶ C02F 9/00

U.S. Cl. 210—666

18 Claims

1. A process for regenerating a spent alkaline or acidic or neutral cleaning solution comprising the steps of:

- pre-conditioning said spent solution;
- adding an absorbent material to said preconditioned solution to provide an interactive solution;
- precipitating undesirable materials from said interactive solution by adding an anionic and a cationic polymeric flocculating agent thereto, in a sequence of steps consisting essentially of (i) adding one of said anionic or a cationic polymeric



flocculating agent to said interactive solution to provide a reactive solution, (ii) thoroughly mixing said reactive solution, and (iii) adding the other of said anionic or said cationic flocculating agent, thereby to precipitate insoluble salts as flocs; and

- subjecting said reactive solution containing said flocs to a solid/liquid separation.

5,510,038

PROCESS FOR PREVENTING THE FORMATION OF DEPOSITS IN A CONSTRUCTION DRAINAGE SYSTEM

Marcel C. Wegmüller, Gundeldingerrain 51, CH-4059 Basel, Switzerland

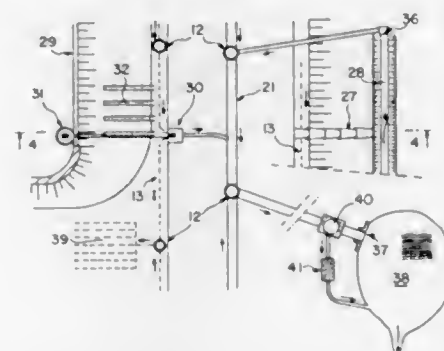
Filed Oct. 13, 1994, Ser. No. 322,235

Claims priority, application WIPO, Feb. 17, 1993, PCT/CH9400029

Int. Cl.⁶ C02F 5/10

U.S. Cl. 210—698

8 Claims



1. A process for preventing scale formation in a construction drainage system, comprising addition in liquid form of 0.1 to 100 g per cubic meter of infiltration or ground water of a conditioning agent or mixtures thereof from a dosage unit via a feed line into the construction drainage system, preferably at the highest point of the seepage pipe, to the infiltration or ground water by controlling the dosage of conditioning agent in dependence on the flow of water at the end of the construction drainage system.

5,510,039

METHOD FOR SEPARATING OFF SOLID MATERIALS

Wolfgang Bassler, Allensbach; Eckhard Gutsmuths, Ravensburg; Hans Kleinschnittger, Weingarten, and Wolfgang Mannes, Günzburg-Reisensburg, Germany, assignors to Sulzer-Escher Wyss GmbH, Ravensburg, Germany

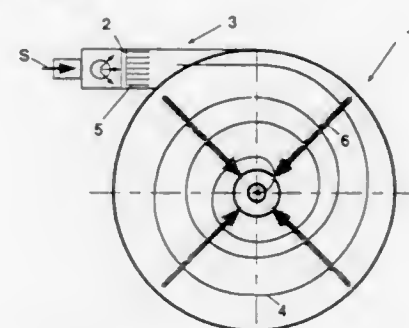
Filed Apr. 15, 1994, Ser. No. 228,334

Claims priority, application Germany, Apr. 17, 1993, 43 12 540.9

U.S. Cl. 210—703

Int. Cl.⁶ C02F 1/24

13 Claims



1. A method for separating solid materials from a suspension comprising the steps of:

- providing a clarification tank having a substantially circular, flat base area and a substantially circular cross-section with a periphery and a center, the tank having an inlet at the periphery and an outlet at the center;
 - directing the suspension through a chamber such that the suspension flows through an outlet of the chamber in communication with the tank inlet;
 - tangentially introducing the suspension into the inlet of the clarification tank at the periphery of said tank;
 - subjecting the suspension to a flotation step wherein bubbles are present to cause the solid materials to float to the surface and form a scum thereon; and
 - directing the suspension into the outlet at the center of the tank along a substantially spiral path such that the suspension is accelerated along the spiral path;
- transporting, at selected intervals, the scum formed on the surface to a middle portion of the clarification tank and discharging the scum from the tank; and
- supplying pressurized air to the suspension and releasing the air into small air bubbles by relaxation before the suspension enters the clarification tank.

5,510,040

REMOVAL OF SELENIUM FROM WATER BY COMPLEXATION WITH POLYMERIC DITHIOCARBAMATES

Thomas M. Miller, Aurora, and Walter H. Goodman, Lisle, both of Ill., assignors to Naleo Chemical Company, Naperville, Ill.

Filed Nov. 21, 1994, Ser. No. 343,061

Int. Cl.⁶ C02F 1/58

U.S. Cl. 210—721

25 Claims

1. A method for the removal of soluble selenium compounds from an aqueous liquid containing soluble selenite and selenate compounds which comprises:

- adjusting the pH of the aqueous liquid containing the selenium compounds to a value of about 5 or less;
- treating the aqueous liquid with a selenate and selenite precipitating amount of a water soluble polydithiocarbamate precipitation aid;
- mixing the water soluble polydithiocarbamate precipitation aid with the aqueous liquid to produce a selenium containing precipitate;
- removing the selenium precipitate from the aqueous liquid; and

e) recovering an aqueous liquid having reduced levels of selenium.

5,510,041

PROCESS FOR PRODUCING AN ORGANIC MATERIAL WITH HIGH FLAME-EXTINGUISHING POWER, AND PRODUCT OBTAINED THEREBY

Maddalena Sonnino, Via Valverde 20, 24100 Bergamo, Italy

Filed Jul. 9, 1993, Ser. No. 88,020

Claims priority, application Italy, Jul. 16, 1992, MI92A1733; Jan. 12, 1993, MI93A0024

Int. Cl.⁶ A62D 1/04

U.S. Cl. 252—3

25 Claims

1. Chemical fire extinguishing product in the form of stabilized foam, comprising a mixture of at least two kinds of cucurbits in the form of a very fine and uniform dry powder with at least one basic additive selected from a group consisting in sodium bicarbonate and calcium carbonate, in proportions between 1.5% and 7% by weight based on the weight of the dry cucurbits, and at least one food preservative in proportions between 0.1% and 2% by weight based on the weight of the dry cucurbits said mixture being treated with water from said cucurbits in proportions between 50% and 70% by weight based on the weight of the dry cucurbits, at least one surfactant in proportions between 5% and 30% by weight based on the weight of the dry cucurbits and at least one inert stabilizer in proportions between 1.5% and 20% by weight with respect to the water.

5,510,042

FABRIC SOFTENING BAR COMPOSITIONS CONTAINING FABRIC SOFTENER, NONIONIC PHASE MOIFIER AND WATER

Frederick A. Hartman, and Robert Mermelstein, both of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Jul. 8, 1994, Ser. No. 272,171

Int. Cl.⁶ D06M 13/46; 13/10

U.S. Cl. 252—8.8

23 Claims

1. A low sudsing, fabric softening bar composition comprising: (A) from about 40%, to about 90%, by weight of the composition, of a hydrophobic, fabric softening compound selected from the group consisting of quaternary ammonium compounds, carboxylic acid salts of tertiary amines, carboxylic acid salts of tertiary ester amines, sorbitan esters of fatty alcohols, glycerol and polyglycerol esters, fatty amines, fatty acids, alkyl or alkenyl succinic acids, and mixtures thereof; (B) from about 5% to about 30%, by weight of the composition, of a nonionic surfactant; (C) from about 5% to about 30%, by weight of the composition, water; and; (D) optionally, cellulose, at a level equivalent to an activity from about 1 to about 100 Cellulase Equivalent Viscosity Units/gram (CEVU/gram) of the composition; wherein when (A) is a sorbitan ester of a fatty alcohol, glycerol ester, or a polyglycerol ester, then (B) cannot also be a sorbitan ester of a fatty alcohol, glycerol ester, or a polyglycerol ester; and wherein components (B) and (C) are miscible with component (A) to form a new crystalline phase at room temperature, said composition being essentially free of detergent builders and anionic surfactants.

5,510,043

LUBRICATING OIL ADDITIVE COMPRISING
SULFURIZED MONOALKYL CATECHOL AND ITS
DERIVATIVES

Kiyoshi Inoue, Yokohama, Japan, assignor to Nippon Oil Co., Ltd. Central Technical Research Laboratory, Yokohama, Japan

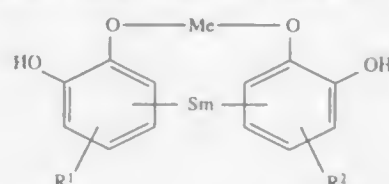
Continuation-in-part of Ser. No. 32,882, Mar. 18, 1993, abandoned. This application May 17, 1994, Ser. No. 243,821

Claims priority, application Japan, Mar. 23, 1992, 4-94967
Int. Cl.⁶ C10M 135/02

U.S. Cl. 252—42.7

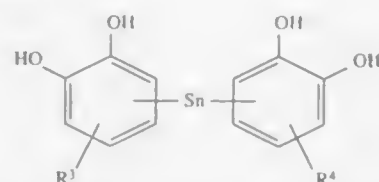
2 Claims

1. A lubricating oil additive consisting of
(A) 100 parts by weight of an alkaline earth metal salt of a sulfurized monoalkylcatechol of formula (I):



wherein Me is an alkaline earth metal each of R¹ and R² is an alkyl group having 14 to 30 carbon atoms, m is a number from 1 to 2; and;

- (B) 2-70 parts by weight of a sulfurized monoalkylcatechol of formula (II):



wherein each of R³ and R⁴ is an alkyl group having 14 to 30 carbon atoms, and n is a number from 1 to 2.

5,510,044

COMPOSITION FOR FROTH FLOTATION OF MINERAL
ORES COMPRISING AMINE AND FROTHER

Janusz S. Laskowski, Richmond; Qun Wang, and Elena A. Alonso, both of Vancouver, Canada, assignors to The University of British Columbia, Vancouver, Canada

Filed May 26, 1994, Ser. No. 249,407

Int. Cl.⁶ B03D 1/018

U.S. Cl. 252—61

17 Claims

1. An emulsified flotation composition, adapted to be used in the flotation of ore fractions in aqueous suspension, which consists essentially of: (a) water; (b) a long chain aliphatic amine present in an amount of from about 0.1% to about 10% by weight of the entire composition; (c) a frother present in an amount of from about 0.1% to about 30% by weight of the entire composition; and (d) an acid emulsifier present in an amount of from about 0.1% to about 10% by weight of the entire composition.

5,510,045

ALKALINE DIAMINE TRACK LUBRICANTS

Christian A. Remus, Detroit, Mich., assignor to Diverser Corporation, Ontario, Canada

Continuation-in-part of Ser. No. 83,632, Jun. 28, 1993, Pat. No. 5,441,654, which is a continuation-in-part of Ser. No. 802,842, Dec. 6, 1991, Pat. No. 5,223,162, which is a

continuation-in-part of Ser. No. 535,473, Jun. 8, 1990, Pat. No. 5,073,280, which is a continuation-in-part of Ser. No. 398,542, Aug. 25, 1989, Pat. No. 5,009,801, which is a

continuation-in-part of Ser. No. 218,893, Jul. 14, 1988, Pat. No. 4,929,375. This application Mar. 25, 1994, Ser. No. 217,978

Int. Cl.⁶ C10M 173/02; 133/04

U.S. Cl. 252—49.3

15 Claims

1. A synthetic diamine-based track lubricant, comprising:
(a) an alkyl diamine,
(b) a water-soluble hydrotrope selected from the group consisting of ethoxylated alkyl amines, having at least 6 carbon atoms in the alkyl portion, nonionic surfactants and mixtures thereof,
(c) a source of alkalinity,
(d) a corrosion inhibitor,
(e) water, and
wherein the lubricant has a pH greater than 8 and the diamine is not neutralized.

5,510,046

MODIFIED ELECTROLYTE FOR ELECTROCHEMICAL
CELLS AND CELLS USING SAME

Changming Li, Vernon Hills; Keryn Llan, Northbrook; Lijun Bai, Vernon Hills, and Joseph G. Kines, Arlington Heights, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 1, 1995, Ser. No. 396,991

Int. Cl.⁶ H01G 9/022

U.S. Cl. 252—62.2

2 Claims

1. An aqueous electrolyte system comprising an electrolyte species and an iron meso-tetra(sulfonatophenyl) porphine modifier species.

5,510,047

PROCESS FOR PREPARING THIXOTROPIC LIQUID
DETERGENT COMPOSITIONS

Steven M. Gabriel; Thomas H. Glassco; Hal Ambuter, and Edward P. Fitch, all of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 867,941, Apr. 13, 1992, abandoned.

This application Jul. 5, 1994, Ser. No. 270,841

Int. Cl.⁶ C11D 9/00; 11/00

U.S. Cl. 252—89.1

19 Claims

1. A process for preparing a viscoelastic, thixotropic, liquid, polymer-containing detergent composition consisting essentially of:

(a) forming a slurry of from about 0.01% to about 40%, by weight of said slurry, of a polymeric, thixotropic thickener selected from the group consisting of cross-linked polycarboxylate polymers with a molecular weight between 750,000 and about 4,000,000, natural gums, cellulosic material and mixtures thereof in a liquid medium;

(b) separately mixing to form a premix composition comprising detergency builder, pH adjusting agent, fatty acid, rheology stabilizing agent, organic dispersant, detergent surfactant, suds suppressor, enzyme stabilizing system, oxidizing agents, water, and mixtures thereof;

(c) simultaneously adding and mixing under moderate to high shear said slurry of step (a) with said premix of step (b) for a sufficient period of time to neutralize and disperse said polymer to form a composition with a viscosity of at least about 250 centipoise; and

- (d) deaerating by mixing and sequentially adding from about 0.01% to about 40%, by weight, of organic solvents, oils, suds suppressors, solid detergent material and mixtures thereof, at low to moderate shear rate, to said composition of step (c) to form a final product with a specific gravity of about 1.0 to about 2.0.

5,510,048

NONAQUEOUS LIQUID, PHOSPHATE-FREE, IMPROVED
AUTOAMATIC DISHWASHING COMPOSITION
CONTAINING ENZYMES

Patrick Durbut, Verviers, Belgium; Fahim U. Ahmed, Greensboro, N.C., and Julien Drapier, Seraing, Belgium, assignors to Colgate Palmolive Co., Piscataway, N.J.

Continuation-in-part of Ser. No. 106,969, Aug. 16, 1993, abandoned, which is a continuation-in-part of Ser. No. 928,621, Aug. 11, 1992, abandoned, which is a continuation-in-part of

Ser. No. 797,605, Nov. 25, 1991, abandoned, which is a continuation-in-part of Ser. No. 708,566, May 31, 1991, abandoned, and a continuation-in-part of Ser. No. 837,316, Feb. 10, 1992, abandoned, which is a continuation-in-part of Ser. No. 708,320, May 31, 1991, abandoned, and a continuation-in-part of Ser. No. 833,472, Feb. 10, 1992, abandoned, which is a continuation-in-part of Ser. No. 708,321, May 31, 1991, Pat. No. 5,169,553. This application Oct. 17, 1994, Ser. No. 324,320

Int. Cl.⁶ C11D 3/386; 3/37; 3/395; 3/10

U.S. Cl. 252—95

5 Claims

1. A detergent composition consisting of approximately by weight:
(a) 1 to 12 percent of a liquid nonionic surfactant which is an ethoxylated fatty alcohol with 9 to 15 carbon atoms and 5 to 9 lower alkoxy groups per mole;
(b) 35 to 65 percent of a nonaqueous liquid carrier material which is polyethylene glycol;
(c) 2 to 20 percent of an alkali metal carbonate;
(d) 0.1 to 1.2 percent of an antifoaming agent;
(e) 1.5 to 12 percent of at least one protease enzyme derived from a strain of *Bacillus alcalophilus* strain designated PB92;
(f) 0.1 to 6.0 percent of an amylase enzyme;
(g) 3 to 20 percent of an alkali metal silicate which is sodium disilicate;

(h) 0.5 to 3.0 percent of a finely divided fumed silica having a surface area of 200*25 to 390*40 m²/gm and a particle size diameter of 0.007 to 0.014 microns.

(i) 1 to 8 wt. % of a noncrosslinked polyacrylate homopolymer having a molecular weight of about 1000 to 100,000; and 1.0 to 12.0 wt. % of a noncrosslinked copolymer selected from the group consisting of a copolymer of acrylate/olefin, a copolymer of acrylate/maleic anhydride and a copolymer of methyl vinyl ether/maleic anhydride, said composition containing less than 6% wt. of free water.

5,510,049

BAR COMPOSITION WITH N-ALKOXY OR N-ARYLOXY
POLYHYDROXY FATTY ACID AMIDE SURFACTANT

Daniel S. Connor, Cincinnati; Yi-Chang Fu, Wyoming, and Jeffrey J. Scheibel, Cincinnati, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation-in-part of Ser. No. 118,918, Sep. 9, 1993, abandoned. This application Jul. 26, 1994, Ser. No. 278,853

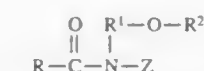
The portion of the term of this patent subsequent to Jul. 26, 2014, has been disclaimed.

Int. Cl.⁶ C11D 1/18; 1/12; 1/75; 9/32

U.S. Cl. 252—108

7 Claims

1. A laundry or toilet bar, or the like, comprising one or more surface-active agents selected from the group consisting of synthetic anionic surfactants and soaps, said bars containing at least about 1% by weight of an alkoxy or aryloxy polyhydroxy fatty acid amide of the formula



wherein R is a C₇ to C₂₁ hydrocarbyl moiety, R¹ is a C₂ to C₈ hydrocarbyl moiety, R² is a C₁-C₈ hydrocarbyl moiety or oxy-hydrocarbyl moiety and Z is a polyhydroxy hydrocarbyl moiety having a linear chain with at least 2 hydroxyls directly connected to the chain, or an alkoxyated derivative thereof.

5,510,050

IMPROVED ACYL ISETHIONATE SKIN CLEANSING
BAR CONTAINING LIQUID POLYOLS AND
MAGNESIUM SOAP

James C. Dunbar, West Chester; Peter W. Beerse, Maineville, and Eddie C. Walker, Cincinnati, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 148,804, Nov. 8, 1993, abandoned.

This application Sep. 6, 1994, Ser. No. 300,880

Int. Cl.⁶ C11D 9/00; 9/32; 13/00

U.S. Cl. 252—108

13 Claims

1. A personal cleansing milled bar composition comprising by bar weight:

A. from about 10 parts to about 70 parts of sodium acyl isethionate;
B. from about 4.5 to about 50 parts magnesium soap;
C. from about 4 to about 15 parts glycerine; and
D. from about 3 to about 16 parts water.

5,510,051

PREPARATION OF A MULTI-PURPOSE CLEANER

Tony Lam, 2354 Beckwith St. #A, Honolulu, Hi. 96822

Filed Aug. 1, 1994, Ser. No. 283,811

Int. Cl.⁶ C11D 3/06; 7/16; 11/00

U.S. Cl. 252—135

2 Claims

1. A method of producing an industrial cleaner in a first stage for storage or shipment and a second stage for use, the first stage comprising the steps of:

filling a first 55 volume unit drum half full of water;
inserting and starting a mixer in said drum;
adding 15 weight units of tetrapotassium pyrophosphate;
adding 15 weight units of trisodium phosphate;
blending in a separate container a blend containing:
2.0 volume units of tall oil fatty acid.

1.5 volume units of a solution of phenol containing 10 moles selected from the group consisting of octylphenol and nonylphenol, and

1.25 volume units of monoethanolamine;

adding said blend to said first drum;

adding 1.5 volume units of coconut diethanolamide;

adding 1.5 volume units of glycol butyl ether;

adding 2.0 volume units of isopropyl alcohol;

adding 2.5 volume units of 45% solution of potassium hydroxide;

filling said first drum with water; and

mixing until consistency is obtained so as to create 55 volume units of base compound in said first drum;

storing or shipping said first drum containing base compound for use; and

diluting said base compound for use in a second stage comprising the steps of:

filling a second 55 volume unit drum 3/4 full of water;

inserting and starting a mixer in said second drum;

adding 11 volume units of said base compound;

adding 15 weight units of tetrapotassium pyrophosphate;

adding 4.0 volume units of glycol butyl ether;

adding sufficient lemon fragrance to give a pleasant odor;

filling said second drum with water; and

mixing until consistency is obtained so as to create 55 volume units of finished product said volume units being gallons and said weight units being pounds ready for use.

5,510,052
ENZYMATIC AQUEOUS PRETREATMENT COMPOSITION FOR DISHWARE
 Elizabeth McCandlish, Highland Park, N.J., assignor to Colgate-Palmolive Co., Piscataway, N.J.

Filed Aug. 25, 1994, Ser. No. 296,076
 Int. Cl.⁶ C11D 3/386; 3/60; 17/00
 U.S. Cl. 252—174.12 9 Claims

1. A pretreatment composition for dishware which comprises approximately by weight:

- 0.05 to 2.0% of a thickening agent selected from the group consisting of xanthan gum, welan gum, rhamnus gum, guar gum, carboxymethyl cellulose, hydroxyalkyl cellulose, alkyl cellulose, polysaccharides with beta glycoside linkages, locust bean gum and maleic anhydride-methyl ether copolymers;
- 0.1 to 0.9% of a calcium compound;
- 0.01 to 1.0% of an antimicrobial preservative;
- 0.1 to 5.0% of a buffer system comprising a mixture of boric acid, an alkali metal chloride and an alkali metal hydroxide;
- 0.05 to 4.0% of at least one surfactant;
- 0.2 to 4.0% of at least one enzyme stabilizer wherein said enzyme stabilizer has the formula YCO_2X , wherein Y is hydrogen or an alkyl group having about 1 to about 6 carbon atoms and X is an alkali metal cation;
- 0.1 to 5.0% of at least one enzyme being selected from the group consisting of an amylase enzyme, alkaline protease enzyme or a mixture of said amylase enzyme and said alkaline protease enzyme, if said amylase enzyme and said alkaline protease enzyme are both present, then a weight ratio of said amylase enzyme to said protease enzyme being about 100 to 1 to about 1 to 10;

- 0.1 to 1.0% of an alkali metal nitrate; and
- balance being water, said composition at a concentration of 10 grams of said composition in one liter of an aqueous bath having a pH of about 6 to about 12, wherein the composition has a Brookfield viscosity at room temperature of about 100 to 600 cps at 10 rpm using a #1 spindle and the composition does not contain phosphate builders, nonphosphate builders excluding any present in said buffer system, organic builders, aliphatic glycols and aliphatic mono alcohols, or fatty acids or metal salts of fatty acids excluding any present in said antimicrobial preservative.

5,510,053
WATER-BLOWN POLYURETHANE SEALING DEVICES AND COMPOSITIONS FOR PRODUCING SAME
 Thirumurti Narayan, Grosse Ile, and Steven Hicks, Trenton, both of Mich., assignors to BASF Corporation, Mt. Olive, N.J.

Filed Dec. 29, 1994, Ser. No. 365,643
 Int. Cl.⁶ C08K 3/00; C08G 18/10
 U.S. Cl. 252—182.2 15 Claims

1. An isocyanate prepolymer composition suitable for preparing a molded polyurethane article, the composition consisting essentially of the result of reacting:

- an isocyanate blend comprising:
 - 0 to 10 pbw 2,4'-diphenylmethane diisocyanate;
 - 40 to 90 pbw 4,4'-diphenylmethane diisocyanate;
 - 1 to 10 pbw 3-ring oligomers of polymethylene polyphenyl polyisocyanate;
 - 1 to 20 pbw n-ring oligomers of polymethylene polyphenyl polyisocyanate (n being greater than 3); and
 - 1 to 10 pbw of a mixture of uretonimine containing molecules and carbodiimide containing molecules; and

(b) from 5 to 50 pbw of a propoxylated propylene glycol 15 having a number average molecular weight of between 2000 and 6000 and a hydroxyl number of between 10 to 75;

wherein the resulting prepolymer has a % free NCO of from 20 to 30 and a viscosity of from 50 to 500 cPs and all pbw are based on the total weight of (a) and (b).

5,510,054
POLYURETHANE ELASTOMER AND FOAM EXHIBITING IMPROVED ABRASION RESISTANCE
 Stefano Mussini, Sassuolo, Italy, assignor to Dow Italia S.p.A., Italy

Filed Jun. 29, 1995, Ser. No. 496,698
 Int. Cl.⁶ C08G 18/32 20 Claims

U.S. Cl. 252—182.23

- A polyurethane elastomer prepared by reacting:
 - a urethane-modified polyisocyanate, with
 - at least one polyether polyol or polyester polyol, in the presence of

- from about 0.1 to about 10 parts per 100 parts by weight of (b) of a liquid polybutadiene comprising 1,2-butene, 2,3-(trans)butene and 2,3-(cis)butene moieties wherein the 1,2-butene content of less than about 50 percent, based on total butene content and the 2,3 (cis)-butene content is greater than the 2,3-(trans)butene content, with

said elastomer being characterized in having (i) a density of from about 100 to about 1100 kg/m³, and (ii) an abrasion loss of less than about 300 mg, as determined in accordance with Test Method A of ISO 4649.

5,510,055
BLEACHING REGULATOR COMPOSITIONS AND BLEACHING PROCESSES USING THEM
 Wolfgang Raimann, Odenthal-Gloebsch, Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Germany
 Continuation of Ser. No. 12,684, Feb. 3, 1993, abandoned.

This application Feb. 17, 1995, Ser. No. 391,376
 Claims priority, application Germany, Feb. 10, 1992, 42 03 797.2

Int. Cl.⁶ C01B 15/00
 U.S. Cl. 252—186.25 13 Claims

1. A bleaching stabilizer composition which, when used is employed in an aqueous solution which has been rendered alkaline, which stabilizer composition consists of, relative to each other,

- 0.1 to 20 parts by weight of magnesium ions, calculated as MgO,
- 3 to 200 parts by weight of gluconic acid, an alkali metal salt thereof or a mixture of said acid and said salt, calculated as the free acid,
- 3 to 25 parts by weight of nitrilotriacetic acid, an alkali metal salt thereof or a mixture of said acid and said salt, calculated as the free acid, and
- 4 to 40 parts by weight of citric acid, an alkali metal salt thereof or a mixture of said acid and said salt, calculated as citric acid monohydrate, and wherein when used in said aqueous solution the constituents a), b), c) and d) together are present in an amount of from 10% to 60% by weight, based on the total weight of aqueous solution and wherein the alkalinity of said solution is adjusted to a pH of 7.5 to 14 by the addition of an alkali metal hydroxide and which contains no ethylenediaminetetraacetic acid no phosphates and no phosphonates.

5,510,056
PROCESS FOR THE CATALYTIC PARTIAL OXIDATION OF HYDROCARBONS

Ludovicus L. G. Jacobs; Peter W. Lednor; Alex G. G. Lima-helu; Ronald J. Schoonebeek, and Koert A. Vonkeman, all of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed Nov. 29, 1994, Ser. No. 346,110
 Claims priority, application European Pat. Off., Nov. 29, 1993, 93203331

Int. Cl.⁶ C01B 3/28 19 Claims

1. A process for the catalytic partial oxidation of a feedstock selected from the group consisting of methane, natural gas, C₁-C₅ hydrocarbons and mixtures thereof to prepare a synthesis gas comprising a mixture of carbon monoxide and hydrogen, which process comprises contacting said feedstock and an oxygen-containing gas with a catalyst in a reaction zone, which catalyst is retained in the reaction zone in a fixed arrangement having a tortuosity of at least 1.1 and having at least 750 pores per square centimeter.

5,510,057
CORROSION INHIBITING METHOD AND INHIBITION COMPOSITIONS

Olen L. Riggs, P.O. Box 968, Bethany, Okla. 73008
 PCT No. PCT/US92/09511, § 371 Date May 6, 1994, § 102(e)
 Date May 6, 1994, PCT Pub. No. WO93/09268, PCT Pub. Date May 13, 1993

PCT Filed Nov. 5, 1992, Ser. No. 232,282
 Int. Cl.⁶ C23F 11/10; 11/14 17 Claims

1. A corrosion inhibiting cooling water composition consisting essentially of a stannous salt for use in cooling water in a minor amount of at least 0.1 parts per million parts thereof, a solvent medium containing a first solvent medium and a second solvent medium, and a polysorbate surfactant wherein (1) said amount of said stannous salt is in the range of from 5 weight percent of said medium to the saturation value of said solvent salt in said solvent medium, (2) said solvent medium has a lower alkanol content in the range of from about 15 to 100 volume percent and a water content in the range up to 85 volume percent.

5,510,058
ELECTRO-SENSITIVE COMPOSITION
 Kazuya Edamura, Tokyo, and Yasufumi Otsubo, Chiba, both of Japan, assignors to Fujikura Kasei Co., Ltd., Tokyo, Japan

Division of Ser. No. 102,759, Aug. 6, 1993. This application Jun. 29, 1994, Ser. No. 267,408

Claims priority, application Japan, Aug. 7, 1992, 4-211834; Aug. 27, 1992, 4-228947

Int. Cl.⁶ H01B 1/00 2 Claims

1. An electro-sensitive composition comprising (1) a fluorine compound having the formula:

$R_1-(CF_2)_n-R_2$ wherein,
 R_1 is selected from the group consisting of H, F, Cl, Br and I; R_2 is CH_2OH ; n indicates an integer within a range of 3-30 and m indicates an integer within a range of 0-2; and (2) an electrically insulating medium selected from the group consisting of silicone oil, phosphazene oil and mixtures thereof, which dissolves the fluorine compound when a voltage is applied thereof.

5,510,059
SURFACE-TREATED MELAMINE CYANURATE POWDER AND PROCESS FOR ITS PRODUCTION

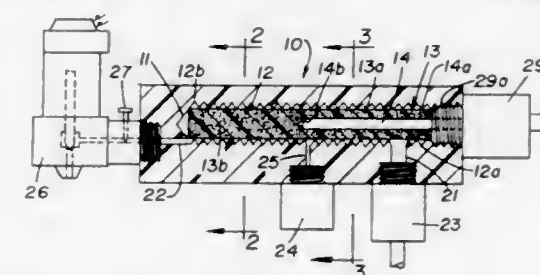
Shinichi Yuki, Tokyo; Kouji Shishido; Masayoshi Shirakawa, both of Toyama, and Masuo Shindo, Funabashi, all of Japan, assignors to Nissan Chemical Industries, Ltd., Tokyo, Japan

Filed Jan. 24, 1995, Ser. No. 377,341
 Claims priority, application Japan, Feb. 8, 1994, 6-014380
 Int. Cl.⁶ C09K 21/00; 15/22 8 Claims

1. A melamine cyanurate powder comprising readily dispersible aggregated primary particles of melamine cyanurate, and particles of metal oxide fixed on the surface of said primary particles of melamine cyanurate.

5,510,060
INLINE CARBONATOR
 George W. Knoll, 11375 Olson Rd., Belvidere, Ill. 61008
 Filed Mar. 14, 1995, Ser. No. 404,104
 Int. Cl.⁶ B01F 3/04 10 Claims

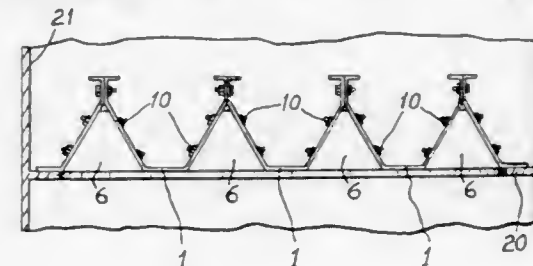
U.S. Cl. 261—27



1. An inline carbonator apparatus comprising, casing means defining an elongate chamber having a helically grooved inner wall, an elongate inner body disposed in the chamber and having a cylindrical outer surface contacting radially inner crests on the helically grooved inner wall and forming a helical flow passage therewith, means for passing liquid to be carbonated to the helical flow passage adjacent an inlet end thereof, outlet means communicating with an outlet end of said helical flow passage; said inner body having an elongate internal chamber extending from a first end adjacent said inlet end of the helical flow passage to a location spaced from the inlet and outlet ends of the helical flow passage, at least the portion of the inner body that extends around the internal chamber being formed of micro-porous material, and means for passing carbon dioxide gas to the internal chamber in the inner body for diffusion through the micro-porous portion of the inner body into the liquid in the helical flow passage.

5,510,061
NON-WELDED SUPPORT PLATE MEMBER
 Frank D. Moore, Tallmadge, Ohio, assignor to Norton Chemical Process Products Corp., Worcester, Mass.
 Filed Jul. 26, 1994, Ser. No. 280,691
 Int. Cl.⁶ B01F 3/04 4 Claims

U.S. Cl. 261—94



1. A support plate comprising a plurality of elongated channel beams each having a generally U-shaped cross-section comprising a flat base portion and sidewalls, wherein the sidewalls each comprise a parallel portion and an inwardly sloping perforated portion which connects the parallel portion with the flat base portion and provide an open end to the channel beam opposite the base portion, said channel beams lying parallel to one another with at least part of the sidewalls adjacent the open ends of the channel beam in contact with the corresponding portion of the adjacent channel beam and releasably connected thereto by attachment means and wherein at least one of the inwardly sloping sidewall portions of at least one of the channel beams is provided with an end plate lying in a plane perpendicular to the length of the channel beam and located at the end thereof, said end plate being attached to the sloping sidewall portion of the channel beam and to the sloping sidewall portion of an adjacent channel beam so as to close off the gap between said sloping sidewall portions of adjacent channel beams.

5,510,062

METHOD OF PRODUCING A NITROCELLULOSE PROPELLANT CONTAINING A CELLULOSIC BURN RATE MODIFIER INFILTRATED THEREIN

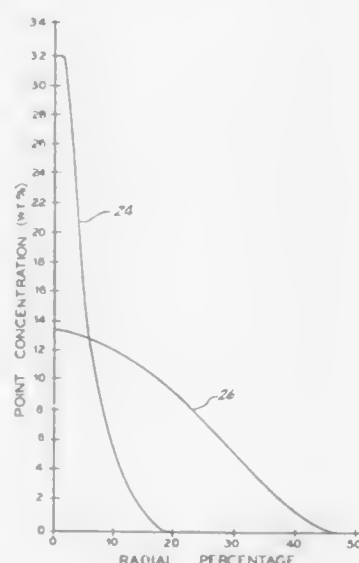
William L. O'Meara, Leon, and Terry A. Murray, Gadsden, both of Fla., assignors to Olin Corporation, St. Petersburg, Fla.

Division of Ser. No. 278,360, Jul. 21, 1994. This application May 1, 1995, Ser. No. 431,949

Int. Cl.⁶ C06B 21/00

U.S. Cl. 264—3.4

11 Claims



1. A method for the manufacture of a propellant, comprising the steps of:

- heating an aqueous suspension containing nitrocellulose particulate to a temperature of from about 30° C. to about 70° C., the ratio, by weight, of water to particulate being from about 2:1 to about 20:1;
- adding to said aqueous suspension a nonaqueous solution containing a dissolved cellulosic thermoplastic in a concentration of from about 1% to about 25%, by weight;
- agitating said nonaqueous/aqueous solution mixture for a time effective for said nonaqueous solution to penetrate at least partially into said particulate;
- removing substantially all of a nonaqueous solvent component from said mixture; and
- removing substantially all of said water thereby producing a cellulosic thermoplastic deterred propellant.

5,510,063 METHOD OF MAKING ACTIVATED CARBON HONEYCOMBS HAVING VARYING ADSORPTION CAPACITIES

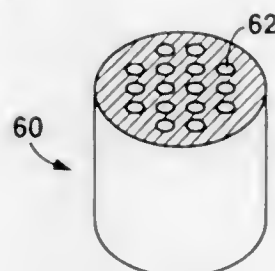
Kishor P. Gadkaree, Big Flats, and Joseph F. Mach, Lindley, both of N.Y., assignors to Corning Incorporated, Corning, N.Y.

Filed Apr. 15, 1994, Ser. No. 228,198

Int. Cl.⁶ C01B 31/00; B29C 43/18

U.S. Cl. 264—29.7

17 Claims



1. A method for making an activated adsorbent carbon body having flow-through channels, said method consisting essentially of:

- providing a crosslinkable resin;
- providing continuous fugitive material wherein the temperature at which said continuous fugitive material begins to distort is greater than the curing temperature of the resin;
- combining and shaping the continuous fugitive material and resin into a green body, and curing the resin;
- carbonizing the resin and at the same time vaporizing the continuous fugitive material to form a carbon body having flow through channels in the configuration of the fugitive material; and
- heating the carbon body to activate the carbon and produce said activated carbon body.

5,510,064

METHOD OF FORMING A CUSTOM MOLDED CERVICAL CAP

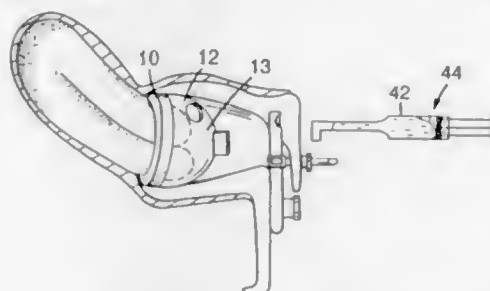
James P. Koch, 211 Sargent Rd., Brookline, Mass. 02146

Filed Dec. 11, 1992, Ser. No. 989,089

Int. Cl.⁶ B29C 33/42; 45/76

U.S. Cl. 264—40.1

7 Claims



1. A method of forming a custom-fitted cervical cap in situ, within a patient's body, comprising the steps of

- positioning a first rim member, having a predetermined inner diameter, around the patient's exocervix;
- determining whether the rim member fits snugly around the patient's exocervix;
- if the first rim member does not fit snugly, removing the first rim member and positioning a second rim member, having an inner diameter smaller than that of the first rim member, around the patient's exocervix;
- repeating steps (b) and (c) for each successive rim member, until a rim member is found which fits the exocervix snugly, said rim member including one or more ridges on its inner surface to securely grip the exocervix;

- selecting a shell member which is dimensioned to be mounted sealingly onto the rim member which fits the exocervix snugly, the shell member including an aperture;
- mounting the shell member onto the rim member such that the rim member, the shell member and the exocervix define a cavity;
- injecting a curable material through the aperture to substantially fill the cavity; and
- allowing the curable material to harden and removing the shell member, the hardened curable material and the rim member, in combination, forming the custom-fitted cervical cap.

- removing the solidified tubular product from the mold cavity and core pin.

5,510,066

METHOD FOR FREE-FORMATION OF A FREE-STANDING, THREE-DIMENSIONAL BODY

David J. Fink, Shaker Heights; Thomas J. Ward, Columbus, and Joel C. Preston, Grove City, all of Ohio, assignors to Guild Associates, Inc., Columbus, Ohio

Continuation-in-part of Ser. No. 929,449, Aug. 14, 1992, Pat. No. 5,370,692. This application Oct. 4, 1994, Ser. No. 317,892

Int. Cl.⁶ B29C 41/02; 41/52

U.S. Cl. 264—40.1

21 Claims

1. A method for a free-form preparation of a free-standing three-dimensional structural body by successively generating adjacent cross-section layers of the body with a freshly generated layer generated on top of a previously generated layer and with previously and freshly generated adjacent layers integrated to comprise the free-standing three-dimensional structural body, which method comprises: successively repeating the steps of:

- placing a plurality of individual liquid drops of a liquid composition on a support surface as discrete individual drops arranged in a pattern corresponding to a cross-sectional layer of the body being prepared and positioned within the pattern so as to be non-contacting, and with the liquid composition containing a first reactant;
- placing a plurality of discrete individual liquid drops of an other liquid composition in said pattern of the cross-sectional layer of the body being prepared with the depositing of the discrete individual drops of the other liquid composition positioned within said pattern so as to contact and connect non-contacting deposited drops of the liquid composition, and with the other liquid composition containing an other reactant adapted after contacting the first reactant to chemically react therewith to form a solid which comprises the cross-sectional layer of the body being prepared.

5,510,065

METHOD OF IN-LINE INJECTION MOLDING

Richard H. McFarlane, 2571 Kaneville Rd., Geneva, Ill. 60134

Continuation of Ser. No. 25,646, Mar. 13, 1987, abandoned, ,

and a continuation-in-part of Ser. No. 496,979, May 23, 1983,

abandoned, which is a division of Ser. No. 302,490, Sep. 16,

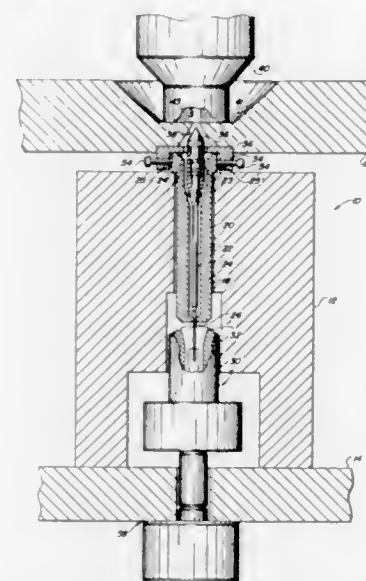
1981, abandoned. This application Mar. 20, 1989, Ser. No.

328,742

Int. Cl.⁶ B29C 45/00

U.S. Cl. 264—40.5

9 Claims



1. A method of forming an elongate, thin-walled tubular product of substantially uniform and symmetrical cross-sectional area along its length using an injection molding technique, said method comprising the steps of:

- placing an elongate core pin within an elongate mold cavity in aligned relation thereto and projecting a distal end of the core pin exteriorly of the mold cavity,
- movably securing a proximal end of said core pin adjacent an open end of said mold cavity and applying a tension in a coaxial direction to the distal end of the core pin,
- axially directing and injecting the flow of melt from a supply of plastic material into the mold cavity and distributing the flow of melt substantially evenly in substantially surrounding relation about the core pin from a location immediately prior to entry of the melt into the mold cavity,
- continuously injecting the flow of melt into the mold cavity until the space between the core pin and the mold cavity is filled along the length of the core pin,
- maintaining the coaxial tension on the distal end of the core pin until the melt was solidified, and venting air from the mold cavity thereby allowing it to be filled with the melt,
- adjusting the proximal end of the core pin laterally relative to the mold cavity to overcome any imbalance in the flow of plastic melt into the mold cavity as it travels the length of the mold cavity, and

5,510,067 METHOD OF PRODUCING A PLASTIC PIN HAVING AN INSERT IN A NECK PORTION

Arnold Jäger, Gehrbergsweg 6, 31303 Burgdorf; Andreas Jäger, Muthesiusweg 45, 30559 Hanover, and Sebastian Jäger, Borchersstr. 2, 30559 Hanover, all of Germany

Filed Jun. 2, 1995, Ser. No. 459,119

Claims priority, application Germany, Nov. 30, 1994, 44 42 601.1

Int. Cl.⁶ B29C 44/06; 44/12

U.S. Cl. 264—46.6

12 Claims



1. A method of producing a plastic pin, optionally a bowling pin, having a cellular and/or porous core that is surrounded by a solid-walled, noncellular and nonporous shell, said method including the steps of:

- providing a mold;
- producing said shell in said mold as an initially hollow body;

while the material of said shell is not yet hardened and is still deformable, inserting into a narrowed neck portion of said shell, in a direction axial relative thereto, an insert in such a way that said insert displaces an inner layer of said shell, divides a hollow interior of said shell into an upper and a lower chamber, and produces a fixed connection with said material of said shell;

thereafter introducing into said shell material for said core thereof, wherein said core material is provided with an expanding agent; and

after setting of said shell and said core, removing said mold.

5,510,068

TITANIUM/ZIRCONIUM/CERIUM OXIDE GRANULAR PARTICULATES/AGGLOMERATES

Francois Parmentier, Lyons, France, assignor to Rhone-Poulenc Chimie, Courbevoie, France

Continuation of Ser. No. 829,546, Feb. 4, 1992, abandoned, which is a continuation of Ser. No. 620,375, Nov. 29, 1990, abandoned, which is a continuation of Ser. No. 277,182, Nov. 29, 1988, abandoned. This application Jan. 5, 1995, Ser. No. 369,267

Claims priority, application France, Nov. 30, 1987, 87 16551 Int. Cl.⁶ B29C 67/00

U.S. Cl. 264—117

32 Claims

1. A process for the preparation of agglomerates of titanium oxide, zirconium oxide or cerium oxide, comprising the steps of:

- intimately admixing under agitation an aqueous suspension or sol of titanium oxide, zirconium oxide or cerium oxide, at least one hydrophobic agent comprising a cationic hydrophobic agent, amphoteric hydrophobic agent, or anionic hydrophobic agent, and at least one organic solvent which is immiscible or only slightly miscible with water in an amount sufficient to effectively agglomerate said titanium oxide, zirconium oxide or cerium oxide and less than an amount which causes the resulting oxide agglomerates to adhere to one another in a compact mass, said at least one organic solvent comprising an ester, ether or ketone;
- maintaining the agitation of said admixture until a medium is obtained consisting essentially of agglomerates of titanium oxide, zirconium oxide or cerium oxide, and an aqueous liquid phase, said aqueous liquid phase being essentially devoid of titanium oxide, zirconium oxide or cerium oxide; and
- separating said aqueous liquid phase from said agglomerates of titanium oxide, zirconium oxide or cerium oxide.

5,510,069

PROCESS FOR PRODUCTION OF A FLAT GASKET MATERIAL

Wolfgang Schuppler, Dornstadt; Michael Sroka, Elchingen; Fritz Ebersberger, Neu-Ulm-Reuttl, and Kurt Osterle, Munderkingen, all of, Germany, assignors to Reinz-Dichtungs-Gesellschaft mbH, Germany

Filed Aug. 2, 1993, Ser. No. 99,332

Claims priority, application Germany, Jul. 31, 1992, 42 25 379.9

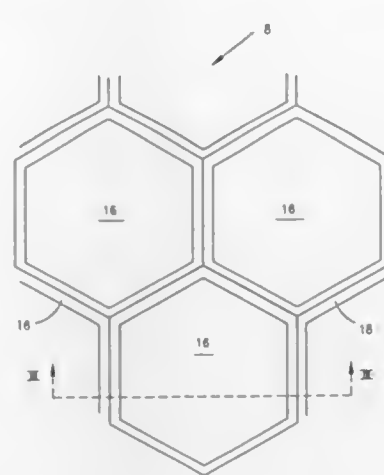
Int. Cl.⁶ B05D 1/28

U.S. Cl. 264—132

13 Claims

1. A process for the production of a flat gasket material comprising the steps of:

- obtaining an indeterminate length sheet or web of a carrier material; and
- printing a printing mass onto both sides of the indeterminate length sheet or web of the carrier material to form a continuously applied sealing layer in the form of a geometrical structure, the geometrical structure being the same and congruent on opposite sides of the carrier sheet, and being arranged independent of any gasket configuration of at least



one flat gasket to be formed from said indeterminate length sheet or web of a carrier material.

5,510,070

METHOD OF FABRICATING A SURGICAL INSTRUMENT

Kenneth W. Krause, Sandown, N.I.; Richard Crowell, Newbury, and Philip B. Sample, Haverhill, both of Mass., assignors to Smith & Nephew Dyonics, Inc., Andover, Mass.

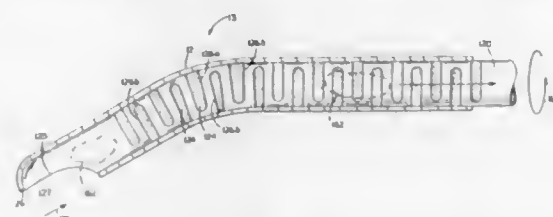
Division of Ser. No. 921,563, Jul. 29, 1992, Pat. No. 5,322,505, which is a continuation of Ser. No. 634,599, Dec. 27, 1990,

Pat. No. 5,152,744, which is a continuation-in-part of Ser. No. 477,223, Feb. 7, 1990, abandoned. This application Apr. 28, 1994, Ser. No. 234,305

Int. Cl.⁶ B29C 45/14; B23H 7/06

U.S. Cl. 264—156

34 Claims



1. A method of fabricating a surgical instrument for insertion into a body cavity for cutting tissue therein, said method comprising

- providing a relatively rigid hollow inner member having proximal and distal ends,
- relieving a region of said inner member to render said region relatively flexible,
- coupling a cutting implement to said distal end of said inner member,
- providing a relatively rigid hollow outer member having proximal and distal ends and an opening in a distal region thereof for admitting said tissue, and
- disposing said inner member for movement within said outer member so that said cutting implement is positioned to cut said tissue exposed to said implement through said opening when said inner member is moved with respect to said outer member.

5,510,071

METHOD AND APPARATUS FOR PRODUCTION OF TUBING

Lenard Van Wonderen, Varna; Joseph F. Bengough, Hensall; Carl D. Chapman, Stratford, and Frederick A. Kime, London, all of, Canada, assignors to Big "O" Inc., Exeter, Canada

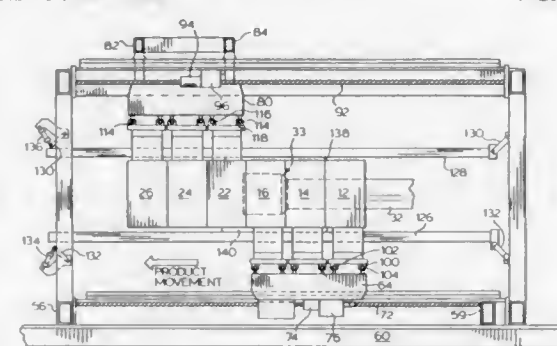
PCT No. PCT/CA92/00422, § 371 Date Feb. 4, 1994, § 102(e) Date Feb. 4, 1994

PCT Filed Sep. 25, 1992, Ser. No. 182,181

Int. Cl.⁶ B29C 53/50

U.S. Cl. 264—166

7 Claims



1. An apparatus for the production of thermoplastic pipe or tubing comprising, in combination, a supporting framework, a plurality of mold carriages mounted on said framework for reciprocal linear travel along a linear path, at least one mold block mounted on each of said mold carriages, each of said mold blocks comprising a set of opposed mold segments mounted on a carriage for transverse linear reciprocal travel therealong for closing and opening of said mold block, actuating means mounted on the carriage for moving said opposed mold segments towards and away from each other on the carriage and single actuating means for selectively moving said carriages with closed mold blocks along the linear path to an extrusion station and for selectively returning said carriages with open mold blocks along said linear path rearwardly past closed mold blocks.

7. A method for the production of thermoplastic pipe or tubing comprising, in combination, providing in a supporting framework a plurality of mold carriages mounted on said framework for reciprocal linear travel by single actuating means along a linear path, mounting at least one mold block having a pair of opposed mold segments on each of said mold carriages with actuating means mounted on the carriage for transverse linear reciprocal travel therealong for closing and opening of said mold block moving opposed mold segments towards and away from each other, and selectively moving said carriages with closed mold blocks along the linear path to an extrusion station and selectively returning said carriages with open mold blocks along said linear path rearwardly past closed mold blocks with said single actuating means.

5,510,072

PROCESS FOR THE MANUFACTURE OF ELASTIC ARTICLES FROM POLY(MONOVINYLAROMATIC/CONJUGATED DIENE) BLOCK COPOLYMERS AND ELASTIC ARTICLES OBTAINABLE THEREWITH

John I. R. Rosenqvist; Teunis Graafland, and Hans F. Vermeire, all of Louvain-la-Neuve, Belgium, assignors to Shell Oil Company, Houston, Tex.

Filed Jun. 20, 1994, Ser. No. 262,191

Claims priority, application European Pat. Off., Jun. 21, 1993, 93201789

Int. Cl.⁶ D01F 6/00

U.S. Cl. 264—184

11 Claims

1. A process for the manufacturing of elastic articles, comprising the steps of:

- preparing a solution or a gel of an apolar organic non-aromatic solvent selected from non-substituted cycloalkanes or cycloalkenes having 5 to 20 carbon atoms or mixtures thereof

and a substantially pure selectively hydrogenated block copolymer, the block copolymer comprising at least two blocks predominantly derived from monoalkylene aromatic monomer selected from styrene, aliphaticstyrene, tert.-butylstyrene, 4-propylstyrene, paramethylstyrene, other ring alkylated styrenes, 1-vinylnaphthalene, 2-vinylnaphthalene or mixtures thereof, at least one block predominantly derived from one or more conjugated dienes selected from 1,3-butadiene, 2-methyl-1,3-butadiene(isoprene), 2,3-dimethyl-1,3-butadiene, 1,3-pentadiene, 1,3-hexadiene, or mixtures thereof, and a total number average molecular weight of at least 70,000; and

processing the solution or gel through a fiber forming orifice.

5,510,073

PLANETARY GEAR FOR A MULTIPLE-SCREW EXTRUDER

Werner Kaegi, Felsberg; Gerhard Schmidt, Domat/Ems, and Joachim Ensinger, Tamins, all of, Switzerland, assignors to Ems-Inventa AG, Zuerich, Switzerland

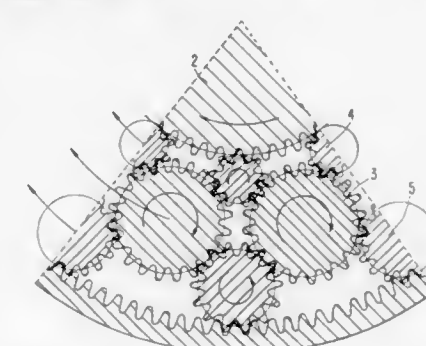
Filed Apr. 13, 1994, Ser. No. 227,106

Claims priority, application Germany, Apr. 15, 1993, 43 12 249.3

Int. Cl.⁶ B01F 7/26; F16H 37/06

U.S. Cl. 264—211.23

31 Claims



1. A multiple-screw extruder comprising:

- a housing having an exterior surface and a circular interior surface the housing having teeth on the interior surface and an interior processing chamber; and
- a planetary gear having a sun wheel formed on at least one toothed portion of a spindle, a plurality of main planet wheels arranged in a circle around the sun wheel, each main planet wheel being formed on at least one end of a screw and being spaced from each other main planet wheel, from the sun wheel and from the teeth on the interior surface of the housing, a plurality of internal intermediate planet wheels arranged between the sun wheel and the main planet wheels and engaging both the sun wheel and the main planet wheels, and a plurality of external intermediate planet wheels arranged between the main planet wheels and the teeth on the interior surface of the housing and engaging both the main planet wheels and the teeth on the interior surface of the housing.

5,510,074

METHOD FOR MANUFACTURING SMART CARDS

Rene Rose, Voisin-le-Bretonneux, France, assignor to Schlumberger Industries, Montrouge, France

Filed Feb. 23, 1994, Ser. No. 200,632

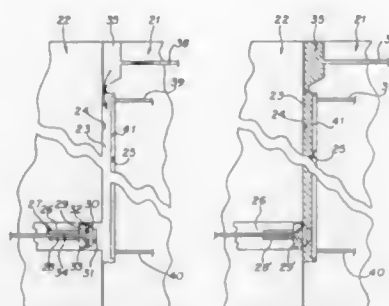
Claims priority, application France, Feb. 23, 1993, 93 02059

Int. Cl.⁶ B29C 45/14; 45/16

U.S. Cl. 264—261

10 Claims

1. Method of manufacturing a smart card having a thermoplastic material card body with substantially parallel major sides; a support member with a graphic on at least one side; and an electronic



module comprising a contact array to one side of which is fixed a chip including an integrated circuit, comprising the steps of:

placing said support member in a mold comprising a hollow space defining volume and shape of said card and delimited by first and second main walls corresponding to the major sides of said card;

holding said support member against said first main wall of said mold;

injecting a thermoplastic material into the volume defined by said hollow space to fill that portion of said volume not occupied by said support member; and
then inserting said electronic module at an appropriate position in said thermoplastic material before said injected material has solidified completely.

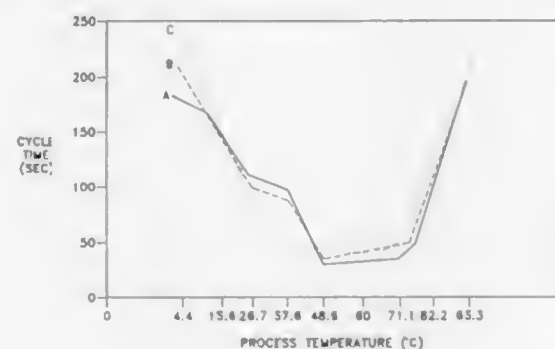
5,510,075 MOLD PROCESS FOR SYNDIOTACTIC POLYPROPYLENE

Shel McGulre, Omaha, Nebr., and Joel L. Williams, Cary, N.C., assignors to Becton, Dickinson and Company, Franklin Lakes, N.Y.

Filed Nov. 4, 1993, Ser. No. 145,560
Int. Cl.⁶ B29C 45/73

U.S. Cl. 264—328.16

5 Claims



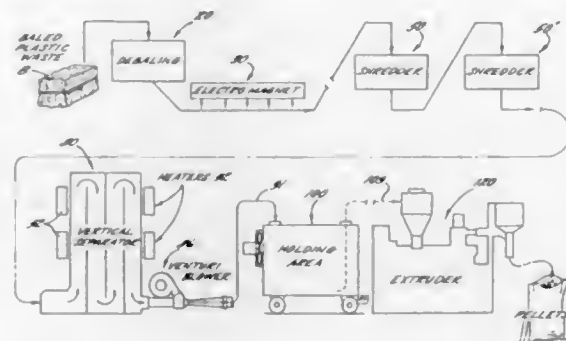
1. A process for molding syndiotactic polypropylene comprising:
a) injecting a melt of syndiotactic polypropylene into a mold maintained at a temperature sufficient to keep said melt in the mold at a process temperature of 49° to 77° C.;
b) holding said melt at said process temperature until it crystallizes into an article having the shape of said mold; and
c) ejecting said article from said mold wherein process steps (a) and (b) are complete in a cycle time of 50 sec. or less and said article has a haze value of 31% or less.

5,510,076 METHOD AND APPARATUS OF RECYCLING PREVIOUSLY USED AGRICULTURAL PLASTIC FILM MULCH

Thomas W. Brooks, P.O. Box 999, Captiva, Fla. 33924
Filed Dec. 2, 1994, Ser. No. 349,083
Int. Cl.⁶ B29B 11/10

U.S. Cl. 264—437

18 Claims



1. A method of recycling previously used, agricultural plastic film mulch comprising the steps of:

feeding the plastic film mulch in loose form along a predetermined path of travel while removing dirt, debris and other contaminants therefrom without the use of any water;
shredding the plastic film mulch into discrete pieces while removing additional dirt, debris and other contaminants therefrom;
feeding the shredded plastic mulch along a second path of travel while drying the shredded plastic mulch and removing still further dirt, debris and other contaminants therefrom to provide a cleaned and shredded plastic mulch; and
extruding the cleaned and shredded plastic mulch into a reusable form.

11. Apparatus for recycling previously used agricultural plastic film mulch comprising:

conveyor means for conveying the plastic film mulch along a predetermined path of travel in a loose form;
agitator means operatively associated with said conveyor means for shaking or agitating the plastic film mulch on said first conveyor means to dislodge dirt, debris and other contaminants from the plastic film mulch;
shredder means for receiving the plastic film mulch from said conveyor means and for shredding the plastic film mulch into discrete pieces of predetermined size while removing an additional amount of dirt, debris and other contaminants from the plastic mulch; and
extruder means for receiving the shredded plastic mulch and for extruding the plastic in a reusable form.

5,510,077 METHOD OF MAKING AN INTRALUMINAL STENT

Thomas Q. Dinh, 5319 Baker Rd., Minnetonka; Ronald J. Tuch, 12330 51st Ave. N., Plymouth, and Michael Dror, 6227 Westridge Blvd., Edina, all of Minn.

Continuation-in-part of Ser. No. 79,222, Jun. 17, 1993, which is a continuation of Ser. No. 854,118, Mar. 19, 1992, abandoned. This application Sep. 15, 1994, Ser. No. 306,806

Int. Cl.⁶ B29C 35/08; 43/18

U.S. Cl. 264—485

22 Claims

1. A method for making an intraluminal stem comprising the steps of:

(a) polymerizing fibrinogen into a fibrin stent preform in a first mold cavity;
(b) placing the fibrin stent preform into a second mold cavity having a molding surface; and
(c) compressing the fibrin stent preform against the molding surface of the second mold cavity to form the intraluminal stent.

5,510,078 METHOD OF LINING PIPELINES AND PASSAGEWAYS

Edward P. Smith, and Graham F. Towers, both of Northants, United Kingdom, assignors to Insituform (Netherlands) B.V., Netherlands

PCT No. PCT/GB92/01508, § 371 Date Jul. 1, 1994, § 102(e) Date Jul. 1, 1994, PCT Pub. No. WO93/05333, PCT Pub. Date Mar. 18, 1993

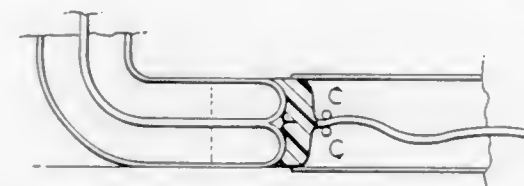
PCT Filed Aug. 14, 1992, Ser. No. 199,260

Claims priority, application United Kingdom, Sep. 6, 1991, 9119100

Int. Cl.⁶ B29C 63/36

U.S. Cl. 264—516

8 Claims



1. A method of lining an existing passageway or conduit with a flexible resin impregnated liner, comprising:

installing a preliner tube of a flexible material in the conduit to be lined;
maintaining the preliner tube in a collapsed condition in the conduit;
installing a constraining means disposed about the exterior of the preliner tube to maintain the preliner tube in the collapsed condition;
everting a flexible lining tube including a layer of resin absorbent material impregnated with a curable synthetic resin and an outer impermeable film into the preliner tube;
placing a quantity of resin in the preliner tube in the region between the everting face of the lining tube and constraining means;
continuing to evert the lining tube into the preliner tube whereby the quantity of resin within the preliner tube at the face of the everting lining tube maintains the face of the everting lining tube fully wetted with resin and displaces the constraining means along the preliner tube as the lining tube is everted; and
curing the everted lining tube in the conduit.

5,510,079 METHOD OF BLOW-MOLDING BIAXIALLY ORIENTED POLYETHYLENE TEREPHTHALATE RESIN BOTTLE- SHAPED CONTAINER

Horoaki Sugiura, Koto; Fuminori Tanaka, Matsudo, and Daisuke Uesugi, Koto, all of Japan, assignors to Yoshino Kogyosho Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 327,894, Oct. 24, 1994, Pat. No. 5,445,784, which is a continuation of Ser. No. 49,512, Dec. 28, 1992, abandoned, which is a continuation of Ser. No. 845,802, Mar. 9, 1992, abandoned, which is a continuation of Ser. No. 684,506, Apr. 15, 1991, abandoned, which is a continuation of Ser. No. 311,373, Feb. 16, 1989, abandoned, which is a continuation of Ser. No. 897,035, Aug. 15, 1986, abandoned, which is a continuation-in-part of Ser. No. 701,352, Feb. 13, 1985, abandoned. This application Jun. 7, 1995, Ser. No. 472,922

Claims priority, application Japan, Feb. 15, 1994, 59-26802
Int. Cl.⁶ B29C 49/18; 49/64

U.S. Cl. 264—521

35 Claims

1. A method for blow-molding a biaxially oriented polyethylene terephthalate resin bottle-shaped container having high heat resistance, comprising the steps of:
providing a preform with a neck and a body;
heating the preform to an orienting temperature;
first biaxial-orientation blow-molding the preform in a first mold which is at a first temperature to biaxially stretch the preform



to form a primary intermediate molded bottle-shaped piece that is larger than the bottle-shaped container, the biaxial stretching creating residual stress in the primary intermediate molded bottle-shaped piece;

causing thermal contraction of the primary intermediate molded bottle-shaped piece by heating said primary intermediate molded bottle-shaped piece to a temperature higher than the first temperature to form a secondary intermediate molded bottle-shaped piece and to eliminate residual stress caused by the first blow-molding; and

second blow-molding the secondary intermediate molded bottle-shaped piece in a second mold to form the bottle-shaped container, wherein orientation magnification of the secondary intermediate molded bottle-shaped piece is small compared to orientation magnification of the primary intermediate molded bottle-shaped piece.

5,510,080 OXIDE DISPERSION-STRENGTHENED ALLOY AND HIGH TEMPERATURE EQUIPMENT COMPOSED OF THE ALLOY

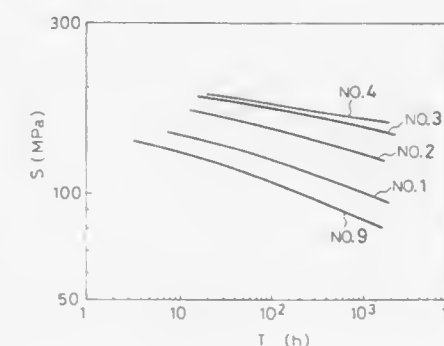
Kazuya Nishi, Kishio Hidaka, Tetsuo Kashimura, all of Hitachi; Shigeyoshi Nakamura, Katsuta; Yutaka Fukui, and Shinichi Nakahara, both of Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 22, 1994, Ser. No. 310,410

Claims priority, application Japan, Sep. 27, 1993, 5-262941
Int. Cl.⁶ C22C 19/05

U.S. Cl. 420—451

6 Claims



1. An oxide dispersion-strengthened alloy, composed of an oxide containing one or more kinds of elements in an amount of 2 wt % or less selected from the group composed of titanium, zirconium and hafnium, chromium in an amount of 15–35 wt %, carbon in an amount of 0.01–0.4 wt % and yttrium in an amount of 0.1–2.0 wt %, and the balance of substantially nickel, wherein an oxide containing yttrium is dispersed as particles in the matrix of the nickel alloy containing one or more kinds of the elements selected from the group composed of titanium, zirconium and hafnium, chromium and carbon.

5,510,081

TEST SAMPLING APPARATUS

John Edwards, Jindalee, Australia, and David Nuske, Denmead, United Kingdom, assignors to Queensland University of Technology, Brisbane, Australia

Continuation of Ser. No. 976,209, Nov. 13, 1992, abandoned.

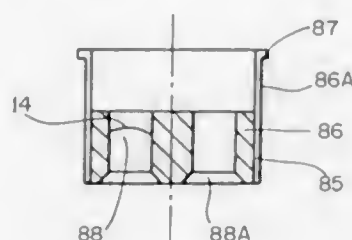
This application Sep. 30, 1994, Ser. No. 315,845

Claims priority, application Australia, Nov. 13, 1991, PK9497

Int. Cl.⁶ G01N 35/10

U.S. Cl. 422—63

15 Claims



1. A test sampling apparatus, comprising:
cutting means adapted for cutting a test sample from a piece of card;
a cut test sample produced by said cutting means;
receiving means for resiliently holding said cut test sample;
transportation means for delivering said cut test sample being held by said receiving means from said cutting means to a remote test container; and,
discharge means adapted for discharging said test sample from said receiving means into said test container.

5,510,082

CHEMICAL ANALYSIS FILM SUPPLIER

Kenji Aral, Kanagawa; Masaaki Terashima, Saltama, and Yoshiyuki Doi, Kanagawa, all of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

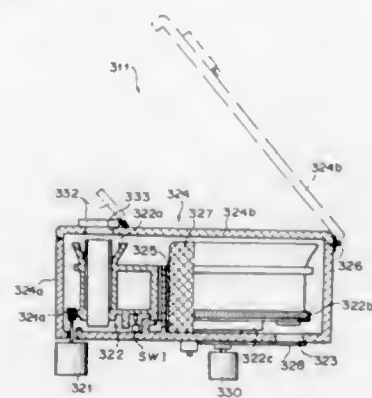
Filed Oct. 18, 1994, Ser. No. 324,987

Claims priority, application Japan, Oct. 25, 1993, 5-266182; Apr. 15, 1994, 6-077334

Int. Cl.⁶ G01N 37/00

U.S. Cl. 422—64

6 Claims



1. A chemical analysis film supplier for a biochemical analysis apparatus, comprising:
a film holding member which holds a plurality of dry chemical analysis films in a plurality of film holding portions formed therein;
a container which stores the film holding member therein so that the chemical analysis films can be taken out from each film holding portion, the film holding member is able to be removed from the container and to be returned to the container while carrying thereon the chemical analysis films held in the film holding portions;

absent time calculating means which calculates an absent time from the time the film holding member is taken out from the container to the time the film holding member is returned to the container;

judging means which compares the absent time with a preset reference time and judges whether the chemical analysis films held in the film holding member are still usable on the basis of the result of the comparison; and
output means which outputs the result of the judgment by the judging means.

5,510,083

PIPETTING AID

Helmut Sack; Michael Breskamp, both of Berlin, and Karl-Heinrich Ehinger, Burladingen, all of Germany, assignors to Deutsch & Neumann GmbH, Berlin, Germany

PCT No. PCT/DE93/00361, § 371 Date Nov. 21, 1994, § 102(e) Date Nov. 21, 1994, PCT Pub. No. WO93/22057, PCT Pub. Date Nov. 11, 1993

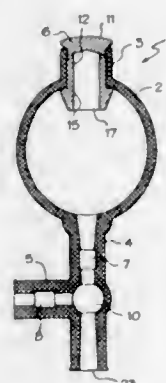
PCT Filed Apr. 22, 1993, Ser. No. 302,661

Claims priority, application Germany, Apr. 24, 1992, 42 14 634.8; Jun. 26, 1992, 42 21 263.4

Int. Cl.⁶ G01N 1/14; B01L 3/00; 3/02

U.S. Cl. 422—100

11 Claims



1. A pipetting aid for exerting suction on liquids, said pipetting aid comprising:
(a) a hollow elastic body (1),
(b) a hollow elastic generally ball-shaped portion (2) formed as part of said hollow body (1), the interior of said ball-shaped portion (2) communicating with the interior of said body (1),
(c) a first hollow tubular portion (3) connected to said ball-shaped portion (2), the interior of said first tubular portion (3) communicating with the interior of said ball-shaped portion (2),
(d) a second hollow tubular portion (4) connected to said ball-shaped portion (2), the interior of said second tubular portion (4) communicating with the interior of said ball-shaped portion (2),
(e) a third hollow tubular portion (5) connected at an angle to said second tubular portion (4), the interior of said third tubular portion (5) communicating with the interior of said second tubular portion (4),
(f) first check valve means (6) positioned in said first tubular portion (3) and adapted to permit the passage of air from inside said ball-shaped portion (2) to the atmosphere upon compression of said ball-shaped portion (2) and not in the reverse direction,
(g) second check valve means (7) positioned in said second tubular portion (4),
(h) third check valve means (8) positioned in said third tubular portion (5),
(i) said second check valve means (7) and said third check valve means (8) being arranged within said second and third tubular portions (4) and (5) respectively so as to prevent the passage of air from inside said ball-shaped portion (2) to the atmosphere upon compression of said ball-shaped portion (2).

- (j) said first check valve means being in the form of a hollow cylinder (12),
(k) closure means (11) extending across and closing that end of said hollow cylinder (12) remote from said ball-shaped portion (2),
(l) air passage means extending into the external periphery of said hollow cylinder (12) to permit the passage of air between the external periphery of said hollow cylinder (12) and the internal periphery of said first tubular portion (3).

5,510,084

PROCESS FOR IMMOBILIZING A NUCLEIC ACID FRAGMENT BY PASSIVE ATTACHMENT TO A SOLID SUBSTRATE, THE SOLID SUBSTRATE THUS OBTAINED, AND ITS USE

Philippe Cros, Lyons; Patrice A. Allibert, Grezieu la Varenne; Bernard F. Mandrand, Villeurbanne, and Pascal T. Dalbon, Venissieux, all of France, assignors to Bio Merieux, Marcy l'Etoile, France

Continuation of Ser. No. 913,953, Jul. 17, 1992, abandoned.

This application Jul. 12, 1994, Ser. No. 273,776

Claims priority, application France, Jul. 17, 1991, 91 09057

Int. Cl.⁶ G01N 33/48; B01L 9/00

U.S. Cl. 422—104

20 Claims

1. A process for immobilization by non-covalent attachment to a solid support, of a nucleic acid fragment containing less than 100 nucleotides, comprising: forming a derivative from the covalent coupling of said fragment with a ligand having a molecular mass of less than 5000 and containing at least one amine group, and depositing said derivative on the support, said derivative not being capable of forming a covalent bond with said support under conditions of said depositing, with the proviso that when said ligand is a nucleotide or oligonucleotide it comprises at least one nucleotide modified so as to introduce said amine group.

5,510,085

FLUIDIZED BED REACTOR INCLUDING A STRIPPER-COOLER AND METHOD OF OPERATING SAME

Iqbal F. Abdullally, Randolph, N.J., assignor to Foster Wheeler Energy Corporation, Clinton, N.J.

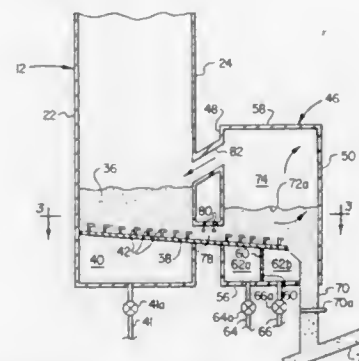
Continuation of Ser. No. 152,948, Nov. 15, 1993, abandoned.

This application Apr. 10, 1995, Ser. No. 422,663

Int. Cl.⁶ F27B 15/00

U.S. Cl. 422—142

5 Claims



1. A fluidized bed reactor comprising:
a furnace containing a bed of particulate material including fuel through which air is passed in a manner to fluidize the particulate material;
a vessel extending to the side of said furnace;
an enclosed duct extending from said furnace to said vessel for connecting said furnace to said vessel;
a plurality of nozzles extending through the side walls of said duct into the interior of said duct and directed in a substantially horizontal direction towards said vessel for introducing

air into said duct in a direction towards said vessel to transfer a quantity of said material from said furnace to said vessel;
means for passing air in said vessel to fluidize said material in said vessel and to entrain some of said material in said vessel; and
means for connecting said vessel to said furnace for permitting the flow of said entrained material in said vessel back to said furnace.

5,510,086

ADCAT EXHAUST TREATMENT DEVICE

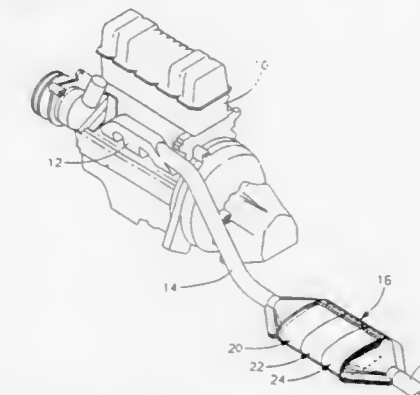
Mark D. Hemingway, Burton, and George A. English, Davison, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Apr. 10, 1995, Ser. No. 419,562

Int. Cl.⁶ B01D 50/00; F01N 3/10

U.S. Cl. 422—171

6 Claims



1. A catalytic converter system for controlling vehicle exhaust emissions comprising:
a catalyst package comprising a substrate;
said substrate having first, second and third catalytic zones positioned respectively within the direction of exhaust flow traveling through the catalyst system; said zones being defined within said substrate by different coatings on said substrate, said first zone having a light-off catalyst coating said second zone having an adsorber/catalyst coating for adsorption of hydrocarbon, said third zone having a catalyst coating for converting CO and NO_x constituents in the exhaust flow, and said second zone being immediately adjacent to said first and third zones.

5,510,087

TWO STAGE DOWNFLOW FLUE GAS TREATMENT CONDENSING HEAT EXCHANGER

Dennis W. Johnson, Barberton, and Karl H. Schulze, North Canton, both of Ohio, assignors to The Babcock & Wilcox Company, New Orleans, La.

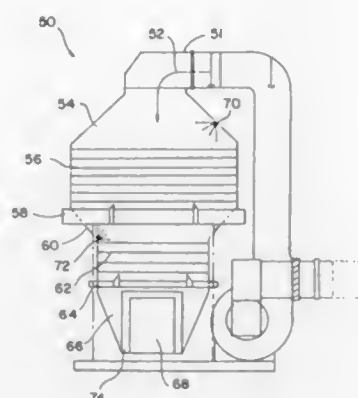
Filed Jul. 5, 1994, Ser. No. 270,968

Int. Cl.⁶ F01N 3/10

U.S. Cl. 422—173

6 Claims

1. A two stage downflow flue gas treatment system for treating a flue gas, comprising:
a housing having an inlet in an upper end and an outlet in a lower end, the flue gas entering the inlet and traveling downwardly through the housing and exiting through the outlet, the housing having a first portion which is larger than a second portion, the first portion being adjacent the upper end of the housing and the second portion being adjacent the lower end of the housing;
first tubular heat exchanger means positioned in the first portion of the housing for cooling the flue gas, the first tubular heat exchanger means including corrosion resistant tubes positioned horizontally in the housing;



second tubular heat exchanger means positioned in the housing beneath the first tubular heat exchanger means for further cooling the flue gas, the first and second tubular heat exchanger means being mounted vertically in series in the housing, the second tubular heat exchanger means including corrosion resistant tubes positioned horizontally in the housing, the second tubular heat exchanger means being smaller than the first tubular heat exchanger means;

alkali reagent spray means positioned above the second tubular heat exchanger means for cleaning pollutants from the flue gas;

spray wash means located above the first tubular heat exchanger means for washing the first and second tubular heat exchanger means; and

collection means in the lower end of the housing below the second tubular heat exchanger means for collecting liquids and particulate.

5,510,088

LOW TEMPERATURE PLASMA FILM DEPOSITION USING DIELECTRIC CHAMBER AS SOURCE MATERIAL

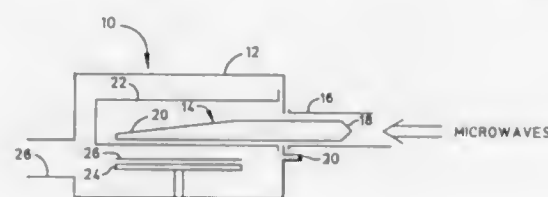
Monti E. Aklufi, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 11, 1992, Ser. No. 897,173

Int. Cl.⁶ C23C 14/34; 16/22

U.S. Cl. 422—186.05

53 Claims



1. A method using plasma to form a thin film within a reaction vessel, said method including the steps of:

generating a plasma within said reaction vessel, said reaction vessel containing an inner chamber of a material desired to be made a part of said thin film; and

introducing a reactive gas into said reaction vessel, said reactive gas reacting with said inner chamber so that said thin film results at least in part from said reaction.

5,510,089 METHOD FOR OPERATING A DISTILLATION COLUMN REACTOR

Edward M. Jones, Friendswood, Tex., assignor to Chemical Research & Licensing Company, Pasadena, Tex.

Division of Ser. No. 733,654, Jul. 22, 1991, Pat. No. 5,198,196.

This application Oct. 29, 1992, Ser. No. 968,393

The portion of the term of this patent subsequent to Mar. 30, 2010, has been disclaimed.

Int. Cl.⁶ B01J 8/08

U.S. Cl. 422—189

1 Claim

1. A method for carrying out heterogeneous catalytic reactions comprising the steps of:

- supporting a solid particulate catalyst on trays in a distillation column reactor;
- feeding a stream containing at least one reactant to said distillation column reactor;
- concurrently in said distillation column reactor:
 - contacting said stream with said catalyst to react at least a portion of said reactant to form a reaction mixture containing reactant and products, and
 - separating reactant from products by fractional distillation while maintaining a liquid level over said catalyst;
- replacing said solid particulate catalyst on any of said trays by:
 - withdrawing liquid from any of said trays through a conduit, said liquid containing solid particulate catalyst to a separator to separate the solid particulate catalyst from the liquid as by settling to define a clear liquid and recirculating the clear liquid to the tray until all of the solid particulate catalyst has been removed from the tray, and
 - withdrawing clear liquid from any of the trays in which catalysts had been separated and slurring replacement catalyst in said withdrawn clear liquid and recirculating the slurried catalyst and liquid to the tray until all the catalyst has been replaced on the tray.

5,510,090

PROCESS FOR THE SELECTIVE EXTRACTION (III) ACTINIDES BY MEANS OF AMIDES HAVING A NITROGENOUS HETEROCYCLIC SUBSTITUENT

Christine Cuillerdier, Paris, and Claude Musikas, Bures, both of, France, assignors to Commissariat A l'Energie Atomique, Paris, France

PCT No. PCT/FR92/01124, § 371 Date Jul. 27, 1993, § 102(e)

Date Jul. 27, 1993, PCT Pub. No. WO93/11113, PCT Pub.

Date Jun. 5, 1993

PCT Filed Dec. 2, 1992, Ser. No. 94,046

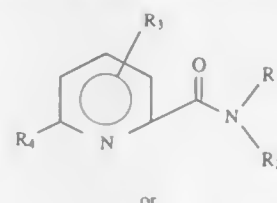
Claims priority, application France, Dec. 5, 1991, 91 15086

Int. Cl.⁶ C01G 56/00; 43/00; C01F 17/00

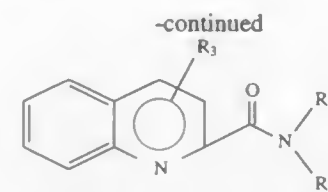
U.S. Cl. 423—9

16 Claims

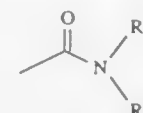
1. Process for the selective extraction of trivalent actinides present in aqueous solution, wherein said aqueous solution contains nitric acid at a concentration below about 0.5 mole/l and also contains lanthanides, said process comprising: contacting the aqueous solution with an organic solution containing an amide having a nitrogenous heterocyclic substituent of formula:



(1)



in which R₁, R₂, and R₃, which are the same or different, represent a hydrogen atom, or an alkyl or alkoxy group, and R₄ represents a hydrogen atom or a group of formula:



in which R₅ and R₆, which are the same or different, represent a hydrogen atom, or an alkyl or alkoxy group, to extract the actinides and form an organic phase containing the extracted actinides and an aqueous phase from which the actinides have been extracted; and separating the organic phase from the aqueous phase.

5,510,091

METHOD OF SEPARATING TRANSPLUTONIUM ELEMENTS FROM LANTHANIDES IN ACIDIC SOLUTIONS BY SOLVENT EXTRACTION

Jiri Rais, and Shoichi Tachimori, both of Ibaraki, Japan, assignors to Japan Atomic Energy Research Institute, Tokyo, Japan

Filed Oct. 5, 1994, Ser. No. 318,262

Claims priority, application Japan, Oct. 5, 1993, 5-249368

Int. Cl.⁶ B01D 11/00

U.S. Cl. 423—9

4 Claims

1. A method of separating transplutonium elements from lanthanides, which comprises the steps of adding an organic solvent containing an N-heterocyclic compound and a hydrophobic anion to an acidic aqueous solution containing both a lanthanide and a transplutonium element and then extracting the transplutonium element into the organic phase.

5,510,092

INTEGRATED CATALYTIC/NON-CATALYTIC PROCESS FOR SELECTIVE REDUCTION OF NITROGEN OXIDES

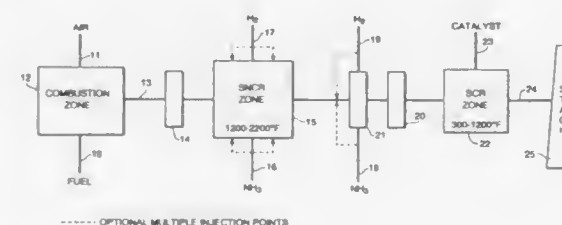
Mansour N. Mansour, Irvine, and Bruce C. Sudduth, Corona, both of Calif., assignors to Applied Utility Systems, Inc., Irvine, Calif.

Filed Nov. 1, 1994, Ser. No. 333,501

Int. Cl.⁶ C01B 21/00

U.S. Cl. 423—239.1

3 Claims



1. In a combined SCR-SNCR process for reducing the NO content of a gas stream effluent from a combustion system, said effluent containing combustion products, including NO, said process including

contacting said gas stream in an SNCR zone with NH₃ to reduce part of the NO in said stream, and

contacting the SNCR zone effluent in an SCR zone with NH₃ and a NO reduction catalysts to further reduce the NO content of said gas streams, the improvement comprising:

- injecting NH₃ into said gas stream downstream of said SNCR zone and upstream of said SCR zone to provide a mixed gas-ammonia stream, the quantity of NH₃ injected being just sufficient to effect the NO reduction in the SCR zone;
- providing sufficient catalyst in said SCR zone to reduce the NO content of the SCR zone effluent to a maximum value;
- passing said gas stream with an amount of NO that exceeds said maximum value to said SCR zone; and
- injecting NH₃ into said SNCR zone only when the NO content of the SCR zone effluent exceeds said maximum value.

5,510,093

COMBUSTIVE DESTRUCTION OF HALOGENATED COMPOUNDS

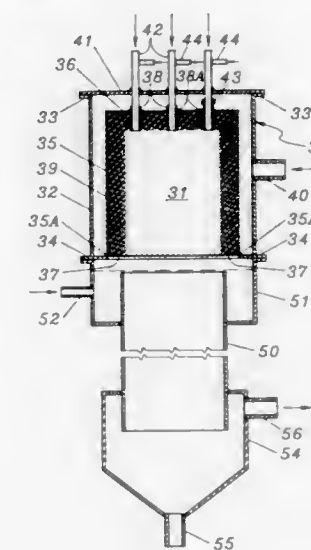
David Bartz, Santa Clara; Robert M. Kendall, Sunnyvale, and Frederick E. Moreno, Los Altos, all of Calif., assignors to Alzeta Corporation, Santa Clara, Calif.

Filed Jul. 25, 1994, Ser. No. 280,072

Int. Cl.⁶ F23D 14/12; F23G 7/06; B01D 53/64; 53/70

U.S. Cl. 423—240 R

11 Claims



1. A process for the combustive destruction of particulate-forming hydrides and/or halogenated compounds selected from the group consisting of halogenated hydrocarbons, fluorocarbon gases, nitrogen trifluoride and sulfur hexafluoride, in a combustion zone laterally surrounded by the exit surface of a foraminous gas burner, which comprises injecting a stream containing at least one of said halogenated compounds and/or particulate-forming hydrides and added fuel gas into the top of said combustion zone, simultaneously supplying fuel gas and air to said foraminous gas burner to effect combustion at said exit surface, the amount of said fuel gas simultaneously supplied to said foraminous gas burner being, on a BTU basis, greater than that of said added fuel gas, and the amount

of said air being in excess of the stoichiometric requirement of all combustibles entering said combustion zone, and discharging the resulting combustion product stream from the bottom of said combustion zone.

5,510,094

AMMONIA-LIMESTONE SCRUBBING WITH BY-PRODUCT FOR USE IN AGRICULTURE

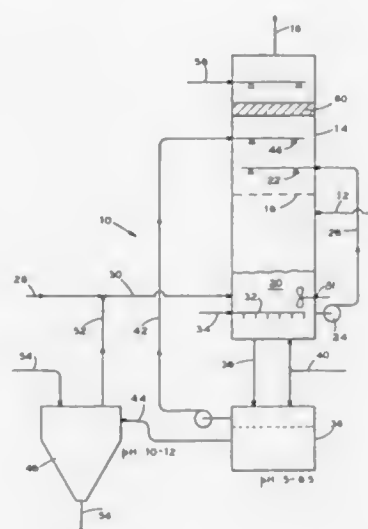
Pervaje A. Bhat, North Canton, and Dennis W. Johnson, Barberton, both of Ohio, assignors to The Babcock & Wilcox Company, New Orleans, La.

Continuation-in-part of Ser. No. 28,892, Mar. 8, 1993, abandoned. This application Jan. 11, 1995, Ser. No. 372,274

Int. Cl.⁶ C01B 17/20

U.S. Cl. 423—243.07

12 Claims



1. A method of wet flue gas desulfurization comprising the steps of:

- passing a sulfur containing flue gas through a scrubber tower having upper and lower zones separated by a perforated tray;
- injecting an ammonia based liquid reagent into said upper zone of said scrubber tower for desulfurization in said upper zone via said ammonia based liquid reagent;
- collecting a bottoms product in a lower region of said scrubber tower;
- forcibly oxidizing said bottoms product, thereby forming gypsum and ammonium sulfate compounds;
- supplying a calcium based reagent to said forcibly oxidized bottoms product;
- recycling said oxidized bottoms product from said lower region of said scrubber tower and spraying same onto the flue gas for desulfurization in said lower zone of said tower via said calcium based reagent;
- delivering a portion of said oxidized bottoms product to a primary dewatering assembly;
- generating a liquid stream in said primary dewatering assembly containing un-used or under-used said ammonia based reagent and said calcium based reagent and a separate solid/slurry stream containing gypsum and ammonium sulfate compounds;
- returning said liquid stream to said tower and spraying same onto the flue gas for desulfurization in both said upper and lower zones of said tower; and,
- concentrating said solid/slurry stream in a secondary dewatering assembly for the subsequent removal therefrom of said gypsum and ammonium sulfate compounds.

5,510,095

PRODUCTION OF HIGH-PURITY SILICON INGOT

Fukuo Aratani, Chiha, and Kyojiro Kaneko, Amagasaki, both of Japan, assignors to Kawasaki Steel Corporation, Kobe, Japan

Continuation of Ser. No. 760,695, Sep. 16, 1991, abandoned.

This application Oct. 19, 1993, Ser. No. 139,633

Claims priority, application Japan, Sep. 20, 1990, 2-248883

Int. Cl.⁶ C30B 15/12; 13/20

U.S. Cl. 423—348

2 Claims

- An improved process for producing directly and continuously a high-purity silicon ingot for solar cells, said process comprising: a first step for a preliminary purification of silicon, said first step comprising continuously melting and holding supplied raw material silicon in a first bottomless crucible placed in an induction coil and continuously discharging a first solidified silicon ingot downward from said bottomless crucible, with at least an axial part of said bottomless crucible being divided into a plurality of electrically conductive pieces spaced circumferentially in said crucible, and then guiding said solidified ingot from said first bottomless crucible to a second bottomless crucible with guide rolls, wherein said first step further includes blowing a plasma gas incorporated with from 2 to about 5 percent water vapor on the surface of the molten silicon for purification, and
- a second step of melting the first silicon ingot obtained in said first step in said second bottomless crucible, permitting the molten silicon to solidify in one direction, and discharging the solidified silicon continuously, wherein the bottomless crucible in the second step is arranged coaxially with the bottomless crucible in the first step and the ingot in the second step has a larger sectional area than that in the first step.

5,510,096

AMORPHOUS SODIUM SILICATE POWDER

Yoshiki Fukuyama, and Genji Taga, both of Shinnanyo, Japan, assignors to Tokuyama Corporation, Yamaguchi, Japan

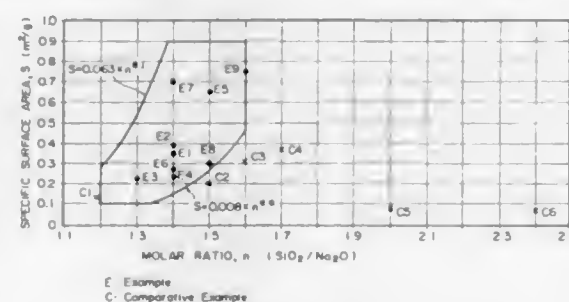
Filed Jul. 12, 1995, Ser. No. 501,363

Claims priority, application Japan, Jul. 14, 1994, 6-161867

Int. Cl.⁶ C01B 33/32

U.S. Cl. 423—332

10 Claims



1. Amorphous sodium silicate powder wherein, when the molar ratio of $\text{SiO}_2/\text{Na}_2\text{O}$ is expressed by n and the specific surface area thereof is expressed by $S(\text{m}^2/\text{g})$, the following expressions:

$$1.20 \leq n \leq 1.60$$

$$0.10 \leq S \leq 0.90$$

and

$$0.008 \times n^{0.6} \leq S \leq 0.063 \times n^{0.8}$$

are satisfied.

5,510,097

HYDROXYLAMMONIUM NITRATE FREE OF AMMONIUM NITRATE

David W. Cawfield; Ronald L. Dotson, both of Cleveland; Harry J. Loftis, Riceville; Sanders H. Moore; Robert T. Brooker, both of Cleveland, all of Tenn., and Jay S. Stirrat, Louisville, Ky., assignors to Olin Corporation, Cheshire, Conn.

Filed May 19, 1994, Ser. No. 245,928

Int. Cl.⁶ C01B 21/20

U.S. Cl. 423—387

14 Claims

1. A process for producing ammonium nitrate-free HAN comprising the steps of:

- stripping ammonia from an ammonia-containing, aqueous hydroxylamine solution having a hydroxylamine concentration of at least about 10% by weight based upon the weight of the hydroxylamine solution, by contacting the ammonia-containing hydroxylamine solution with a stripping agent selected from the group consisting of inert gases and steam to provide an ammonia-free, aqueous hydroxylamine solution, and
- reacting the ammonia-free, aqueous hydroxylamine solution with aqueous nitric acid having an acid concentration of between about 20% and about 70%, based upon the weight of the aqueous nitric acid, to produce an aqueous HAN product that is essentially free of ammonium nitrate.

5,510,098

CVD METHOD OF PRODUCING AND DOPING FULLERENES

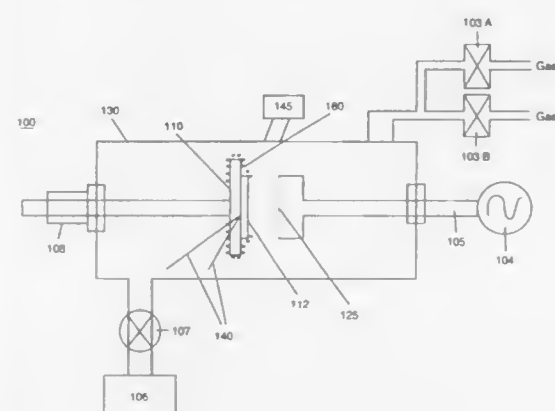
Lee Chow, Orlando, Fla., assignor to University of Central Florida, Orlando, Fla.

Filed Jan. 3, 1994, Ser. No. 176,543

Int. Cl.⁶ C01B 31/00

U.S. Cl. 423—445 B

15 Claims



1. A method of producing fullerenes using an electrically heated metal filament to deposit soot containing fullerenes on a substrate within a Chemical Vapor Deposition chamber, comprising the steps of:

- feeding and mixing, under fullerene growth conditions to increase the yield of fullerenes-containing soot, approximately 0.5 to 2% CH_4 gas with approximately 98 to 99.5% H_2 gas into a Chemical Vapor Deposition chamber containing a substrate and a metal filament;
- raising the temperature of the metal filament in the chamber to approximately 2200 degrees C.;
- maintaining the temperature of the substrate to be between approximately 900 to 950 degrees C.;
- collecting soot from the substrate in the chamber; and
- extracting fullerenes from the collected soot.

5,510,099

MUTAGENESIS TESTING USING TRANSGENIC NON-HUMAN ANIMALS CARRYING TEST DNA SEQUENCES

Jay M. Short, Encinitas, and Patricia L. Kretz, San Marcos, both of Calif., assignors to Stratagene, La Jolla, Calif.

Continuation of Ser. No. 837,031, Feb. 14, 1992, abandoned, which is a continuation-in-part of Ser. No. 505,676, Apr. 5, 1990, abandoned, which is a continuation-in-part of Ser. No. 45,037, May 1, 1987, abandoned. This application Sep. 23, 1993, Ser. No. 125,618

The portion of the term of this patent subsequent to Sep. 13, 2011, has been disclaimed.

Int. Cl.⁶ A61K 49/00; C12N 15/00

U.S. Cl. 424—9.2

13 Claims

1. A mutagenesis testing method comprising:

- exposing a transgenic mouse to a test agent, said transgenic mouse comprising somatic and germ cells containing a test DNA sequence recoverable from said cells via enzymatic excision sites, the expression of said sequence being capable of detection in bacteria by bioassay, wherein said bioassay selects for cells containing mutations in said test DNA sequence, wherein said test sequence is selected from the group consisting of LacZ, LacZα, LacI and LacI^Q;
- recovering a sample of said test DNA sequence from said exposed mouse, wherein said recovery is mediated through enzymatic excision of a type functional for lambda cos sites or lambda ZAP excision sites; and
- determining by bioassay in a polysogenic *E. coli* that is restriction system deficient the frequency of mutation of said test DNA sequence in said recovered sample.

5,510,100

OIL-IN-WATER EMULSIONS CONTAINING AN AUTO-EMULSIFIABLE COMPOSITION BASED ON A FATTY ALCOHOL AND ON AN ALKYL POLYOSIDE AND A CO-EMULSIFYING AGENT

Elisabeth Picard; Jacqueline Lambert, both of Paris, and Jacqueline Griat, Ablon, all of France, assignors to L'Oreal, Paris, France

Filed Jun. 10, 1994, Ser. No. 258,025

Claims priority, application France, Jun. 10, 1993, 93 07004

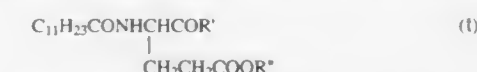
Int. Cl.⁶ A61K 7/42; 7/40

U.S. Cl. 424—59

7 Claims

1. A cosmetic or dermatological composition in the form of a stable oil-in-water emulsion, comprising

- from 5 to 40% by weight of an oily phase optionally containing, in an amount less than 15% by weight, at least one vegetable oil containing more than 40% by weight of linoleic acid triglycerides,
- from 0.5 to 5% by weight of an auto-emulsifiable composition containing from 60 to 90% by weight of at least one fatty alcohol having from 12 to 22 carbon atoms, from 10 to 40% by weight of an alkyl polyoside, the alkyl chain of which has from 12 to 22 carbon atoms,
- from 0.5 to 4% by weight of at least one co-emulsifying agent selected from the group consisting of a fatty alcohol having from 14 to 22 carbon atoms, a fatty acid having from 14 to 22 carbon atoms, an alkyl glyceryl ether, the alkyl chain of which has from 14 to 22 carbon atoms, a compound of formula:



wherein R^* and R^* , each independently, represent a cholesteryl, behenyl or 2-octyldecyl radical, and a mixture thereof, with the proviso that when a single co-emulsifying agent is present, said single co-emulsifying agent is present in an amount equal to or less than 2 weight percent, the remainder consisting essentially of an aqueous phase.

5,510,101

OPHTHALMIC PHARMACEUTICAL COMPOSITION
CONTAINING N-ACETYL-CYSTEINE AND
POLYVINYLCALCOHOL

Federico Stroppolo, Pregassona, Switzerland; Daniele Bonadeo, Varese, Italy; Francesco Tocchini, Bissone, Switzerland, and Annibale Gazzaniga, Rescaldina, Italy, assignors to Zambon Group S.p.A., Vicenza, Italy
Division of Ser. No. 5,397, Jan. 15, 1993, abandoned. This application Mar. 17, 1994, Ser. No. 214,232
Claims priority, application Italy, Jan. 16, 1992, MI92A0074
Int. Cl.⁶ A61K 31/74; 47/32

U.S. Cl. 424—78.04

7 Claims

1. A method for the treatment of keratoconjunctivitis sicca comprising administration to a person in need thereof of an ophthalmic pharmaceutical comprising 3–5% weight per volume N-acetyl-cysteine and 1–97% weight per volume polyvinylalcohol.

5,510,102

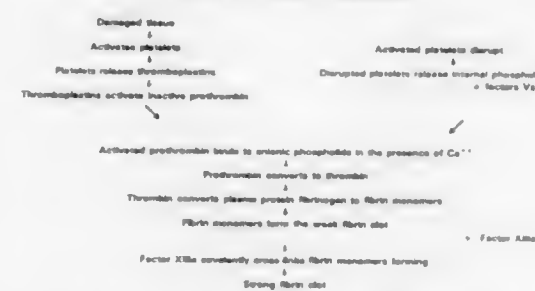
PLASMA AND POLYMER CONTAINING SURGICAL
HEMOSTATIC ADHESIVES

Kent C. Cochrum, Davis, Calif., assignor to The Regents of the University of California, Oakland, Calif.
Filed Jan. 23, 1995, Ser. No. 377,775
Int. Cl.⁶ A61K 38/36; A61L 25/00

U.S. Cl. 424—78.08

17 Claims

PHYSIOLOGICAL PROCESS OF COAGULATION



1. A hemostatic adhesive agent for triggering clotting process comprising of a platelet-rich plasma concentrate and a physiologically acceptable biocompatible polymer selected from the group consisting of alginates, poly-L-amino acids, chitosan and chitin wherein the platelet-rich plasma concentrate is 5 to 10 times concentrated normal plasma, said concentrate containing 5 to 10 times higher concentration of fibrinogen and other plasma proteins than the normal plasma; wherein a platelets to plasma concentrate ratio is from 1:2 to 2:1; and wherein a platelet-rich plasma concentrate to polymer ratio is from 99:1 to 80:20; wt/wt.

5,510,103

PHYSICAL TRAPPING TYPE POLYMERIC MICELLE
DRUG PREPARATION

Masayuki Yokoyama, Matsudo; Yasuhisa Sakurai, Tokyo; Teruo Okano, Ichikawa, and Kazunori Kataoka, Kashiwa, all of Japan, assignors to Research Development Corporation of Japan, Japan
Division of Ser. No. 105,535, Aug. 11, 1993, Pat. No. 5,449,513. This application Jun. 5, 1995, Ser. No. 465,499
Claims priority, application Japan, Aug. 14, 1992, 4-217044; Aug. 3, 1993, 5-192586

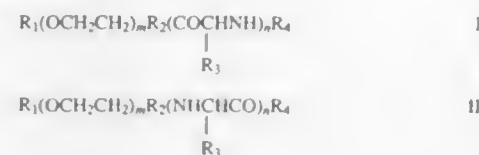
Int. Cl.⁶ A61K 31/74; 9/127

U.S. Cl. 424—78.08

5 Claims

1. A method for trapping hydrophobic drugs, which comprises heating, ultrasonication or organic solvent treatment of a hydrophobic drug and a drug carrier comprised of a block copolymer of formula I, or II to physically trap said hydrophobic drug in polymeric micelles composed of said drug carrier, wherein formula I

and II are represented:



wherein:

R₁ is selected from the group consisting of H and methyl;
R₂ is selected from the group consisting of NH, CO and R₆(CH₂)_qR₇ where
R₆ is selected from the group consisting of -OC(O)-, -OC(O)N(H)-, -N(H)C(O)-, -N(H)C(O)O-, -N(H)C(O)N(H)-, -C(O)N(H)- and -C(O)O-;
R₇ is NH or CO; and
q is 1–6;
R₃ is selected from the group consisting of H, -CH₃, -CH₂CO₂H, -CH₂CH₂CO₂H, -CH₂CO₂CH₂O-, -CH₂CH₂CO₂CH₂O-, -CH₂CH(CH₃)CH₃, -CH(CH₃)CH₂CH₃, -CH(CH₃)₂, -CH₂O-, -(CH₂)_pC₆H₅, -(CH₂)_pCOOR₅ and -CH₂C(O)N(H)R₅; where p is 1 or 2;
R₅ is selected from the group consisting of benzyl and C₁–C₂₀ alkyl group, said C₁–C₂₀ alkyl group being optionally substituted with a benzyl group; and
R₄ is selected from the group consisting of H, -OH, -C(O)-alkyl, -N(H)-alkyl and -O-alkyl, wherein said alkyl is a C₁–C₂₀ alkyl group;
m=4–2500; and
n=2–300.

5,510,104

METHOD FOR KILLING OR INHIBITING THE
GROWTH OF SPORULATING MICROORGANISMS
WITH HALOPEROXIDASE-CONTAINING
COMPOSITIONS

Robert C. Allen, San Antonio, Tex., assignor to ExOxEmis, Inc., Little Rock, Ark.

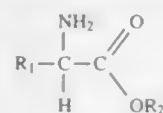
Division of Ser. No. 343,781, Nov. 22, 1994, Pat. No. 5,451,402, which is a division of Ser. No. 100,780, Aug. 2, 1993, Pat. No. 5,389,369, which is a continuation-in-part of Ser. No. 660,994, Feb. 21, 1991, abandoned. This application Jun. 1, 1995, Ser. No. 457,860

Int. Cl.⁶ A61K 38/44; C12N 9/02; 9/04; 9/08

U.S. Cl. 424—94.4

16 Claims

1. A method for killing or inhibiting the growth of sporulating microorganisms selected from the group consisting of bacteria, yeast or fungi, in a subject in need thereof, comprising: administering, in the presence of a halide selected from the group consisting of chloride or bromide, an antimicrobially effective amount of a composition comprising a haloperoxidase and at least one agent of the formula:



wherein R₁ is hydrogen, an unsubstituted, or hydroxy or amino substituted, straight or branched chain alkyl group having from 1 to 6 carbon atoms, and R₂ is hydrogen or a straight or branched chain alkyl group having from 1 to 6 carbon atoms; wherein said composition is administered by directly contacting said composition with the sporulating microorganism.

5,510,105

TREATMENT OF AUTOIMMUNE DISEASES WITH IL-2
RECEPTOR-SPECIFIC CYTOTOXINS

Terry B. Strom, 22 Kennard Rd., Brookline, Mass. 02146
Division of Ser. No. 842,463, Feb. 27, 1992, Pat. No. 5,336,489, which is a continuation of Ser. No. 692,830, Apr. 26, 1991, abandoned, which is a continuation of Ser. No. 492,616, Mar. 12, 1990, abandoned, which is a continuation of Ser. No. 772,893, Sep. 5, 1985, Pat. No. 5,011,684. This application Jul. 8, 1994, Ser. No. 275,010
Int. Cl.⁶ A61K 38/20; 39/395; 45/00

U.S. Cl. 424—182.1

11 Claims

1. A method of treating a mammal suffering from an autoimmune disease state-producing immune response characterized by a proliferative burst of IL-2 receptor-bearing lymphocytes, said method comprising administering to said mammal during said proliferative burst, a cytotoxin linked to an IL-2 receptor-specific substance whereby said IL-2 receptor-bearing lymphocytes are killed to the exclusion of non-IL-2 receptor-bearing cells.

5,510,106

METHODS AND COMPOSITIONS FOR VACCINATING
AGAINST FELINE IMMUNODEFICIENCY VIRUS

Janet K. Yamamoto, Gainesville, Fla., and Niels D. Pedersen, Winters, Calif., assignors to The Regents of the University of California, Oakland, Calif.
Continuation of Ser. No. 995,304, Dec. 21, 1992, which is a continuation of Ser. No. 726,061, Jul. 5, 1991, abandoned, and a continuation-in-part of Ser. No. 226,447, Apr. 12, 1994, abandoned, which is a continuation of Ser. No. 823,201, Feb. 6, 1992, abandoned, which is a continuation of Ser. No. 614,474, Nov. 16, 1990, Pat. No. 5,118,602, which is a division of Ser. No. 89,700, Aug. 26, 1987, abandoned. This application Nov. 7, 1994, Ser. No. 335,296

Int. Cl.⁶ A61K 39/00; 39/38; 39/21; C12N 7/00; 7/01

U.S. Cl. 424—207.1

3 Claims

1. A vaccine comprising an immunogen capable of eliciting an immune response protective against infection by feline immunodeficiency virus (FIV) when administered in an effective amount to a susceptible host, wherein the immunogen provides immunological protection against FIV.

5,510,107

PROCESS FOR THE MANUFACTURE OF A SOLID
COSMETIC COMPOSITION USING PLASTER OF PARIS
AND COSMETIC COMPOSITION THEREBY OBTAINED

Sophie Lecomte, and Gwenola Le Gars, both of Paris, France, assignors to L'Oreal, Paris, France
Filed May 11, 1994, Ser. No. 240,612
Claims priority, application France, May 13, 1993, 93 05774
Int. Cl.⁶ A61K 7/48

U.S. Cl. 424—401

27 Claims

1. A process for the manufacture of a solid cosmetic composition containing plaster of Paris, said process comprising
(a) preparing a pulverulent mixture of
(i) calcium sulphate hemihydrate in powder form,
(ii) a hydrophobic fraction comprising at least one fatty substance or at least one pulverulent substance treated by coating or chemical grafting so as to impart thereto hydrophobic properties, or a mixture thereof, and
(iii) a hydrophilic fraction, the weight proportion (iii)/(ii) being between 0.08 and 7.5.
(b) preparing an aqueous phase in liquid form;
(c) kneading said pulverulent mixture and said aqueous phase in a weight proportion of said pulverulent mixture/aqueous phase between 0.2 and 2 so as to obtain a pourable mixture;
(d) introducing said pourable mixture into a mold;
(e) hardening said mixture in said mold by hydration of said calcium sulphate hemihydrate to calcium sulphate dihydrate; and

(f) removing the product resulting from step (e) from said mold.

5,510,108

SANITIZER FOR SWIMMING POOLS, SPAS, AND HOT
TUBS

Richard J. Chouraqui, Paris, France, assignor to Olin Corporation, Cheshire, Conn.
Filed Feb. 1, 1995, Ser. No. 383,478
Int. Cl.⁶ A01N 25/34; A61K 9/26; C02F 1/76; 1/68

U.S. Cl. 424—408

13 Claims

1. A sanitizer composition comprising a bactericidal effective amount of the combination of (a) chlorinated isocyanuric acid and alkali metal salts thereof; (b) aluminum sulfate; and (c) copper sulfate; and wherein the percentage ranges by weight of each ingredient are as follows:

Chlorinated isocyanuric acid and alkali metal salts thereof	80–95%
Aluminum Sulfate	5–15%
Copper Sulfate	0.1–1.5%

5,510,109

ANTIBACTERIAL AND ANTIFUNGAL COMPOSITION

Toshikazu Tomioka, Ibaraki; Katsumi Tomita; Mariko Tomita, both of Hirakata, and Atsushi Nishino, Neyegawa, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

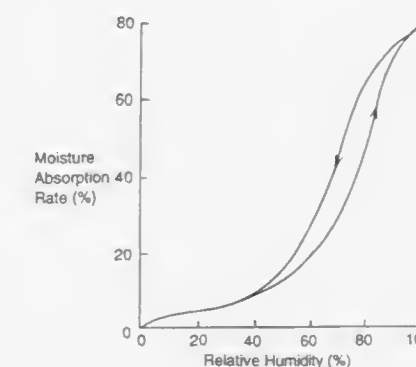
Continuation of Ser. No. 799,520, Nov. 27, 1991, abandoned. This application Apr. 22, 1993, Ser. No. 51,581

Claims priority, application Japan, Nov. 28, 1990, 2-332493; Dec. 27, 1990, 2-408126; May 7, 1991, 3-101289; Jul. 19, 1991, 3-179315; Oct. 4, 1991, 3-257487

Int. Cl.⁶ A01N 25/26; 59/20

U.S. Cl. 424—421

9 Claims



1. An antibacterial and antifungal composition comprising a bactericidally and fungicidally effective amount of an antibacterial and antifungal material which is carried on a silica gel particle, wherein said antibacterial and antifungal material is at least one metal thiosulfato complex which is obtained by adding at least one compound selected from the group consisting of sulfite and bisulfite to an aqueous solution of a metal salt so as to react, followed by the addition of thiosulfate, or by adding a metal salt to an aqueous solution of thiosulfate, wherein said metal thiosulfato complex is one selected from the group consisting of silver thiosulfato complex, copper thiosulfato complex and zinc thiosulfato complex, pI wherein said silica gel particle has an average particle size of 1–10 μm.

5,510,110

CHEMICAL MOLLUSC BARRIER

George S. Puritch, Saanichton; David S. Almond, and Robert M. Matson, both of Victoria, all of, Canada, assignors to W. Neudorff GmbH KG, Emmerthal, Germany
Continuation-in-part of Ser. No. 72,538, Jun. 4, 1993, abandoned. This application Aug. 16, 1993, Ser. No. 107,239
Int. Cl.⁶ A01N 25/34

U.S. Cl. 424—421

22 Claims

1. A chemical barrier composition for preventing terrestrial molluscs from crossing the barrier composition, consisting essentially of:

a solid substrate material having no ability by itself to chemically repel terrestrial molluscs; and

a coating applied to cover the surface of the substrate material, the coating consisting essentially of (a) an active ingredient, present at least about 10% by weight of the coating composition, effective to irritate and prevent terrestrial molluscs from crossing the barrier, the active ingredient being formed of the sodium, potassium, or ethanolamine salts of monocarboxylic fatty acids having from 8 to 14 carbon atoms, coconut fatty acid, palm kernel fatty acid, or mixtures thereof, and (b) a solvent selected from the group consisting of water, alcohols, diols, triols, and mixtures thereof,

the barrier composition having good weather resistance properties such that it does not rapidly dissolve and become ineffective upon exposure to moisture or rainfall.

5,510,111

THERAPEUTIC COMPOSITION REMEDYING THE DISORDERS APPEARING IN THE OTOLARYNGOLOGICAL SPHERE

Georges S. Grimberg, 123 rue de l'Université, 75007 Paris, France

Continuation of Ser. No. 182,222, Jan. 14, 1994, abandoned.

This application Mar. 6, 1995, Ser. No. 400,171

Claims priority, application France, Jan. 28, 1993, 93 00861

Int. Cl.⁶ A61K 9/00

U.S. Cl. 424—439

6 Claims

1. A method of treating a patient suffering from acute rhinitis, consisting of the administration to the patient of a therapeutic composition comprising from 40,000 to 60,000 IU of Vitamin A per dose, L. Cystine base, washed sublimed sulphur and dead yeast.

5,510,112

COMPOSITION FOR ENHANCING THE BIODEGRADATION OF BIODEGRADABLE ORGANIC WASTES

Shimon Gatt; Yechezkel Barenholz, and Herve Bercovier, all of Jerusalem, Israel, assignors to Yissum Research Development Company of the Hebrew University of Jerusalem, Jerusalem, Israel

Division of Ser. No. 653,319, Feb. 11, 1991, Pat. No. 5,401,413.

This application Sep. 22, 1994, Ser. No. 310,522

Int. Cl.⁶ A61K 9/127; 9/133; C02F 1/40; 3/00

U.S. Cl. 424—450

2 Claims

1. A composition for enhancing the biodegradation of biodegradable organic wastes comprising a combination of organic-waste consuming microorganisms which are capable of degrading hydrocarbons and liposomes, said liposomes having vesicles of a diameter of about 20–80 nm, wherein said liposomes supply essential nutrients for bacterial growth while concomitantly increasing the polarity and wettability of the waste, thereby increasing availability of the waste for enhanced bacterial interaction therewith.

5,510,113

COMPOSITION BASED ON HYDRATED LIPIDIC LAMELLAR PHASES OR ON LIPOSOMES CONTAINING AT LEAST ONE DERIVATIVE OF LABDANE, OR A PLANT EXTRACT CONTAINING IT; COSMETIC OR PHARMACEUTICAL, PARTICULARLY DERMATOLOGICAL COMPOSITION CONTAINING IT

Frederic Boute; Alain Meybeck, both of Courbevoie, and Christian Marechal, Paris, all of, France, assignors to LVMH Recherche, Nanterre, France

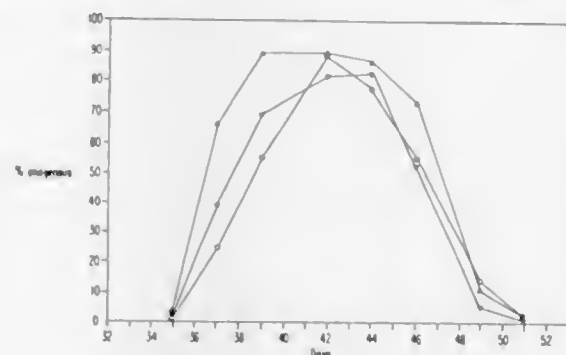
Division of Ser. No. 768,292, Dec. 12, 1991, Pat. No. 5,384,126. This application Oct. 14, 1994, Ser. No. 323,077

Claims priority, application France, Aug. 17, 1989, 89 10986

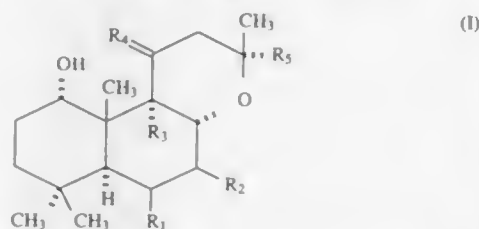
Int. Cl.⁶ A61K 9/127

U.S. Cl. 424—450

22 Claims

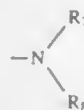


1. A method for promoting hair pigmentation, comprising applying on the desired hair area, a hair treating effective amount of at least one composition comprising hydrated lipidic lamellar phases or liposomes containing at least in part a component selected from a derivative of labdane of formula I herebelow:



in which:

R₁ and R₂ are identical or different and each represent a hydroxy group or an —O—CO—R₆ group in which R₆ represents an alkyl radical having from 1 to 7 atoms of carbon, an alkoxy radical having from 1 to 7 atoms of carbon, or an alkenyl radical having from 1 to 7 atoms of carbon, optionally substituted by one or more hydroxy or



groups in which R₇ and R₈ each represent an atom of hydrogen, an alkyl radical having from 1 to 4 atoms of carbon or R₇ and R₈ represent together with the atom of nitrogen, a heterocyclic radical such as piperidino, morpholino, N'-methylpiperazino;

R₃ represents an atom of hydrogen or a hydroxy group;

R₄ represents an atom of oxygen to the assembly



R₅ represents an ethyl or vinyl radical; optionally in a pharmaceutical or cosmetically acceptable excipient.

5,510,114

SLOW RELEASE PHARMACEUTICAL COMPOSITION CONTAINING A BILE ACID AS AN ACTIVE INGREDIENT

Fabio Borella, Milan; Alberto Brandt, Rome, and Fabio Carli, Trieste, all of, Italy, assignors to Instituto Biochimico Italiano Giovanni Lorenzini S.p.A., Milan, Italy

Filed May 2, 1994, Ser. No. 236,986

Claims priority, application Italy, May 18, 1993, MI93A1014

Int. Cl.⁶ A61K 9/22; 9/58; 9/62; 35/413

U.S. Cl. 424—452

8 Claims

1. Slow release pharmaceutical composition containing a bile acid as active ingredient and provided in the form of 0.5–2 mm diameter coated particles suitable to be manufactured in the form of capsules or tablets, wherein the core of said particles consists of 10 to 90% by weight of a bile acid, 1 to 15% by weight of a bioadhesive substance, 5 to 40% by weight of a high specific gravity substance selected from the group consisting of barium sulfate, powdered metallic iron, samarium oxide, erbium oxide, magnesium trisilicate, aluminum trisilicate and titanium dioxide, the balance to 100 being constituted by cellulose or polyvinylpyrrolidone, an aliquot of 40 to 60% by weight of said particles being enteric coated with gastroresistant substances and the remainder being coated with a non-enteric coating.

5,510,115

METHOD AND COMPOSITION FOR ADMINISTRATION OF BENEFICIAL AGENT BY CONTROLLED DISSOLUTION

Julian P. Breillatt, Jr., Mundelein; Lecon Woo; Deanna J. Nelson, both of Libertyville; Richard Appl, Downer's Grove; Naoml L. Weinless, Highland Park; Sharon Pokropinski, Berwyn; Paul Soltys, Palatine, and Sumner A. Barenberg, Chicago, all of Ill., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Continuation of Ser. No. 80,399, Jun. 21, 1993, abandoned,

which is a division of Ser. No. 345,334, May 1, 1989, abandoned,

which is a continuation-in-part of Ser. No. 120,892,

Nov. 16, 1987, abandoned, and a continuation-in-part of Ser. No. 121,316, Nov. 16, 1987, abandoned. This application Dec.

8, 1994, Ser. No. 351,971

Int. Cl.⁶ A61K 9/22

U.S. Cl. 424—473

16 Claims

1. A method for delivering a controlled amount of at least one beneficial agent to a flowing medical fluid, said method comprising:

providing a formed element including a shaped solid matrix having at least one beneficial agent dispersed therein, the matrix comprising a water soluble, anhydrous sugar material, the formed element having a configuration selected so that upon introducing the formed element into a flowing stream of a medical fluid, the formed element dissolves at a dissolution rate selected to release the at least one beneficial agent into the medical fluid at a desired delivery rate;

providing a flow cell including a chamber connectible to a medical fluid administration line through which a medical fluid flows;

positioning the formed element in the chamber; and connecting the flow cell in the medical fluid administration line so that as a flowing stream of a medical fluid passes through the flow cell, the at least one beneficial agent is released into the medical fluid at the desired delivery rate.

5,510,116

PRESSURIZED PRODUCT DELIVERY SYSTEMS

Michael Froix, Mountain View, Calif.; Larry Shipley, Lafayette, La.; Christine J. Y. Liao, La Palma, Calif.; Hien Nguyen, Los Oso, Calif., and Sok L. Khor, Palo Alto, Calif., assignors to Advanced Polymer Systems, Inc., Redwood City, Calif.

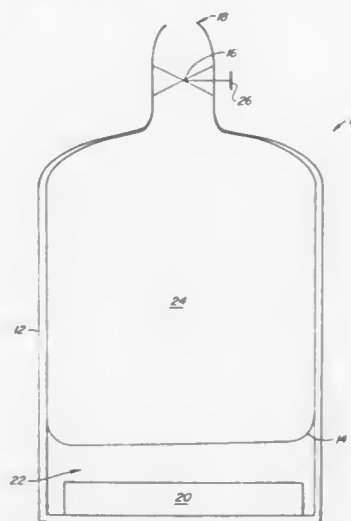
Division of Ser. No. 803,298, Dec. 4, 1991, Pat. No. 5,256,400.

This application Jul. 21, 1993, Ser. No. 95,611

Int. Cl.⁶ A61L 9/04

U.S. Cl. 424—486

6 Claims



1. A composition comprising aggregates of macroporous polymeric particles composed of cross-linked polyethylenically unsaturated monomers and monoethylenically unsaturated monomers, wherein said particles have an average size in the range from 1 μm to 500 μm and define a substantially non-collapsible pore network and said aggregates have an average size in the range from 5 mm to 25 mm and define interstitial spaces between said particles, and wherein the interstitial spaces are substantially larger than individual pores in the pore network.

5,510,117

ENTRAPMENT VEHICLE AND METHOD

Kenneth Abate, Amherst, N.H., assignor to Micro-Pak, Inc., Wilmington, Del.

Continuation of Ser. No. 964,418, Oct. 21, 1992, abandoned, which is a continuation-in-part of Ser. No. 759,239, Sep. 13, 1991, abandoned, which is a continuation of Ser. No. 490,356,

Mar. 8, 1990, Pat. No. 4,952,550, which is a continuation-in-part of Ser. No. 320,944, Mar. 9, 1989, Pat. No. 4,959,341.

This application Nov. 7, 1994, Ser. No. 335,207

Int. Cl.⁶ A61K 9/14; B01J 13/02

U.S. Cl. 424—489

14 Claims

1. A method of preparing a delivery vehicle having an active material entrapped therein, said delivery vehicle being suspended in a water immiscible carrier, said method consisting essentially of the steps of:

suspending a particulate support material in an aqueous solution containing the active material to be entrapped, said support material being selected from the group consisting of crosslinkable carboxylated celluloses, chitosan, guar gum, polymethacrylates, polyacrylates, and mixtures thereof; blending said support material suspension with a water-immiscible carrier to form a suspension of said support material in said water-immiscible carrier, said active material being insoluble in said water-immiscible carrier; adding a cross linking agent to said water-immiscible carrier, said cross-linking agent being insoluble in said aqueous solution but soluble in said water-immiscible carrier; and

allowing said cross-linking agent to cross-link said support material, said cross-linking occurring at the phase boundary, thereby forming said delivery vehicle;
whereby said delivery vehicle is in the form of a cross-linked support material having said aqueous solution containing the active material entrapped therein, said delivery vehicle being suspended in said water-immiscible carrier.

5,510,118

PROCESS FOR PREPARING THERAPEUTIC COMPOSITIONS CONTAINING NANOPARTICLES

H. William Bosch, Bryn Mawr; Donna M. Marcer, Collegeville; Ronald L. Mueller, Downingtown; Jon R. Swanson, Macungie, and Dinesh S. Mishra, Harleysville, all of Pa., assignors to NanoSystems LLC, Collegeville, Pa.

Filed Feb. 14, 1995, Ser. No. 388,092

Int. Cl.⁶ A61K 9/14

U.S. Cl. 424—489

20 Claims

1. A process for preparing particles consisting essentially of 99.9–10% by weight of a crystalline drug substance having a solubility in water of less than 10 mg/ml, said drug substance having a non-crosslinked surface modifier adsorbed on the surface thereof in an amount of (i). 1–90% by weight and sufficient to maintain an effective average particle size of less than about 400 nm, said process comprises the steps of:

- a) preparing a premix of said crystalline drug substance having a particle size of less than about 100 µm and said surface modifier by mixing them in a liquid dispersion medium being selected from the group consisting of water, aqueous salt solutions, safflower oil, ethanol, t-butanol, hexane and glycol;
- b) transferring said premix to a microfluidizer having an interaction chamber capable of producing shear, impact, cavitation and attrition forces;
- c) subjecting said premix to said forces at a temperature not exceeding 40° C. and a fluid pressure of from about 3,000 to about 30,000 psi by passing said premix through said interaction chamber to reduce the particle size of said drug substance and to obtain a homogeneous slurry thereof;
- d) collecting all the slurry from said interaction chamber into a receiving tank;
- e) reintroducing said slurry in said receiving tank into said interaction chamber to further subject said slurry to said forces and thereby to decrease the effective average particle size of said drug substance; and
- f) repeating said collection and reintroduction steps until said drug substance is reduced to an effective average particle size of less than about 400 nm.

5,510,119

CONTROLLED RELEASE THERAPEUTIC SYSTEM FOR LIQUID PHARMACEUTICAL FORMULATIONS

Glancarlo Santos, Milan, and Roberto Golzi, Cremona, both of Italy, assignors to Recordati S.A., Chemical and Pharmaceutical Company, Chiasso, Switzerland

Continuation of Ser. No. 191,013, Feb. 1, 1994, Pat. No. 5,405,619, which is a continuation of Ser. No. 928,616, Aug. 10, 1992, Pat. No. 5,296,236, which is a continuation of Ser. No. 711,588, Jun. 6, 1991, abandoned, which is a continuation of Ser. No. 408,755, Sep. 18, 1989, abandoned. This application Feb. 22, 1995, Ser. No. 394,660

Claims priority, application Italy, Sep. 16, 1988, 21961/88

Int. Cl.⁶ A61K 9/16

U.S. Cl. 424—490

3 Claims

1. A controlled release pharmaceutical dosage form comprising microgranules comprising a pharmaceutical and excipients and comprising a homogeneously smooth surface with at least three coatings deposited thereon, said coatings comprising:
a pH insensitive coating constituting a barrier operating as a diffusion membrane and allowing regulation of the release of said pharmaceutical;

a second coating applied on said pH-insensitive coating and comprising a member selected from the group consisting of a polymeric, hydrophilic coating and a hydrophobic coating;

a third coating applied on the second coating and comprising a member selected from the group consisting of a polymeric hydrophilic coating and a hydrophobic coating with the proviso that when said second coating comprises a polymeric hydrophilic coating said third coating comprises a hydrophobic coating and vice versa;

said microgranules with all the plural coatings thereon having dimensions which allow stable suspension of the plural coated microgranules in a liquid administration vehicle.

5,510,120

COSMETIC COMPOSITION FOR TOPICAL APPLICATION TO SKIN OR HAIR

Malcolm N. Jones, Cheshire; Michael Kaszuba, Merseyside, and Ian G. Lyle, Deeside, all of, United Kingdom, assignors to Unilever Patent Holdings B.V., Vlaardingen, Netherlands, and The Victoria University of Manchester, Manchester, England

Filed Apr. 15, 1993, Ser. No. 46,856

Claims priority, application United Kingdom, Apr. 15, 1992, 2908339

Int. Cl.⁶ A61K 7/48;7/06

U.S. Cl. 424—499

12 Claims

1. A cosmetic composition for topical application to skin and hair or skin or hair comprising: particles selected from the group consisting of microcapsules and liposomes, which include a cosmetically effective benefit agent, lectin bound to the exterior of said particles, which has specific binding affinity to an organic surface at a target location accessible on application of the composition to the skin and hair or skin or hair whereby said lectin is able to bind said particles to said organic surface; and, optionally a cosmetically acceptable vehicle.

5,510,121

GLYCOSAMINOGLYCAN-SYNTHETIC POLYMER CONJUGATES

Woonza M. Rhee, 3845 LaDonna Ave., Palo Alto, Calif. 94306, and Richard A. Berg, 660 S. Springer Rd., Los Altos, Calif. 94024

Division of Ser. No. 146,843, Nov. 3, 1993, which is a continuation-in-part of Ser. No. 907,518, Jul. 2, 1992, Pat. No. 5,324,775, which is a continuation-in-part of Ser. No. 433,441, Nov. 14, 1989, Pat. No. 5,162,430, which is a continuation-in-part of Ser. No. 274,071, Nov. 21, 1988, abandoned. This application May 4, 1995, Ser. No. 434,958

Int. Cl.⁶ A61K 35/12;35/14;35/24;35/37

U.S. Cl. 424—520

4 Claims

1. A composition comprising:
a conjugate comprising a glycosaminoglycan or a derivative thereof chemically conjugated to a hydrophilic synthetic polymer; and
a therapeutically effective amount of a cytokine or growth factor.

5,510,122

PREPARATION AND USE OF WHOLE SALIVA

Leo M. Srebnny, East Setauket; Steven S. Schwartz, Melville, and Allen G. Meek, Poquott, all of N.Y., assignors to The Research Foundation of State University of New York, Albany, N.Y.

Filed Sep. 28, 1994, Ser. No. 314,515

Int. Cl.⁶ A61K 7/28

U.S. Cl. 424—537

19 Claims

15. A method for treating a saliva-deficient individual comprising orally administering to the individual an amount effective to

alleviate xerostomia, of a composition comprising collected saliva which has been contacted with a disinfecting agent to inactivate microorganisms contained therein, said disinfecting agent comprising chlorhexidine or an ionizing radiation.

5,510,123

FOOD SWEETENER COMPOSITION AND PROCESS

Cheryl R. Mitchell, Stockton, Calif., and Morris A. Mann, Phoenix, Ariz., assignors to California Natural Products, Lathrop, Calif.

Filed Dec. 14, 1993, Ser. No. 167,515

Int. Cl.⁶ A23L 1/236

U.S. Cl. 426—3

20 Claims

1. A food sweetener composition, comprising:
a sweetener system including aspartame; and
a sugar acid in an amount sufficient to eradicate undesirable lingering aftertaste of the aspartame.

5,510,124

METHOD FOR PACKAGING SINGLE UNITS OF CHEWING GUM AND CHEWING GUM SO PACKAGED

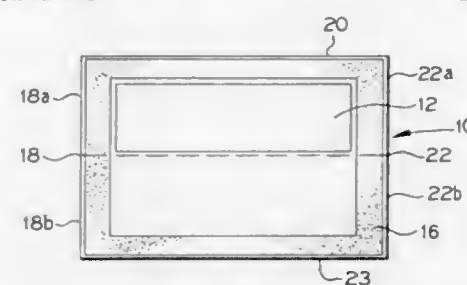
Stanley J. Kopecky, Prospect Heights; Daniela Zaluda, Chicago; Christafor E. Sundstrom, Glen Ellyn; Steven E. Zibell, Tinley Park, and William T. Boyd, Aurora, all of Ill., assignors to Wm. Wrigley Jr. Company, Chicago, Ill.

Filed Mar. 23, 1994, Ser. No. 216,811

Int. Cl.⁶ B65D 65/02

U.S. Cl. 426—5

24 Claims



1. An enclosed single piece of substantially sugar free chewing gum comprising:

a piece of chewing gum that is substantially sugar free; and
a wrapper having first and second portions surrounding the piece of chewing gum with at least the first portion of the wrapper being sealed to the second portion of the wrapper to create a sealed environment that houses the piece of chewing gum, the wrapper having a moisture vapor permeation rate of less than 0.10 g/100 in²/24 hr at 100° F., 90% RH as measured by ASTM method F1249-90, and providing sufficient barrier properties to allow the single piece to be stored without a counterband packaging.

5,510,125

PROCESS FOR SELECTIVE REMOVAL OF SUGAR FROM BEVERAGES

Walter Gresch, Niederweningen, Switzerland, assignor to Bucher-Guyer AG Maschinenfabrik, Niederweningen, Switzerland

Continuation of Ser. No. 291,848, Aug. 17, 1994, abandoned, which is a continuation of Ser. No. 460,330, Dec. 28, 1989, abandoned. This application Jan. 24, 1995, Ser. No. 378,253

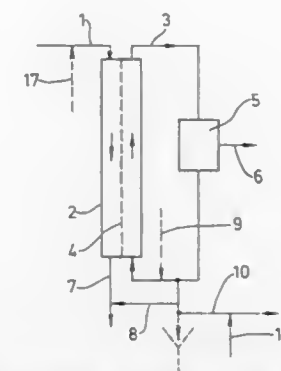
Claims priority, application Switzerland, May 4, 1988, 1672/88

Int. Cl.⁶ A23L 1/015

U.S. Cl. 426—11

22 Claims

1. Process for selective removal of non-volatile substances, consisting of one or more of the non-volatile substances selected



from the group consisting of sugar, acids and substances causing bad taste, from beverages or sugar-containing solutions, by membrane separation processes comprising the steps of subjecting the beverage or sugar-containing solution to a membrane separation process to separate a non-volatile substance therefrom to produce a permeate having the substance therein separated from the beverage and a retentate having a reduced quantity of said substance retained therein, subsequently removing at least a portion of the retained said substance from the retentate or the separated substance from the permeate, at least partially circulating the permeate from the membrane separation process in a permeate circuit, one of removing or converting the substance in the permeate circulating in the permeate circuit to achieve high selectivity of substance removal, and subsequently feeding back into the retentate at least a portion of the permeate with said separated substance removed therefrom.

5,510,126

TORTILLA

Johannes H. Van Eijk, King of Prussia, and Merna Legel, Exton, both of Pa., assignors to Gist-Brocades N.V., Netherlands

Filed Apr. 8, 1994, Ser. No. 225,262

Int. Cl.⁶ A21D 8/04

U.S. Cl. 426—19

12 Claims

1. An improver composition for wheat flour tortillas comprising a yeast composition obtained by subjecting yeast to at least one step selected from the group consisting of drying, heating and grinding, said yeast having a moisture content between 0 and 10%, a protein between 40 and 65% (N×6.25), an SH-content between 2 and 150 micromoles per g and a gassing power of between 0 and 100 ml CO₂ per hour and per g at 30° C. and other normal tortilla ingredients.

5,510,127

PROCESS FOR MAKING BREAD IN AN AUTOMATIC BREAD MAKER

John Wong, Hong Kong; Raymond Sze, Estoril Court, both of, Hong Kong; Thomas H. Tompkins, Shreveport, La., and Randall S. Ward, Hattiesburg, Miss., assignors to Raymond Industrial Ltd., Kowloon, Hong Kong, and Sunbeam Corporation, Ft. Lauderdale, Fla.

Filed Jan. 13, 1995, Ser. No. 372,111

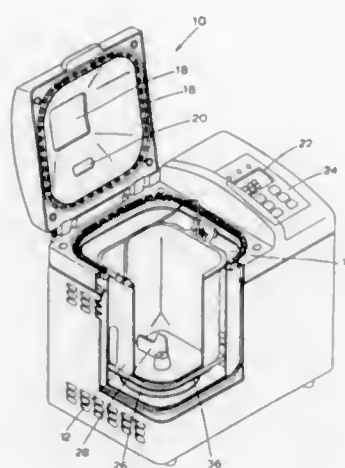
Int. Cl.⁶ A21D 6/00;8/00

U.S. Cl. 426—19

37 Claims

1. A method for making bread from bread ingredients in a bread maker having a motor driving a kneading blade, a heater and a fan, comprising the sequential steps of:

- (a) combining the bread ingredients into a dough;
- (b) actuating the motor with intermittent pulses for kneading the dough during a first knead cycle;
- (c) deactuating the motor for allowing the dough to rest;
- (d) actuating the motor with intermittent pulses for kneading the dough during a second knead cycle;
- (e) fermenting the dough during a first rise cycle;



- (f) degassing the dough;
 (g) fermenting the dough during a second rise cycle;
 (h) baking the bread at a predetermined first bake temperature during a first bake cycle extending for a variable period of time corresponding to a desired bread crust color;
 (i) baking the bread at a temperature lower than the first bake temperature during a second bake cycle;
 (j) gradually cooling the bread from the second bake cycle temperature.

5,510,128
PROCESS FOR PRODUCING EMULSIFIED FILTRATE OF HALF-HULLED RICE
 Yoshichi Takubo, Ehime, Japan, assignor to Takubo Kogyosho Co., Ltd., Imabari, Japan
 Filed Aug. 4, 1994, Ser. No. 285,948
 Claims priority, application Japan, Aug. 27, 1993, 5-248449
 Int. Cl.⁶ A23L 1/10

U.S. Cl. 426—28 4 Claims
 1. A process for producing an emulsified filtrate of half-hulled rice, comprising the steps of:
 mixing 2,300 g of hot water with 600 g of malted rice;
 keeping the mixture at 50° to 60° C. for several hours to saccharify malted rice;
 then boiling the mixture for sterilization;
 filtering the mixture;
 mixing the resulting filtrate with 160 g of boiled half-hulled rice;
 then agitating the mixture;
 filtering the mixture; and
 removing any residue from the mixture, thereby obtaining emulsified filtrate.

5,510,129
POTASSIUM BROMATE REPLACER COMPOSITION
 Yoon J. Kim, Park Ridge, Ill., assignor to Research Resources, Inc., Park Ridge, Ill.
 Continuation-in-part of Ser. No. 147,995, Nov. 5, 1993. This application Sep. 19, 1994, Ser. No. 308,617
 Int. Cl.⁶ A21D 2/22; 2/08; 2/02

U.S. Cl. 426—62 3 Claims
 1. A potassium bromate replacer composition comprising an ascorbic acid composition in an effective amount to replace an oxidizing agent of potassium bromate, said ascorbic acid composition consisting essentially of comprising:
 (a) about 15 to 250 ppm ascorbic acid by weight of flour,
 (b) about 0.02 to 0.15 parts food acid per 100 parts flour, and
 (c) about 0.15 to 0.40 parts phosphate per 100 parts flour.

5,510,130
READY-TO-EAT CEREAL FLAKES AND PROCESS FOR MAKING SAME

William E. Holtz, Barrington; Margo P. Pidgeon, Bolingbrook, and Donn G. Vitek, Crystal Lake, all of Ill., assignors to The Quaker Oats Company, Chicago, Ill.
 Continuation-in-part of Ser. No. 838,654, Aug. 16, 1991, Pat. No. 5,372,826. This application Jun. 3, 1994, Ser. No. 253,452
 Int. Cl.⁶ A23L 1/164

U.S. Cl. 426—93 27 Claims
 1. A process for preparing ready-to-eat cereal flakes having edible matter embedded therein, said process comprising:
 (a) preparing a dry mix comprising cereal grain and a plasticizer;
 (b) introducing the dry mix and water into an initial cooking and forming step under conditions sufficient to produce a cooked cereal dough product;
 (c) introducing edible matter and the cooked cereal dough product into a secondary forming step under conditions sufficient to form a secondary cereal dough product having edible matter embedded therein; and
 (d) converting the secondary cereal dough product into flakes.

5,510,131
ENZYME ASSISTED DEGRADATION OF SURFACE MEMBRANES OF HARVESTED FRUITS AND VEGETABLES

Ayrookaran J. Poulose, San Bruno, and Matthew Boston, San Carlos, both of Calif., assignors to Genencor International, Inc., Rochester, N.Y.
 Continuation of Ser. No. 948,618, Sep. 23, 1992, Pat. No. 5,298,265, which is a continuation of Ser. No. 370,901, Jun. 23, 1989, Pat. No. 5,037,662. This application Jan. 7, 1994, Ser. No. 178,979

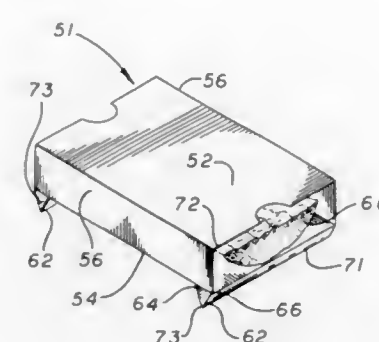
The portion of the term of this patent subsequent to Sep. 23, 2012, has been disclaimed.
 Int. Cl.⁶ A23L 1/212

U.S. Cl. 426—102 4 Claims
 1. An unmacerated harvested fruit or vegetable product at temperatures at from about 10° C. to about 50° C. wherein said harvested fruit or vegetable product comprises a water activity (a_w) of greater than 0.80, a surface membrane which contains one or more types of water insoluble components selected from the group consisting of cutin, cellulose, pectin, triglycerides and waxy esters and an enzyme composition deposited on the surface membrane of said harvested fruit or vegetable product, said enzyme composition comprising cutinase; whereby said composition is present in an amount effective for providing an increase in water permeability across said membrane of at least fifty percent as compared to said fruit or vegetable without said composition.

5,510,132
METHOD FOR COOKING A FOOD ITEM IN MICROWAVE HEATING PACKAGE HAVING END FLAPS FOR ELEVATING AND VENTING THE PACKAGE
 Anthony J. Gallo, Jr., Omaha, Nebr., assignor to ConAgra, Inc., Omaha, Nebr.

Filed Jun. 7, 1994, Ser. No. 255,065
 Int. Cl.⁶ A23L 1/01

U.S. Cl. 426—234 17 Claims
 1. A method of cooking a food item in a microwave oven, wherein the food item is contained in a package having a top wall, a bottom wall and a side wall for enclosing the food item between the top and bottom walls and a microwave interactive layer is affixed to the bottom wall for converting microwave energy into heat, the side wall includes two opposed end walls, each end wall being scored to define a first end flap and a second end flap, each end flap partially separable from the remainder of the package along the scoring, the location of the scoring sufficient to permit the separable portion of the flaps to be moved to a location underneath the bottom wall, the method comprising the steps of:



separating the separable portions of the flaps from the remainder of the package along the scoring;
 placing the separable portions of the flaps underneath the bottom wall;
 cooking the food item in a microwave oven with the separable portions of the flaps underneath the bottom wall; and
 forming the flaps into a pair of stabilized triangles to support the bottom wall above the microwave oven floor.

5,510,133
PROCESS FOR PREPARING FOODSTUFFS BASED ON REFORMED AND CURED HERRING ROE
 Shoji Yamamoto, Sherwood, Canada, assignor to Keeping and MacKay Limited (K. & M.), Canada
 Filed Nov. 21, 1994, Ser. No. 344,678
 Int. Cl.⁶ A23L 1/328

U.S. Cl. 426—272 18 Claims
 1. A process for preparing reformed and cured herring roe mixed foods from eggs derived from herring ovaries, salt, water and a solid food, which process comprises:
 filling a perforate mold with sexually-matured herring eggs and with pieces of said solid food by placing the solid food on top of a first layer of said herring eggs in said mold and then placing a second layer of said herring eggs on the solid food to form a sandwich structure in said mold; and subsequently salt curing said sandwich structure of herring eggs and solid food while subjecting the sandwich structure to mechanical pressure to bind the herring eggs together and to provide a salt-cured product; and allowing said salt-cured product to solidify in said perforate mold.

5,510,134
PROCESS FOR THE PRODUCTION OF HIGHLY CONCENTRATED FRUIT AROMAS FROM CONDENSED FRUIT VAPOURS

Andrea Simon, Seebuck; Jan Cully, Garching, and Heinz-Rüdiger Vollbrecht, Altenmarkt, all of Germany, assignors to SKW Trostberg Aktiengesellschaft, Trostberg, Germany
 Continuation of Ser. No. 780,510, Oct. 22, 1991, abandoned.
 This application Dec. 20, 1994, Ser. No. 359,856

Claims priority, application Germany, Oct. 25, 1990, 40 33 934.3

U.S. Cl. 426—424 12 Claims
 1. Process for the production of highly concentrated fruit aromas from condensed fruit vapors comprising:

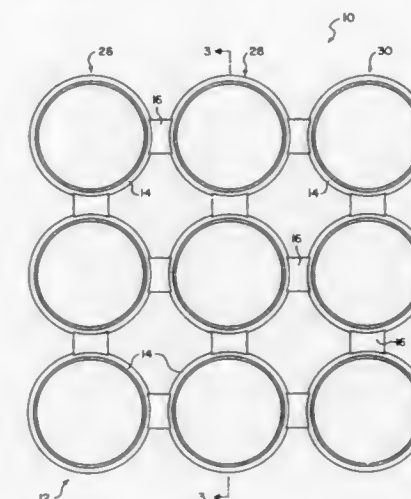
- a) Concentrating fruit vapors, having a fruit aroma content of about 0.0005 to 0.001% by weight by distillation;
 b) extracting the concentrate from step a) with compressed carbon dioxide at 80 to 120 bar and 25° to 40° C., and
 c) after decompression of the carbon dioxide, separating the aroma-rich oily phase from the aroma-poor aqueous phase.

5,510,135
APPARATUS AND METHOD FOR CONNECTED FORMING AND CONTROLLED STACKING OF MATERIAL

John Galder, 5321 Industrial Oaks, Blvd., Austin, Tex. 78735
 Filed Jun. 23, 1994, Ser. No. 264,508
 Int. Cl.⁶ A21C 11/00

U.S. Cl. 426—512

10 Claims



3. A method of forming raw, soft, material to be stacked so that it can be controlled and stacked uniformly while still raw and soft comprising the steps of:

- a) introducing raw, soft, material to be formed into a mold means with at least two separate molds the mold means formed so as to have two openings:
 (i) a first top opening for receiving the material to be formed; and
 (ii) a second bottom opening for releasing the material once formed;
 b) temporarily containing the raw, soft, material in the mold means so that the raw soft, material generally assumes the shape of the two molds;
 c) connecting the two mold means with a web forming means so that when raw, soft, material is introduced to the mold means, the raw, soft, material in each mold is connected by a web of additional raw, soft, material; and
 d) pressing the raw, soft, material, generally in the shape of the mold, from the mold means while connected to each molded shape by the web of raw, soft, connecting material.

5,510,136
METHOD OF MAKING BREAD PRODUCTS WITHOUT SHORTENINGS AND/OR OILS

Donald J. Alexander, R.R. 1, Box 38, Martin, N. Dak. 58758
 Filed Oct. 21, 1994, Ser. No. 326,867
 Int. Cl.⁶ A23L 1/10; A21D 2/00; 13/00

U.S. Cl. 426—549

5 Claims

1. A method of making bread products without using shortenings and/or oils comprising:
 substituting waxy barley flour for said shortenings and/or oils in bread dough which is baked to make bread products.

5,510,137

SWEET ICE STUFFS AND JELLIED FOODS

Yuzo Okada, and Toshio Kato, both of Kawasaki, Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

Filed Apr. 26, 1994, Ser. No. 233,272

Claims priority, application Japan, Apr. 28, 1993, 5-102587; May 12, 1993, 5-110700

Int. Cl.⁶ A23G 9/00; A23L 1/05

U.S. Cl. 426—565

8 Claims

1. A sweet ice composition selected from the group consisting of ice cream, ice milk, lacto ice and ice sherbets, wherein said composition comprises:

a milk product, a sweetener, 0.3 to 3% trehalose as a smoothing agent and water.

5,510,138

HOT MELT CONFORMAL COATING MATERIALS

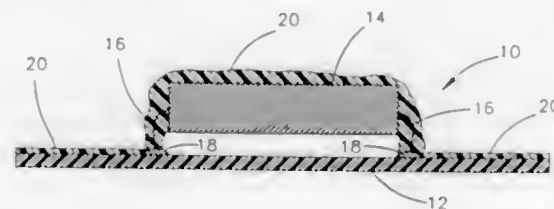
Henry M. Sanfieb, Carmel; James M. Rosson, Kokomo, both of Ind., and Ralph D. Hermansen, Northridge, Calif., assignors to Delco Electronics Corporation, Kokomo, Ind., and Hughes Aircraft Company, Los Angeles, Calif.

Filed May 24, 1994, Ser. No. 248,043

Int. Cl.⁶ B05D 5/12

U.S. Cl. 427—96

20 Claims



1. A method for forming a conformal coating on at least a portion of a substrate of an electronic assembly, said method comprising the steps of:

formulating a hot melt conformal coating composition which is initially a solid or semisolid at approximately room temperature and a liquid at an elevated temperature which is higher than room temperature;

depositing said hot melt conformal coating composition on said portion of said substrate while said hot melt conformal coating composition is at said elevated temperature; and

allowing said hot melt conformal coating composition to cool on said portion of said substrate and solidify so as to form a conformal coating which provides environmental protection to said portion of said substrate.

5,510,139

PROCESS FOR ASSEMBLY AND BONDING OF ELECTRONIC COMPONENTS ON AN INSULATING SUPPORT

Erich Deissner, Schwelm; Jonathan D. H. Hammond, Solingen, and Dieter Meier, Gevelsberg, all of, Germany, assignors to AMEG Additive Metallisierung-Entwicklungs- und Anwendungsgesellschaft GmbH, Ennepetal, Germany

Filed Oct. 14, 1993, Ser. No. 136,010

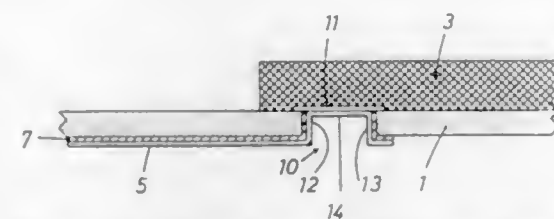
Claims priority, application Germany, Oct. 16, 1992, 42 35 019.0

Int. Cl.⁶ B05D 5/12

U.S. Cl. 427—97

6 Claims

1. A process for assembly and bonding of uncased electrical components provided with metal connections on an area of an insulating support to be provided with strip conductors comprising: applying a catalyst for a currentless metal deposition on the insulating support in the area of the insulating support where the strip conductors are to be provided;



providing holes through the insulating support with walls of the holes through the insulating support being coated with the catalyst;

positioning the uncased electrical components with their metal connections in registration with the holes; and

bonding by currentless metal deposition from a chemical metallization bath the metal connections in registration with the walls of the holes and the walls of the holes simultaneously with the forming of the metallic strip conductors wherein the bonding of the metal connections has a dimension along the connections of no more than 100 microns.

5,510,140

METHOD FOR PREPARING MAGNETIC RECORDING MEDIUM

Shigeo Kurose; Yoshihiro Honjo, and Akira Somiya, all of Nagano, Japan, assignors to TDK Corporation, Tokyo, Japan

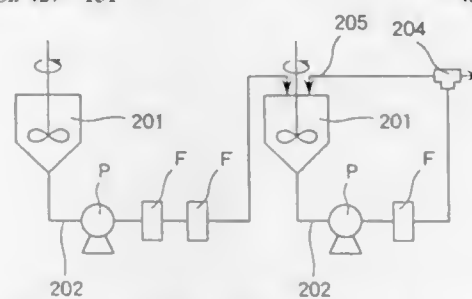
Filed Dec. 1, 1994, Ser. No. 353,215

Claims priority, application Japan, Dec. 1, 1993, 5-329943; Dec. 1, 1993, 5-329944; Dec. 9, 1993, 5-340794; Dec. 13, 1993, 5-341819; Dec. 22, 1993, 5-346251; Feb. 25, 1994, 6-052736; Feb. 25, 1994, 6-052737; Feb. 25, 1994, 6-052738; Feb. 25, 1994, 6-052739

Int. Cl.⁶ B05D 3/12

U.S. Cl. 427—131

43 Claims



1. A method of preparing a magnetic recording medium having at least two layers of coating on at least one surface of a non-magnetic substrate, the uppermost layer of coating being a magnetic layer of 0.1 to 0.8 μm thick, comprising:

a step of preparing a paint composition for the uppermost layer of coating, including a paint filtering step of filtering the paint through at least one filter means including an ultimate filter means, the ultimate filter means used in the paint filtering step having a 95% cut filtration precision of 1.0 to 6.0 μm .

5,510,141

COATING COMPOSITION AND METHOD FOR FORMING THIN FILM ON SUBSTRATE USING SAME

Kensuke Makita; Yasuo Moriguchi, and Junichi Okuda, all of Matsusaka, Japan, assignors to Central Glass Company, Limited, Ube, Japan

Filed Jan. 26, 1995, Ser. No. 378,729

Int. Cl.⁶ B05D 5/06

U.S. Cl. 427—165

6 Claims

1. A method for applying a coating composition to a substrate with a reverse roller coater so as to form a thin film on the substrate and then for baking the thin film so as to transform the

5,510,143

METHOD AND APPARATUS FOR IMPRESSING A PATTERN ON FLOCKED MATERIALS

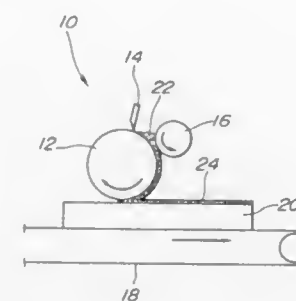
David I. Walsb, No. Providence, R.I., and William F. Laird, Kingston, Canada, assignors to Microfibres, Inc., Pawtucket, R.I.

Continuation of Ser. No. 994,447, Dec. 23, 1992, abandoned, which is a continuation of Ser. No. 698,379, May 9, 1991, abandoned, which is a continuation of Ser. No. 403,764, Sep. 6, 1989, abandoned. This application Jul. 20, 1994, Ser. No. 277,702

Int. Cl.⁶ B05D 1/14

U.S. Cl. 427—206

1 Claim



thin film into a metal oxide film, the method being characterized in that the coating composition comprises:

0.1–10 wt % of at least one organic metal compound on a metal oxide basis, said at least one organic metal compound being selected from the group consisting of metal alkoxides, metal acetylacetonates and metallic soaps; and

at least one organic solvent,

wherein said coating composition has a viscosity which is in a range from 0.1 to 100 centipoises; wherein a reverse roller of the coater is rotated at a rotation speed within a range from 2 to 55 m/min. and the substrate is moved at a moving speed within a range from 1 to 30 m/min. while the coating composition is applied to the substrate, and wherein the rotation speed of the reverse roller is adjusted to be higher than the moving speed of the substrate.

5,510,142

PROCESS FOR MANUFACTURING A COMPOSITE BASE FABRIC INTENDED FOR THE REINFORCEMENT OF A WAISTBAND AND COMPOSITE BASE FABRIC THUS OBTAINED

Pierrot Groshens, Peronne, France, assignor to Lainiere De Picardie, Peronne, France

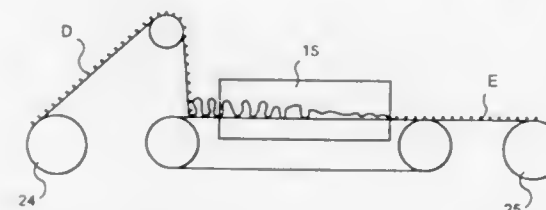
Filed Sep. 15, 1994, Ser. No. 306,757

Claims priority, application France, Sep. 2, 1994, 94 10581

Int. Cl.⁶ B05D 3/12; 3/02; 1/38; D06C 15/00

U.S. Cl. 427—176

26 Claims



1. A process for manufacturing a composite base fabric for the reinforcement of a waistband and which is elastic in the direction of the warp, which comprises:

A. knitting a composite base fabric comprising:

(i) a warp knit fabric;

(ii) a fabric substrate inserted in the warp knit fabric;

(iii) elastic yarns under a tensional elastic deformation, said elastic yarns being inserted in the warp knit fabric substantially parallel to the fabric wales; and

iv weft yarns inserted in the warp knit fabric without participating in the formation of its stitches;

B. thermofixing the composite base fabric;

C. depositing a film forming coating comprising a cross-linkable resin on the fabric substrate in contact with the elastic yarns and the weft yarns;

D. drying and cross-linking the film forming coating the fixing the weft yarns on the fabric substrate; and

E. submitting the composite base fabric to a relaxation treatment to slacken the elastic yarns.

5,510,144

PROCESS FOR PREVENTING HEAVY METAL MIGRATION IN CRYSTAL ARTICLES

Paul Cordie, Bouxwiller, France, assignor to Lalique S.A., France

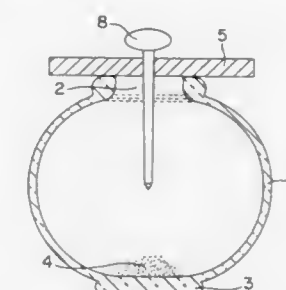
Filed Jan. 18, 1994, Ser. No. 182,447

Claims priority, application France, Jan. 26, 1993, 93 00709

Int. Cl.⁶ C03C 17/00; 15/00; 23/00

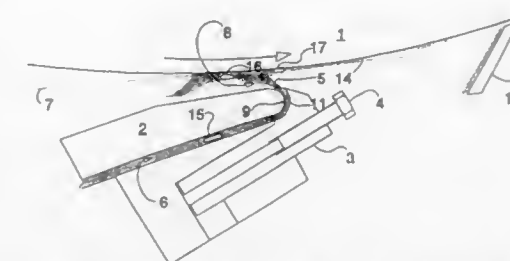
U.S. Cl. 427—237

7 Claims



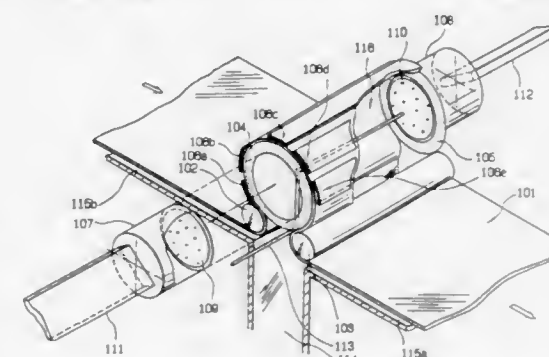
1. A process for the surface treatment of crystal articles to prevent heavy metal migration comprising contacting the surface of the crystal article with a reactive gas produced by vaporization of a metal sulfate selected from the group consisting of ammonium aluminum sulfates, mixtures of ammonium sulfate and aluminum sulfate, ammonium iron sulfates and mixtures of ammonium sulfate and iron sulfates and hydrates thereof at an elevated temperature not greater than the softening temperature of the crystal, cooling the crystal article and water washing the crystal surface to remove any residual powder.

1. A jet coating method for applying coating mix onto a moving web (14) in a noncontacting manner at ambient pressure without using a pressurized chamber in a region where the coating mix contacts the web, comprising the step of directing a jet of the



coating mix counter to an approach direction of the web (14) at a velocity sufficiently high to attain a splitting of the jet into a return flow (16) and a coating mix application flow (17), said jet being unrestricted in the region where the coating mix contacts the web.

21 Claims



continuously moving a substrate web supported by an internal supporting means in the longitudinal direction while guiding said substrate web by means of a guiding and internal supporting means for said substrate web;

establishing a substantially enclosed film-forming chamber having a film-forming space by curving and projecting said moving substrate web by means of said guiding and internal supporting means to form a columnar portion to be the cylindrical wall of said film-forming chamber and;

introducing a film-forming raw material gas through a gas feed means into said film-forming space while simultaneously radiating microwaves using a microwave applicator means into said film-forming space and directing said microwaves in a direction that is substantially parallel to a width direction of the substrate web and perpendicular to the circumference of the cylindrical wall of said film-forming chamber to generate a microwave plasma in said film-forming space, said plasma being confined in said film-forming space and maintaining the film-forming space at a pressure which is lower than atmospheric pressure such that the inside of said film-forming chamber communicates with the space outside said film-forming chamber, thereby continuously forming a functional

deposited film on the inner face of said continuously moving cylindrical wall which is exposed to said plasma.

5,510,152

PROCESS FOR CURING A GASKET COATING

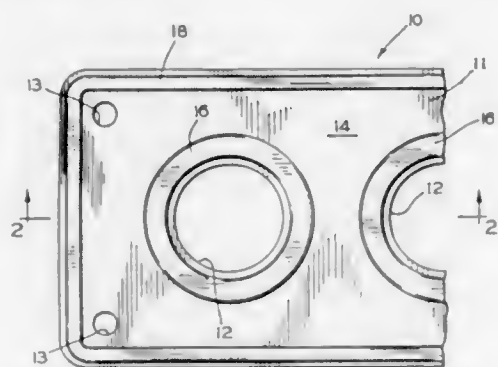
Brent R. Boldt, Rolling Meadows, Ill., assignor to Dana Corporation, Toledo, Ohio

Division of Ser. No. 97,987, Jul. 27, 1993, which is a continuation of Ser. No. 867,887, Apr. 13, 1992, abandoned. This application Nov. 22, 1994, Ser. No. 343,691

Int. Cl.⁶ C08J 7/04

U.S. Cl. 427—510

9 Claims



1. A process for curing a gasket coating comprising the steps of:
 - (a) providing a gasket body;
 - (b) applying a resilient coating to said gasket body, said coating polymerizing in response to ultraviolet light;
 - (c) exposing said coating and said body to ultraviolet radiation having a first wavelength to initiate polymerization of a first portion of said coating; and
 - (d) exposing said coating and said body to ultraviolet radiation having a second wavelength different from said first wavelength to initiate polymerization of a different portion of said coating.

5,510,153

METHOD FOR ENCAPSULATING ELECTRONIC CONDUCTORS

Peter F. Lillenthal, II, Princeton, N.J.; Ivan Pawlenko, Holland, Pa., and Ching-Ping Wong, Lawrenceville, N.J., assignors to AT&T IPM Corporation, Coral Gables, Fla.

Filed Aug. 4, 1993, Ser. No. 102,178

Int. Cl.⁶ B05D 7/20; H01B 7/02

U.S. Cl. 427—515

11 Claims

1. A method for encapsulating electronic conductors comprising the steps of:
 - mixing glass particles in an uncured silicone resin;
 - curing the silicone resin;

the cured silicone resin encasing electrical conductors to be electrically insulated;

the curing step comprising the step of transmitting microwaves into the uncured resin, thereby to heat the resin as is required for cure.

5,510,154

LOW-VELOCITY ELECTRON EXCITED PHOSPHOR AND METHOD FOR PRODUCING SAME

Shigeo Itoh; Hitoshi Toki, and Yoshihisa Yonezawa, all of Mōhara, Japan, assignors to Futaba Denshi Kogyo K.K., Chiba, Japan

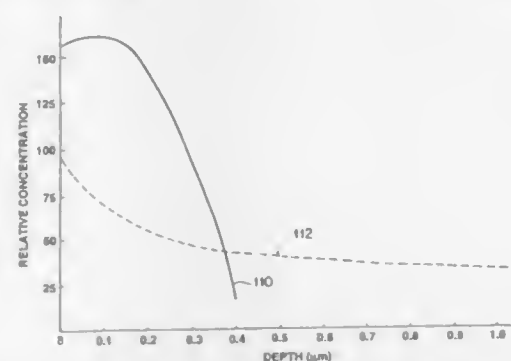
Filed Dec. 2, 1993, Ser. No. 160,166

Claims priority, application Japan, Dec. 3, 1992, 4-324411; Dec. 14, 1992, 4-352783

Int. Cl.⁶ B05D 3/06

U.S. Cl. 427—526

2 Claims



1. A method for producing a low-velocity electron excited phosphor, comprising the steps of:
 - doping an activator in a matrix crystal for said phosphor at an implantation energy of 100 keV or less by ion implantation; and
 - annealing said phosphor implanted with said activator for 30 minutes or less whereby said activator is doped to be concentrated in said matrix crystal within a region of 0.5 μm from a surface of said matrix crystal of said phosphor.

5,510,155

METHOD TO REDUCED GAS TRANSMISSION

Joel L. Williams, Cary, N.C.; Susan L. Burkett, Northport, Ala., and Shel McGuire, Omaha, Nebr., assignors to Becton, Dickinson and Company, Franklin Lakes, N.J.

Filed Sep. 6, 1994, Ser. No. 301,101

Int. Cl.⁶ B05D 3/00

U.S. Cl. 427—532

4 Claims

1. A method to improve the shelf life of a plastic article comprising depositing a coating of silicon oxide on a surface of a plastic article and subjecting the coated surface to high energy irradiation whereby shelf life is improved by reduced gas transmission through said plastic.

5,510,156

MICROMECHANICAL STRUCTURE WITH TEXTURED SURFACE AND METHOD FOR MAKING SAME

Yang Zhao, North Andover, Mass., assignor to Analog Devices, Inc., Norwood, Mass.

Filed Aug. 23, 1994, Ser. No. 294,389

Int. Cl.⁶ C23C 14/02; B65D 6/08; B05D 1/36; 1/32

U.S. Cl. 427—534

24 Claims

1. A method of fabricating a suspended microstructure comprising the steps of:

5,510,157

METHOD OF PRODUCING DIAMOND OF CONTROLLED QUALITY

Chia-Fu Chen, Hsinchu, Taiwan; Kazuhito Nishimura, Osaka, Japan; Ensei Ko, 835-2, Nishi Koiso, Oiso-machi, Naka-gun, Kanagawa-ken, Japan; Hiroshi Ishizuka, Tokyo, Japan, and Satoru Hosomi, Hiratsuka, Japan, assignors to Ishizuka Research Institute, Ltd.; Ensei Ko, both of Kanagawa, and Osaka Diamond Industrial Co., Ltd., Osaka, all of, Japan

Continuation of Ser. No. 494,750, Mar. 16, 1990, abandoned. This application Nov. 6, 1991, Ser. No. 789,441

Claims priority, application Japan, Mar. 17, 1989, 1-67228; Mar. 31, 1989, 1-83378

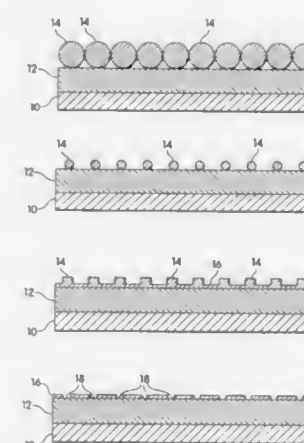
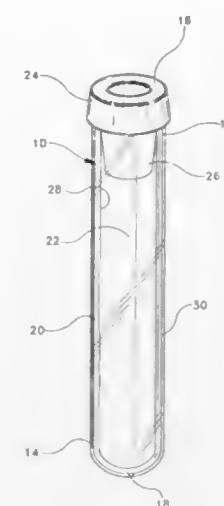
Int. Cl.⁶ C01B 31/06

U.S. Cl. 427—577

28 Claims

1. A method of producing a diamond substance of known acceptable quality by chemical vapor deposition, said known acceptable quality being indicated by the cathodoluminescence spectrum of a control diamond substance having said acceptable quality, which method comprises:

- a) providing a substrate in a chemical vapor deposition chamber;
- b) depositing a diamond substance on said substrate by chemical vapor deposition, said depositing comprising:
 - i. introducing into said chamber a matrix gas comprising hydrogen and at least one additional gas selected from a hydrocarbon gas and carbon monoxide;
 - ii. exciting said matrix gas to create a plasma while heating said substrate to a temperature of least 700° C. to deposit a diamond substance on said substrate, said substance being crystallographically diamond;
- c) terminating said deposition at an early stage after commencing said deposition before a significant mass of said diamond substance has been deposited on said substrate, the amount of deposited diamond substance being sufficient to enable measurement of the luminescence spectrum of said diamond substance by cathodoluminescence measurement;
- d) removing said substrate bearing said diamond substance from said chamber;
- e) subjecting said diamond substance to a cathodoluminescence measurement to determine the luminescence spectrum of said diamond substance;
- f) comparing, utilizing the luminescence measurement of step (e), the luminescence spectrum of said diamond substance to the luminescence spectrum of said control diamond substance of said acceptable quality, the luminescence spectrum of said control diamond substance being indicative of a diamond substance of said acceptable quality whereby the comparison provides an indication of any deviation in said deposited diamond substance from said acceptable quality;
- g) returning said substance bearing said diamond substance, to said chemical vapor deposition chamber;
- h) depositing additional diamond substance on said substance by chemical vapor deposition according to step b);
- i) adjusting, based on the comparison of step f), one or more of the pressure, substrate temperature, or matrix gas composition prevailing in step h) to compensate for deviation from acceptable quality indicated by the comparison of step f); and
- j) repeating steps c) through i) to produce a significant mass of said diamond substance of said acceptable quality.



- (1) depositing a sacrificial layer on a substrate, said layer having a top surface,
 - (2) depositing a mono-layer of particles of a first size on said surface of said sacrificial layer,
 - (3) shrinking said particles to a second size smaller than said first size,
 - (4) depositing a layer of mask material over said sacrificial layer and said particles,
 - (5) removing said particles such that portions of said mask material overlying said particles are removed while portions not overlying said particles remain on said surface,
 - (6) etching said sacrificial layer using said mask material as an etch mask so as to form hollows in said surface of said sacrificial layer,
 - (7) removing said mask material,
 - (8) removing portions of said sacrificial layer to form holes in said sacrificial layer for formation of anchors for said microstructure;
 - (9) depositing a microstructure material over said substrate and said sacrificial layer to form said microstructure, said microstructure material filling the holes in said sacrificial layer to form said anchors, and
 - (10) removing said sacrificial layer,
- a surface of said microstructure material that was in contact with the top surface of said sacrificial layer before removal of said sacrificial layer having bumps corresponding to said hollows, wherein a dimension of said bumps is defined by the second size of said particles and a spacing between said bumps is defined by the first size of said particles.

5,510,158

PROCESS FOR OXIDATION OF AN ARTICLE

Tatsumi Hiramoto, Tokyo; Tatsushi Igarashi; Hiromitsu Matsuno, both of Himeji; Takeo Matsushima, and Shinichi Iso, both of Takasago, all of, Japan, assignors to Ushiodenki Kabushiki Kaisha, Tokyo, Japan

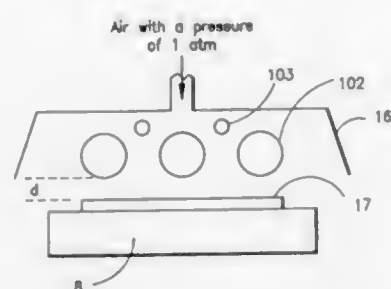
Filed Nov. 28, 1994, Ser. No. 348,259

Claims priority, application Japan, Nov. 26, 1993, 5-319238 Int. Cl.⁶ C23C 16/48; B05D 3/00

U.S. Cl. 427—582

15 Claims

1. Process for oxidation of an article to be treated, comprising the steps of:



disposing the article to be treated in a treatment chamber containing an oxygen-containing gas; and irradiating oxygen-containing gas with vacuum ultraviolet rays having a wavelength of about 172 nm by emitting the vacuum ultraviolet rays from a dielectric barrier discharge lamp in which xenon gas is encapsulated and is in an excimer state; producing ozone and an activated oxygen from a photochemical reaction between the oxygen-containing gas and the vacuum ultraviolet rays; and oxidizing the article to be treated by contacting the article with the ozone and the activated oxygen produced by said photochemical reaction.

5,510,159

LIQUID CRYSTAL DEVICE

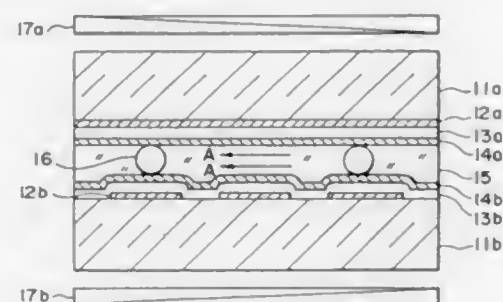
Masanobu Asaoka, Yokohama; Hideaki Takao, Sagami-hara; Yukio Hanyu, Atsugi, and Makoto Kojima, Hino, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan Division of Ser. No. 964,061, Oct. 21, 1992, Pat. No. 5,320,883. This application Mar. 18, 1994, Ser. No. 214,428.

Claims priority, application Japan, Oct. 22, 1991, 3-301310; Jan. 22, 1991, 3-301311

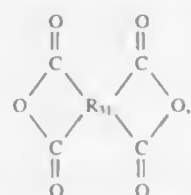
Int. Cl.⁶ G02F 1/1337

U.S. Cl. 428—1

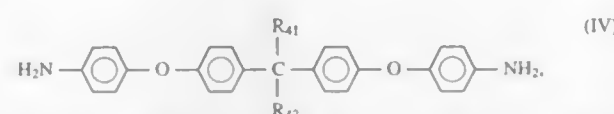
15 Claims



1. A liquid crystal device, comprising: a pair of substrates each provided with a transparent electrode, and a liquid crystal disposed in a chiral smectic phase between the substrates; at least one of said pair of substrates having thereon an alignment film comprising a polyimide obtained through a reaction of at least two species of tetracarboxylic anhydrides of the following formula (III):



wherein R_{31} denotes a tetravalent organic group, and a diamine of the following formula (IV):



wherein R_{41} and R_{42} denote the same or different alkyl groups having 1–10 carbon atoms.

5,510,160

THERMOPLASTIC MULTILAYER COMPOSITES

Hans Jadamus, and Stefan Röber, both of Marl, Germany, assignors to Huels Aktiengesellschaft, Marl, Germany

Filed Jan. 28, 1994, Ser. No. 187,511

Claims priority, application Germany, Aug. 4, 1993, 43 26 130.2

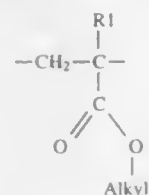
Int. Cl.⁶ B32B 1/08; 27/08; 27/30; 27/34

U.S. Cl. 428—36.91

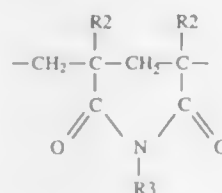
9 Claims

1. A thermoplastic multilayer composite comprising:

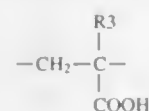
- (I) at least one layer comprising a molding compound of a polyamide, and
- (II) at least one layer adjacent to said layer (I) comprising a molding compound comprising a mixture of:
 - (a) from 97.5 to 50% by wt. of polyvinylidene fluoride or vinylidene fluoride copolymer, and
 - (b) from 2.5 to 50% by wt. of polyglutarimide comprised of the monomer units:
 - (i) from 14 to 85% by weight of



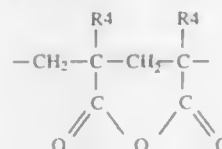
- (ii) from 10 to 75% by weight of



- (iii) from 0 to 15% by weight of



- (iv) from 7 to 20% by weight of



wherein the sum of (i), (ii), (iii) and (iv) of component IIb is 100%, and wherein alkyl is methyl, ethyl, propyl, butyl, or hexyl; and R_1 to R_4 , identical or different, are hydrogen or $(\text{C}_n\text{H}_{2n-1})$ wherein n is an integer of from 1 to 6, and wherein said layers (I) and (II) are directly bonded to one another.

5,510,161

TAPE LAMINATES FOR DIAPER CLOSURE

Peter M. Lloyd, Penllergaer, Wales, assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

PCT No. PCT/US92/09424, § 371 Date May 5, 1994, § 102(e) Date May 5, 1994, PCT Pub. No. WO93/11728, PCT Pub. Date Jun. 24, 1993

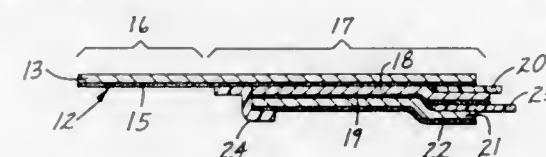
PCT Filed Nov. 4, 1992, Ser. No. 232,237

Claims priority, application United Kingdom, Dec. 17, 1991, 9126781

Int. Cl.⁶ B32B 3/06

U.S. Cl. 428—40

9 Claims



1. A laminate tape construction comprising two or more porous paper backed tapes each of said porous paper backed tapes having a layer of pressure-sensitive adhesive in which at least one of said tapes comprises a porous paper backing without any barrier layer, said at least one tape having two opposite faces, a first face having a first pressure-sensitive adhesive layer adhered directly thereto and a first continuous release coating of a solventless, radiation-cured silicone applied directly to the porous paper backing second face, the penetration of the silicone into the porous paper backing being such that silicone is not on the porous paper backing first face, which paper backing has a basis weight of from 50 to 150 g/m².

5,510,162

APPARATUS FOR PERFORMING A METHOD OF ALIGNING AND COUPLING A PAIR OF STEREOSCOPIC PRINTS

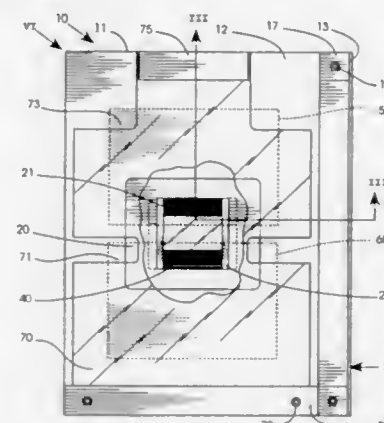
Dennis L. Brown, 328 Stow Rd., Harvard, Mass. 01451-1909

Filed Aug. 1, 1994, Ser. No. 283,408

Int. Cl.⁶ G02B 27/22

U.S. Cl. 428—40

15 Claims



1. A complementary pair of stereoscopic pictures to aligning and coupling apparatus be used with a stereoscopic device, said apparatus comprising:

- (a) a base having a flat upper supporting surface for supporting a pair of complementary stereoscopic pictures;
- (b) a flat transparent alignment sheet which is mounted on said base for movement between an active position wherein the sheet rests on said flat upper supporting surface and an inactive position wherein said sheet is spaced sufficiently from said flat upper supporting surface to enable a pair of pictures to be placed on said supporting surface so that said pair of pictures which is placed on said flat upper supporting surface is sandwiched between said supporting surface and said sheet, said sheet having markings for enabling one of said pair of

pictures to be aligned relative to the other of said pair of pictures for optimum viewing by a stereoscopic viewing device; and

(c) coupling means positioned between said flat upper supporting surface and said sheet for fixing one of said pair of pictures to the other of said pair of pictures.

5,510,163

OPTICAL STORAGE MEDIA HAVING VISIBLE LOGOS

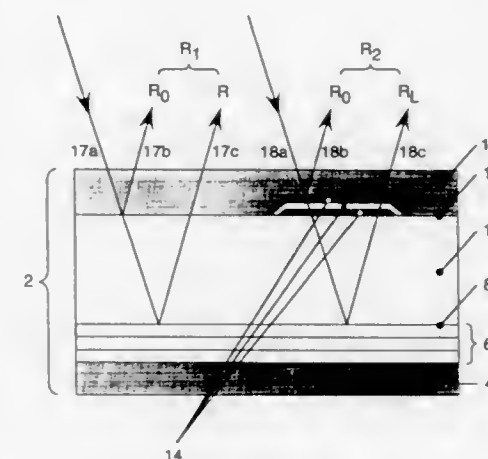
Brian T. Sullivan; Li Li, both of Gloucester; Jerzy A. Dobrowolski, Ottawa, and Peter D. Grant, Metcalfe, all of Canada, assignors to National Research Council of Canada, Ottawa, Canada

Filed May 18, 1994, Ser. No. 245,699

Int. Cl.⁶ B32B 3/00

U.S. Cl. 428—64.1

22 Claims



1. An optical medium for storing encoded data, wherein the encoded data is comprised of '0' and '1' data bits, a '0' data bit being represented by a different level of reflectance of the optical medium than a '1' data bit, wherein a '1' data bit corresponds to a reflectance greater than or equal to a minimum threshold reflectance R_{min}^1 and a '0' data bit corresponds to a reflectance less than or equal to a maximum threshold reflectance R_{max}^0 and having a visible logo thereon in the form of a geometric design, pattern, inscription, or the like, the optical medium comprising:

- a substrate having a read-side and a non read-side;
- a reflective recording coating carried by the non read-side of the substrate; and,
- a logo coating covering one or more predetermined areas of the read side of the substrate for producing the visible logo carried by the read-side of the substrate, the coating being comprised of one or more layers wherein the layer material and layer thickness of each of the one or more layers is chosen such that the areas of the Optical medium covered by the logo coating have a reflectance at a read/write laser wavelength, the reflectance being greater than or equal to R_{min}^1 for a '1' data bit and the reflectance being less than or equal to R_{max}^0 for a '0' data bit, in order to distinguish between the '0' and '1' data bits encoded in the optical medium; the areas of the optical medium covered by the logo coating having a reflectance, at least at a predetermined visible wavelength other than the read/write laser wavelength, that is substantially different from the reflectance of areas of the optical medium not covered by the logo coating such that there is a visible luminous and/or color contrast between areas of the optical medium covered and not covered by the logo coating.

5,510,164

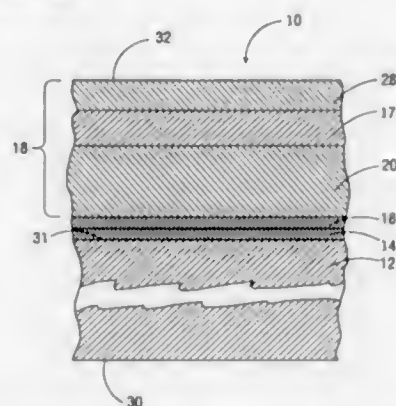
SINGLE-SIDED ABLATIVE WORM OPTICAL DISK WITH MULTILAYER PROTECTIVE COATING

Margaret E. Best, San Jose; Paul B. Comita, Menlo Park; Kurt A. Rubin, Santa Clara; Takao Suzuki, San Jose; Wade W. C. Tang, San Jose, and Yu-Sze Yen, San Jose, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 16, 1994, Ser. No. 358,135
Int. Cl.⁶ B32B 3/00

U.S. Cl. 428—641

10 Claims



1. A single-sided ablative write-once optical disk having a single data layer for use in a laser-based optical disk drive comprising:
 - a radiation-transparent substrate having a first surface that supports the single data layer and an opposite surface that forms a first outer face of the disk and from which laser radiation enters the substrate;
 - a fluorinated hydrocarbon film formed on the first surface of the substrate;
 - a tellurium-based active film formed directly on the fluorinated hydrocarbon film, the active film flowing to form holes in the presence of incident radiation from the laser;
 - a deformable layer of material having a hardness, as measured on the Shore A scale, of less than 100 and selected from the group consisting of silicone elastomers, polyacrylates, ethylene propylenes, polyurethanes and fluorocarbons, the deformable layer being formed directly on and in contact with the active film and permitting flow of the active film in the presence of incident radiation from the laser; and
 - a protective overcoat formed on the deformable layer, the protective overcoat forming the second outer face of the disk opposite said first outer face and comprising a plastic layer of polyester or polycarbonate bonded to the deformable layer by a layer of adhesive.

5,510,165
THIN FILM WRAPPING FOR CASSETTE CASE
Selzo Seki, Miyagi, Japan, assignor to Sony Corporation, Tokyo, Japan

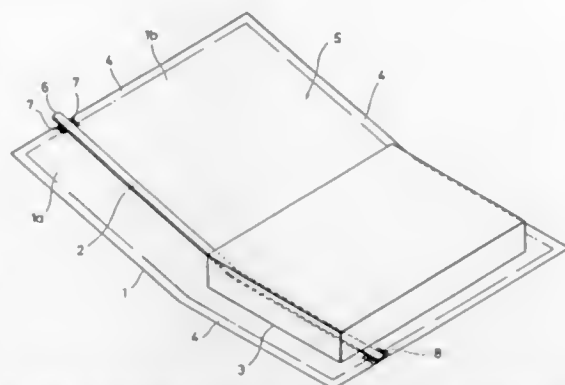
Continuation-in-part of Ser. No. 82,721, Jun. 28, 1993, abandoned. This application May 27, 1994, Ser. No. 250,673
Claims priority, application Japan, Jun. 30, 1992, 4-173393; Jul. 31, 1992, 4-205590; May 31, 1993, 5-129801

Int. Cl.⁶ B44C 1/26

U.S. Cl. 426—67

20 Claims

1. A packaging film comprising:
 - a film of material capable of being formed as a substantially closed film envelope;
 - tear means formed in said film said tear means including a tear part which is integral with said film and formed at a predetermined location in said film;
 - a heat sealing area formed in said film, said heat sealing area corresponding to surfaces of the film which overlap during formation of said film envelope and between which a bond, having a predetermined bonding strength, is formed;



at least one tearing portion extending along said heat sealing area from said tear part of said tear means; and
means for modifying the bonding strength between the overlapping surfaces of said film along a predetermined length of said at least one tearing portion and for causing the bonding strength to gradually increase along said predetermined length away from the tear part of said tear means, from a minimum bonding strength, greater than or equal to zero, to said predetermined bonding strength.

5,510,166

INHIBITOR PARCEL AND METHOD FOR PRESERVING ELECTRONIC DEVICES OR ELECTRONIC PARTS

Yoshiaki Inoue; Shigeru Murahayashi; Yoshio Yoshikawa; Takeshi Nagasaka; Yoshihiko Harima; and Isamu Yoshino, all of Tokyo, Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

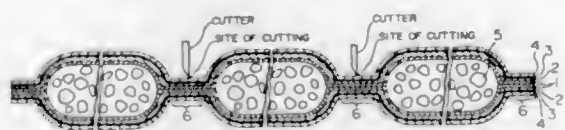
Division of Ser. No. 599,525, Oct. 18, 1990, Pat. No. 5,415,907.
This application Jan. 31, 1995, Ser. No. 381,403

Claims priority, application Japan, Oct. 23, 1989, 1-273727; Oct. 23, 1989, 1-273728; Dec. 8, 1989, 1-319250; Dec. 15, 1989, 1-323887

Int. Cl.⁶ B32B 9/00

U.S. Cl. 428—76

11 Claims



1. A method of using an inhibitor parcel for preservation of electronic devices or electronic parts which comprises tightly sealing an electronic device or an electronic part into a gas barrier container together with the inhibitor parcel which comprises:
 - (a) a composition comprising an unsaturated fatty acid compound as its main ingredient sealed between two sheets of
 - (b) a permeable diffusing-parcelling material, said diffusing-parcelling material comprising:
 - (i) a base sheet made of a plurality of fibers bonded together by an adhesive or a base sheet made of a fibrous material coated with an adhesive coating,
 - (ii) an oxygen permeable resin layer laminated onto a first, exterior side of said base sheet, said oxygen permeable resin layer comprising at least one member selected from the group consisting of silicon resin, polyethylene resin, ethylene-vinyl acetate copolymer, natural rubber, synthetic rubber, cellulose and cellulose compounds,
 - (iii) a porous film of low softening point resin or a low softening point nonwoven fabric laminated onto a second, interior side of said base sheet,

with the proviso that said permeable diffusing-parcelling material (b) has an oxygen permeability of 10^4 to 10^6 ml/m².Atm.day and a water vapor permeability/oxygen permeability ratio of at least 0.02 H₂O mg./Atm/O₂ ml at 25° C. and a relative humidity of 50%, and

with the proviso that said second, interior side of said base sheet faces toward said composition (a), and said first exterior side of said base sheet is opposite said second, interior side of said base sheet.

5,510,167

UNIVERSAL COVER FOR ARMCHAIRS, SOFAS, AND THE LIKE

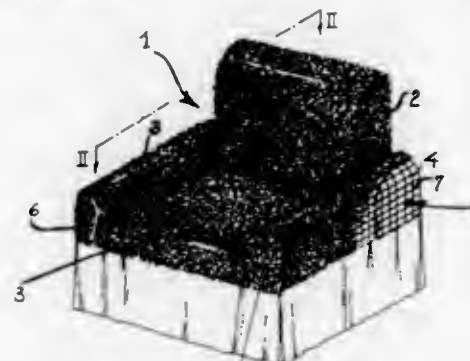
Francesco M. Candolfi, Filottrano, and Claudio DeFelice, Treia, both of Italy, assignors to Caleffi - S.p.A., Mantova, Italy

Filed Oct. 7, 1992, Ser. No. 957,737

Claims priority, application Italy, Oct. 11, 1991, AN91U0025
Int. Cl.⁶ B32B 5/12

U.S. Cl. 428—107

8 Claims



1. A cover for an article of furniture comprising a plurality of pieces of non-elasticized cloth each of said pieces having at least a first and a second set of parallel elastic yarns stretched across the cloth back and attached to said back, wherein the second set of yarns is disposed transversely to the first set of yarns to form a quadrilateral mesh net, the yarns being attached to the back under tension so that when the yarns are in a relaxed state the cloth will have an embossed appearance, wherein each of said pieces of the cover is adapted to fit a particular component of said furniture, said components being selected from the group consisting of armrests, backrest and seat of said furniture, and wherein said pieces of the cover are attached together in the shape of said components of the article of furniture intended to be covered.

5,510,168

MAGNETIC RECORDING MEDIUM AND MAGNETIC RECORDING METHOD

Takahiro Mori, and Takashi Horiyama, both of Tokyo, Japan, assignors to Konica Corporation, Japan

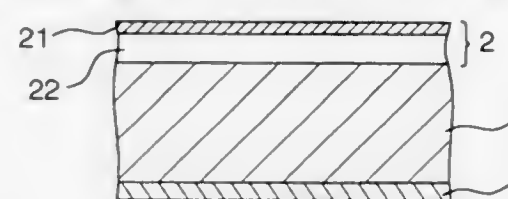
Filed Nov. 12, 1993, Ser. No. 150,719

Claims priority, application Japan, Dec. 7, 1992, 4-326821

Int. Cl.⁶ G11B 5/66; 15/60; B32B 3/10; 5/16

U.S. Cl. 428—141

11 Claims



1. A magnetic recording tape adapted to record a signal while moving in a running direction, said tape comprising a support having provided on a first side thereof, at least one magnetic recording component layer, an uppermost layer containing a ferromagnetic metal powder and a binder, a thickness of said at least one magnetic recording component layer being 0.2 to 3.0 microns, a thickness of said support being 3.5 to 10.5 microns, an average

center line roughness of a surface of said support on said first side being not more than 10 nm, and an average center line roughness of a surface of said uppermost magnetic layer being not more than 4 nm, wherein a thickness of said support satisfies the following inequality:

$$E_T \geq 0.03/t_s^2$$

in which E_T is a Young's modulus of said support in a transverse direction perpendicular to said running direction, in kg/mm², and t_s is a thickness of said support in mm.

5,510,169

MAGNETIC RECORDING MEDIUM WITH BACKSIDE COATING CONTAINING POLYMERIC PARTICLES

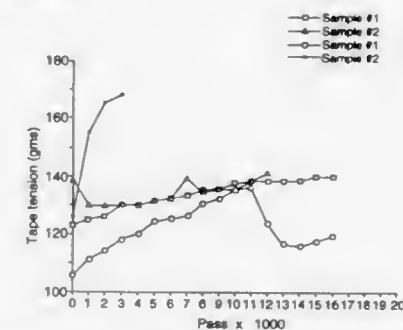
James A. Greczyna, Vadnais Heights, and Chi-Ming Tseng, Woodbury, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Oct. 14, 1994, Ser. No. 323,393

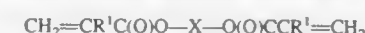
Int. Cl.⁶ G11B 5/00

U.S. Cl. 428—147

19 Claims



1. A magnetic recording medium comprising a support having two major surfaces, a magnetic layer provided on one major surface of the support, and a backside coating provided on the other major surface of the support, wherein the backside coating comprises nonmagnetic particles dispersed in a polymeric binder; the particles having a mean particle size of 0.5 to 5.0 μm and comprising a copolymer of:
 - (a) about 50–98 parts by weight of at least one polymerizable di(meth)acrylate monomer of the formula:



wherein each R^1 is independently H or CH_3 and X is a divalent branched or unbranched aliphatic or aromatic linking group; and
(b) about 2–50 parts by weight of at least one polymerizable hydroxyl-containing monomer.

5,510,170

SECURING PACKING ELEMENTS

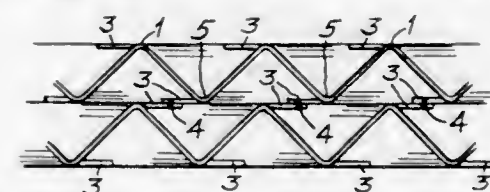
Frank D. Moore, Tallmadge, Ohio, assignor to Norton Chemical Process Products Corp., Worcester, Mass.

Filed Mar. 25, 1994, Ser. No. 218,278

Int. Cl.⁶ B32B 3/28; B01D 47/00; B01F 3/04

U.S. Cl. 428—184

9 Claims



1. A tower packing assembly comprising a plurality of corrugated packing elements each having alternating ridges and valleys

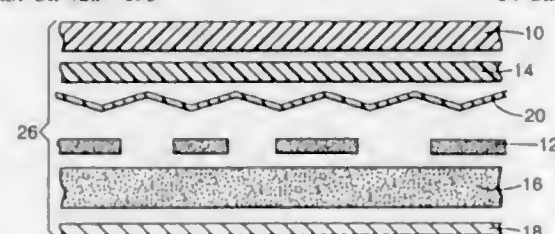
and provided, along at least a portion of at least some of the crests of the ridges, with tab extensions tangential to the crest and at right angles thereto, the elements being in face to face relationship with the lines of corrugations angled with respect to those on contiguous elements and the elements being held together at locations in which the tab extensions are in contact with a contiguous sheet.

5,510,171

DURABLE SECURITY LAMINATE WITH HOLOGRAM
Lynn E. Faykish, Minneapolis, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Jan. 19, 1995, Ser. No. 375,531
Int. Cl.⁶ B32B 3/00

U.S. Cl. 428—195

14 Claims

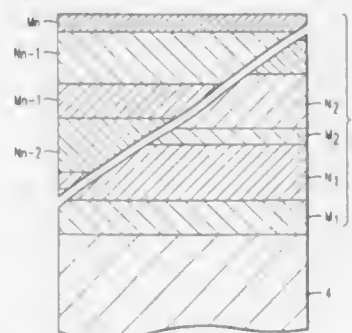


1. A security laminate, comprising:
 - (a) protective layer having first and second surfaces;
 - (b) embossed layer having first and second surfaces, the first surface of the embossed layer bonded to at least a portion of the second surface of the protective layer;
 - (c) reflective layer having first and second surfaces, the first surface of the reflective layer bonded to at least a portion of the second surface of the embossed layer; and
 - (d) adhesion enhancing layer bonded to only a portion of the second surface of the reflective layer; and
 - (e) adhesive bonded to at least a portion of the adhesion enhancing layer/reflective layer/embossed layer/protective layer composite wherein the bond between the reflective layer and the adhesion enhancing layer and the bond between the adhesion enhancing layer and the adhesive are each more tenacious than the bond between the reflective layer and the embossed layer and further wherein the bond between the adhesive and the adhesion enhancing layer is more tenacious than the bond between the adhesive and the reflective layer.

5,510,172

MAGNETIC MULTILAYER FILM AND MAGNETORESISTANCE ELEMENT
Satoru Araki, and Daisuke Miyauchi, both of Chiha, Japan, assignors to TDK Corporation, Tokyo, Japan
Filed Jun. 23, 1993, Ser. No. 79,940
Claims priority, application Japan, Jun. 23, 1992, 4-188840
Int. Cl.⁶ B32B 7/02; G11B 5/66; S70; S127
U.S. Cl. 428—213

20 Claims



1. A magnetic multilayer film, comprising a first and a second magnetic thin film with a non-magnetic thin film between said first and second magnetic thin films, wherein

said first and second magnetic thin films have different coercive forces, said first magnetic thin film having a lower coercive force and a squareness ratio SQ_1 of from 0.7 to 1.0 and said second magnetic thin film having a higher coercive force and a squareness ratio SQ_2 of from 0.1 to 0.8;

the first magnetic thin film has a thickness t_1 , the second magnetic thin film has a thickness t_2 and the non-magnetic thin film has a thickness t_3 wherein $4 \text{ \AA} \leq t_2 < 30 \text{ \AA}$, $20 \text{ \AA} < t_1 < 200 \text{ \AA}$, $t_1 > t_2$ and $4 \text{ \AA} < t_3 < 60 \text{ \AA}$, and

wherein the ratio of coercive force between adjacent magnetic thin films is 1.2:1 to 100:1.

5,510,173

MULTIPLE LAYER THIN FILMS WITH IMPROVED CORROSION RESISTANCE

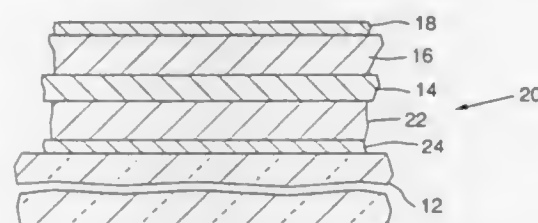
Thomas Pass, Sunnyvale, and Floyd E. Woodard, Los Altos, both of Calif., assignors to Southwall Technologies Inc., Palo Alto, Calif.

Filed Aug. 20, 1993, Ser. No. 110,350

Int. Cl.⁶ B32B 17/06

U.S. Cl. 428—216

17 Claims



1. In a coating having a 10 to 3000 Å thick layer of metal selected from the group consisting of silver, copper, and combinations of silver and copper with one another and with noble metals with an overlayer of dielectric, the improvement comprising employing as the overlayer a mixed material having a first layer adjacent to the layer of metal composed substantially of dielectric selected from the group consisting of indium oxide, zinc oxide and mixed indium/zinc oxide dielectric and a second layer adjacent to the first and composed substantially of mixed indium/tin oxide dielectric.

5,510,174

THERMALLY CONDUCTIVE MATERIALS CONTAINING TITANIUM DIBORIDE FILLER

Gary J. Litman, Framingham, Mass., assignor to Chomerics, Inc., Woburn, Mass.

Continuation of Ser. No. 91,700, Jul. 14, 1993, abandoned.

This application Apr. 12, 1994, Ser. No. 226,450

Int. Cl.⁶ B32B 27/12; 15/08; 27/20; 27/30

U.S. Cl. 428—261

20 Claims

1. A thermally conductive of pressure sensitive adhesive tape having both thermal conductance and adhesion, said thermally conductive, pressure sensitive adhesive tape comprising a combination including a pressure sensitive adhesive resin binder and titanium diboride particles distributed throughout the pressure sensitive adhesive resin binder.

5,510,175

POLISHING CLOTH

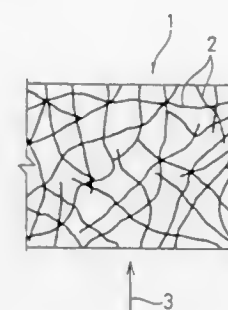
Kenichiro Shiozawa, Kyoto, Japan, assignor to Chiyoda Co., Ltd., Kyoto, Japan

Continuation-in-part of Ser. No. 148,312, Nov. 8, 1993, abandoned. This application Mar. 1, 1995, Ser. No. 396,929

Int. Cl.⁶ B24D 3/32

U.S. Cl. 428—288

2 Claims



1. A polishing cloth comprising a nonwoven cloth comprising 100% polyvinyl alcohol filaments which is bonded with microporous aromatic polysulfone resin, characterized in that: the nonwoven cloth is first impregnated with an aromatic polysulfone resinous solution prepared by dissolving aromatic polysulfone resin in an organic solvent; the nonwoven cloth impregnated with the aromatic polysulfone resinous solution is subsequently immersed in a nonsolvent so as to coagulate the aromatic polysulfone resinous solution; and the nonwoven cloth is finally washed with water and dried.

5,510,176

POLYTETRAFLUOROETHYLENE POROUS FILM

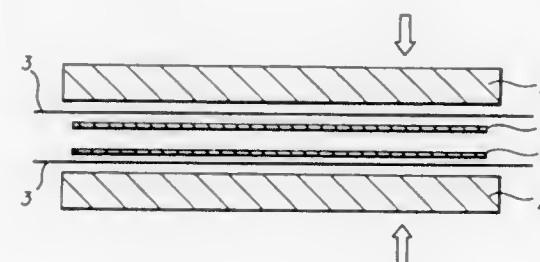
Atsushi Nakamura, Fukuoka, and Satoshi Nakashima, Tokyo, both of Japan, assignors to Mitsubishi Kasei Corporation, and Nippon Vaisa Industries, Ltd., both of Tokyo, Japan
Continuation-in-part of Ser. No. 909,174, Jul. 6, 1992, Pat. No. 5,358,678, which is a continuation-in-part of Ser. No. 907,849, Jul. 2, 1992, abandoned. This application Aug. 26, 1994, Ser. No. 295,070

Claims priority, application Japan, Jul. 4, 1991, 3-1645631; Dec. 13, 1991, 3-330481; Dec. 31, 1991, 3-330480

Int. Cl.⁶ B32B 3/26

U.S. Cl. 428—316.6

9 Claims



1. A polytetrafluoroethylene porous film which is formed from a polytetrafluoroethylene resin molding powder obtained by suspension polymerization, wherein said film has a porosity of 40 to 80%, a water permeability of not less than 200 liter/hr. \cdot m²·atm and a removal ratio of uniform particles having a 0.038 μm diameter of not less than 76%.

5,510,177

MAGNETIC RECORDING MEDIUM

Kenichi Masuyama; Kazuo Kato, and Hiroaki Araki, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Dec. 21, 1992, Ser. No. 994,522

Claims priority, application Japan, Dec. 20, 1991, 3-338957

Int. Cl.⁶ B32B 5/16; G11B 5/66

U.S. Cl. 428—323

11 Claims

1. A magnetic recording medium comprising a first magnetic layer and a second magnetic layer which have been provided in this order on a surface of a nonmagnetic support, and which contain ferromagnetic particles and a binder, wherein said second magnetic layer contains nonmagnetic particles selected from the group consisting of Cr₂O₃, α-Fe₂O₃, SiC, TiO₂, ZrO₂ and particles obtained by coating nonmagnetic powder particles having a Mohs' hardness of 6 or more with Cr₂O₃, α-Fe₂O₃, SiC or TiO₂, having a pH of less than 7, and a Mohs' hardness of 6 or more, in an amount of from 1 to 20 parts by weight, per 100 parts by weight of the ferromagnetic particles in the second magnetic layer, and said first magnetic layer contains nonmagnetic particles selected from the group consisting of α-Al₂O₃, SiO₂ and particles obtained by coating nonmagnetic powder particles having a Mohs' hardness of 6 or more with α-Al₂O₃ or SiO₂ having a pH of 7 or more, and a Mohs' hardness of 6 or more, in an amount of from 5 to 50 parts by weight, per 100 parts by weight of the ferromagnetic particles in the first magnetic layer.

5,510,178

TRANSFER ARTICLE FOR FORMING TETROREFLECTIVE AND COLORED IMAGES AND METHOD OF MAKING SAME

Ulf N. Olsen, Solbergmoen, Norway; Erik Franke, Copenhagen, Denmark, and Eilif Strand, Drammen, Norway, assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

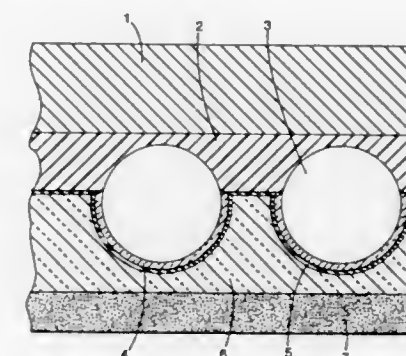
PCT No. PCT/DK91/00325, § 371 Date Jun. 23, 1993, § 102(e) Date Jun. 23, 1993, PCT Pub. No. WO92/07990, PCT Pub. Date May 14, 1992

PCT Filed Oct. 25, 1991, Ser. No. 39,454

Claims priority, application Denmark, Oct. 25, 1990, 2573/90
Int. Cl.⁶ B32B 5/16

U.S. Cl. 428—323

12 Claims



1. A transfer for placing a retroreflective article on a substrate, which transfer comprises:
 - (a) a support sheet;
 - (b) a monolayer of transparent microspheres embedded about one-fourth to about one-half their diameter in the support sheet;
 - (c) a specularly reflecting layer disposed on the portion of the microspheres that protrudes from the support sheet; and
 - (d) an imagewise coating applied over the specularly reflecting layer, the imagewise coating being based on a polyester resin and an isocyanate.

5,510,179
MAGNETIC RECORDING MEDIUM HAVING AT LEAST TWO LAYERS WHEREIN THE UPPERMOST LAYER CONTAINS ALUMINA PARTICLES WHICH CONTAIN SPECIFIED OXIDES

Kiyoto Fukushima; Sadafumi Iijima, and Motoyuki Tsunoda, all of Nagano, Japan, assignors to TDK Corporation, Tokyo, Japan

Filed Dec. 22, 1994, Ser. No. 361,578
Claims priority, application Japan, Dec. 22, 1993, 5-346248
Int. Cl.⁶ G11B 5/00

U.S. Cl. 428—323

4 Claims

1. A magnetic recording medium comprising at least two coating layers on one surface of a non-magnetic substrate, wherein the uppermost layer of the coating layers is a magnetic layer having a thickness t of 0.2 to 0.5 μm and containing 0.4–16% by weight of alumina particles containing an oxide of elements selected from the group consisting of Si, Fe, Ti, W, Mg, Mn and mixtures thereof and having a mean particle size d of 0.1 to 0.3 μm , wherein the ratio t/d is a number in the range of from 1:1 to 4:1, wherein the oxide contained in the alumina particles is present in a total amount of 0.05 to 5.0% by weight of the alumina particles when calculated as SiO_2 , Fe_2O_3 , TiO_2 , WO_3 , MgO and MnO .

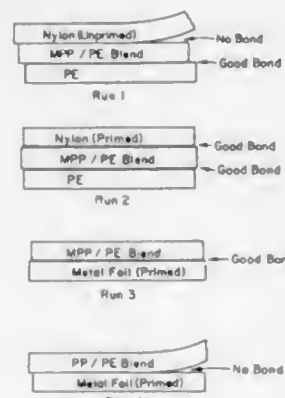
5,510,180
POLYPROPYLENE LAMINATES

Yao-Ching Liu, Longview, and Ray Edwards, Henderson, both of Tex., assignors to Eastman Chemical Company, Kingsport, Tenn.

Division of Ser. No. 815,726, Dec. 30, 1991, Pat. No. 5,248,364. This application Sep. 23, 1993, Ser. No. 126,213
Int. Cl.⁶ B32B 27/08; 27/36; B29C 47/06

U.S. Cl. 428—332

12 Claims



1. A destructively bonded extrusion laminate comprising:
(1) a first layer of a blend of maleated high molecular weight polypropylene/low density polyethylene; and
(2) a second layer of a substrate primed with a polyethylene-imine primer.

5,510,181
LUBRICANT AND MAGNETIC RECORDING MEDIUM USING THE SAME

Yoshiyuki Nabata, Tochigi, Japan, assignor to Kao Corporation, Tokyo, Japan

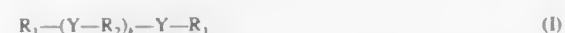
Filed Jul. 9, 1993, Ser. No. 87,864
Claims priority, application Japan, Jul. 21, 1992, 4-194284
Int. Cl.⁶ G11B 5/66; B32B 5/16; 27/00

U.S. Cl. 428—336

3 Claims

1. A magnetic recording medium comprising a substrate having thereon a magnetic layer and a lubricant layer wherein said lubricant is provided on the outermost layer at a thickness of at most

about 20 Å and is a compound which is devoid polar groups at the terminals of its molecule and which is represented by the following formula (I):



wherein Y is selected from the group consisting of the divalent residue of a carboxyl group-containing compound, the divalent residue of an isocyanate group-containing compound and the divalent residue of a hydroxyl group-containing compound, and all Y groups in formula (I) may be the same or different when k is 2 or more;

R_1 represents a perfluoropolyether chain comprising a repeating unit of $(C_2F_{2a}O)_b$, wherein a is 1, 2 or 3, and b is at least 2, which is terminated by $-CF_3$ and has a number average molecular weight of about 400 to 10,000, and both R_1 groups in formula (I) may be the same or different;

R_2 represents a perfluoropolyether chain comprising a repeating unit of $C_2F_{2c}O_d$, wherein c is 1, 2 or 3, and d is an integer of at least 1 and all R_2 groups in formula (I) may be the same or different when k is 2 or more; and k is an integer of at least 1.

5,510,182
COPOLYESTERCARBONATE COMPOSITION DERIVED FROM DIHYDRIC PHENOL, CARBONATE PRECURSOR AND AN ALPHA, OMEGA DICARBOXYLIC ACID

Luca P. Fontana, Evansville; Kenneth F. Miller, Mt. Vernon, both of Ind.; Adrianus A. Claesen, CA Bergen Op Zoom, Netherlands; Peter W. van Es, GV Hoogerheide, Netherlands; Theodorus O. N. de Vroomen, Dordrecht, Netherlands; Clayton B. Quinn, Burnt Hills, N.Y., and Richard W. Campbell, Evansville, Ind., assignors to General Electric Company, Pittsfield, Mass.

Division of Ser. No. 44,852, Apr. 8, 1993, Pat. No. 5,321,114, which is a division of Ser. No. 627,517, Dec. 14, 1990, abandoned, which is a continuation-in-part of Ser. No. 476,068, Jan. 30, 1990, abandoned, which is a continuation-in-part of Ser. No. 455,118, Dec. 22, 1989, abandoned. This application Mar. 29, 1994, Ser. No. 219,128

Int. Cl.⁶ C08G 63/64

U.S. Cl. 428—35.7

17 Claims

1. A multi-walled article wherein at least one wall of said article is comprised of a sheet of a copolyestercarbonate derived from a dihydric phenol; a carbonate precursor; and an aliphatic alpha omega dicarboxylic acid or ester precursor wherein the dicarboxylic acid or ester precursor has from 10 to about 20 carbon atoms, inclusive, and is chemically condensed in the copolyestercarbonate in quantities of from about 2 to 30 mole percent of the dihydric phenol.

5,510,183
METHOD OF FORMING SELF-TEXTURING FILAMENTS AND RESULTING SELF-TEXTURING FILAMENTS

Fred L. Travelute, Charlotte, N.C., and Robert E. Hoffman, Catawba, S.C., assignors to Wellman, Inc., Shrewsbury, N.J.

Division of Ser. No. 156,237, Nov. 22, 1993, Pat. No. 5,407,625. This application Nov. 4, 1994, Ser. No. 334,420

Int. Cl.⁶ D02G 3/00

U.S. Cl. 428—362

3 Claims

1. A coiled bilateral hollow polymeric filament in which the two component polymers are identical except for their degree of orientation.

5,510,184
YARN FOR FORMABLE SHEET STRUCTURES AND PROCESS FOR PREPARING THE YARN

Jorgen Due, Silkeborg; Bjarne Graves, Them, and Henning Bak, Silkeborg, all of, Denmark, assignors to Hoechst Aktiengesellschaft, Germany

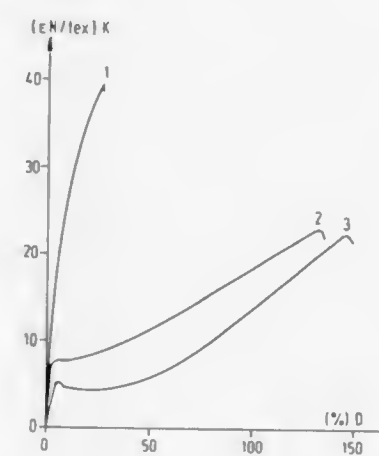
Continuation of Ser. No. 963,847, Oct. 20, 1992, abandoned, which is a continuation of Ser. No. 308,974, Feb. 8, 1989, abandoned, which is a continuation of Ser. No. 873,425, Jun. 12, 1986, abandoned. This application Mar. 8, 1994, Ser. No. 207,874

Claims priority, application Germany, Jun. 14, 1985, 35 21 479.1

Int. Cl.⁶ D02G 3/00

U.S. Cl. 428—365

8 Claims



1. A yarn for preparing irreversibly highly formable textile sheet structures by weaving or knitting comprising a carrier component and a non-carrier component

wherein said yarn is textured, and has a degree of elasticity under a load of 5 cN/tex of below 50%.

the carrier component contains partially oriented, undrawn polyester filaments in an amount of 6 to 100% by weight of the total linear density of the yarn and said filaments have a birefringence of at least 27×10^{-3} , an elongation at break between 70 and 200% and a flow stress of at least 6 cN/tex.

5,510,185
CARBON FIBER CHOPPED STRANDS AND COATING DISPERSION USED FOR PRODUCING SAME

Eiji Fujisawa; Hiroaki Shono, both of Fukushima; Kozo Yodate, Chiba, and Ichiro Fujishima, Tokyo, all of, Japan, assignors to Nitto Boseki Co., Ltd., Fukushima, Japan

Continuation of Ser. No. 918,069, Jul. 24, 1992, abandoned. This application Dec. 21, 1994, Ser. No. 361,151

Claims priority, application Japan, Jul. 26, 1991, 3-187290

Int. Cl.⁶ B32B 9/00

U.S. Cl. 428—368

4 Claims

1. A chopped strand of carbon fibers comprising carbon fibers and 0.3–5% by weight of carbonaceous spherule particles adsorbed onto the surface of the carbon fibers.

5,510,186
DURABLE WIDEBAND ANTI-REFLECTION COATING FOR INFRARED WINDOWS

Frank C. Sulzbach, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

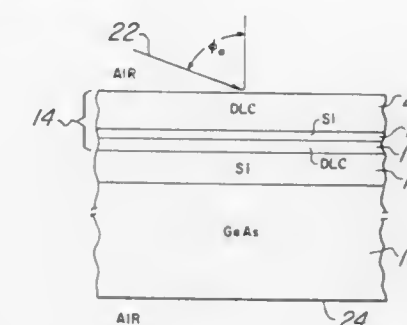
Continuation of Ser. No. 400,606, Aug. 30, 1989, abandoned.

This application Jun. 16, 1995, Ser. No. 491,510

Int. Cl.⁶ B32B 9/00

U.S. Cl. 428—408

11 Claims



1. An ultra hard, wide band anti-reflection coating for a window comprising:

a semiconductor window having an index of refraction between 2.9 and 3.5;

a cladding layer to provide durability and promote bonding on said window;

a first diamond like carbon layer on said cladding layer;

a semiconductor layer on said first diamond like carbon having an index of refraction between 2.7 and 4.0; and

a second diamond like carbon layer on said semiconductor layer.

5,510,187
MAGNETIC RECORDING MEDIUM WHOSE MAGNETIC LAYER INCORPORATES NONHALOGENATED VINYL COPOLYMER AND SPECIFIED POLYURETHANE POLYMER

Ramesh C. Kumar, Maplewood; Ravindra L. Arudi, Woodbury; James G. Carlson, Lake Elmo; Daniel Y. Chang, Vadnais Heights; John C. Haidos, St. Paul; Keith J. Modert, Hugo; Suman K. Patel, Woodbury, and Nelson T. Rotto, St. Paul, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 54,312, Apr. 27, 1993, abandoned.

This application Jun. 1, 1995, Ser. No. 457,323

Int. Cl.⁶ G11B 5/00

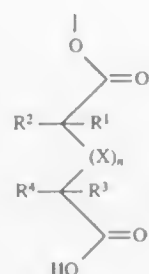
U.S. Cl. 428—425.9

51 Claims

1. A magnetic recording medium, comprising a magnetic layer provided on a nonmagnetizable substrate, wherein the magnetic layer comprises a magnetic pigment dispersed in a polymeric binder, and wherein the polymeric binder comprises:

(a) a nonhalogenated vinyl copolymer, wherein the vinyl copolymer comprises a plurality of pendant nitrile groups, a plurality of pendant hydroxyl groups, and at least one pendant dispersing group; and

(b) a polyurethane polymer, wherein the polyurethane polymer comprises a pendant dispersing group of the formula



wherein

R¹, R², R³, and R⁴ are independently selected from the group consisting of —H, —OH, —COOM, —SSO₃M, —SH, —CH₂COOM, —SCH₂COOM, —P(=O)(OM)₂, —OP(=O)(OM)₂, and —Y, wherein at least one of R¹, R², R³, and R⁴ comprises a moiety other than —H or —Y;

Y is selected from the group consisting of linear alkyl groups comprising from about 1 to about 10 carbon atoms, branched alkyl groups comprising from about 1 to about 10 carbon atoms, and aryl groups comprising from about 6 to about 10 carbon atoms;

M is a cation selected from the group consisting of alkali metal cations, H⁺ and ammonium cations;

R¹ and R² together or R³ and R⁴ together can be cis or trans =CHCOOH;

X is a divalent moiety independently selected from the group consisting of —CR⁵R⁶ and —NR⁷;

n represents an integer selected from the group consisting of 0 and 1;

R⁵ and R⁶ are independently selected from the group consisting of —H, —OH, —COOM, —SO₃M, —SH, —CH₂COOM, —SCH₂COOM, —P(=O)(OM)₂, —OP(=O)(OM)₂, and —Y, wherein M and Y are as defined above;

R⁷ is a monovalent moiety independently selected from the group consisting of —CH₂COOH, —CH₂CH₂COOH, —CH₂CH₂N(CH₂COOH)₂, —(CH₂)₆N(CH₂COOH)₂, —(CH₂CH₂O)₂CH₂CH₂N(CH₂COOH)₂, and —CH₂CH₂N(CH₂COOH)CH₂CH₂OH.

27. A magnetic recording medium, comprising a magnetic layer provided on a nonmagnetizable substrate, wherein the magnetic layer comprises a magnetic pigment dispersed in a polymeric binder, and wherein the polymeric binder comprises:

- a nonhalogenated vinyl copolymer, wherein the vinyl copolymer comprises a plurality of pendant nitrile groups, a plurality of pendant hydroxyl groups, and at least one pendant dispersing group; and
- a polyurethane polymer having at least one pendant nonhalogenated vinyl copolymeric moiety, said vinyl copolymeric moiety of the polyurethane polymer comprising a plurality of pendant nitrile groups.

5,510,188

CERAMIC-LIKE OPAQUE GLASS

Larry D. Vockler, Vancouver, Wash., assignor to Industrial Control Development, Inc., Vancouver, Wash.

Filed Sep. 14, 1994, Ser. No. 307,333

Int. Cl.⁶ B32B 3/10; 19/04

U.S. Cl. 428—426

2 Claims

1. A composite article comprising a glass substrate coated with a durable and highly adhesive cured silicate film, said film prepared from a composition consisting essentially of the following components in the weight percentages noted:

- 37 to 43 wt % high temperature-resistant pigment;
- 11 to 16 wt % aqueous sodium silicate solution wherein the weight ratio of SiO₂ to Na₂O is approximately 3;
- 15 to 24 wt % aqueous sodium silicate solution wherein the weight ratio of SiO₂ to Na₂O is approximately 2;

(d) 15 to 20 wt % aqueous potassium silicate solution wherein the weight ratio of SiO₂ to K₂O is approximately 2;

(e) 0.5 to 3 wt % colloidal silica;

(f) 3 to 7 wt % aqueous alkali metal hydroxide solution having a concentration of 30–60 wt %; and

(g) 1.5 to 3 wt % feldspar.

5,510,189

ADHESIVE TAPE FOR ELECTRONIC PARTS AND LIQUID ADHESIVE

Yukinori Sakumoto; Takeshi Hashimoto; Katsuji Nakaba; Masaharu Kohayashi; Takeshi Nishigaya, and Fumiyoshi Yamanashi, all of Shizuoka, Japan, assignors to Tomoe Gawa Paper Co., Ltd., Tokyo, Japan

Division of Ser. No. 326,427, Oct. 20, 1994. This application Jun. 5, 1995, Ser. No. 462,365

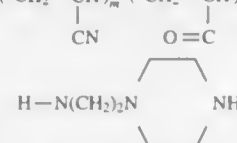
Claims priority, application Japan, Oct. 22, 1994, 5-286204 Int. Cl.⁶ B32B 9/04

U.S. Cl. 428—447

3 Claims

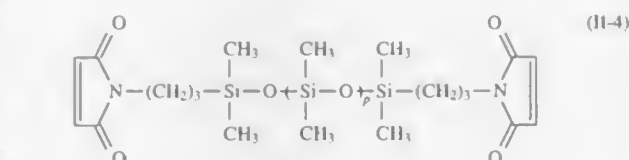
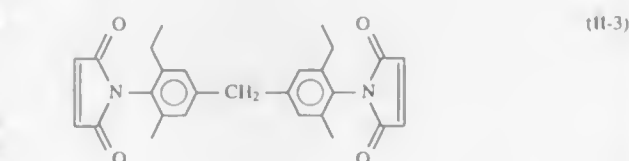
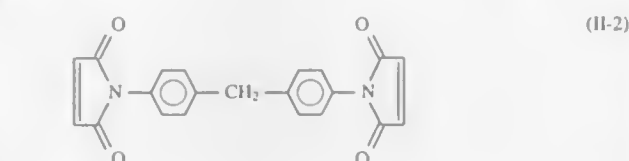
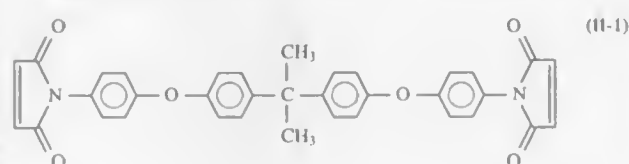
1. An adhesive for electronic parts obtained by laminating one surface of a release film with an adhesive comprising:

- a piperazinylethylaminocarbonyl-containing butadiene-acrylonitrile copolymer having a weight average molecular weight of 10,000–200,000, an acrylonitrile content of 5–50% by weight, and an amino equivalent of 500–10,000, represented by the following formula (I):

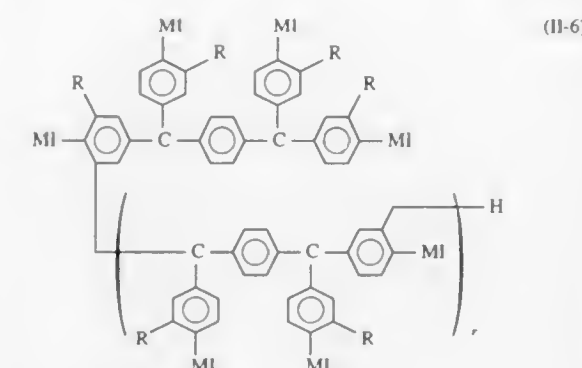
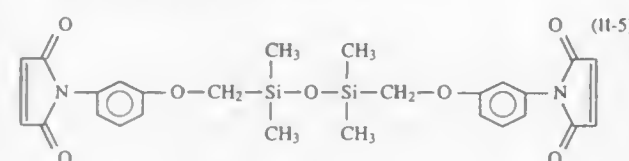


wherein, k, m and n are molar ratios and taking n as 1, k is a number of 3–175, and m is a number of 0.3 to 93; and

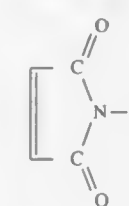
- a compound having at least two maleimides groups selected from the compounds represented by the following formulae (II-1) to (II-6):



wherein p is an integer of from 0 to 7



wherein MI=



R=H or CH₃, and r=1–5

the ratio of component (b) based on 100 parts by weight of component (a) being in the range of 10 to 900 parts by weight.

5,510,190

RADIATION-CURABLE RELEASE COMPOSITIONS

John Allen, Yorba Linda, and Qun Yu, Los Angeles, both of Calif., assignors to Avery Dennison Corporation, Pasadena, Calif.

Filed Feb. 27, 1995, Ser. No. 394,572

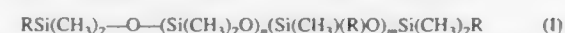
Int. Cl.⁶ B32B 9/04; 9/06; C08F 283/12

U.S. Cl. 428—448

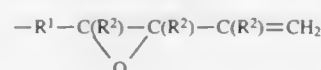
20 Claims

1. A radiation-curable release composition, comprising:

- (A) an organopolysiloxane represented by the formula

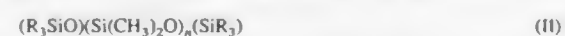


wherein in Formula (I), each R is —R¹—O(O)C—C(R²)=CH₂, —R¹—O—C(R²)=CH₂ or



R¹ is a hydrocarbylene group; each R² is independently hydrogen or a methyl or ethyl group; m is a number from 1 to about 15; and n is a number from about 50 to about 300; and

- (B) an organosiloxane polymer represented by the formula



wherein in Formula (II), each R is independently a hydrocarbon group and n is a number in the range of about 1000 to about 20,000.

5,510,191

NBR BASED RUBBER LAMINATED METAL PLATE GASKET MATERIAL

Toshihiro Higashira, and Rikito Eguchi, both of Fujisawa, Japan, assignors to NOK Corporation, Tokyo, Japan

Filed Mar. 29, 1994, Ser. No. 219,477

Claims priority, application Japan, Apr. 2, 1993, 5-100464

Int. Cl.⁶ B65D 53/00; B32B 15/04; 15/08; 27/00

U.S. Cl. 428—457

6 Claims

1. A rubber-laminated metallic plate, which comprises:

- a metallic plate;
- a primer layer comprising phenol resin and a nitrile-butadiene rubber compound, formed on at least one side of said metallic plate; and
- a vulcanized rubber layer comprising said nitrile-butadiene rubber compound, formed on said primer layer, in which said nitrile-butadiene rubber compound used in forming said layers (b) and (c) comprises:
 - nitrile-butadiene rubber,
 - about 40 to about 120% by weight of a white filler on the basis of the nitrile-butadiene rubber,
 - about 70 to about 90% by weight of a carbon black on the basis of the nitrile-butadiene rubber,
 - about 3 to about 10% by weight of zinc oxide as an acid acceptor on the basis of the NBR, and
 - a vulcanizing agent which consists of an organic peroxide.

5,510,192

POLYETHYLENE NAPHTHALATE MULTILAYERED FILM FOR HIGH DENSITY MAGNETIC RECORDING MEDIUM

Shigeo Utsumi, Yamato; Masashi Inagaki, Tsukui, and Yuko Watanuki, Tokyo, all of Japan, assignors to Diafoil Hoechst Company, Limited, Tokyo, Japan

Filed Jul. 1, 1992, Ser. No. 906,943

Claims priority, application Japan, Jul. 12, 1991, 3-172793

Int. Cl.⁶ G11B 5/66; B32B 27/06

U.S. Cl. 428—480

10 Claims

1. A polyethylene naphthalate multilayered film for a high density magnetic recording medium comprising:

- a polyethylene naphthalate layer (A) having a first surface and a second surface, and
- a polyethylene naphthalate layer (B) having a laminating surface and a protrusion surface, said layer (B) being laminated on at least one surface of said polyethylene naphthalate layer (A), and having a thickness of not more than 2 μm and characteristics represented by the following formulae (1)–(3), and the multilayered film having characteristics represented by the following formula:

$$0.002 \leq Ra \leq 0.010 (1)$$

$$H_2 \leq 0.1 (2)$$

$$50 \leq Pc (3)$$

$$Y \leq 700 (4)$$

wherein

Ra represents a center line average roughness, measured in micrometers, at the surface of the polyethylene naphthalate layer (B).

H₂ represents the number of second or higher order protuberances in the surface of the polyethylene naphthalate layer (B), measured in units of number/25 cm², determined by the multiple interference method.

Pc represents the number of peak counts at the surface of the polyethylene naphthalate layer (B), measured in units of number/0.8 mm, and

Y represents Young's modulus in the machine direction and transverse direction of the film, measured in units of kg/mm².

5,510,193
SUPPORTED POLYCRYSTALLINE DIAMOND COMPACT
HAVING A CUBIC BORON NITRIDE INTERLAYER FOR
IMPROVED PHYSICAL PROPERTIES

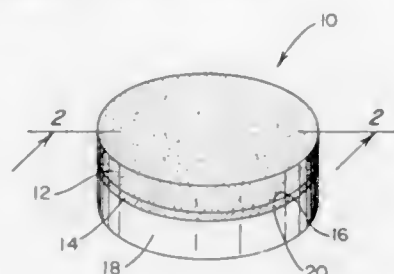
David B. Cerutti, and Henry S. Marek, both of Worthington, Ohio, assignors to General Electric Company, Worthington, Ohio

Filed Oct. 13, 1994, Ser. No. 322,841

Int. Cl.⁶ B22F 7/02

U.S. Cl. 428—552

4 Claims



1. A metal carbide supported polycrystalline diamond (PCD) compact, consisting essentially of:

- (a) a PCD compact layer;
- (b) a cemented metal carbide support layer; and
- (c) a polycrystalline cubic boron nitride (PCBN) interlayer being interposed between said PCD compact layer and said cemented metal carbide support layer, wherein said PCBN interlayer having a CBN content of at least about 70% by volume, wherein said PCBN compact interlayer comprises between about 10% and 30% by volume of said binder metal from said cemented metal carbide support layer.

5,510,194
PERFORATED PLATE FILTER MEDIA AND RELATED PRODUCTS

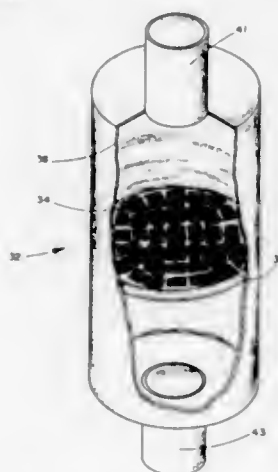
John B. Hendricks, and Michael L. Dingus, both of Huntsville, Ala., assignors to Alabama Cryogenic Engineering, Inc., Huntsville, Ala.

Continuation-in-part of Ser. No. 800,220, Nov. 27, 1991, Pat. No. 5,298,337, which is a continuation-in-part of Ser. No. 530,873, May 29, 1990, which is a continuation-in-part of Ser. No. 375,709, Jul. 5, 1989, Pat. No. 5,101,894. This application Apr. 27, 1993, Ser. No. 54,315

Int. Cl.⁶ B01D 36/00

U.S. Cl. 428—556

2 Claims



1. An air filter for removing contaminants from an air stream comprising:

- a housing having an inlet and an outlet and disposed across a duct carrying said air stream;
- a support member disposed across said housing;

a plurality of perforated plates secured to said support member and arranged for flow from said air stream through said plates; and

said plates having a multiplicity of uniform sized holes of a selected diameter in the range of 0.5 to 20 microns and a porosity of 30 to 60 percent.

5,510,195
RESIN MEMBRANE HAVING METALLIC LAYER AND METHOD OF PRODUCING THE SAME

Masakatsu Sano, Machida; Nobuo Katsuura, Sagami-hara; Osamu Igarashi, Yokohama; Atsushi Nakayama, Kamakura; Toshihide Imamura, and Kanichi Kadotani, both of Atsugi, all of, Japan, assignors to Nikko Kogyo Kabushiki Kaisha, and Komatsu Ltd., both of Tokyo, Japan

Filed Feb. 27, 1992, Ser. No. 842,705

Claims priority, application Japan, Mar. 1, 1991, 3-059357; May 24, 1991, 3-149349

Int. Cl.⁶ B32B 5/18; 15/08

U.S. Cl. 428—613

20 Claims



1. A resin membrane comprising:

- a porous resin; and
- a metallic layer chemically bonded to the porous resin, wherein the pores of the resin are not blocked off by the metallic layer, the metallic layer chemically bonded to the porous resin coats the surface of the resin and penetrates into the pores of the porous resin and said porous resin has functional groups capable of being chemically bonded to said metallic layer.

5,510,196
CORROSION RESISTANT STEEL SHEETS IMPROVED IN CORROSION RESISTANCE AND OTHER CHARACTERISTICS

Hiroki Nakamaru; Tohru Fujimura; Hiroaki Ohnuma; Kazuo Mochizuki; Nobuyuki Morito, and Michio Katayama, all of Chiba, Japan, assignors to Kawasaki Steel Corporation, Japan

PCT No. PCT/JP93/00956, § 371 Date Mar. 8, 1994, § 102(e) Date Mar. 8, 1994, PCT Pub. No. WO94/01602, PCT Pub. Date Jan. 20, 1994

PCT Filed Jul. 9, 1993, Ser. No. 204,298

Claims priority, application Japan, Jul. 10, 1992, 4-184133; Jul. 10, 1992, 4-184134; Nov. 11, 1992, 4-300913; Nov. 11, 1992, 4-300914; Nov. 11, 1992, 4-300915; Feb. 9, 1993, 5-021050

Int. Cl.⁶ B32B 15/18

U.S. Cl. 428—659

11 Claims

1. A corrosion resistant steel sheet having improved resistances to corrosion and cosmetic corrosion that is treated with a Zn—Cr alloy plating which is an alloy consisting of Zn and Cr as formed by electrodeposition and which is substantially solely composed of a phase η_x having a hexagonal crystal system with lattice constants $a=2.66\text{--}2.74\text{ \AA}$ and $c=4.61\text{--}4.95\text{ \AA}$, and any portion of said alloy not composed of said η_x phase is substantially composed of at least one phase selected from the group consisting of a phase Γ_x having a cubic crystal system with a lattice constant $a=3.00\text{--}3.06$

5,510,198
RE-USABLE CEMENT FORMS
William D. Maag, and Joey C. Carico, both of Kingsport, Tenn., assignors to Eastman Chemical Company, Kingsport, Tenn.

Filed Feb. 22, 1995, Ser. No. 392,455

Int. Cl.⁶ B32B 9/00

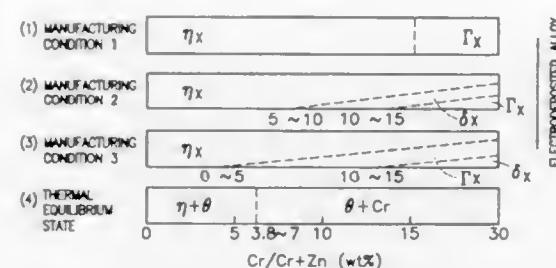
U.S. Cl. 428—688

15 Claims

1. A panel of material comprising a film comprising a layer of a solid polyolefin and a layer of copolyester wherein said copolyester comprises:

- (1) a dicarboxylic acid component comprising repeat units from at least 90 mole percent terephthalic acid; and
- (2) a diol component comprising repeat units from 20 to 40 mole percent diethylene glycol and 80 to 60 mole percent ethylene glycol, based on 100 mole percent dicarboxylic acid and 100 mole percent diol,

said layer of a copolyester being intimately bonded to a wooden substrate and said polyolefin layer being exposed on the outer surface of said film.



\AA , and a phase δ_x having a hexagonal crystal system with lattice constants $a=2.72\text{--}2.78\text{ \AA}$ and $c=4.43\text{--}4.60\text{ \AA}$.

5,510,197
LEAD FRAME MATERIAL AND LEAD FRAME FOR SEMICONDUCTOR DEVICE

Shunji Takahashi; Seizo Masukawa; Rensei Futatsuka; Tetsuya Sugimoto; Takeshi Suzuki; Chuzo Azuma; Yuichi Kanda, and Takao Fukutami, all of Alzuwakamatsu, Japan, assignors to Mitsubishi Shindoh Co., Ltd., Tokyo, Japan

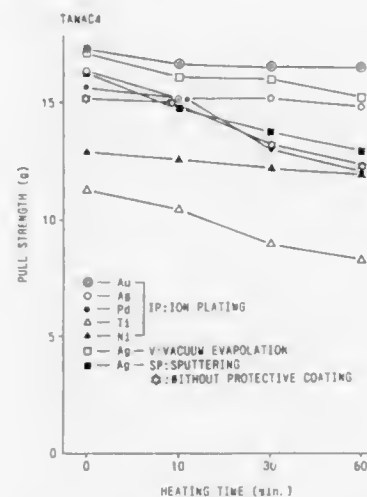
Filed Apr. 26, 1994, Ser. No. 233,460

Claims priority, application Japan, Apr. 28, 1993, 5-103260; Nov. 9, 1993, 5-279912

Int. Cl.⁶ B32B 15/20; H01L 23/495

U.S. Cl. 428—670

12 Claims



6. A lead frame for semiconductor device comprising:

- a lead frame body having inner leads to be wire-bonded and outer leads to be bonded to circuit patterns of a printed circuit board, said frame body consisting of copper or copper alloys;
 - first protective coatings formed by vapor deposition on surfaces of said inner leads of said lead frame body; and
 - intermediate coatings formed between said surfaces of said inner leads and said first protective coatings;
- wherein said first protective coatings are composed of a metal selected from the group consisting of gold, gold alloy, silver, silver alloy, palladium and palladium alloy, said protective coating has a thickness of 10–500 angstrom, and said intermediate coatings are composed of nickel or nickel alloys and have a thickness of 50–20,000 angstrom.

5,510,199
PHOTOCOPY RESISTANT DOCUMENT AND METHOD OF MAKING SAME

J. Philip Martin, San Antonio, Tex., assignor to Clarke American Checks, Inc., San Antonio, Tex.

Filed Jun. 6, 1994, Ser. No. 254,352

Int. Cl.⁶ B32B 9/00

U.S. Cl. 428—690

6 Claims

1. A document consisting essentially of:

- a substrate having a matte surface;
- photocopy-resistant, non-fluorescent, background indicia printed on the matte surface of the substrate; the photocopy-resistant, background indicia consisting essentially of resin-based carrier and solvent-eradicable dye; the photocopy-resistant, background indicia being of a color selected from the group consisting of gray specifically identified by trademark "Pantone Matching System" number 428, gray specifically identified by trademark "Pantone Matching System" number 426 and bluish gray specifically identified by trademark "Pantone Matching System" number 282; and
- non-photocopy-resistant, non-fluorescent textual indicia printed on the matte surface of the substrate over the photocopy-resistant, background indicia; the non-photocopy-resistant, textual indicia consisting essentially of resin-based carrier and non-solvent-eradicable, pigment particles.

5,510,200
FILMS FOR NON-LINEAR OPTICS
Geoffrey J. Ashwell, Shelleys, England, assignor to British Technology Group Limited, London, England

PCT No. PCT/GB91/02096, § 371 Date Aug. 30, 1993, § 102(e) Date Aug. 30, 1993, PCT Pub. No. WO92/09374, PCT Pub. Date Jun. 11, 1992

PCT Filed Nov. 27, 1991, Ser. No. 70,341

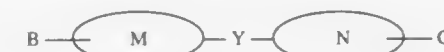
Claims priority, application United Kingdom, Nov. 28, 1990, 9025832

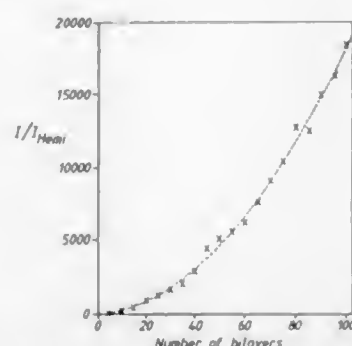
Int. Cl.⁶ B32B 9/04

U.S. Cl. 428—704

29 Claims

1. An ordered non-centrosymmetric optically non-linear material comprising a multi-layer Langmuir-Blodgett film comprising alternate layers of an optically non-linear amphiphilic compound and a spacer compound, said spacer compound having the general formula





wherein M and N represent carbocyclic or heterocyclic groups each respectively having at least one hydrophobic substituent group B or C containing a minimum of six carbon atoms and Y represents a divalent bridging group or atom.

5,510,201 METHOD OF OPERATING A FUEL CELL WHEREIN HYDROGEN IS GENERATED BY PROVIDING IRON IN SITU

John Werth, Princeton, N.J., assignor to H Power Corporation, Belleville, N.J.

Continuation of Ser. No. 52,561, Apr. 23, 1993, abandoned, which is a continuation-in-part of Ser. No. 874,113, Apr. 24, 1992, abandoned. This application Sep. 23, 1994, Ser. No. 281,901

Int. Cl.⁶ H01M 8/04

U.S. Cl. 429—17

10 Claims

1. A method of operating a hydrogen-air fuel cell that is fed by the in situ generation of hydrogen, which hydrogen is generated by passing H₂O into contact with ground or crushed iron, said iron being ground or crushed in situ to enhance its activity and used in a reaction with said H₂O within an operative cycle after grinding or crushing, said method comprising the steps of:

- providing a fluidized bed of iron, said iron being initially in a pellet form prior to grinding or crushing in order to supply iron particles for said fluidized bed, and a source of H₂O in combination with a hydrogen-air fuel cell;
- generating hydrogen for said hydrogen-air fuel cell by reacting said iron with said H₂O at an approximate maximum temperature of about 450° C.;
- grinding or crushing said iron to produce active iron particles, whose reactivity is enhanced to generate hydrogen in step (b) at a rate of approximately at least two percent per minute (2%/min.) at said approximate maximum temperature of about 450° C., said grinding or crushing being accomplished in situ within an operative cycle of said hydrogen-air fuel cell;
- supplying said hydrogen generated in step (b) to said hydrogen-air fuel cell;
- generating H₂O and electricity in said hydrogen-air fuel cell; and
- using at least some of the H₂O generated in step (e) to resupply H₂O for the generation of hydrogen in step (b).

5,510,202 QUASI-PASSIVE VARIABLE PRESSURE REGENERATIVE FUEL CELL SYSTEM

Lowell R. McCoy, Woodland Hills, Calif., assignor to Rockwell International Corporation, Seal Beach, Calif.

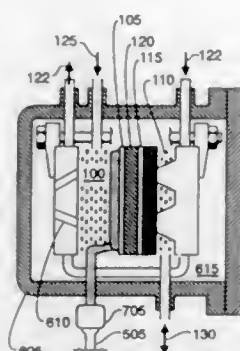
Filed Feb. 24, 1994, Ser. No. 201,508

Int. Cl.⁶ H01M 8/06

U.S. Cl. 429—19

5 Claims

1. A regenerative fuel cell system comprising:
- a fuel cell having (1) an anode with an anode hydrogen inlet, and (2) a cathode having a cathode air inlet;



- a main water storage tank having (1) a fuel cell spent air inlet communicating with said cathode air inlet (2) an oxygen inlet, referred to as an electrolyzer-to-water tank inlet, (3) an air/oxygen exhaust outlet, (4) a water outlet, referred to as a main-to-secondary-water-tank outlet, and (5) a make-up water inlet;
- a secondary water storage tank having (1) a water inlet, referred to as a secondary-water inlet and (2) a water outlet, referred to as a secondary-water-outlet;
- an air pump having a discharge communicating with said fuel cell cathode air inlet;
- a water electrolyzer having (1) an electrolyzer oxygen outlet communicating with said electrolyzer-to-water-tank inlet, and (2) an electrolyzer hydrogen outlet;
- a liquid-gas separator communicating with (1) said electrolyzer hydrogen outlet and (2) said anode hydrogen inlet;
- a condensed phase hydrogen storage tank communicating with said liquid-gas separator;
- a wick having (1) an anode end in contact with said anode and (2) a water end in direct communication with said secondary-water-outlet; and
- a water pump having (1) an inlet communicating with said main-to-secondary-water-tank outlet and (2) a discharge communicating with said secondary-water inlet.

5,510,203 CELL AND MODULE BATTERY OF SEALED ALKALINE STORAGE BATTERY

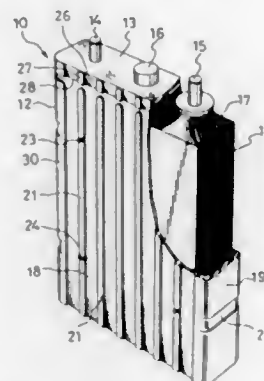
Shinji Hamada; Kanji Takata, both of Neyagawa; Akinori Yokota, Moriguchi; Hiromu Matsuda, Iiyogo, and Munehisa Ikoma, Nara, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Aug. 15, 1994, Ser. No. 290,167

Claims priority, application Japan, Feb. 23, 1994, 6-025460 Int. Cl.⁶ H01M 2/02; 2/12

U.S. Cl. 429—53

23 Claims



7. A module battery (31) comprising a plurality of cells (10) stacked in one direction forming a stacked assembly, each of said cells comprising a battery casing (12) of a synthetic resin, an alkaline electrolyte and an electrode group (11) accommodated in said battery casing, and a lid (13) with a safety vent (16) sealingly

fitted to the opening of said battery casing; wherein said cells are bound in a direction of stacking of cells by binding members (34) connecting end plates (33) to each other provided on both ends in said stacked assembly, spaces (36) for allowing air flow between said cells are formed by a plurality of parallel ribs (21) (30) formed in butted relation with each other on the outer surfaces of said battery casing in the direction of stacking, and a thickness of side walls (18) of said battery casing along the direction of stacking is from 1 mm to 3 mm, a rib height from 1 mm to 2 mm, a rib interval from 10 mm to 15 mm, and a rib width from 3 mm to 10 mm.

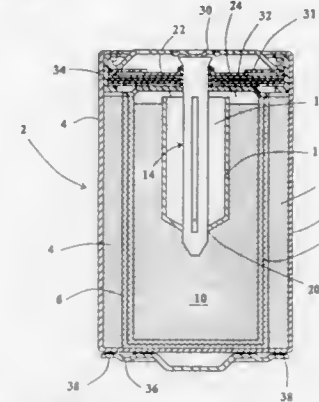
5,510,204 GALVANIC CELL WITH AN ANODE ELECTRODE THAT EXTENDS UP TO AT LEAST 80 PERCENT OF THE HEIGHT OF THE CATHODE ELECTRODE

Lewis F. Urry, Elyria, Ohio, assignor to Eveready Battery Company, Inc., St. Louis, Mo.

Continuation of Ser. No. 103,377, Aug. 9, 1993, Pat. No. 5,389,457. This application Feb. 13, 1995, Ser. No. 387,667 Int. Cl.⁶ H01M 2/26

U.S. Cl. 429—66

6 Claims



1. A galvanic cell comprising a cupped metallic container; a tubular cathode electrode in electronic contact with and lining an inner surface of the container and said container functioning as the first terminal of the cell; a separator disposed within said tubular cathode electrode to form a cavity within said tubular cathode electrode, said separator permitting ion transport; an anode electrode disposed within said cavity and electronically insulated from the cathode electrode by said separator; an anode current collector in electronic contact with said anode electrode and in electronic contact to an external terminal of the cell in which said external terminal functions as the second terminal of the cell; wherein the separator forming the cavity has a height that is at least the height of the cathode electrode and wherein the anode electrode in the cavity extends up to at least 80 percent of the height of the cathode electrode.

5,510,205 UNIVERSAL CAMCORDER BATTERY PACK

Yaacov Ozer, Flat 12, 9/F., Wing Fat Ind. Bldg., 12 Wang Tai Road, Kowloon Bay, Hong Kong

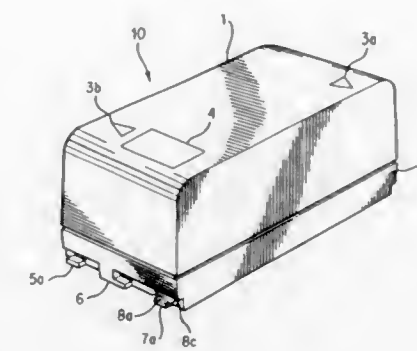
Continuation-in-part of Ser. No. 910,486, Jul. 8, 1992, Pat. No. 5,227,262. This application Mar. 22, 1993, Ser. No. 36,537

Int. Cl.⁶ H01M 2/10

U.S. Cl. 429—91

22 Claims

1. A universal camcorder battery pack, comprising: a housing including a top, a base opposite to the top, a first end and a second end opposite to the first end; at least one battery enclosed within the housing; and a plurality of contacts disposed in the base and connected to the at least one battery, the plurality of contacts being adapted to be coupled to at least three different standard sets of camcorder contacts.



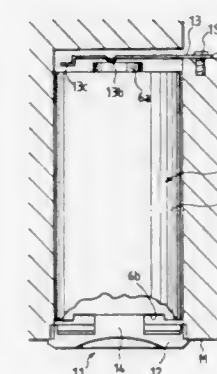
5,510,206 BATTERY LOADING MECHANISM OF CAMERA

Noboru Akami, Yokohama, Japan, assignor to Nikon Corporation, Tokyo, Japan

Filed Sep. 26, 1994, Ser. No. 311,851
Claims priority, application Japan, Sep. 27, 1993, 5-239734 Int. Cl.⁶ H01M 2/10; 2/00

U.S. Cl. 429—100

6 Claims



1. A camera battery loading mechanism for loading a battery in an axial direction, said battery having a positive electrode terminal protruding from a proximal end portion, a negative electrode terminal recessed in a distal end portion, and the distal end portion including a non-conductor portion exclusive of the negative electrode terminal, said loading mechanism comprising:

- a battery chamber, formed with a space for housing the battery, into which the battery is inserted from an insertion port opened to the outside with the positive electrode terminal inserted first;
 - a positive-side electrical plate spring bendable toward the inserting direction of the battery, provided in an inner part opposite to the insertion port of said battery chamber and having one end fixed inwardly of said battery chamber, wherein said plate spring is bent to generate a biasing force which ejects the battery from an insertion opening to the outside thereof; and
 - a negative-side electrical contact provided inside a battery cover and connecting with the negative electrode terminal of the battery;
- wherein said positive-side electrical plate spring has a contact point contacting the positive electrode terminal of the battery when the battery is inserted positive terminal first and a preventive portion contacting the non-conductor portion when the battery is inserted negative electrode terminal first, and said contact point does not contact the negative electrode terminal when said preventive portion contacts the non-conductor portion.

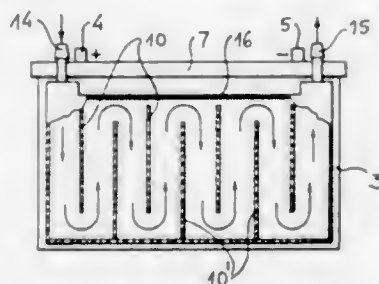
5,510,207
STORAGE CELL BATTERY UNIT EQUIPPED WITH A COOLING DEVICE

Tristan Grivel, Bordeaux; Claude Gilibert, Le Pian-Medoc, and Francis Bonnaud, Salgnac, all of, France, assignors to Societe Anonyme dite SAFT, Romainville, France
Filed Nov. 1, 1993, Ser. No. 143,748

Claims priority, application France, Nov. 2, 1992, 92 13087
Int. Cl.⁶ H01M 10/50

U.S. Cl. 429—120

4 Claims

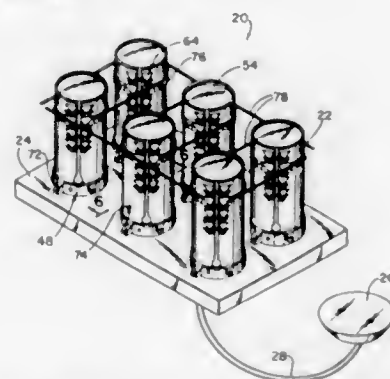


1. A storage cell battery unit having a plurality of cells and comprising a housing made of plastic and constituted by a case and a cover heat-sealed thereon and a cooling device that uses a circulating fluid, wherein said cooling device includes two panels made of plastic and heat-sealed in fluid-tight manner to respective ones of two opposite walls of said housing, each of the panels co-operating with the corresponding wall to delimit a circulation compartment having an inlet orifice and an outlet orifice for said fluid at the top of the compartment, said orifices being situated in said cover, and a water tank being interposed between each of said orifices and said compartment.

5,510,208
COMPOSITE BATTERY CELL SLEEVE
John C. Hall, Saratoga, and Juan F. Leon, San Diego, both of Calif., assignors to Space Systems/Loral, Inc., Palo Alto, Calif.
Filed Sep. 28, 1994, Ser. No. 314,079
Int. Cl.⁶ H01M 2/02

U.S. Cl. 429—164

10 Claims



1. A battery cell sleeve assembly comprising:
a first cylindrical sleeve extending between proximal and distal ends and having a longitudinal axis comprised of a plurality of substantially unidirectional longitudinally extending first elongated fibers being embedded in an epoxy matrix; a second cylindrical sleeve extending between proximal and distal ends and being coaxial, coterminous, and proximate said first cylindrical sleeve, said second cylindrical sleeve being comprised of a plurality of second and third elongated fibers being embedded in an epoxy matrix, said second and third fibers being substantially unidirectional extending transverse of said first fibers, said second and third fibers extending in mutually transverse directions; and

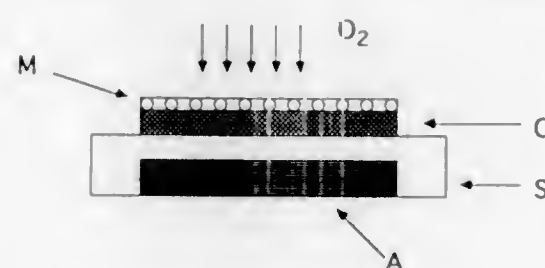
a cylindrical base member having an annular flange for reception thereon of said distal ends of said first and second cylindrical sleeves, said distal ends of said first fibers being contiguous with said annular flange whereby said annular flange operates as a heat shunt for drawing heat away from said first cylindrical sleeve by conduction between said first fibers and said annular flange.

5,510,209
SOLID POLYMER ELECTROLYTE-BASED OXYGEN BATTERIES

Kuzhikalail M. Abraham, Needham, and Zhilping Jiang, Sharon, both of Mass., assignors to EIC Laboratories, Inc., Norwood, Mass.
Filed Jan. 5, 1995, Ser. No. 369,032
Int. Cl.⁶ H01M 6/16; 6/18; 8/10

U.S. Cl. 429—192

12 Claims



1. An electrochemical cell comprising:
a metal-containing electroactive anode;
an oxygen electroactive cathode; and
a polymer electrolyte disposed between said metal containing anode and said oxygen electroactive cathode; wherein said polymer electrolyte comprises:
a polymer hose;
electrolyte salt; and
a plasticizer solvent chosen from the group of solvents consisting of propylene carbonate, ethylene carbonate, dimethyl sulfoxide, gamma-butyrolactone, tetramethylene sulfone (sulfolane), N-methyl pyrrolidinone, tri-ethylene glycol dimethyl ether, and tetra-ethylene glycol dimethyl ether, and minutes thereof.

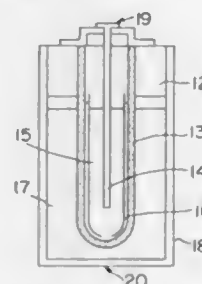
5,510,210
SOLID ELECTROLYTE FOR SODIUM-SULFUR SECONDARY CELL AND PROCESS FOR PREPARING THE SAME

Young-shol Kim, Kyungki-do, Rep. of Korea, assignor to Yukong Limited, Rep. of Korea
Filed Oct. 31, 1994, Ser. No. 331,763

Claims priority, application Rep. of Korea, Nov. 9, 1993, 1993-23702
Int. Cl.⁶ H01M 6/18

U.S. Cl. 429—193

2 Claims



1. A solid electrolyte for sodium-sulfur secondary cell, comprising a composition consisting essentially of 7.0 to 10.0 weight

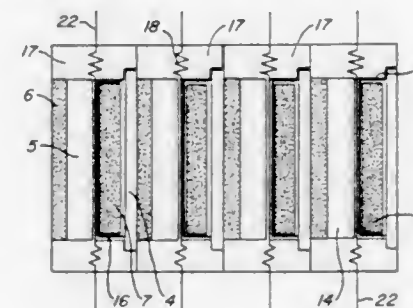
percent of Na₂O, 0.5 to 3.5 weight percent of MgO or 0.7 to 1.0 weight percent of Li₂O, 0.01 to 0.6 weight percent of WO₃, and the balance of Al₂O₃.

5,510,211
BIPOLAR BATTERY AND METHOD OF MAKING A PARTITION WALL FOR SUCH A BATTERY
Erik Sundberg, Nicandersgatan 5, Helsingborg, and Ove Nilsson, Utterstigen 2, Nol, both of, Sweden
PCT No. PCT/SE92/00493, § 371 Date Jul. 21, 1994, § 102(e)
Date Jul. 21, 1994, PCT Pub. No. WO93/01624, PCT Pub. Date Jan. 21, 1993

PCT Filed Jul. 1, 1992, Ser. No. 167,824
Claims priority, application Sweden, Jul. 1, 1991, 9102039
Int. Cl.⁶ H01M 6/48

U.S. Cl. 429—210

7 Claims



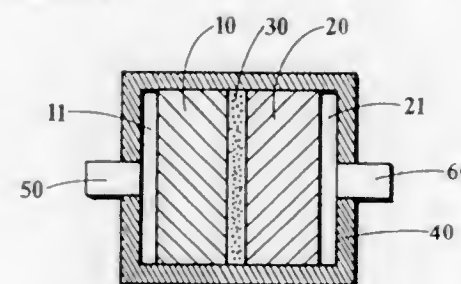
1. Bipolar acid containing battery comprising at least two cell units being divided by a dimensional stable non-electroconductive wall (5) comprising positive (6) and negative (7) electrodes in two adjacent cells and a porous material (10) having pores (8) passing from its positive to its negative side and having said pores (8) filled with an electroconductive lead or a lead alloy characterized by said porous material (10) being comprised of a non-electroconductive dimensional stable material and by the lead or lead alloy making electrical contact between two adjacent cell units.

5,510,212
STRUCTURAL MICRO-POROUS CARBON ANODE FOR RECHARGEABLE LITHIUM ION BATTERIES

Frank M. Delnick, 12301 Oakland NE., Albuquerque, N.M. 87122; Narayan Doddapaneni, 10516 Royal Birkdale NE., Albuquerque, N.M. 87111; Robert R. Lagasse, 1237 Sasebo, NE., Albuquerque, N.M. 87112; Ronald F. Simandl, 308 Big Tree Dr., Farragut, Tenn. 37922; D. Gerald Glasgow, 361 S. Village Dr., Centerville, Ohio 45459, and Alan Sylvester, 2801 New Mexico Ave., NW, #922, Washington, D.C. 20007
Continuation of Ser. No. 4,720, Jan. 13, 1993, abandoned.
This application Dec. 2, 1994, Ser. No. 350,281
Int. Cl.⁶ H01M 4/36

U.S. Cl. 429—218

6 Claims



1. A lithium-ion secondary battery electrode comprising:
a three dimensional, monolithic, microporous carbon structure having a lithium intercalation efficiency of more than 50%; a

macroscopic density of about 0.7 to about 1.0 g/cc, randomly oriented domains shown by transmission electron microscopy to contain approximately 4 to 10 lattice planes extending approximately 20 to 50 Å in lateral extent, a network of cells having diameters in the range of approximately 10 to approximately 100 micrometers within the structure, the cells separated from each other by walls and interconnected by holes through the walls, wherein said carbon structure is prepared by a process comprising the steps of:
(a) preparing a polymer precursor having an open-celled structure;
(b) pretreating the polymer precursor wherein pretreatment comprises gradually heating the polymer precursor to an elevated temperature of about 240° C in the presence of oxygen; and
(c) carbonizing the pretreated polymer precursor in an inert gas in order to preserve desirable pore structure thereby improving the electrochemical efficiency of the lithium-ion secondary battery electrode, by gradually heating said pretreated precursor to a temperature of about 1200° C., and gradually cooling said pretreated precursor, said heating and cooling steps of said pretreated precursor being at a rate not exceeding 0.5° C/min.

5,510,213
METHOD OF PREPARING ELECTRODES FOR LEAD-ACID ELECTRODE BATTERY

Eugene G. Gagnon, Utica, and Daniel J. Lisi, East Detroit, both of Mich., assignors to General Motors Corporation, Detroit, Mich.
Filed Nov. 16, 1994, Ser. No. 340,509
Int. Cl.⁶ H01M 4/56

U.S. Cl. 429—225

9 Claims

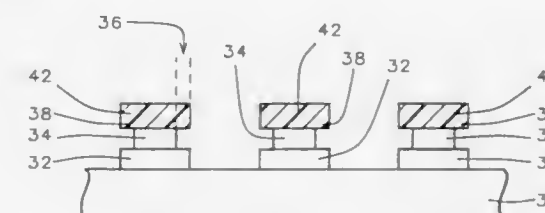
1. A method of making a negative electrode for a lead-acid battery, the electrode comprising a precharged active material which is partially or fully charged, the method comprising the steps of:
a. forming a lead-based powder having a metallic lead content of at least about 95 weight percent;
b. forming a lead-oxide powder having a lead oxide content of at least about 85 weight percent and a BET surface area of at least about 0.1 meter square per gram;
c. combining the powders to provide on the basis of 100 parts by weight of total powder, 65 to 80 parts of the lead based powder and 20 to 35 parts of the lead-oxide powder and forming an aqueous mixture of the powders;
d. applying the mixture to at least one side of a grid; and
e. drying the applied mixture.

5,510,214
DOUBLE DESTRUCTION PHASE SHIFT MASK

Hong-Tsz Pan, Chang-Hua, and Ming-Tzong Yang, Hsin Chu, both of, Taiwan, assignors to United Microelectronics Corporation, Hsinchu, Taiwan
Filed Oct. 5, 1994, Ser. No. 318,425
Int. Cl.⁶ G03F 9/00

U.S. Cl. 430—5

23 Claims



1. A double destruction phase shift mask, comprising:

- a quartz substrate with a thickness of between about 1 and 6 millimeters;
- a patterned layer of attenuating phase shifting material having edges formed on said quartz substrate;
- a patterned layer of transparent phase shifting material having edges formed on said patterned layer of attenuating phase shifting material so that said edges of said patterned layer of attenuating phase shifting material extend beyond said edges of said patterned layer of transparent phase shifting material; and
- a gap width formed between said edges of said patterned layer of transparent phase shifting material and said edges of said patterned layer of attenuating phase shifting material.

5,510,215

METHOD FOR PATTERNING MULTILAYER DIELECTRIC COLOR FILTER

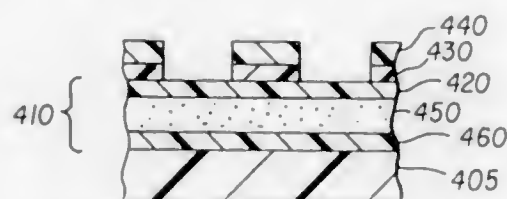
Eric T. Prince, Fairport; Michael J. Hanrahan, Hilton, and Sharlene A. Wilson, Seneca Falls, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 25, 1995, Ser. No. 378,211

Int. Cl.⁶ G03F 9/00

U.S. Cl. 430—7

20 Claims



1. A method of patterning a multilayer, dielectric color filter comprising the steps of:

- depositing a multilayer, dielectric color filter on a substrate having top, bottom and multiple intermediate layers;
- applying a patternable mask onto the top layer of the multilayer, dielectric color filter to provide selected openings through the mask;
- removing the top layer of the multilayer, dielectric color filter through the selected openings in the patterned mask, the patterned mask and the multiple intermediate layers of the filter being resistant to the process used for removing the top layer, to provide openings to the multiple intermediate layers of the filter; and
- removing, through the openings in the top layer, the multiple intermediate layers of the filter, down to the bottom layer, the top layer and bottom layer being resistant to the process used for removing the intermediate layers.

5,510,216

SELECTIVE METALLIZATION PROCESS

Gary S. Calabrese, North Andover, Mass.; Jeffrey M. Calvert, Burke, Va.; Mu-San Chen, Ellicott; Walter J. Dressick, Fort Washington, both of Md.; Charles S. Dulcey, Washington, D.C.; Jacques H. Georger, Jr., Holden, and John F. Bohland, Jr., Berlin, both of Mass., assignors to Shipley Company Inc., Marlborough, Mass.

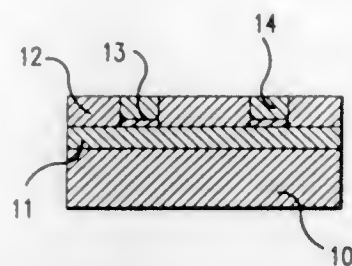
Continuation of Ser. No. 226,352, Apr. 12, 1994, abandoned, which is a division of Ser. No. 111,640, Aug. 25, 1993, Pat. No. 5,468,597. This application Aug. 29, 1995, Ser. No. 520,554

Int. Cl.⁶ G03F 7/16

U.S. Cl. 430—16

11 Claims

1. An article of manufacture comprising a substrate having a layer of a ligating material over its entire surface, a layer of an organic material having recesses defined therein over said substrate and said ligating material and a metal coating over a portion of said substrate in a selected pattern confined within the recesses of said layer of organic material and being bonded to said substrate



through an intermediate layer of catalyzed ligating material, said ligating material comprising a ligating material having one end bonded to the substrate and said catalyzed ligating material comprising said ligating material having one end bonded to the substrate and its other end bonded to an electroless metal plating catalytic material.

5,510,217

GALLIUM PHthalOCYANINE HALIDE CRYSTALS, METHOD FOR PREPARING THE SAME AND ELECTROPHOTOGRAPHIC PHOTORECEPTOR USING THE SAME

Kazuya Hongo; Katsumi Nukada; Masakazu Iijima; Noriyoshi Takahashi; Masaaki Suwabe, and Hitoshi Takimoto, all of Minamishigara, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Sep. 30, 1994, Ser. No. 315,858

Claims priority, application Japan, Oct. 1, 1993, 5-267775

Int. Cl.⁶ G03G 5/04; C09B 47/04

U.S. Cl. 430—58

21 Claims

1. Gallium phthalocyanine halide crystals wherein a part of the crystal is changed into hydroxygallium phthalocyanine and wherein the halogen content in the gallium phthalocyanine halide crystals is 10 to 99.9% by weight.

5,510,218

ELECTROPHOTOGRAPHIC PHOTOSENSITIVE MEMBER, PROCESS CARTRIDGE USING SAME AND ELECTROPHOTOGRAPHIC APPARATUS

Kouchi Nakata; Toshihiro Kikuchi, both of Yokohama; Akihiro Senoo, and Tetsuro Kanemaru, both of Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 7, 1994, Ser. No. 271,502

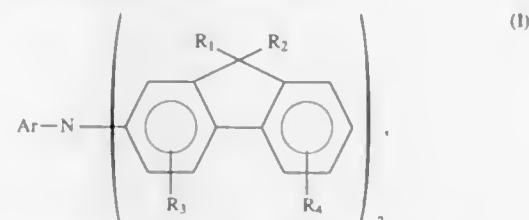
Claims priority, application Japan, Jul. 9, 1993, 5-170460

Int. Cl.⁶ G03G 5/047

U.S. Cl. 430—59

7 Claims

1. An electrophotographic photosensitive member, comprising: an electroconductive support and a photosensitive layer disposed on the electroconductive support, wherein said photosensitive layer contains an arylamine compound represented by the following formula (1)



wherein Ar denotes substituted or unsubstituted aryl group or substituted or unsubstituted heterocyclic group; R₁ and R₂ independently denote substituted or unsubstituted alkyl group, substituted or unsubstituted aralkyl group, or substituted or unsubstituted aryl group, R₃ and R₄ being capable of forming a ring by connection thereof; and R₃ and R₄ independently

denote hydrogen atom, halogen atom, substituted or unsubstituted alkyl group, substituted or unsubstituted alkoxy group, or substituted or unsubstituted aryl group.

5,510,219

TONER FOR ELECTROSTATIC-IMAGE DEVELOPMENT AND PROCESS FOR PRODUCING THE SAME

Takeshi Agata, and Takashi Imai, both of Minami Ashigara, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Oct. 19, 1994, Ser. No. 325,938

Claims priority, application Japan, Dec. 8, 1993, 5-340246

Int. Cl.⁶ G03G 9/087

U.S. Cl. 430—106

20 Claims

1. A toner for electrostatic-image development comprising a core containing a binder resin and a colorant comprising a metallic lake pigment surface treated with a coupling agent containing an amino group or a polyamine compound, and a shell covering said core, wherein said shell is formed by interfacial polymerization of a first shell-forming reactant in an oily medium with a second shell-forming reactant in an aqueous medium.

5,510,220

CONDUCTIVE DEVELOPER COMPOSITIONS WITH SURFACE ADDITIVES

Robert J. Nash, Webster; Cheryl A. Hanzlik, Fairport; Richard N. Muller, Penfield, and Richard J. Hodgson, Rochester, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Jan. 27, 1995, Ser. No. 379,838

Int. Cl.⁶ G03G 9/10; 9/097

U.S. Cl. 430—106

29 Claims

1. A developer composition consisting essentially of negatively charged toner particles consisting essentially of crosslinked polyester resin particles, pigment particles, and a surface additive mixture comprised of metal salts of fatty acids in an amount of from about 0.2 to about 0.5 weight percent, metal oxide particles in an amount of from about 0.3 to about 1 weight percent, and nonmetallized silica particles in an amount of from about 0.2 to about 0.5 weight percent; and carrier particles comprised of a core with a coating thereover containing a conductive component.

5,510,221

MAGNETIC TONER COMPOSITIONS

Joseph R. Matalevich; Douglas A. Lundy, both of Webster; Michael J. Cortash, Walworth, and Michael L. Grande, Palmyra, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Mar. 30, 1995, Ser. No. 413,661

Int. Cl.⁶ G03G 9/083

U.S. Cl. 430—106.6

30 Claims

1. A process for avoiding, reducing, or minimizing comet formation which comprises adding to the surface of a magnetic toner comprised of resin particles, magnetite, carbon black, optional charge additive, and wax, a surface additive mixture of silica, and magnetite, and wherein said magnetite is a soft magnetite or an acicular magnetite.

5,510,222

TONER FOR DEVELOPING ELECTROSTATIC IMAGE AND PROCESS FOR PRODUCTION THEREOF

Kohji Inaba, Yokohama; Tatsuya Nakamura, Tokyo; Tatsuhiko Chiba, Kamakura, and Takao Ishiyama, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 17, 1994, Ser. No. 243,932

Claims priority, application Japan, May 20, 1993, 5-118517;

May 27, 1993, 5-126180; May 27, 1993, 5-126181

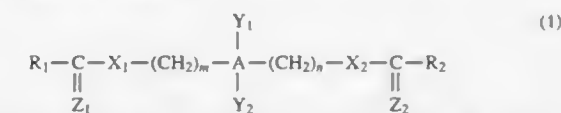
Int. Cl.⁶ G03G 9/087

U.S. Cl. 430—109

39 Claims

1. A toner for developing an electrostatic latent image, comprising: a binder resin, a colorant, and a release agent in amounts from 1–40 wt. parts per 100 wt. parts of the binder resin, said release agent comprising an ester compound having 1 to 4 ester groups selected from the group consisting of ester compounds (a), (b) and (c) shown below:

- a poly-functional ester having a tertiary carbon or/and a quaternary carbon and obtained from an alcohol compound or carboxylic compound having at least two functional groups;
- a mono-functional ester having a tertiary carbon or/and a quaternary carbon; and
- a poly-functional ester having a primary or secondary carbon having at least two functional groups represented by the following formula (1):



wherein A denotes a carbon atom or alicyclic group, R₁ and R₂ independently denote an organic group having 1–35 carbon atoms, Y₁ and Y₂ independently denote a hydrogen atom, halogen atom or organic group, m and n denote 0 or an integer of at least 1, X₁ and X₂ independently denote an oxygen atom or sulfur atom, and Z₁ and Z₂ independently denote an oxygen atom or sulfur atom, with the proviso that

- at least one of Y₁ and Y₂ denotes an organic group when A denotes a carbon atom and m and n are 0;
- at least one of Y₁ and Y₂ denotes a hydrogen atom or halogen atom when A denotes a carbon atom and either one of m and n denotes an integer of at least 1; and
- Y₁ and Y₂ denote a hydrogen atom or halogen atom with the proviso that at least one of Y₁ and Y₂ is a halogen atom when A denotes a carbon atom and m and n are an integer of at least 1.

5,510,223

IMAGE FORMING METHOD COMPRISING ELECTROSTATIC TRANSFER OF DEVELOPED IMAGE AND CORRESPONDING IMAGE FORMING APPARATUS

Tsutomu Kukimoto, Tokyo; Hiroshi Yusa, Yokohama; Koichi Tomiyama, Kawasaki; Tsuyoshi Takiguchi, Yokohama; Eiichi Imai, Narashino; Tetsuya Kuribayashi, Tokyo; Hisayuki Ochi, and Hiroyuki Suematsu, both of Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 145,702, Nov. 4, 1993, Pat. No. 5,392,103, which is a division of Ser. No. 902,808, Jun. 25, 1992, Pat. No. 5,270,770, which is a continuation of Ser. No. 514,914, Apr. 25, 1990, abandoned. This application Dec. 30, 1994, Ser. No. 345,717

Claims priority, application Japan, Apr. 27, 1989, 1-111006; Jul. 16, 1989, 1-18422; Jul. 19, 1989, 1-184421

Int. Cl.⁶ G03G 13/08; 13/09

U.S. Cl. 430—126

26 Claims

1. An image forming method, comprising:

- developing an electrostatic image formed on an electrostatic image-bearing member comprising an organic photoconductor with a developer to form thereon a developed image, said developer comprising 100 wt. parts of a magnetic toner and 0.05 to 3 wt. parts of fine powder treated with a silicone

material selected from the group consisting of silicone oil and silicon varnish; wherein the magnetic toner

- (1) contains 17-60% by number of magnetic toner particles having a particle size of 5 microns or smaller, and
- (2) contains 5-50% by number of magnetic toner particles having a particle size of 6.35-10.08 microns; and
- (3) has a true density of 1.45 to 1.8 g/cm³; and

(ii) electrostatically transferring the developed image on the electrostatic image-bearing member to a transfer material while pressing a transfer means supplied with a bias voltage against the electrostatic image-bearing member with the transfer material disposed between the electrostatic image-bearing member and the transfer means under a pressure condition.

5,510,224

PHOTOSENSITIVE MICROCAPSULE FOR PHOTOIMAGING AND THERMAL DEVELOPMENT RECORDING MEDIA

Hiroshi Takahashi; Toshitaka Sakuhara, and Fumiharu Iwasaki, all of Tokyo, Japan, assignors to Seiko Instruments Inc., Japan

Division of Ser. No. 682,914, Apr. 19, 1991, Pat. No. 5,292,458. This application Oct. 6, 1993, Ser. No. 132,579

Claims priority, application Japan, Apr. 10, 1990, 2-94305; Jun. 5, 1990, 2-147021; Jun. 15, 1990, 2-158191; Jul. 5, 1990, 2-179250; Oct. 17, 1990, 2-278194

Int. Cl.⁶ B01J 13/16; G03C 1/72; 1/73

U.S. Cl. 430-138

8 Claims

1. A photosensitive microcapsule comprising: a polymerizable monomer contained in a microcapsule; a photopolymerization initiator comprising a hydrophobic sensitizer for initiating polymerization of said polymerizable monomer in response to a light energy; and an image producing material such as a dye or a precursor; wherein said hydrophobic sensitizer has at least one of 3,7-bis(octadecylmethylamino) phenothiazoniumchloride which reacts in response to red color light energy, 3,7-di(octadecylmethylamino)-5-phenylphenaziniumchloride which reacts in response to green color light energy, and 3,6-di(octadecylmethylamino)-acridinechloride which reacts in response to blue color light energy.

5,510,225

THERMAL DYE SUBLIMATION TRANSFER DONOR ELEMENT

Wilhelmus Janssens, Aarschot, and Luc Vanmaele, Lochristi, both of, Belgium, assignors to AGFA-GEVAERT, N.V., Mortsel, Belgium

Filed Jun. 10, 1993, Ser. No. 74,664

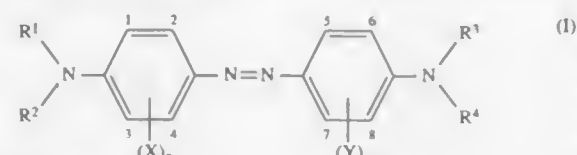
Claims priority, application European Pat. Off., Jul. 14, 1992, 92202157.1

Int. Cl.⁶ B41M 5/38

U.S. Cl. 430-200

16 Claims

1. Dye-donor element for use according to thermal dye transfer methods, said element comprising a support having thereon a dye layer comprising a dye layer carried by a polymeric binder resin, characterized in that said dye is an azo dye corresponding to the following general formula (I):



wherein

each of R¹ to R⁴ independently represent hydrogen, an unsubstituted alkyl group, a cycloalkyl group or an aryl group, or R¹ and R² and/or R³ and R⁴ may be joined together to form a

5- or 6-membered heterocyclic ring system, or each of R¹ to R⁴ independently can be joined to the carbon atom of the aromatic ring at a position ortho to the position of attachment of the anilino nitrogen to form a 5- or 6-membered ring;

X and Y independently represent a substituent; selected from the group consisting of SH, OH, halogen, NO₂, CN, alkyl, amino, carbonamido, sulfonamido, acylamido, sulfonylamino, phosphorylamino, alkoxy, thialkoxy, alkoxy-carbonyl and aryloxy-carbonyl;

n represent 0, 1, 2, 3, or 4, X substituents may be the same or different when n is greater than 1;

n' represents 0, 1, 2, 3 and 4, and Y substituents may be the same or different when n' is greater than 1.

5,510,226

STEREOLITHOGRAPHY USING VINYL ETHER-EPOXIDE POLYMERS

Stephen C. Lapin, Wauconda; James R. Snyder, Chicago, and Eugene V. Sitzmann, Elk Grove Village, all of Ill., assignors to AlliedSignal Inc., Morris Township, Morris County, N.J. Continuation of Ser. No. 693,890, May 1, 1991, abandoned.

This application Apr. 20, 1994, Ser. No. 230,444

Int. Cl.⁶ G03C 5/00

U.S. Cl. 430-269

33 Claims

1. In the process for forming a three-dimensional object from a liquid polymer precursor comprising repeatedly exposing the surface of a bath of said precursor to a beam of actinic light to solidify successive layers of said precursor to make a green structure followed by postcuring of said green structure the improvement comprising employing as said liquid polymer precursor the composition consisting essentially of

(a) at least one multifunctional vinyl ether compound; (b) at least one multifunctional epoxy compound; (c) an effective amount of a cationic photoinitiator; said vinyl ether compounds and epoxy compounds both being curable by acids released by said photoinitiator and having proportions of (a), (b), and (c) selected to provide a polymeric structure having suitable green strength with minimal curl distortion when said composition is polymerized by an actinic light source selected from the group consisting of UV and visible light lasers, the proportions of said vinyl ether compounds and epoxides being defined by the formula M=F/E where

M is the vinyl ether equivalent weight of the composition and between 150 and 800

F is the total weight in grams of the composition, and E is the number of vinyl ether equivalents in the composition.

5,510,227

IMAGE DYE FOR LASER ABLATIVE RECORDING PROCESS

Thap DoMinh, Fort Collins, Colo.; Linda Kaszczuk, and Lee W. Tutt, both of Webster, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 14, 1994, Ser. No. 259,588

Int. Cl.⁶ G03C 5/00

U.S. Cl. 430-269

4 Claims

1. A single sheet process of forming a dye ablation image having an improved Dmin in the absence of a receiving element comprising imagewise-heating by means of a laser, a dye-ablative recording element comprising a support having thereon a dye layer comprising an image dye dispersed in a polymeric binder having an infrared-absorbing material associated therewith, said laser exposure taking place through the side of the support having thereon said dye layer, said imagewise-heating causing imagewise dye ablation, and removing the ablated image dye material by means of an air stream to obtain said image in said dye-ablative recording element, wherein said dye layer comprises a yellow dye dispersed in a polymeric binder, said yellow dye comprising curcumin.

5,510,228

2-CYANO-3,3-DIARYLACRYLATE UV DYES FOR LASER RECORDING PROCESS

Stephen M. Neumann, Rochester, and Richard P. Henzel, Webster, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 17, 1995, Ser. No. 390,011

Int. Cl.⁶ G03C 5/00

U.S. Cl. 430-269

4 Claims

1. A single sheet process of forming a dye image in the absence of a receiving element comprising imagewise-heating, by means of a laser, a recording element comprising a support having thereon a dye layer comprising an image dye dispersed in a polymeric binder, said dye layer having an infrared-absorbing material associated therewith, said laser exposure taking place through the side of the support having thereon said dye layer, and causing dye to be removed imagewise to obtain said dye image in said recording element, wherein said image dye is a 2-cyano-3,3-diarylacrylate UV-absorbing dye.

5,510,229

OPTICAL INFORMATION RECORDING MEDIUM USING SQUARYLIUM COMPOUNDS

Tsutomu Satoh, Yokohama; Ikuo Shimizu, and Yukiyoshi Ito, both of Yokkaichi, all of Japan, assignors to Ricoh Company, Ltd., and Kyowa Hakko Kogyo Co., Ltd., both of Tokyo, Japan

Division of Ser. No. 550,309, Jul. 9, 1990, Pat. No. 5,256,794.

This application Jul. 8, 1993, Ser. No. 88,808

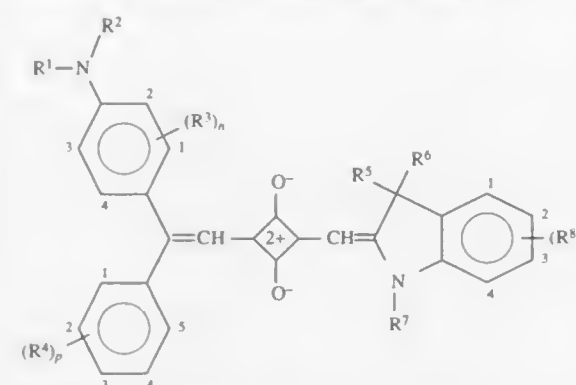
Claims priority, application Japan, Jul. 12, 1989, 1-179631

Int. Cl.⁶ G11B 7/24

U.S. Cl. 430-270.18

8 Claims

1. An optical information recording medium comprising a substrate, and a recording layer formed on said substrate, which comprises a squarylium compound having formula (I):

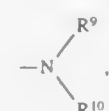


in which

R¹ and R² independently represent hydrogen, an alkyl group having 1 to 4 carbon atoms, an aryl group which may have a substituent, or an aralkyl group having 7 to 10 carbon atoms, which may have a substituent;

R³ represents a halogen, an alkyl group having 1 to 4 carbon atoms, an alkoxy group having 1 to 4 carbon atoms, a nitro group, or a hydroxyl group; n is an integer of 0 to 4 and R³'s may be the same or different when n is 2 to 4;

R⁴ represents a halogen, an alkyl group having 1 to 4 carbon atoms, an alkoxy group having 1 to 4 carbon atoms, a hydroxyl group, a nitro group, a cyano group, a trifluoromethyl group, or



in which R⁹ and R¹⁰ are the same as defined in R¹; p is an integer of 0 to 5 and R⁴'s may be the same or different when p is 2 to 5;

R⁵ and R⁶ independently represent an alkyl group having 1 to 4 carbon atoms;

R⁷ represents an alkyl group having 1 to 4 carbon atoms, an aryl group which may have a substituent, or an aralkyl group having 7 to 10 carbon atoms, which may have a substituent;

R⁸ represents a halogen, an alkyl group having 1 to 4 carbon atoms, an alkoxy group having 1 to 4 carbon atoms, an aryl group which may have a substituent, or an aralkyl group having 7 to 10 carbon atoms, which may have a substituent; and q is an integer of 0 to 4 and when q is 2 to 4, R⁸'s may be the same or different and may form an aromatic ring which may have a substituent, in combination with two adjacent carbon atoms in the ring to which R⁸'s are bonded,

wherein said substituent of said aryl group and said alkaryl group represented by R¹, R², R⁷, R⁸, R⁹ or R¹⁰ is selected from the group consisting of halogen, an alkyl group having 1 to 4 carbon atoms, and an alkoxy group having 1 to 4 carbon atoms; and wherein said substituent of said aromatic ring formed by R⁸'s is selected from the group consisting of halogen, an alkyl group having 1 to 4 carbon atoms, an alkoxy group having 1 to 4 carbon atoms, an aralkyl group having 7 to 10 carbon atoms, and an aryl group.

5,510,230

DEVICE FABRICATION USING DUV/EUV PATTERN DELINEATION

Donald M. Tennant, Freehold; Donald L. White, Morris Plains, and Obert R. Wood, II, Little Silver, all of N.J., assignors to AT&T Corp., Murray Hill, N.J.

Filed Oct. 20, 1994, Ser. No. 326,444

Int. Cl.⁶ G03F 7/20

U.S. Cl. 430-325

7 Claims

1. Process for device fabrication comprising at least one lithographic delineation step comprising projection-reduction of patterned radiation within the wavelength range of 150 nm-3 nm on a radiation sensitive resist layer, by means of a lens system constituted of reflecting optical elements to produce an aerial pattern image constituted of light and dark regions, in which the pattern includes features of minimum dimension less than 0.25 μm, by illumination of a phase mask with unpatterned radiation, thereby producing an exposed image, developing to produce a developed image, and thereafter masking entailing use of the developed image to selectively process device-functional material.

CHARACTERIZED IN THAT

unpatterned radiation is of coherency within the range σ=0.5-0.2, in which exposed images are of a thickness at least 70% of the absorption distance, 1/e, for the radiation in the resist layer.

5,510,231

SOLID DEVELOPING COMPOSITION FOR SILVER HALIDE PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL AND PROCESSING METHOD USING THE SAME

Hideki Komatsu, and Shoji Nishio, both of Hino, Japan, assignors to Konica Corporation, Japan

Filed Apr. 22, 1994, Ser. No. 231,398

Claims priority, application Japan, Apr. 27, 1993, 5-101152

Int. Cl.⁶ G03C 5/18; 5/26

U.S. Cl. 430-399

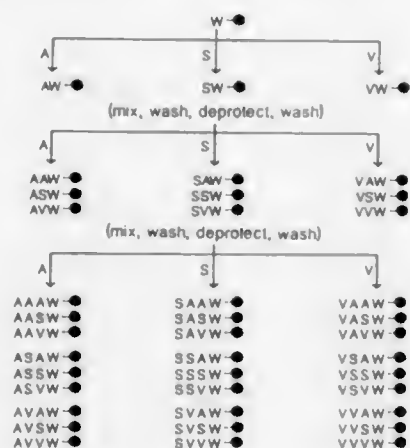
9 Claims

1. A method for processing a black and white silver halide photographic light-sensitive material comprising: exposing the light-sensitive material; developing the exposed material with a developer; and replenishing the developer with a developer replenisher in an amount of 200 ml or less per m² of the material, said developer and developer replenisher being prepared by dissolving

5,510,240

METHOD OF SCREENING A PEPTIDE LIBRARY

Kit S. Lam, and Sydney E. Salmon, both of Tucson, Ariz., assignors to The Arizona Board of Regents, Tucson, Ariz., Division of Ser. No. 717,454, Jun. 19, 1991, which is a continuation-in-part of Ser. No. 546,845, Jul. 2, 1990, abandoned. This application Feb. 8, 1993, Ser. No. 14,979
Int. Cl.⁶ C12Q 1/00; G01N 33/566; 33/543; C07K 3/00
U.S. Cl. 435—7.1 26 Claims



1. A method of screening a library of peptides and determining a sequence of a peptide ligand for an acceptor molecule of interest comprising the steps of:

- introducing an acceptor molecule to a peptide library, wherein the library comprises a multiplicity of species of solid phase supports having a linker, by which analyzable quantities of deprotected peptides are covalently attached to the support, wherein the sequences of said peptides are not pre-determined and a single species of peptide is attached to each support;
- identifying the solid-phase supports having peptides thereon that bind the acceptor molecule, wherein said identified supports represent at most about 1 part per 1,000 parts of the supports of the library;
- isolating at least one identified support from all other species of the library; and thereafter
- determining the sequence of the peptide species attached to the isolated support.

5,510,241

METHOD OF TESTING FOR THE PRESENCE OF SALMONELLA SEROTYPES EXPRESSING SALMONELLA ENTERITIDIS FIMBRIAL ANTIGEN (SEFA) AND REAGENTS THEREFORE

Christopher J. Thorns, Woking, England, assignor to The Minister of Agriculture, Fisheries and Food in her Britannic Majesty's Government of the U.K. of Gt. Britain & N. Ireland, London, England
Continuation of Ser. No. 30,208, Mar. 26, 1993, abandoned.
This application May 25, 1995, Ser. No. 449,922
Claims priority, application United Kingdom, Oct. 1, 1990, 9021290; Oct. 17, 1990, 9022570; Mar. 27, 1991, 9106546
Int. Cl.⁶ G01N 33/53; C07K 14/255; 16/00
U.S. Cl. 435—7.3 31 Claims

1. A method of testing a sample for the presence of microorganisms for Salmonella serotypes expressing *Salmonella enteritidis* fimbrial antigen (SEFA) comprising the steps of:

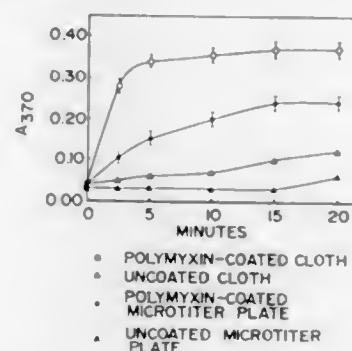
- exposing a sample suspected of containing the microorganisms, or SEFA to an antibody which specifically binds to the antigen specifically bound by the monoclonal antibody secreted by ECACC 90101101 or ECACC 90121902 or an antibody which specifically binds the epitope bound by the monoclonal antibody secreted by ECACC 90101101 or ECACC 90121902;

(b) detecting antibody-antigen specific binding, wherein antigen-antibody specific binding is indicative of the presence of microorganisms selected from the group consisting of *S. enteritidis*, *S. dublin*, *S. moscow* and *S. blegdam*, and the absence of antibody-antigen specific binding is indicative of the absence of *S. enteritidis*.

5,510,242

METHOD FOR USING POLYMYXIN-COATED SUBSTRATE FOR LIPOPOLYSACCHARIDE DETECTION

Burton W. Blais, 78 Welsh Private Road, Ottawa, Ontario, Canada, and Hiroshi Yamazaki, 22 Alderbrook Drive, Nepean, Ontario, Canada
Continuation of Ser. No. 697,683, May 9, 1991, abandoned.
This application Jul. 7, 1993, Ser. No. 87,013
Claims priority, application Canada, May 18, 1990, 2017093; Mar. 7, 1991, 2037726; Mar. 7, 1991, 2037727
Int. Cl.⁶ G01N 33/567; C12N 9/99; 9/18
U.S. Cl. 435—7.32 12 Claims



1. A process for the detection of lipopolysaccharide present on the cell walls of a target Gram negative bacteria which process comprises the steps of:

- heating a sample of bacteria in a detergent solution to extract lipopolysaccharide antigens from said cell walls of said Gram negative bacteria;
- contacting said solution with a device consisting essentially of in combination, a macroporous, hydrophobic material as a substrate, said substrate comprising a cloth composed of hydrophobic synthetic polymeric fibers, selected from the group consisting of polyester, polypropylene, and nylon and blends thereof with rayon which are either woven or non-woven into a physically-structurally-stable cloth of more than about 200 μ m thickness, such that the pores exceed about 20 μ m in diameter, said substrate being adapted to receive a sample to be tested, and, bound by simple adsorption to said substrate, a polyxin;
- washing said device; and
- detecting the presence of said predetermined lipopolysaccharide by contacting an antibody indicator conjugate specifically binding said lipopolysaccharide to said device.

5,510,243

MULTIPLE CHROMOGEN ENZYME TARGETING (MCET) FOR USE IN BACTERIAL CONTAMINATION MONITORING

Steven H. Boyd, and Norman R. Walnwright, both of Falmouth, Mass., assignors to Gelman Sciences, Inc., Ann Arbor, Mich.
Filed Jun. 21, 1994, Ser. No. 264,130
Int. Cl.⁶ C12Q 1/34; 1/04; C12P 39/00; C12N 1/00
U.S. Cl. 435—18 8 Claims

1. A rapid method for the simultaneous detection of total coliforms and *Escherichia coli* in a sample, comprising:

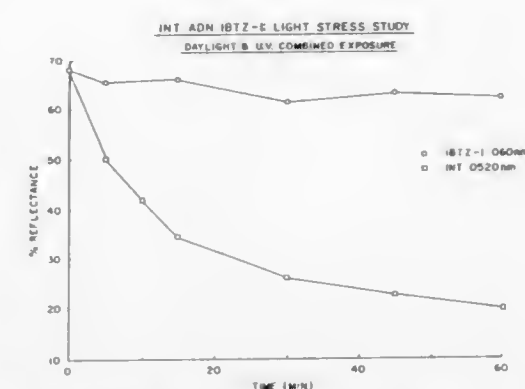
filtering the sample to capture total coliforms and *Escherichia coli* present in said sample;

preparing a medium comprising a non-target bacteria inhibitor, 6-O-alpha-D-galactopyranosyl-D-glucose or isopropyl-beta-D-thiogalactoside as the inducer for β -galactosidase, a fluorogenic or chromogenic substrate for said β -galactosidase, method-bera-D-glucuronide as the inducer for β -glucuronidase, and a fluorogenic or chromogenic substrate for said β -glucuronidase;

contacting said filtered sample with said medium; incubating said medium to produce colonies of said total coliforms and *Escherichia coli*;

detecting and correlating the signal produced by said fluorogenic or chromogenic substrate for said β -galactosidase to total coliforms present in said sample; and

detecting and correlating the signal produced by said fluorogenic or chromogenic substrate for said β -glucuronidase to the presence of *Escherichia coli* in said sample.



(b) determining the presence or concentration of D- β -hydroxybutyrate in the test sample from the intensity and degree of a color change of the composition.

5,510,244

APPARATUS AND METHOD FOR ASSAYING OPTICAL ISOMERS

Yukie Inoue, Tsuzuki; Ryuzo Hayashi, Higashiosaka, and Naoka Matsuya, Sakai, all of, Japan, assignors to Kanzaki Paper Manufacturing Co., Ltd., Tokyo, Japan
Filed May 27, 1993, Ser. No. 67,960
Claims priority, application Japan, May 29, 1992, 4-139491; Aug. 31, 1992, 4-232018; Oct. 30, 1992, 4-293015; Dec. 7, 1992, 4-327057
Int. Cl.⁶ C12Q 1/32; G01N 21/00
U.S. Cl. 435—26 20 Claims

1. A method of assaying the L- and D-optical isomers in a sample which comprises:

- (I-1) the step of assaying the L-optical isomer as occurring in said sample;
 - (I-2A) subjecting said sample to an enzymatic reaction in the presence of a L-dehydrogenase and a D-dehydrogenase of the isomers and a coenzyme, and converting the L-optical isomer in the sample to D-optical isomer and/or the D-optical isomer in the sample to L-optical isomer; and
 - (I-2B) assaying the L-optical isomer after said enzymatic reaction;
- or (II)
- (II-1) the step of assaying the D-optical isomer as occurring in said sample;
 - (II-2A) subjecting said sample to an enzymatic reaction in the presence of a L-dehydrogenase and a D-dehydrogenase of the isomers and an oxidized coenzyme, and converting the L-optical isomer in the sample to D-optical isomer and/or the D-optical isomer in the sample to L-optical isomer; and
 - (II-2B) assaying the D-optical isomer after said enzymatic reaction.

5,510,245

COMPOSITION AND METHOD OF ASSAYING FOR KETONE BODIES

Thomas A. Magers, South Bend, Ind., assignor to Bayer Corporation, Elkhart, Ind.
Division of Ser. No. 941,707, Sep. 8, 1992, Pat. No. 5,326,697.
This application Jan. 18, 1994, Ser. No. 182,405
Int. Cl.⁶ C12Q 1/32; 1/26; 1/54; G01N 33/48
U.S. Cl. 435—26 29 Claims

1. A method of determining the presence or concentration of D- β -hydroxybutyrate in a test sample consisting essentially of:

- contacting the test sample with a composition consisting essentially of D- β -hydroxybutyrate dehydrogenase, nicotinamide adenine dinucleotide, a disulfide reductase system consisting essentially of a single disulfide substrate and a disulfide reductase, and a thiol-responsive indicator dye; and

5,510,246

METHOD FOR RAPID QUANTIFICATION OF MICROORGANISM GROWTH

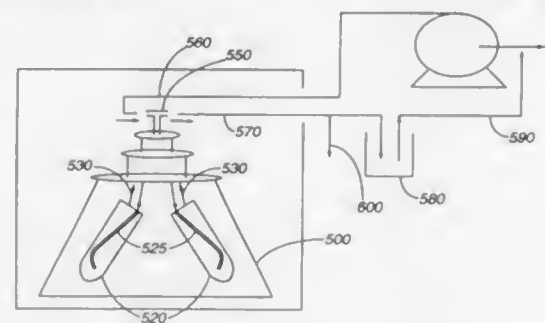
Scott D. Morgan, Cottage Grove, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Continuation of Ser. No. 61,678, May 14, 1993, abandoned.
This application Dec. 15, 1994, Ser. No. 357,761
Int. Cl.⁶ C12Q 1/06; G06M 11/02
U.S. Cl. 435—39 9 Claims

1. A method to count microbial colonies growing on an inoculated growth medium adhered to a substantially planar culturing device comprising the steps of:

- obtaining a filtered mask image of the culturing device to identify pixels in the mask image which lie outside of the inoculated growth medium in order to prevent processing of pixels which lie outside of the growth medium;
- obtaining a filtered noise image of the culturing device to identify pixels in the filtered noise image having measured intensities outside of a predetermined range of intensities and which lie inside of the growth medium in order to prevent processing of pixels having measured intensities outside of a predetermined range of intensities which lie inside of the growth medium;
- obtaining a filtered background image of the culturing device to provide background image data which excludes pixels identified in steps a) and b);
- incubating the inoculated growth medium for a selected time interval;
- obtaining a first filtered image of the culturing device to provide first image data;
- processing the background and first image data to produce a difference image wherein the difference image is obtained by taking a difference between the first filtered image data and the background image data;
- processing the difference image to identify hit pixels which are local maxima, wherein a hit pixel is determined by the steps of:

- 1) testing a pixel value at a center pixel for compliance with a value;
- 2) testing at least two neighboring pixel values directly adjacent to the center pixel to insure that the immediate neighboring pixels have values less than the center pixel value;
- 3) testing pixels adjacent to each of the neighboring pixels of step 2) which are neighbors once removed to the center pixel to insure that they have a value less than the value of an adjacent neighboring pixel; and
- 4) labeling each center pixel which satisfies the tests of steps 1), 2) and 3) as a hit pixel; and
- 5) clustering the hit pixels by dilating each of the hit pixels to encompass a matrix and expanding the matrix to encompass hit pixels which overlap one another wherein a number of matrices on the growth medium corresponds to a number of microbial colonies in the growth medium;
- h) storing a position and number of matrices which correspond to a count of the microbial colonies in the growth medium; and
- i) providing a count of the microbial colonies in the growth medium.

5,510,247
CENTRIFUGAL MULTIPHASE SYSTEMS AND METHOD FOR USING THE SAME
Claire Komives, Pittsburgh, and Alan J. Russell, Wexford, both of Pa., assignors to University of Pittsburgh, Pittsburgh, Pa.
Filed Mar. 29, 1993, Ser. No. 38,925
Int. Cl.⁶ C12P 1/00; C12S 13/00; C12M 1/40
U.S. Cl. 435—41



1. A centrifugal reactor system, comprising:
 - a. a chamber rotatable about an axis;
 - b. a means for rotating said chamber about said axis;
 - c. at least a first inlet means in communicative connection with said chamber for introducing a feed to said chamber, said feed containing at least one reactant; and
 - d. at least a first outlet means in communicative connection with said chamber for removing liquid from said chamber;
 said chamber containing at least two liquid phases therein, said at least two liquid phases comprising a first phase and a second phase, said first phase and said second phase being in contact with each other within said chamber, said first phase comprising a catalyst system therein, said catalyst system selected to effect a desired reaction involving said at least one reactant of said feed, which reactant partitions into said first phase to contact said catalyst system and react to produce a reaction product, at least a portion of said reaction product partitioning into said second phase, said chamber being rotated at a tangential velocity to create sufficient centrifugal force to maintain a volume of said second phase as a substantially unmixed phase at a location of communicative connection of said first outlet means with said chamber, thereby enabling removal of an amount of said second phase from said chamber while minimizing loss of said catalyst system.
37. A method of performing a catalyzed reaction in a multiphase system comprising the steps of:
 - a. introducing a feed containing at least one reactant into a chamber rotatable about an axis, said chamber containing at

- two liquid phases therein, said at least two liquid phases comprising a first phase and a second phase, said first phase and said second phase being in contact with each other within said chamber, said first phase comprising a catalyst system therein, said catalyst system selected to effect a desired reaction involving said at least one reactant of said feed, which reactant partitions into said first phase to contact said catalyst system and react to produce product, at least a portion of said product partitioning into said second phase;
- b. rotating said chamber at a tangential velocity to create sufficient centrifugal force to maintain a volume of said second phase as a substantially unmixed phase at a location of communicative connection of an outlet means with said chamber; and
- c. removing an amount of said second phase from said chamber via said outlet means.

5,510,248
STABLE RECOMBINANT MEIZOTHROMBIN-LIKE POLYPEPTIDES

Hélène C. F. Côté, Vancouver; Willem K. Stevens; Michael E. Neshelm, both of Kingston, and Ross T. A. MacGillivray, Vancouver, all of, Canada, assignors to The University of British Columbia, Canada
Filed Jun. 22, 1993, Ser. No. 82,843
Int. Cl.⁶ C12P 21/02; C12N 5/10; 15/11; C07H 21/04
U.S. Cl. 435—69.6

1. An isolated polynucleotide which encodes a polypeptide characterized by:
 - (a) having anti-coagulant activity; and
 - (b) having the amino acid sequence of prothrombin with amino acid substitutions at residues 155, 271 and 284.
6. A method for producing a polypeptide, having anti-coagulant activity and having the amino acid sequence of prothrombin with amino acid substitutions at residues 155, 271, and 284 which, upon activation, stimulates production of activated protein C, comprising:
 - (a) introducing into a host cell an expression vector which contains a nucleotide sequence which encodes the polypeptide, which, upon activation, stimulates production of activated protein C;
 - (b) culturing the host cell in an appropriate medium; and
 - (c) isolating the polypeptide product encoded by the expression vector.

5,510,249
YEAST PROCESSING SYSTEM
Søren Bjørn, Lyngby; Kjeld Norris, and Fanny Norris, both of Hellerup, all of, Denmark, assignors to Novo Nordisk A/S, Bagsvaerd, Denmark
Division of Ser. No. 196,887, Feb. 15, 1994, Pat. No. 5,395,922, which is a continuation of Ser. No. 486,569, Feb. 28, 1990, abandoned. This application Mar. 2, 1995, Ser. No. 397,595
Claims priority, application Denmark, Mar. 3, 1989, 1054/89; Oct. 6, 1989, 4941/89
Int. Cl.⁶ C12P 21/00

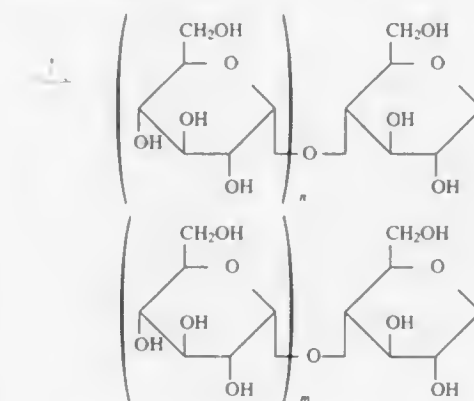
1. A process for producing a polypeptide comprising a fusion of a signal peptide, a leader peptide and a heterologous protein or polypeptide, the polypeptide having the following structure: signal peptide-leader peptide-X¹X²X³X⁴-heterologous protein wherein X¹ is part of the leader peptide and is a peptide bond or is one or more amino acids which may be the same or different, X² and X³ are the same or different and X² and X³ are each a basic

- amino acid selected from the group consisting of Lys and Arg, X² and X³ together defining a yeast processing site, and X⁴ is part of the heterologous protein and is a peptide bond or is one or more amino acids which may be the same or different, with the proviso that X¹ or X⁴ is one or more amino acids in which at least one of the amino acids of X¹ or X⁴ is a negatively charged amino acid selected from the group consisting of Glu and Asp, and that when the signal and leader peptide is the MFα prepeptide and wherein X¹ is a peptide bond, X⁴ is not Glu-Ala-Glu-Ala or Glu-Ala-Glu-Ala-Ser-Leu-Asp, and that when X⁴ is a peptide bond, X¹ is not Ser-Leu-Asp comprising
- (a) cultivating a yeast strain comprising a recombinant expression vector which is capable of replicating in yeast and which carries a DNA construct which comprises a DNA sequence encoding said polypeptide in a suitable medium to obtain expression and secretion of said polypeptide and
- (b) isolating said polypeptide.

5,510,250
NON-REDUCING OLIGOSACCHARIDE WITH NEOTREHALOSE STRUCTURE, AND ITS PRODUCTION AND USES

Hajime Aga; Takashi Shibuya; Toshiyuki Sugimoto, and Toshio Miyake, all of Okayama, Japan, assignors to Kabushiki Kaisha Hayashihara Seibutsu, Okayama, Japan
Division of Ser. No. 355,243, Dec. 9, 1994. This application Mar. 14, 1995, Ser. No. 403,625
Claims priority, application Japan, Dec. 15, 1993, 5-342187
Int. Cl.⁶ C12P 19/18; 19/16; 19/04
U.S. Cl. 435—97

1. A process for producing a non-reducing oligosaccharide having the formula:



where "n" and "m" are 0 or more integers, and their total number (n+m) is at least 1
said method comprising:

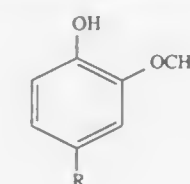
- (a) exposing an aqueous solution which contains neotrehalose and an α-glucosyl saccharide either to the action of a saccharide-transferring enzyme or to the action of a saccharide-transferring enzyme and also a hydrolase in this order to form said non-reducing oligosaccharide; and
- (b) recovering said non-reducing oligosaccharide.

5,510,251
AGENTS AND METHOD OF PRODUCTION THEREOF
Guy T. Carter; Margaret J. Torrey, and Michael Greenstein, all of Suffern, N.Y., assignors to American Cyanamid Company, Madison, N.J.
Division of Ser. No. 927,581, Aug. 10, 1992, Pat. No. 5,418,168, which is a division of Ser. No. 543,290, Jun. 25, 1990, Pat. No. 5,169,956, which is a continuation of Ser. No. 732,252, May 10, 1985, Pat. No. 5,106,994, which is a continuation-in-part of Ser. No. 617,650, Jun. 5, 1984, abandoned. This application Oct. 4, 1994, Ser. No. 318,001
Int. Cl.⁶ C12P 17/18; G12N 1/20
U.S. Cl. 435—119

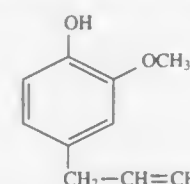
1. A process for producing agents LL-F28249α, LL-F28249β, LL-F28249γ, LL-F28249δ, LL-F28249ε, LL-F28249ζ, LL-F28249η, LL-F28249θ, LL-F28249ι, LL-F28249κ, LL-F28249λ, LL-F28249μ, LL-F28249ν, and LL-F28249ω which comprises: aerobically fermenting the organism *Streptomyces cyanogriseus noncyanogenus*, NRRL 15773 or mutant thereof, in a liquid medium containing assimilable sources of carbon, nitrogen and inorganic anions and cations, until a substantial amount of LL-F28249α, β, γ, δ, ε, ζ, η, θ, ι, κ, λ, μ, ν, and ω are produced in said medium; and then recovering the agents therefrom.

5,510,252
PROCESS FOR THE PREPARATION OF SUBSTITUTED METHOXYPHENOLS AND MICROORGANISMS SUITABLE FOR THIS PURPOSE
Rudolf Hopp, Holzminden, and Jürgen Rabenhorst, Höxter-Stahle, both of, Germany, assignors to Haarmann & Reimer GmbH, Holzminden, Germany
Division of Ser. No. 104,832, Aug. 10, 1993, Pat. No. 5,371,013. This application Jun. 24, 1994, Ser. No. 265,074
Claims priority, application Germany, Aug. 17, 1992, 42 27 076.6
Int. Cl.⁶ C12P 7/24; 7/42; 7/22
U.S. Cl. 435—146

1. A process for preparing a compound of the formula:



wherein
R represents —COOH, —CH=CH—COOH, —CH=CH—CH₂OH or —CH=CH—CHO;
said process comprising oxidizing eugenol having the formula:



in the presence of *Pseudomonas* sp. nov. DSM 7062 or 7063.

5,510,253

PLANTS RESISTANT TO INFECTION BY PLRV
Timothy A. Mitsky, Chesterfield, Mo.; Cynthia L. Hemenway, Apex, N.C., and Nilgun E. Tumer, Princeton Junction, N.J., assignors to Monsanto Company, St. Louis, Mich.

Continuation of Ser. No. 12,688, Feb. 3, 1993, abandoned.

This application Oct. 20, 1994, Ser. No. 326,297

Int. Cl.⁶ A01H 1/04; C12N 15/00; C07H 17/00

U.S. Cl. 435—172.3 21 Claims

7. A method for providing resistance to infection by potato leafroll virus in a susceptible Solanaceae plant which comprises:

(a) transforming plant cells with a DNA molecule which comprises:

(i) a promoter region which functions in plant cells to cause the production of an RNA sequence; which is operably linked to

(ii) a structural gene encoding a full length potato leafroll virus replicase; which is operably linked to

(iii) a 3' non-translated region which functions in plant cells to cause the termination of transcription and the addition of polyadenylated ribonucleotides to the 3' end of the transcribed mRNA sequence;

(b) regenerating said plant cells to provide a differentiated plant; and

(c) selecting a transformed plant which expresses the full length potato leafroll virus replicase gene at a level sufficient to render the plant resistant to infection by said potato leafroll virus.

5,510,254

THREE DIMENSIONAL CELL AND TISSUE CULTURE SYSTEM

Brian A. Naughton, and Gail K. Naughton, both of El Cajon, Calif., assignors to Advanced Tissue Sciences, Inc., La Jolla, Calif.

Continuation-in-part of Ser. No. 131,361, Oct. 4, 1993, Pat. No. 5,443,550, which is a division of Ser. No. 575,518, Aug. 30, 1990, Pat. No. 5,266,480, which is a division of Ser. No. 402,104, Sep. 1, 1989, Pat. No. 5,032,508, which is a

continuation-in-part of Ser. No. 242,096, Sep. 8, 1988, Pat. No. 4,963,489, which is a continuation-in-part of Ser. No. 38,110, Apr. 14, 1987, abandoned, which is a continuation-in-part of Ser. No. 36,154, Apr. 3, 1987, Pat. No. 4,721,096, which is a continuation of Ser. No. 853,569, Apr. 18, 1986, abandoned. This application May 11, 1994, Ser. No. 241,259

Int. Cl.⁶ C12N 5/00; C12M 3/00

U.S. Cl. 435—240.243 20 Claims

1. A three-dimensional liver culture comprising liver parenchymal cells cultured on a living stromal tissue prepared in vitro, comprising stromal cells and connective tissue proteins naturally secreted by the stromal cells attached to and substantially enveloping a framework composed of a biocompatible, non-living material formed into a three dimensional structure having interstitial spaces bridged by the stromal cells.

5,510,255

PLANT FATTY ACID SYNTHASES

Vic C. Knauf, 1013 Hillview La., Winters, Calif. 95694, and Gregory A. Thompson, 5127 Cowell Blvd., Davis, Calif. 95616

PCT No. PCT/US91/05801, § 371 Date Feb. 1, 1993, § 102(e) Date Feb. 1, 1993

Continuation-in-part of Ser. No. 568,493, Aug. 15, 1990, abandoned, and Ser. No. 721,761, Jun. 26, 1991, Pat. No. 5,475,099. This PCT application Aug. 15, 1991, Ser. No. 978,687

Int. Cl.⁶ C12N 15/29; 15/82; 15/10; 15/52

U.S. Cl. 435—172.3 10 Claims

1. A method of making mRNA encoding a plant synthase protein in an oilseed crop plant comprising:

growing a plant cell having integrated in its genome a DNA construct, said construct comprising in the 5' to 3' direction of transcription, a transcriptional regulatory region functional in said plant cell and a plant synthase factor A or synthase factor B protein encoding sequence oriented for transcription of a sense sequence under conditions which will permit the transcription of said plant synthase protein encoding sequence.

5,510,256

ELIMINATING INTERNAL INITIATION OF SOLUBLE CD4 GENE

Richard J. Kirschner; John E. Mott; Frances M. Eckenrode, all of Kalamazoo, and David P. Brunner, Portage, all of Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Continuation of Ser. No. 13,828, Feb. 2, 1993, abandoned, which is a continuation of Ser. No. 562,861, Aug. 6, 1990, abandoned. This application Dec. 29, 1994, Ser. No. 365,995

Int. Cl.⁶ C12N 15/63; 5/10; C07H 21/04

U.S. Cl. 435—172.3 13 Claims

1. A DNA molecule comprising a DNA sequence encoding the first domain of a soluble CD4 wherein said DNA sequence has been modified to eliminate the synthesis of a protein that initiates at the codon of amino acid 96 of soluble CD4 wherein the DNA sequence between the BclI and EcoNI restriction sites of soluble CD4 comprises:

5' GATCATCAAGAACCTGAAGATCGAAGACTCTGATA
CCTACATCTGTGAAGTTGAAGACCGAGAAAGAAGAT
AGTTCTTGGAGTTCTAGCTTCTGAGACTATGGATGTAG
ACACTTCAACTTCTGGTCTTCTTCTTGTCAACTGCTG
GTGTTGGTCTGACTGCTAACTCTGACACTCACCTGC
CAAGTTGACGACCACAAACCAGACTGACGATTGAGAC
TGTGAGTGGACGA 5'

9. A method of eliminating internal initiation from a DNA sequence encoding the first domain of a soluble CD4 gene comprising modifying said DNA sequence to eliminate the synthesis of a protein that initiates at the codon of amino acid 96 of soluble CD4 wherein said modifying step comprises substituting the DNA sequence between BclI and EcoNI restriction sites of soluble CD4 with:

5' GATCATCAAGAACCTGAAGATCGAAGACTCTGATA
CCTACATCTGTGAAGTTGAAGACCGAGAAAGAAGAT
AGTTCTTGGAGTTCTAGCTTCTGAGACTATGGATGTAG
ACACTTCAACTTCTGGTCTTCTTCTTGTCAACTGCTG
GTGTTGGTCTGACTGCTAACTCTGACACTCACCTGC
CAAGTTGACGACCACAAACCAGACTGACGATTGAGAC
TGTGAGTGGACGA 5'

5,510,257

HOLLOW FIBER IMMOBILIZATION WITH CHOPPED MICROPOROUS HOLLOW FIBERS

Kamalesh K. Sirkar, 60 Saw Mill Dr., Berkeley Heights, N.J. 07922, and Rajesh K. Shukla, 103 Thorn St., Jersey City, N.J. 07307

Filed Oct. 4, 1989, Ser. No. 417,981

Int. Cl.⁶ C12N 11/04; 5/00; 1/00; 1/20; 1/14; 1/16; C12M 3/00; 3/04; 1/04

U.S. Cl. 435—182 14 Claims

3. An immobilization support for whole cells comprising a chopped microporous hollow fiber having a length of five centimeters or less wherein the exterior surface of the microporous hollow fiber is hydrophobic and the inside surface of the microporous hollow fiber is hydrophilic.

5. A bioreactor comprising:
a fluid container;
means including at least one continuous length of hydrophobic hollow fiber having ends potted in tube sheets for gas supply and removal and product removal by solvent extraction; and

a plurality of chopped microporous hollow fibers having lengths of five centimeters or less, said chopped hollow fibers being located in said container and providing for immobilization of whole cells on a lumen and exterior of said chopped hollow fibers;

wherein the chopped hollow fibers are hydrophobic and the fibers have been wetted.

9. A method of immobilizing whole cells comprising the steps of:

chopping microporous hollow fibers into short sections of fibers having a length of approximately five centimeters or less; combining said sections of fibers with a medium suitable for growth of whole cells; and

growing whole cells on the inside surfaces and on the exterior surfaces of said sections of fibers by incubating said medium; wherein the plurality of chopped microporous hollow fibers are hydrophobic and the fibers have been wetted.

5,510,258

PORCINE REPRODUCTIVE AND RESPIRATORY SYNDROME VIRUS ANTIGEN AND PROCESSES FOR THE PREPARATION AND USE OF SAID ANTIGEN IN VACCINES AND DIAGNOSTICS

Thomas Sanderson, Libertyville, Ill.; Michael J. McGinley, Lenexa, Kans.; Jeffrey J. Zimmerman, Ames, Iowa; Howard T. Hill, Cambridge, Iowa; Michael C. Meetz, Nevada, Iowa; Eugene C. Pirtle, Ames, Iowa; Sabrina L. Swenson, Madrid, Iowa, and George P. Shibley, Leawood, Kans., assignors to Bayer Corporation, Pittsburgh, Pa., and Iowa State University Research Foundation, Ames, Iowa

Continuation-in-part of Ser. No. 14,915, Feb. 8, 1993, abandoned. This application Jun. 1, 1994, Ser. No. 252,612

Int. Cl.⁶ C12N 7/08; 7/04; 5/00; A61K 39/12; 39/00; 39/38; 39/193

U.S. Cl. 435—237 3 Claims

1. A process for growing a porcine reproductive and respiratory syndrome virus (PRRSV) designated as ATCC VR 2402 by growing the virus in a tissue culture to an amount sufficient to protect animals against PRRS to diagnose PRRS or to identify the molecular structure of PRRSV for subunit or recombinant products, comprising inoculating PRRSV onto a tissue culture which is of a cloned African Green Monkey Kidney cell line clone 9009B designated as ATCC CRL 11302 and harvesting the grown virus.

5,510,259

HUMAN IL-2 RECEPTOR γ CHAIN MOLECULE

Kazuo Sugamura, No. 27-8, Asahigaoka 1-chome, Aoba-ku, Sendai-shi, Miyagi-ken; Toshikazu Takeshita, Sendai; Hironobu Asao, Sendai; Masataka Nakamura, Sendai; Toshiro Shimamura, Kawasaki; Manabu Suzuki, Kawasaki, and Junji Hamuro, Kawasaki, all of Japan, assignors to Ajinomoto Co., Inc., Tokyo, and Kazuo Sugamura, Sendai, both of Japan

Filed Apr. 22, 1993, Ser. No. 52,205

Claims priority, application Japan, Apr. 23, 1992, 4-104947

Int. Cl.⁶ C12N 5/00; 15/00; C07H 21/04

U.S. Cl. 435—240.2 18 Claims

Probe No.1

ATACTGACGC CGAATGG

T	A	A
C	T	T
	C	C

1. Isolated and purified DNA having a nucleotide sequence coding for human interleukin-2 receptor γ -chain, selected from the

group consisting of: (a) sequence Id Nos. 1, 2, 3, 5, 6, 8 and 10; and (b) altered nucleotide sequences of (a) due to degeneracy in the genetic code.

5,510,260

PROLACTIN SECRETING CELL LINE AND METHOD OF OBTAINING THE SAME

Robert M. MacLeod; Margaret V. MacQueen, and Ivan S. Login, all of Charlottesville, Va., assignors to University of Virginia Patent Foundation, Charlottesville, Va.

Continuation-in-part of Ser. No. 160,757, Feb. 26, 1988, abandoned. This application Aug. 20, 1993, Ser. No. 110,102

Int. Cl.⁶ C12N 5/06

U.S. Cl. 435—240.2 5 Claims

1. The clonal cell line MMQ, said MMQ cell line being on deposit and identified in the American Type Culture Collection as CRL 10609 and characterized by the presence of dopamine receptors and the secretion of only the prolactin hormone.

5,510,261

METHOD OF CONTROLLING THE DEGRADATION OF GLYCOPROTEIN OLIGOSACCHARIDES PRODUCED BY CULTURED CHINESE HAMSTER OVARY CELLS

Charles F. Gooch, San Carlos, and Michael J. Gramer, Stanford, both of Calif., assignors to The Board of Trustees of the Leland Stanford Junior University, Stanford, Calif.

Continuation of Ser. No. 795,458, Nov. 21, 1991, abandoned. This application Jan. 12, 1995, Ser. No. 371,587

Int. Cl.⁶ C12N 5/00; C12P 21/04; A61K 38/16; C07K 14/435

U.S. Cl. 435—240.2 13 Claims

1. An in vitro method of controlling the degradation of glycoprotein oligosaccharides produced by cultured Chinese hamster ovary (CHO) cells, said method comprises:

culturing CHO cells in a culture medium under conditions selected to increase or decrease the culture's extracellular neuraminidase activity; thereby maintaining or decreasing the sialic acid content of said glycoprotein oligosaccharides.

5,510,262

CELL-CULTURING APPARATUS AND METHOD EMPLOYING A MACROPOROUS SUPPORT

Gregory Stephanopoulos, Winchester; Rahul Singhvi, Cambridge; Seujeung Park, Somerville; Maria Flytzani-Stephanopoulos, Winchester, all of Mass., and Mark A. Applegate, San Diego, Calif., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Continuation of Ser. No. 921,920, Jul. 29, 1992, Pat. No. 5,262,320, which is a continuation-in-part of Ser. No. 539,861, Jun. 18, 1990, abandoned, and Ser. No. 789,289, Nov. 8, 1991, abandoned. This application Nov. 16, 1993, Ser. No. 153,204

The portion of the term of this patent subsequent to Nov. 16, 2010, has been disclaimed.

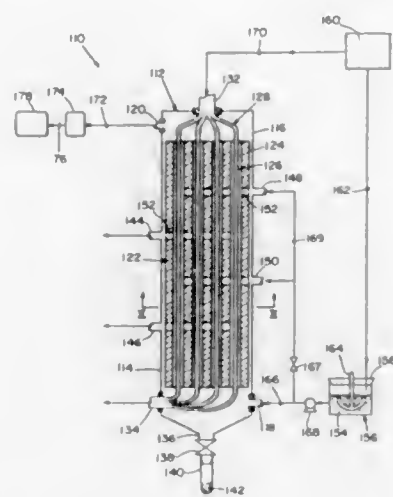
Int. Cl.⁶ C12M 3/00; C12N 5/00

U.S. Cl. 435—240.23 18 Claims

1. An apparatus for culturing cells, comprising:

a) a cell-culture reactor having a cell-culture medium inlet and a cell-culture medium outlet;

b) a monolithic biocompatible macroporous support defining a passage, said support disposed within the cell-culture reactor between the medium inlet and the medium outlet, wherein the monolithic biocompatible macroporous support includes



pores which have a pore diameter sufficient to allow cells of a cell culture to collect within the pores and to allow oxygen and other nutrients to migrate from the passage into the pores for consumption by the cells;

- c) at least one oxygen-permeable conduit disposed within the passage, whereby oxygen in an oxygen-containing gas directed through the oxygen-permeable conduit migrates from the oxygen-containing gas across an oxygen-permeable wall of the oxygen-permeable conduit and is dissolved in cell-culture medium directed through the passage, thereby allowing oxygen to migrate from the passage to the cell culture within the pores of the monolithic biocompatible macroporous support;
- d) means for directing the oxygen-containing gas through the oxygen-permeable conduit, whereby oxygen migrates across the oxygen-permeable wall of the oxygen-permeable conduit to the cell-culture medium which is being directed through the passage within the cell-culture reactor; and
- e) means for directing the cell-culture medium from the medium inlet through the passage within which the oxygen-permeable conduit is disposed and out of the cell-culture reactor at the medium outlet at a rate sufficient to provide nutrients to the cells in the pores of the monolithic biocompatible macroporous support in an amount sufficient to culture the cells.

13. A method of culturing cells, comprising the steps of:

- a) inoculating a monolithic biocompatible macroporous support disposed within a cell-culture reactor having a cell-culture medium inlet and a cell-culture medium outlet, the monolithic biocompatible macroporous support defining a passage between the medium inlet and the medium outlet, the monolithic biocompatible macroporous support including pores having a pore diameter sufficient to allow cells to collect within the pores and to allow oxygen and other nutrients to migrate from the passage into the pores for consumption by the cells;
- b) directing a cell-culture medium into the medium inlet at a rate sufficient to provide nutrients to the cells in the pores of the monolithic biocompatible macroporous support in an amount sufficient to culture the cells; and
- c) directing an oxygen-containing gas through an oxygen-permeable conduit disposed within the passage, whereby oxygen in the oxygen-containing gas migrates across an oxygen-permeable wall of the oxygen-permeable conduit to the cell-culture medium which is being directed through the passage, thereby allowing oxygen to migrate from the passage to a cell culture within the pores of the monolithic biocompatible macroporous support at a rate sufficient to culture the cells.

5,510,263

GROWTH OF PANCREATIC ISLET-LIKE CELL CLUSTERS

Vito Quaranta, La Jolla, Calif., and Jonathan C. R. Jones, Chicago, Ill., assignors to Desmos, Inc., San Diego, Calif. Continuation-in-part of Ser. No. 42,727, Apr. 5, 1993, abandoned. This application Nov. 12, 1993, Ser. No. 152,460

Int. Cl.⁶ C12N 5/00; 5/06; 5/08; A61K 35/22

U.S. Cl. 435—240.243

7 Claims

1. A method for growing cells of pancreatic islet-like cell clusters (ICCs), comprising the step of culturing said ICCs in contact with a laminin-like extracellular matrix material that is produced by 804G cells and NBT-II cells, wherein said matrix material comprises three polypeptides having molecular weights of about 150 kD, 140 kD and 135 kD, said matrix material characterized as:

- (a) promoting enhanced growth of said ICCs in comparison to ICCs grown without the extracellular matrix material;
- (b) having the ability to promote hemidesmosome formation in epithelial cells cultured thereon;
- (c) binding concanavalin; and
- (d) being bound by polyclonal antibodies generated against the extracellular matrix secreted by 804G or NBT II cells.

5,510,264

ANTIBODIES WHICH BIND MENINGITIS RELATED HOMOLOGOUS ANTIGENIC SEQUENCES

Diane Van Alstyne, and Lawrence R. Sharma, both of Vancouver, Canada, assignors to Insight Biotech Inc., St. Michael, Barbados

Filed Sep. 28, 1993, Ser. No. 127,499

Int. Cl.⁶ C12N 5/12; C07K 16/18; 16/24; G01N 3/353

U.S. Cl. 435—240.27

24 Claims

1. A composition comprising a carrier and a monoclonal antibody or antigen-binding fragment thereof which binds to a Meningitis Related Homologous Antigenic Sequence contained in the amino acid sequence of a protein or peptide, wherein said protein or peptide is found in a bacterium or virus that is an etiologic agent of meningitis.

5,510,265

MULTISTAGE PROCESS FOR DEEP DESULFURIZATION OF A FOSSIL FUEL

Daniel J. Monticello, The Woodlands, Tex., assignor to Energy BioSystems Corporation, The Woodlands, Tex.

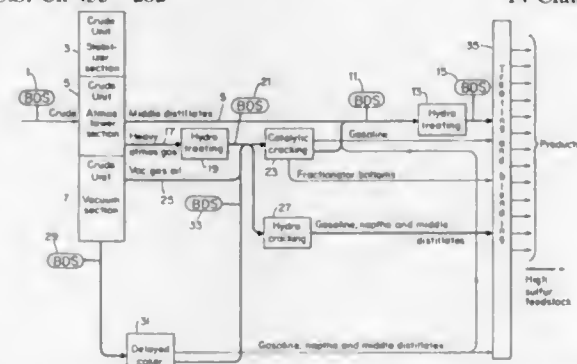
Division of Ser. No. 99,100, Jul. 29, 1993, Pat. No. 5,387,523, which is a continuation-in-part of Ser. No. 669,914, Mar. 15, 1991, Pat. No. 5,232,854. This application Aug. 30, 1994, Ser. No. 298,147

The portion of the term of this patent subsequent to Aug. 3, 2010, has been disclaimed.

Int. Cl.⁶ C10G 32/00; C12S 1/02

U.S. Cl. 435—282

14 Claims



1. A method for the deep desulfurization of a liquid fossil fuel containing organic sulfur, said organic sulfur comprising aromatic sulfur-bearing heterocycles, comprising the steps of:

(a) subjecting the liquid fossil fuel to

i) hydrosulfurization (HDS), whereby the sulfur susceptible to the removal by HDS is removed from the liquid fossil fuel; or

ii) microbial desulfurization (MDS), whereby sulfur susceptible to the removal by MDS is removed from the liquid fossil fuel;

(b) contacting the liquid fossil fuel with a biocatalyst in an aqueous medium in an amount and under conditions sufficient for the conversion of the organic sulfur of the aromatic sulfur-bearing heterocycles to inorganic sulfur, wherein the biocatalyst comprises bacteria or a substantially cell-free preparation thereof having the capability of the parent microorganism for catalyzing the removal of sulfur from aromatic sulfur-bearing heterocycles, thereby preparing a deeply desulfurized liquid fossil fuel; and

(c) separating the deeply desulfurized liquid fossil fuel from the aqueous medium.

5,510,266

METHOD AND APPARATUS OF HANDLING MULTIPLE SENSORS IN A GLUCOSE MONITORING INSTRUMENT SYSTEM

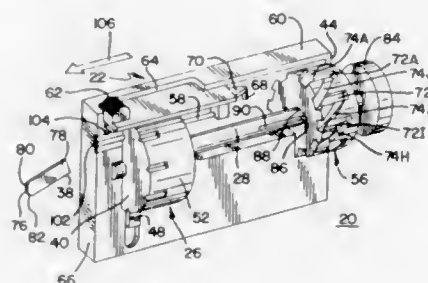
Lydia M. Bonner, Leesburg; Joseph P. Desimone, Mishawaka, and Russell J. Micinski, South Bend, all of Ind., assignors to Bayer Corporation, Elkhart, Ind.

Filed May 5, 1995, Ser. No. 435,201

Int. Cl.⁶ G01N 37/00

U.S. Cl. 436—43

18 Claims



15. A method of handling a plurality of fluid sensors comprising: installing a sensor magazine into a magazine opening in a housing of a sensor dispensing instrument, said sensor magazine having a plurality of sensor slots, each of which sensor slots is adapted to accommodate one of said plurality of fluid sensors;

positioning said sensor magazine so that one of said plurality of sensor slots is in alignment with a feed means;

actuating a feed actuator means to advance said feed means through said sensor slot in alignment with said feed means so that said sensor in said sensor slot is placed into a testing position wherein a portion of one end of said sensor protrudes from said instrument;

further actuating said feed actuator means so that said feed means is further advanced to eject said sensor from said instrument;

returning said feed actuator means to a standby position so as to return said feed means to a standby position with said feed actuator means causing an indexing wheel in said housing to be rotated as said feed means is returned to said standby position to thereby rotate said sensor magazine so that another one of said plurality of sensor slots is placed in alignment with said feed means.

5,510,267

FLOW CYTOMETRY LYTIC AGENT AND METHOD ENABLING 5-PART LEUKOCYTE DIFFERENTIAL COUNT

Paul N. Marshall, Santa Clara, Calif., assignor to Abbott Laboratories, Abbott Park, Ill.

Division of Ser. No. 352,106, May 15, 1989, abandoned. This application Aug. 24, 1992, Ser. No. 934,282

Int. Cl.⁶ G01N 33/48

6 Claims

U.S. Cl. 436—63

1. A method for obtaining a five part differential determination of leukocyte cell subpopulations from a whole blood sample, which comprises the steps of:

- a. contacting a whole blood sample containing red blood cells and leukocytes with a diluent;
- b. lysing said red blood cells and sheathing said leukocyte cells by the addition of a flow cytometry lytic agent to said diluted whole blood sample, said flow cytometry lytic agent consisting essentially of:
- (1) an aromatic oxyethanol used in a concentration sufficient to impart leukoprotective properties to the flow cytometry lytic agent;
 - (2) an organic buffer with pK at or near 8.5, serving to provide pH buffering capacity and to increase the electrical conductivity of the lytic agent; and,
 - (3) a non-ionic detergent component;
- c. intersecting said lysed red blood cells and said sheathed leukocytes with a focussed laser beam;
- d. measuring four light scattering parameters resulting from said intersection at:
- (1) 0 degree light scatter;
 - (2) 10 degree light scatter;
 - (3) 90 degree light scatter; and
 - (4) 90 degree depolarized light scatter; and,
- e. resolving the measured light scattering parameters to obtain a five subpopulation differential enumerating the neutrophils, lymphocytes, monocytes, eosinophils and basophils.

5,510,268

METHOD AND DEVICE FOR DETECTING SUBSTANCES IN AN AMBIENT SUBSTANCE, IN PARTICULAR FOR DETECTING CHEMICAL WARFARE AGENTS

Hans-Rüdiger Döring, Ludwigstrasse 13, D-7050 Leipzig, and Eberhard Hartmann, Stuttgarter Allee 18, D-7060 Leipzig, both of, Germany

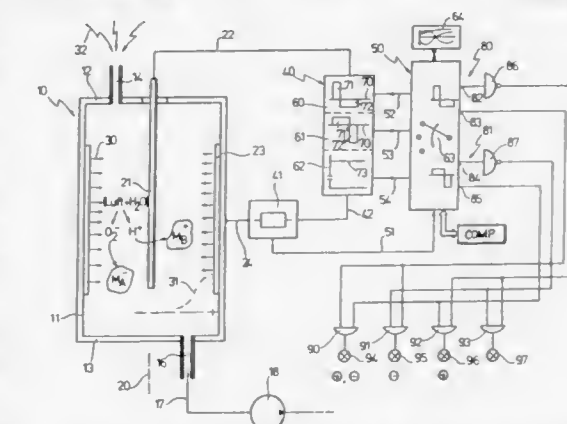
Continuation of Ser. No. 955,869, Dec. 17, 1992, abandoned.

This application Sep. 20, 1994, Ser. No. 308,947

Int. Cl.⁶ G01N 27/66

U.S. Cl. 436—103

22 Claims



1. A method of detecting a gaseous warfare agent in the presence of an interfering compound in ambient air, comprising the steps of: providing a measuring chamber having spaced apart electrodes for generating therein an electrical field, at least one of said electrodes containing radioactive material and the separation between said electrodes being substantially greater than the

half-life range of the radioactive material, said electrical field being developed by applying selected voltages across said electrodes;

developing a first plurality of characteristic curve data by plotting the quasi-molecular ion current flowing from one of said electrodes to the other versus the applied voltage when first and second asymmetric time varying voltages are alternately selected and applied across said electrodes and various known concentrations of said gaseous warfare agent are caused to flow through said measuring chamber;

developing a second plurality of characteristic curve data by plotting the quasi-molecular ion current flowing from one of said electrodes to the other versus the applied voltage when first and second asymmetric time varying voltages are alternately selected and applied across said electrodes and various known concentrations of said interfering compound are caused to flow through said measuring chamber;

causing a sample of ambient air including a reactive compound and believed to include at least one of said gaseous warfare agent and said second interfering compound to flow through said chamber and in said electric field, the radiation from said radioactive material having an ionizing effect on said reactive compound thereby generating negatively charged ions and positively charged ions that will attach to molecules of said gaseous warfare agent and said interfering compound present in said sample thereby forming electrically charged quasi-molecular ions;

applying said asymmetric first time varying voltage across said electrodes;

measuring any resulting first quasi-molecular ion current flowing from one of said electrodes to the other;

comparing the measured first quasi-molecular ion current to each of said first plurality of characteristic curves and developing a first detection signal indicating whether or not a match to one of said first characteristic curves is detected;

comparing the measured first quasi-molecular ion current to each of said second plurality of characteristic curves and developing a second detection signal indicating whether or not a match to one of said second characteristic curves is detected;

applying said asymmetric second time varying voltage across said electrodes;

measuring any resulting second quasi-molecular ion current flowing from one of said electrodes to the other;

comparing the measured second quasi-molecular ion current to each of said first plurality of characteristic curves and developing a third detection signal indicating whether or not a match to one of said first characteristic curves is detected;

comparing the measured second quasi-molecular ion current to each of said second plurality of characteristic curves and developing a fourth detection signal indicating whether or not a match to one of said second characteristic curves is detected; and

logically combining said first, second, third and fourth detection signals to generate an output signal indicative of the presence of at least one of said gaseous warfare agent and said interfering compound, or the lack thereof, in said sample of ambient air.

5,510,269

INFRARED METHOD AND APPARATUS FOR MEASURING GAS CONCENTRATION INCLUDING ELECTRONIC CALIBRATION

Karl H. Black, Dexter, and Walter I. Armstrong, Saline, both of Mich., assignors to Sensors, Inc., Saline, Mich.

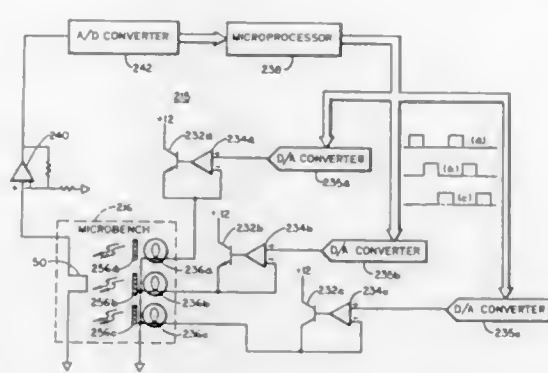
Continuation-in-part of Ser. No. 979,818, Nov. 20, 1992, abandoned. This application Mar. 14, 1994, Ser. No. 212,264

Int. Cl.⁶ G01N 21/61

U.S. Cl. 436—164

23 Claims

1. A method of span calibrating a gas analyzer by determining at least one calibration factor, in which said analyzer detects at least one component gas in a sample by applying electrical energy at a



given level to a radiation source in order to produce a given level of radiation having at least one absorption line of said at least one component gas, directing the given level of radiation along an optical path through a sample chamber, detecting radiation attenuated by absorption by said at least one component gas in said sample chamber at said at least one absorption line, and resolving said detected radiation attenuated by absorption and at least one calibration factor into component gas concentration, including:

filling said sample chamber with a gas that is non-absorbing of radiation at said at least one absorption line;

applying electrical energy at at least one known level that is different from said given level of energy to said source in order to produce at least one known level of radiation that is different from said given level of radiation;

detecting with said detector said at least one known level of radiation in order to produce at least one output signal; and determining at least one calibration factor as a function of said at least one output signal produced from said at least one known level of radiation that is different from said given level of radiation.

5,510,270

SYNTHESIS AND SCREENING OF IMMOBILIZED OLIGONUCLEOTIDE ARRAYS

Stephen P. A. Fodor, Palo Alto, Calif.; Michael C. Pirrung, Durham, N.C.; J. Leighton Read, Palo Alto, and Lubert Stryer, Stanford, both of Calif., assignors to Affymax Technologies N.V.

Division of Ser. No. 850,356, Mar. 12, 1992, Pat. No. 5,405,783, which is a division of Ser. No. 492,462, Mar. 7, 1990, Pat. No. 5,143,854, which is a continuation-in-part of Ser. No. 362,901, Jun. 7, 1989, abandoned. This application Sep. 30, 1992, Ser. No. 954,519

Int. Cl.⁶ G01N 33/53

U.S. Cl. 436—518

12 Claims

1. A method of synthesizing and screening oligonucleotides comprising the sequential steps of:

a) generating a pattern of light and dark areas by selectively irradiating at least a first area of a surface of a substrate, said surface comprising immobilized nucleotides on said surface, said nucleotides capped with a photoremovable protective group, without irradiating at least a second area of said surface, to remove said protective group from said nucleotides in said first area;

b) simultaneously contacting said first area and said second area of said surface with a first nucleotide to couple said first nucleotide to said immobilized nucleotides in said first area, and not in said second area, said first nucleotide capped with said photoremovable protective group;

c) generating another pattern of light and dark areas by selectively irradiating with light at least a part of said first area of said surface and at least a part of said second area to remove said protective group in said at least a part of said first area and said at least a part of said second area;

d) simultaneously contacting said first area and said second area of said surface with a second nucleotide to couple said second

nucleotide to said immobilized nucleotides in at least a part of said first area and at least a part of said second area;

e) performing additional irradiating and nucleotide contacting and coupling steps so that a matrix array of at least 100 oligonucleotides having different sequences is formed on said surface, said at least 100 oligonucleotides in at least 100 respective areas of less than 0.1 cm², whereby said at least 100 oligonucleotides have sequences and locations on said surface defined by the patterns of light and dark areas formed during the irradiating steps and the nucleotides coupled in said contacting steps; and

f) contacting said at least 100 oligonucleotides with a receptor to identify an oligonucleotide showing complementarity to said receptor.

5,510,271

PROCESSES FOR PRODUCING LOW COST, HIGH EFFICIENCY SILICON SOLAR CELLS

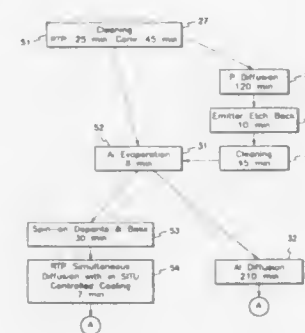
Rohatgi, Marietta; Zhizhang Chen, Duluth, and Parag Doshi, Atlanta, all of Ga., assignors to Georgia Tech Research Corporation, Atlanta, Ga.

Filed Sep. 9, 1994, Ser. No. 303,340

Int. Cl.⁶ H01L 31/18

U.S. Cl. 437—2

17 Claims



1. A process utilizing an in situ controlled cooling procedure for producing a junction between a diffused region and a bulk silicon region within a silicon substrate, while preserving carrier bulk lifetime within the bulk silicon region and while permitting selective adjustment of the depth of the diffused region within the silicon substrate, comprising the sequential steps of:

applying a material containing a dopant to a surface of said silicon substrate;

applying heat to the combination of said silicon substrate and said dopant from a light radiating source to cause diffusion of said dopant into said silicon substrate to thereby form said diffused region and said junction within said silicon substrate; reducing the amount of said heat at a first cooling rate which preserves said carrier bulk lifetime within said silicon region, said first cooling rate being slower than the natural cooling rate of said combination toward ambient temperature; and permitting said combination to naturally decrease in temperature to said ambient temperature after a duration of reduction in the amount of said heat at said first cooling rate, said duration being proportional to said depth of said diffused region within said silicon substrate.

2. The process of claim 1, further comprising the step of forming a solar cell from said diffused silicon substrate.

5,510,272

METHOD FOR FABRICATING SOLAR CELL

Hiroaki Morikawa, and Hisao Kumabe, both of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

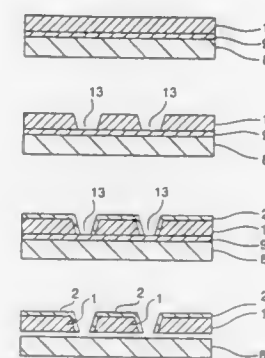
Filed Dec. 1, 1994, Ser. No. 352,118

Claims priority, application Japan, Dec. 24, 1993, 5-326559

Int. Cl.⁶ H01L 31/18

U.S. Cl. 437—2

4 Claims



1. A method for producing a solar cell comprising: forming an insulating layer and a thin semiconductor crystalline film as a photovoltaic layer on an underlying substrate, said insulating layer being selectively etchable relative to said thin film; exposing said insulating layer by forming a throughhole in said thin semiconductor crystalline film; separating said thin semiconductor crystalline film from said underlying substrate by supplying an etchant to said insulating layer, employing said throughhole, thereby etching and removing said insulating layer; and passivating said thin semiconductor crystalline film from the surface opposite a light receiving surface.

5,510,273

PROCESS OF MOUNTING SEMICONDUCTOR CHIPS IN A FULL-WIDTH-ARRAY IMAGE

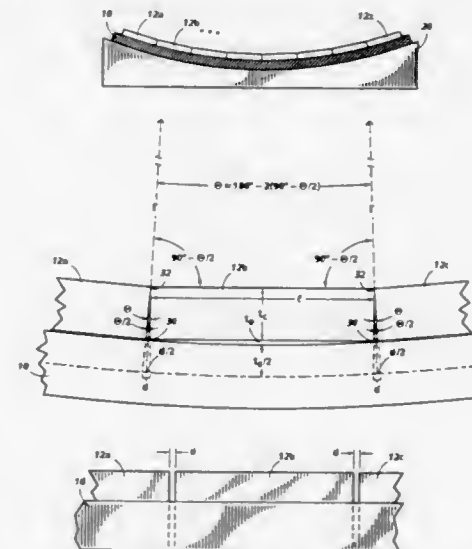
Kraig A. Quinn, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Apr. 3, 1995, Ser. No. 415,811

Int. Cl.⁶ H01L 21/56;21/58;21/603;21/70

U.S. Cl. 437—3

5 Claims



1. A method of assembling a chip array having a plurality of chips spaced a distance from one another, comprising the steps of: providing a flexible substrate;

urging the flexible substrate evenly against a work surface, the work surface defining a concave bow causing the flexible substrate to assume a radius of curvature; and tacking a plurality of chips onto the substrate with an adhesive, arranging the chips in a line whereby top corners of adjacent surfaces of adjacent chips contact each other.

5,510,274

METHOD OF CONTROLLING A CARRIER LIFETIME IN A SEMICONDUCTOR SWITCHING DEVICE

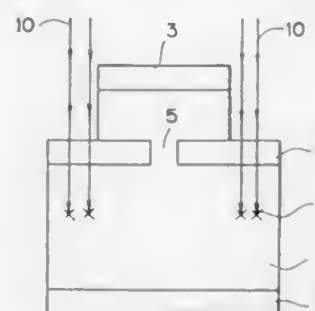
Tadaharu Minato, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 59,357, May 11, 1993, abandoned, which is a continuation-in-part of Ser. No. 905,871, Jun. 29, 1992, abandoned, which is a division of Ser. No. 233,823, Aug. 10, 1988, Pat. No. 5,144,402. This application Dec. 14, 1994, Ser. No. 355,806

Claims priority, application Japan, Aug. 19, 1987, 62-206856 Int. Cl.⁶ H01L 49/00

U.S. Cl. 437—6

10 Claims



I. A method of controlling a carrier life time in a semiconductor switching device having a cathode region and a gate region for switching a main current and a semiconductor layer through which said main current flows to the cathode region, comprising the steps of:

- preparing a semiconductor switching device and a radiation source for emitting a radiation; and
- irradiating said semiconductor switching device with said irradiation emitted from said radiation source only at a peripheral portion of said semiconductor layer aligned with said gate region to cause lattice defects only at the irradiated peripheral portion so that a central main current flowing portion in said semiconductor layer is different in carrier life time from the irradiated peripheral portion in said semiconductor layer.

5,510,275

METHOD OF MAKING A SEMICONDUCTOR DEVICE WITH A COMPOSITE DRIFT REGION COMPOSED OF A SUBSTRATE AND A SECOND SEMICONDUCTOR MATERIAL

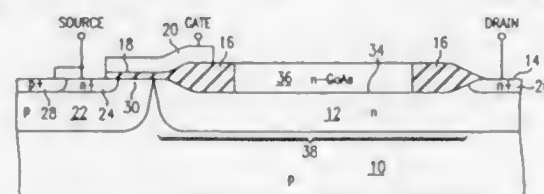
Satwinder Malhi, Garland, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Nov. 29, 1993, Ser. No. 158,670

Int. Cl.⁶ H01L 21/265

U.S. Cl. 437—41

11 Claims



I. A method of forming a semiconductor device in a semiconductor substrate comprising the steps of:

- forming a source region in the semiconductor substrate;
- forming a drain region in the semiconductor substrate;
- forming a gate conductor adjacent to and insulated from the semiconductor substrate;
- forming a channel region in the semiconductor substrate adjacent to the source region and insulated from the gate conductor; and
- forming first and second drift regions to form a composite drift region between the drain region and the channel region, the first drift region comprising a portion of the semiconductor substrate disposed between the channel region and the drain region, the second drift region comprising a layer of semiconductor material different than the semiconductor material forming the substrate disposed adjacent the first drift region.

5,510,276

PROCESS FOR PRODUCING A PRESSURE TRANSDUCER USING SILICON-ON-INSULATOR TECHNOLOGY

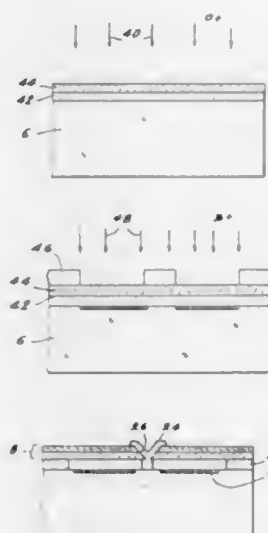
Bernard Diem, Echirrolles, and Marie-Therese Delaye, Grenoble, both of, France, assignors to Commissariat A L'Energie Atomique, France

Filed Dec. 15, 1993, Ser. No. 167,503

Claims priority, application France, Dec. 28, 1992, 9215772 Int. Cl.⁶ H01L 21/265; 21/74; 21/764

U.S. Cl. 437—24

13 Claims



I. A process for producing an integrated pressure transducer having at least one deformable diaphragm integral with a monocrystalline silicon substrate and means for measuring deformation of the diaphragm, said process comprising the following steps, in sequence, of:

- a) implanting oxygen ions in the monocrystalline silicon substrate (6,6a) and annealing the substrate at a temperature about 1150° C. to about 1400° C. in order to form a monocrystalline silicon film (44,44a) on the substrate and separated from the substrate, at least locally, by an insulating layer (42,42a);
- b) producing an opening (26,26a) in the silicon film down to the insulating layer;
- c) partially eliminating the insulating layer via said opening in order to form the diaphragm in the silicon film;
- d) resealing said opening (24,24a), said process also including producing at least one buried electrode contact layer (12,111,113,115) in the silicon substrate facing the deformable diaphragm, said production of said buried electrode contact layer taking place following the annealing of the substrate.

5,510,277

SURFACE TREATMENT FOR SILICON SUBSTRATES

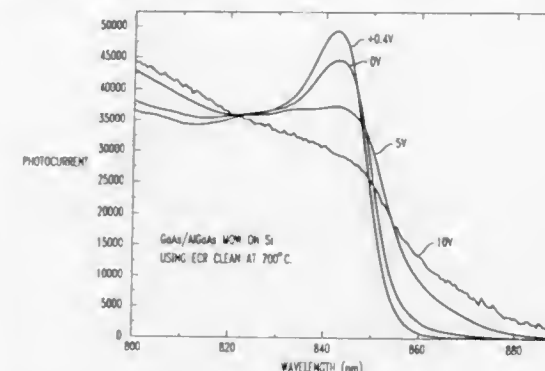
John E. Cunningham, Lincroft; Keith W. Goossen, Aberdeen; William Y. Jan, Scotch Plains, and James A. Walker, Howell, all of N.J., assignors to AT&T Corp., Murray Hill, N.J.

Filed Jun. 29, 1994, Ser. No. 268,137

Int. Cl.⁶ H01L 21/302

U.S. Cl. 437—24

16 Claims



I. A method of preparing a silicon substrate comprising the steps of:

- implanting particles into an oxide layer on a silicon substrate; and then
- breaking bonds between silicon and oxygen atoms in the oxide layer by heating at a temperature below approximately 825° C. until the oxide layer has been substantially removed from the surface.

5,510,278

METHOD FOR FORMING A THIN FILM TRANSISTOR

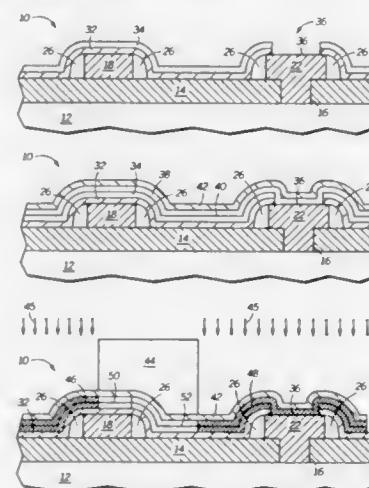
Bich-Yen Nguyen; Thomas F. McNelly; Philip J. Tobin, and James D. Hayden, all of Austin, Tex., assignors to Motorola Inc., Schaumburg, Ill.

Filed Sep. 6, 1994, Ser. No. 300,770

Int. Cl.⁶ H01L 21/786

U.S. Cl. 437—40

13 Claims



I. A method for forming a thin film transistor comprising the steps of:

- providing a substrate;
- forming a gate electrode overlying the substrate, the gate electrode having a sidewall;
- forming a gate dielectric layer abutting at least a portion of the gate electrode;
- forming a first layer of semiconductive material abutting at least a portion of the gate dielectric layer;
- etching a portion of the first layer of semiconductive material to form an exposed portion of the gate dielectric layer;

etching the exposed portion of the gate dielectric layer to define a contact opening therein;

forming a second layer of semiconductive material overlying the first layer of semiconductive material to form a composite layer of semiconductive material overlying the gate dielectric layer, wherein the second layer of semiconductive material also lies within the contact opening;

patterning the composite layer; and forming a source region within a first portion of the composite layer and a drain region within a second portion of the composite layer, wherein the source and drain regions define a channel region within a third portion of the composite layer that overlies the gate electrode.

5,510,279

METHOD OF FABRICATING AN ASYMMETRIC LIGHTLY DOPED DRAIN TRANSISTOR DEVICE

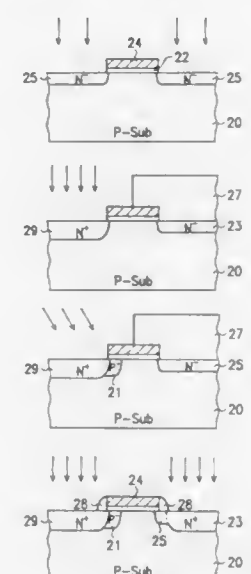
Sun-Chieh Chien, Hsinchu; Jengping Lin, Taoyuan Hsien, and Chen-Chiu Hsue, Hsinchu, all of, Taiwan, assignors to United Microelectronics Corp., Hsinchu, Taiwan

Filed Jan. 6, 1995, Ser. No. 369,728

Int. Cl.⁶ H01L 21/8234

U.S. Cl. 437—41

9 Claims



I. A method of fabricating an asymmetric lightly doped drain transistor device, comprising the following steps:

- (a) providing a silicon substrate doped with impurities of a first conductivity type and having an active region;
- (b) forming a gate oxide layer on said active region;
- (c) forming a gate structure on said gate oxide layer to form a channel region there beneath in said substrate;
- (d) applying a first ion implantation to implant ions of a second conductivity type into said substrate to form doped source and drain regions at two sides of said channel region;
- (e) forming a barrier layer on said drain region;
- (f) applying a second ion implantation to implant a second conductivity type into said substrate to form a heavily doped first source region, using said barrier layer as a mask;
- (g) applying an oblique angle ion implantation to ions of a first conductivity type into said substrate to form a lightly doped pocket region under said channel region and at side of said heavily doped first source region, using said barrier layer as a mask;
- (h) removing said barrier layer and forming sidewall spacers on side walls of said gate structure; and
- (i) applying a third ion implantation to implant ions of a second conductivity type into said substrate to form a heavily doped second source region and a heavily doped drain region, using said sidewall spacers as a mask.

5,510,280

METHOD OF MAKING AN ASYMMETRICAL MESFET HAVING A SINGLE SIDEWALL SPACER

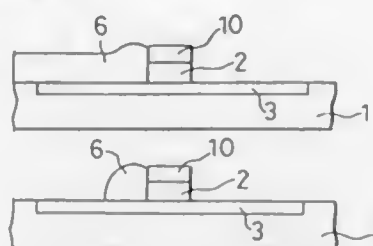
Minoru Noda, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 881,291, May 11, 1992, Pat. No. 5,296,398, which is a division of Ser. No. 673,339, Mar. 22, 1991, Pat. No. 5,153,683. This application Jun. 10, 1993, Ser. No. 74,355

Claims priority, application Japan, Apr. 19, 1990, 2-104038 Int. Cl.⁶ H01L 21/338

U.S. Cl. 437—41

2 Claims



1. A method of producing a field effect transistor comprising: producing a metal gate electrode having a first insulating film disposed on it, said metal gate electrode being disposed on and forming a Schottky barrier with a compound semiconductor substrate;
- depositing a second insulating film comprising a material different from that of said first insulating film covering the entire surface of said substrate and said first insulating film and etching said second insulating film to expose said first insulating film;
- producing a photoresist pattern having an opening exposing part of said second insulating film at only one side of said gate electrode and selectively removing said second insulating film at the one side of said gate electrode using said photoresist pattern as a mask;
- removing said photoresist pattern;
- processing said second insulating film remaining on said substrate to produce a side wall at said gate electrode at the side of said gate electrode where said second insulating film was not removed; and
- implanting ions into said substrate using said gate electrode and said side wall as masks to produce source and drain regions in said substrate.

5,510,281

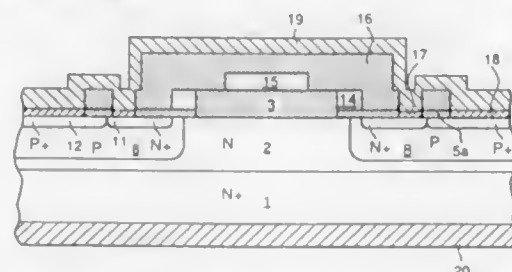
METHOD OF FABRICATING A SELF-ALIGNED DMOS TRANSISTOR DEVICE USING SIC AND SPACERS

Mario Ghezzi, Ballston Lake; Tat-Sing P. Chow, Schenectady; James W. Kretschmer, Ballston Spa; Richard J. Sala, Schenectady, and William A. Hennessy, Niskayuna, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Mar. 20, 1995, Ser. No. 406,440 Int. Cl.⁶ H01L 21/265

U.S. Cl. 437—41

12 Claims



1. A method for fabricating a semiconductor device comprising:

- patterning a refractory dielectric layer over a semiconductor layer, the semiconductor layer comprising material of a first conductivity type;
- conformally depositing a first spacer layer over the patterned refractory dielectric layer and the semiconductor layer;
- patterning the first spacers layer to leave a first spacer layer portion adjacent to an edge of the patterned refractory dielectric layer, the first spacer portion comprising a first spacer;
- implanting ions to form a base region of a second conductivity type in the semiconductor layer;
- conformally depositing a second spacer layer over the patterned refractory dielectric layer, the first spacer, and the semiconductor layer;
- patterning the second spacer layer to leave a second spacer layer portion adjacent to an edge of the first spacer, the second spacer portion comprising a second spacer;
- implanting ions to form a source region of the first conductivity type in the base region;
- removing the first and second spacers;
- applying a gate insulator layer over at least a portion of the semiconductor layer;
- conformally depositing a gate electrode layer over the patterned refractory dielectric layer, the gate insulator layer and the semiconductor layer; and
- patterning the gate electrode layer to leave a gate electrode portion adjacent to an edge of the patterned refractory dielectric layer.

5,510,282

METHOD FOR MANUFACTURING A NONVOLATILE SEMICONDUCTOR MEMORY DEVICE USING A RESIDUAL SIDEWALL FILM

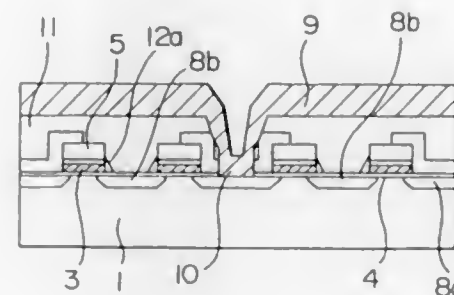
Hideki Hara, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Oct. 5, 1994, Ser. No. 318,390

Claims priority, application Japan, Oct. 7, 1993, 5-251552 Int. Cl.⁶ H01L 21/8247

U.S. Cl. 437—43

5 Claims



1. A method for manufacturing a nonvolatile semiconductor memory device including steps of: forming a plurality of first insulating films extending in a first direction and parallel to each other on a semiconductor substrate; forming a plurality of second insulating films each extending on the semiconductor substrate between adjacent two of the first insulating films; forming on each of the second insulating films a plurality of gate structures each including consecutive layers of a floating gate, a third insulating film and a control gate; forming a fourth insulating film at least on the gate structures; selectively dry-etching the fourth insulating film to leave residual side wall films at a first side of each of the gate structures; after said dry-etching, selectively introducing impurity ions of a second conductivity type to first regions of the semiconductor substrate adjacent to the first side of each of the gate structures; and selectively introducing impurity ions to second regions of the semiconductor substrate adjacent to a second side of each of the gate structures opposite to the first side.

5,510,283

METHOD OF MAKING A SEMICONDUCTOR DEVICE

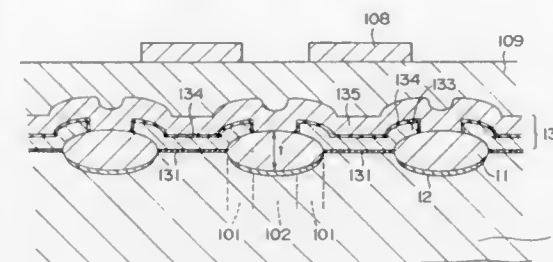
Koichi Maari, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Oct. 24, 1994, Ser. No. 327,718

Claims priority, application Japan, Oct. 28, 1993, 5-294065 Int. Cl.⁶ H01L 21/8247

U.S. Cl. 437—43

5 Claims



1. A method of manufacturing a semiconductor device having a plurality of elements separated by element isolation films, each of said elements comprising: source and drain regions formed on a surface portion of a semiconductor substrate in spaced-apart relation from each other to define a channel region therebetween; a gate insulating film formed on said channel region; a floating gate disposed on said gate insulating film such that both ends thereof overlap end portions of said element isolation films bounding said surface portion; an insulating film formed to cover said floating gate; and a control gate disposed on said insulating film and on said element isolation films such that said control gate is formed in part directly on said element isolation films and in part on said insulating film covering said floating gate whose ends in turn are formed directly on said element isolating films, said method comprising:

- a first process of forming an oxide layer on said substrate, forming an oxidization preventive film on said oxide layer and then forming openings in said oxidization preventive film;
- a second process of forming said element isolation films on portions of said semiconductor substrate exposed by said openings in said oxidization preventive film and then also forming channel stop diffusion layers in said semiconductor substrate along respective lower surfaces of said element isolation films by implanting ions in said semiconductor substrate, said element isolation films having a thickness at locations where said control gate is formed directly thereon and said channel stop diffusion layers having an impurity concentration such that first portions of the surface of said semiconductor substrate beneath said element isolation films at said locations where said control gate is formed directly on said element isolation films invert with respect to conducting type while second portions of the surface of the substrate beneath the element isolation films at locations where said control gate is not directly formed on said element isolation films do not invert, and wherein said first portions invert and said second portion do not invert with respect to conductivity type when said floating gate is subject to a potential at least equal to about 60% of a potential applied to the control gate; and
- a third process forming said element on each portion of said semiconductor substrate in spaced-apart relation from each other by means of said element isolation films and said channel stop diffusion layers.

5,510,284

METHOD FOR MANUFACTURING AN ASYMETRIC NON-VOLATILE MEMORY

Yoshimitsu Yamauchi, Nabari, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 247,889, May 23, 1994, abandoned.

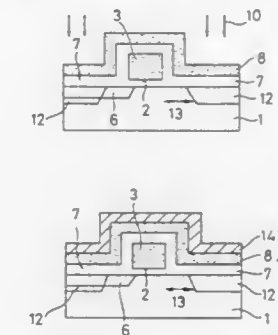
This application Jul. 27, 1995, Ser. No. 508,132

Claims priority, application Japan, Aug. 27, 1993, 5-212958; Apr. 12, 1994, 6-073603

Int. Cl.⁶ H01L 21/8247

U.S. Cl. 437—43

7 Claims



1. A method for manufacturing a non-volatile memory comprising the steps of:
- (i) forming a floating gate on a semiconductor substrate having a first insulating film;
- (ii) implanting impurity ions to an area adjacent to one side of the floating gate while masking at least an area adjacent to another side of the floating gate;
- (iii) forming a second insulating film on the semiconductor substrate including the floating gate, followed by depositing a conductive film on the entire surface of the second insulating film, the conductive film including an upright portion and a horizontally extending portion, the height of the upright portion of the conductive film at a sidewall of the floating gate being greater than the height of the horizontally extending portion of the conductive film;
- (iv) implanting impurity ions into the semiconductor substrate via the conductive film to form an offset region located between the floating gate and one of source/drain regions and underneath the upright portion of the conductive film and source/drain regions located underneath the horizontally extending portion of the conductive film; and
- (v) patterning the conductive film to constitute a control gate.

5,510,285

METHOD FOR FABRICATING CCD IMAGE SENSORS

Yong K. Kim, Kyungki, Rep. of Korea, assignor to LG Semicon Co., Ltd., Seoul, Rep. of Korea

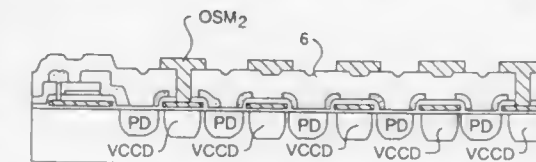
Division of Ser. No. 274,951, Jul. 14, 1994. This application Mar. 31, 1995, Ser. No. 414,928

Claims priority, application Rep. of Korea, May 21, 1994, 11096/1994

Int. Cl.⁶ H01L 21/339

U.S. Cl. 437—53

6 Claims



1. A method for fabricating a charge coupled device image sensor comprising processes for:
- forming a plurality of photoelectric conversion regions and a plurality of vertical charge coupled device regions by a selective injection of second conductive type ions into a first conductive type semiconductor substrate;

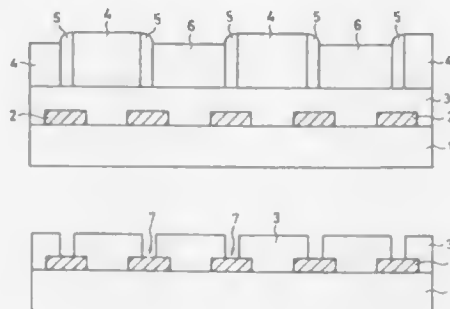
forming a plurality of transfer gate electrodes over the plurality of vertical charge coupled regions for transmitting image signal charges in four phases after forming a gate insulation film on all over the surface;
 depositing a first insulation film on all over the surface, and forming light shielding metal thereon;
 forming a first metal layer by a selective removal of the optical shielding metal over the plurality of photoelectric conversion regions and the plurality of vertical charge coupled device regions;
 forming contact holes for exposing the transfer gate electrodes the same clock signals applied thereto within one vertical charge coupled device region of the plurality of vertical charge coupled device regions, after depositing a second insulation film on all over the surface; and,
 forming a second metal layer by depositing optical shielding and conductive metal on all over the surface, and carrying out patterning leaving the metal only on the plurality of the vertical charge coupled device regions.

5,510,286
METHOD FOR FORMING NARROW CONTACT HOLES OF A SEMICONDUCTOR DEVICE
 Jae K. Kim, Kyongki, Rep. of Korea, assignor to Hyundai Electronics Industries Co., Ltd., Kyongki, Rep. of Korea
 Filed Jul. 13, 1995, Ser. No. 502,305
 Claims priority, application Rep. of Korea, Jul. 14, 1994, 94-16961

Int. Cl.⁶ H01L 21/44

U.S. Cl. 437—50

4 Claims

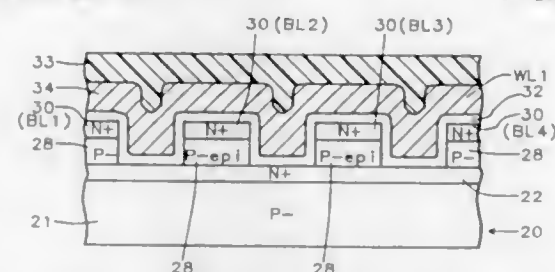


1. A method for forming contact holes of a semiconductor device, comprising the steps of:
 forming an insulating film on an infrastructure of a semiconductor device;
 forming conductive wirings on the insulating film;
 forming a blanket interlayer insulating film over the surface of the resulting structure;
 forming first photoresist film patterns on the interlayer insulating film, the side walls of said first photoresist film patterns each being located above the conductive wirings;
 forming sacrificial film spacers at the side walls of the first photoresist film patterns;
 forming second photoresist film patterns on the interlayer insulating film between the sacrificial film spacers; and
 forming contact holes by sequentially removing the sacrificial film spacers and then, the thus exposed areas of the interlayer insulating film, in sequence, with the first and the second photoresist film patterns serving as a mask.

5,510,287
METHOD OF MAKING VERTICAL CHANNEL MASK ROM
 Ling Chen, Sunnyvale, Calif.; Sung-Mu Hsu, I-Lan, and Liang F. Weng, Hsin-Chu, both of, Taiwan, assignors to Taiwan Semiconductor Manuf. Company, Hsinchu, Taiwan
 Filed Nov. 1, 1994, Ser. No. 332,908
 Int. Cl.⁶ H01L 21/8246

U.S. Cl. 437—52

19 Claims

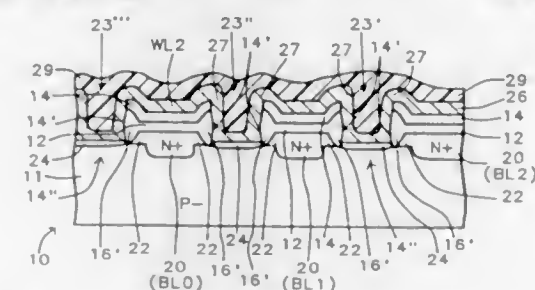


1. A method of manufacture of a semiconductor device on a P-silicon semiconductor substrate having a surface comprising
 a) forming an N+ source region layer on the surface of said semiconductor substrate, said N+ source layer having an exposed surface,
 b) forming a dielectric layer on the surface of said source region layer,
 c) patterning and etching said dielectric layer forming a first dielectric layer pattern with openings therein down to said exposed surface of said N+ source layer,
 d) forming a silicon epitaxial channel layer in said openings in said first dielectric layer pattern, said silicon epitaxial channel layer having exposed surfaces and doping said epitaxial layer with a P- dopant,
 e) forming an N+ drain layer on the surface of said silicon epitaxial layer to form drain regions over the remainder of said silicon epitaxial layer by doping with an N+ dopant,
 f) removing said dielectric layer and then forming a second dielectric layer on the surface of said device including said N+ drain layer,
 g) forming and patterning a conductor layer containing silicon over said second dielectric layer,
 h) forming an N+ implant mask with an N+ opening over a region of said epitaxial channel layer and ion implanting through said N+ opening in said implant mask into said region,
 i) forming a code implant mask over said conductor layer, and
 j) ion implanting through said code implant mask into the device.

5,510,288
BURIED BIT LINE MASK ROM PROCESS
 Gary Hong, Hsinchu, Taiwan, assignor to United Microelectronics Corporation, Hsinchu, Taiwan
 Filed Jan. 20, 1995, Ser. No. 375,782
 Int. Cl.⁶ H01L 21/8246

U.S. Cl. 437—52

20 Claims



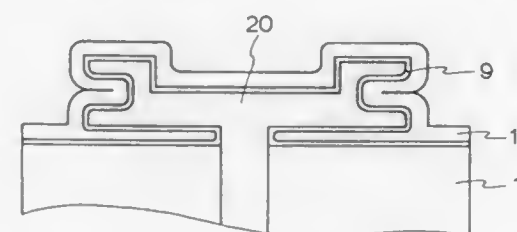
1. A method of fabricating an MOSFET device on a lightly doped semiconductor substrate comprising,
 forming a first dielectric layer on said substrate,

forming over said dielectric layer a masking layer with an array of openings therein,
 forming field oxide regions through said openings in said masking layer,
 ion implanting dopant into said substrate through said masking layer between said thick silicon dioxide regions forming an array of buried conductors therein,
 performing an anisotropic etch back through said masking layer of said field oxide regions to form channel openings in said field oxide regions down to expose the surface of said substrate,
 forming a gate oxide layer over said substrate where exposed by said etch back,
 forming a conformal array of conductors over said device extending down into said channel openings forming sidewalls therein narrowing said channel openings,
 forming a ROM code mask over said device with a ROM code opening over one of said channel openings, and
 ion implanting dopant into said ROM code opening.

5,510,289
METHOD FOR FABRICATING STACK CAPACITOR OF SEMICONDUCTOR DEVICE
 Yang K. Choi, Kyongki, Rep. of Korea, assignor to Hyundai Electronics Industries Co. Ltd., Kyongki, Rep. of Korea
 Filed Jun. 1, 1995, Ser. No. 457,222
 Claims priority, application Rep. of Korea, Jun. 22, 1994, 94-14250; Jun. 28, 1994, 94-15010
 Int. Cl.⁶ H01L 21/8242

U.S. Cl. 437—60

6 Claims



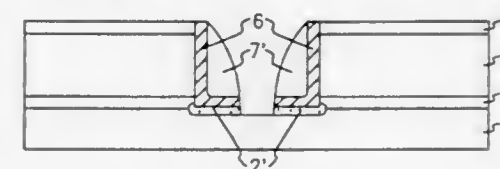
1. A method for fabricating a stack capacitor of a semiconductor device, comprising the steps of:
 forming a first oxide film for a planarization over a substrate,
 depositing a first nitride film over the first oxide film, and then forming a capacitor contact hole in the resulting structure obtained after the deposition of the first nitride film;
 depositing a doped, first polysilicon film over the entire exposed surface of the resulting structure obtained after the formation of the contact hole such that the polysilicon film fills the contact hole, and then sequentially depositing a second nitride film and a second oxide film over the first polysilicon film;
 sequentially etching the second oxide film, the second nitride film and the first polysilicon film by a lithography process using a storage electrode mask, thereby forming a pattern constituted by the films left after the etching;
 thickly growing a selective, third oxide film over the second oxide film;
 depositing a doped, second polysilicon film over the entire exposed surface of the resulting structure obtained after the growth of the third oxide film;
 etching the second polysilicon film using a blanket dry etch, thereby forming patterns of the second polysilicon film respectively on side walls of the pattern of the first polysilicon film and second nitride film;
 removing the third oxide film and the second oxide film;
 removing the second nitride film and the first nitride film; and
 forming a dielectric film over a storage electrode constituted by the pattern of the first polysilicon film and the patterns of the second polysilicon film, and then forming a plate electrode over the dielectric film.

5,510,290
METHOD FOR FORMING A FIELD OXIDE LAYER IN A SEMICONDUCTOR DEVICE WHICH PREVENTS BIRD BEAK BY NITRADATION OF PAD OXIDE
 Sung K. Kwon, Ichonkun, Rep. of Korea, assignor to Hyundai Electronics Industries Co., Ltd., Rep. of Korea
 Filed Mar. 31, 1995, Ser. No. 414,109
 Claims priority, application Rep. of Korea, Apr. 1, 1994, 1994-6951

Int. Cl.⁶ H01L 21/76; 21/762

U.S. Cl. 437—69

8 Claims

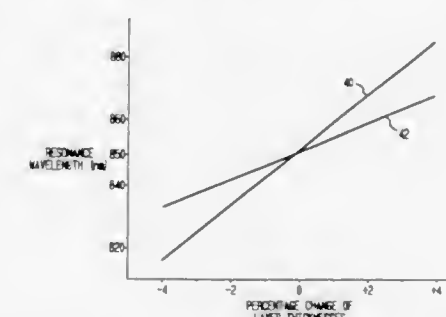


1. A method for forming a field oxide layer in a semiconductor device comprising the steps of:
 forming a pad layer and a first resistant layer of oxidation, in turn, on a substrate;
 opening a field region by etching a portion of said resistant layer of oxidation, whereby a part of said pad layer remains;
 forming said pad layer into a oxynitride layer;
 forming a second and a third resistant layer of oxidation, in turn, on a resultant structure;
 forming a spacer layer by applying anisotropic etching to said third resistant layer of oxidation;
 exposing a portion of said substrate by etching said second resistant layer of oxidation and said oxynitride layer; and
 forming said field oxide layer by oxidizing said substrate.

5,510,291
SURFACE-NORMAL SEMICONDUCTOR OPTICAL CAVITY DEVICE
 Keith W. Goossen, Aberdeen, N.J., assignor to AT&T Corp., Murray Hill, N.J.
 Filed May 2, 1994, Ser. No. 236,618
 Int. Cl.⁶ H01L 21/20

U.S. Cl. 437—129

11 Claims



1. A method for fabricating a semiconductor optical cavity device that includes at least one multi-layer mirror structure that consists only of undoped layers, said method comprising the steps of
 in a first reactor adapted to deposit only undoped layers whose thickness variations over their entire extents are less than the thickness variations over their entire extents of layers deposited in a second reactor, successively depositing the undoped layers that constitute said mirror structure, at least some of the layers of said mirror structure being included in the overall thickness of the optical cavity of the device,
 and, in said second reactor, successively depositing undoped and doped layers that constitute the remainder of the thickness of said optical cavity.

wherein each of the layers deposited in said first reactor is characterized by thickness variations over its entire extent that are less than the thickness variations of layers deposited in said second reactor.

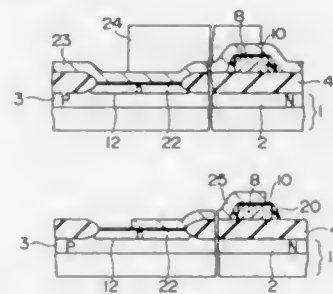
5,510,292
MANUFACTURING METHOD FOR A SEMICONDUCTOR DEVICE HAVING LOCAL INTERCONNECTIONS
Hiromi Hayashi, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Dec. 27, 1994, Ser. No. 363,931

Claims priority, application Japan, Mar. 4, 1994, 6-035101
Int. Cl.⁶ H01L 21/44

U.S. Cl. 437—187

6 Claims



1. A method for manufacturing a semiconductor device, said method comprising the steps of:
forming an impurity diffusion region as a first conductive region within a semiconductor layer;
forming a tungsten nitride film on a region including said impurity diffusion region;
selectively forming an etch mask on said tungsten nitride film located extending from said impurity diffusion region to a second conductive region; and
removing said tungsten nitride film by dry etching in accordance with said etch mask, said dry etching including the steps of
a) introducing a gas comprising fluorine, and
b) introducing a gas comprising hydrogen after said tungsten nitride film is initially thinned by etching with said gas comprising fluorine.

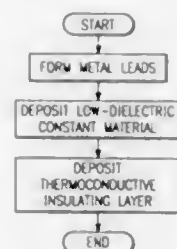
5,510,293
METHOD OF MAKING RELIABLE METAL LEADS IN HIGH SPEED LSI SEMICONDUCTORS USING THERMOCONDUCTIVE LAYERS
Ken Numata, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed May 31, 1994, Ser. No. 251,822

Int. Cl.⁶ H01L 21/44

U.S. Cl. 437—195

14 Claims



1. A method of fabricating metal leads in a semiconductor device, said metal each being resistant to damage due to Joule's heat, said method comprising the steps of:
forming at least two metal leads on a substrate, said metal leads having a height-to-width aspect ratio greater than 2;

depositing a low-dielectric constant material at least between said metal leads, said low-dielectric constant material having a dielectric constant of less than 3.5; and
depositing a thermoconductive insulating layer on at least the tops of said metal leads, said thermoconductive insulating layer comprising at least one of AlN and Si₃N₄;
wherein current passing through said metal leads produces said Joule's heat which is transferable to said thermoconductive insulating layer and is dissipatable.

5,510,294

METHOD OF FORMING VIAS FOR MULTILEVEL METALLIZATION

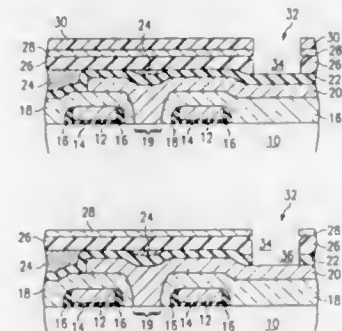
Alexander Kalnitsky; Girish A. Dixit, and Fusen E. Chen, all of Dallas, Tex., assignors to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.

Continuation of Ser. No. 275,819, Jul. 15, 1994, abandoned, which is a division of Ser. No. 815,704, Dec. 31, 1991, abandoned. This application May 26, 1995, Ser. No. 453,563

Int. Cl.⁶ H01L 21/44; 21/467

U.S. Cl. 437—195

17 Claims



1. A method of forming a via for multilevel metallization for a semiconductor integrated circuit, comprising the steps of:
forming an opening in a dielectric layer exposing a portion of an underlying first conductive layer wherein the dielectric has partially sloped sidewalls sloping outward at an upper surface of the dielectric layer, wherein the step of forming the opening in the dielectric layer further includes the steps of:
forming a third conductive layer over the dielectric layer and before the second conductive layer is formed;
forming and patterning a photoresist layer over the third conductive layer;
isotropically etching partway through the dielectric layer;
removing the entire photoresist layer;
after the entire photoresist layer has been removed, anisotropically etching the remaining dielectric layer in the opening exposing the first conductive layer in the opening;
after exposing the first conductive layer in the opening, removing the third conductive layer before the second conductive layer is formed; and
forming a second conductive layer over the dielectric layer and in the opening.

5,510,295
METHOD FOR LOWERING THE PHASE TRANSFORMATION TEMPERATURE OF A METAL SILICIDE

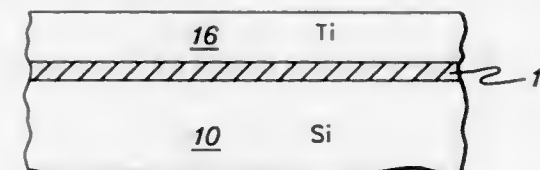
Cyril Cabral, Jr., Ossining; Lawrence A. Clevenger, Lagrangeville; Francois M. d'Heurle, Ossining; James M. E. Harper, Yorktown Heights, all of N.Y.; Randy W. Mann, Jericho, Vt.; Glen L. Miles, Essex Junction, Vt., and Donald W. D. Rakowski, Georgia, Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 29, 1993, Ser. No. 145,921

Int. Cl.⁶ H01L 21/44

U.S. Cl. 437—200

31 Claims



16. A method for forming a titanium silicide layer on a silicon layer on a semiconductor wafer, comprising the steps of:
disposing a refractory metal proximate to the surface of said silicon layer by ion implantation, with a dose of 10¹² to 5×10¹⁴ atoms/cm²;
depositing a layer comprising titanium and silicon over said refractory metal; and heating said wafer to a temperature sufficient to substantially form the C54 phase of said titanium silicide layer from said layer comprising titanium and silicon, said temperature being less than about 700° C.

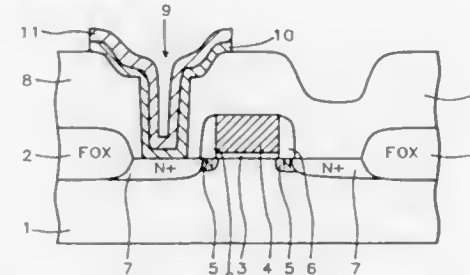
5,510,296
MANUFACTURABLE PROCESS FOR TUNGSTEN POLYCIDIC CONTACTS USING AMORPHOUS SILICON
Haw Yen, Hsin Chu, and Shaw-Tseng Hsia, Taipei, both of, Taiwan, assignors to Vanguard International Semiconductor Corporation, Hsinchu, Taiwan

Filed Apr. 27, 1995, Ser. No. 429,727

Int. Cl.⁶ H01L 21/28

U.S. Cl. 437—200

22 Claims



1. A method for fabricating a MOSFET device on a semiconductor substrate, using a polycide coated hole to provide electrical contact between active device regions in the substrate, and the interconnect metallizations, comprising the steps of:
providing the active device elements in said semiconductor substrate;
depositing a first dielectric layer on said semiconductor substrate, that includes said active device elements;
photolith, graphic processing to open a region in photoresist, exposing said first dielectric layer, directly overlying said active device element;
anisotropic removal of said first dielectric layer, in said opened region of photoresist, to create a contact hole to said active device element;
surface cleaning of said active device element, in said contact hole opening;
depositing a layer of amorphous silicon on said active device element, in said contact hole opening, and on the surface of said first dielectric layer;

ion implanting a first conductivity imparting dopant into said silicon layer;
surface cleaning of said silicon layer;
depositing a metal silicide layer on said silicon layer, to form a metal polycide;
patterning of said metal polycide to form contact structure; and
annealing of said metal polycide contact structure.

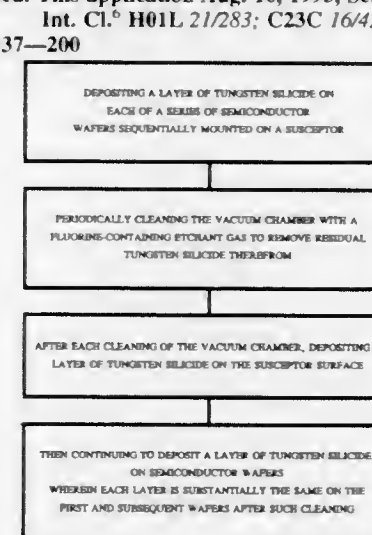
5,510,297
PROCESS FOR UNIFORM DEPOSITION OF TUNGSTEN SILICIDE ON SEMICONDUCTOR WAFERS BY TREATMENT OF SUSCEPTOR HAVING ALUMINUM NITRIDE SURFACE THEREON WITH TUNGSTEN SILICIDE AFTER CLEANING OF SUSCEPTOR
Susan Telford, Cupertino, Calif.; Michio Aruga, Ioba, Japan, and Mei Chang, Cupertino, Calif., assignors to Applied Materials, Inc., Santa Clara, Calif.

Continuation of Ser. No. 352,265, Dec. 7, 1994, abandoned, which is a continuation of Ser. No. 83,420, Jun. 28, 1993, abandoned. This application Aug. 10, 1995, Ser. No. 504,294

Int. Cl.⁶ H01L 21/283; C23C 16/42

U.S. Cl. 437—200

21 Claims



15. In an improved tungsten silicide deposition process, in a vacuum chamber, wherein a tungsten silicide layer is formed on an integrated circuit structure of a semiconductor wafer mounted on a susceptor having an aluminum nitride surface thereon, the improved process comprising:
(a) cleaning said chamber with fluorine-containing etchant gases to remove previous depositions of tungsten silicide;
(b) maintaining said susceptor at a temperature of at least 500° C.; and
(c) depositing on said susceptor a layer of tungsten silicide, said depositing being made prior to an initial deposition of tungsten silicide on a first wafer mounted on said susceptor after cleaning with said fluorine-containing etchant gases.

5,510,298
METHOD OF INTERCONNECT IN AN INTEGRATED CIRCUIT

Donald J. Redwine, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

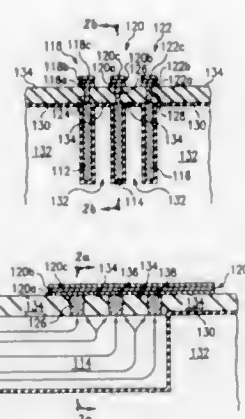
Continuation of Ser. No. 132,425, Oct. 5, 1993, abandoned, which is a continuation of Ser. No. 758,653, Sep. 12, 1991, abandoned. This application Sep. 12, 1994, Ser. No. 304,628

Int. Cl.⁶ H01L 21/44; 21/48

U.S. Cl. 437—203

12 Claims

9. A method of controlling the frequency response of a conducting strip of an interconnect structure, said method comprising the steps of:
forming a metal line in a semiconductor material layer;



forming an insulating layer over said metal line;
forming at least one conducting via in said insulating layer, said
conducting via being electrically coupled to said metal line by
a plurality of conducting contacts;
forming said conducting strip on said insulating layer, said
conducting strip being coupled in parallel electrically to said
conducting via.

5,510,299

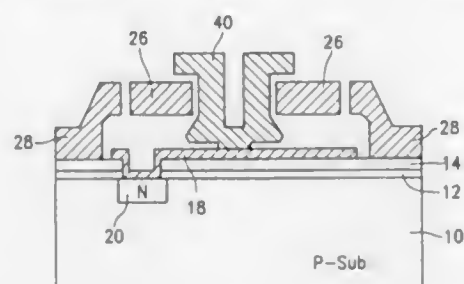
**METHOD FOR THE MANUFACTURE OF
IC-PROCESSED MICRO ELECTRO-STATIC MOTORS**
Zhi-Jian Li; Xi-Qing Sun, and Li-Tian Liu, all of Beijing,
China, assignors to United Microelectronics Corp., Taiwan,
China

Filed Jun. 3, 1994, Ser. No. 253,940

Int. Cl.⁶ H01L 21/302

U.S. Cl. 437—225

13 Claims



1. A method for manufacturing a micro electro-static motor
comprising the steps of:

- providing a silicon substrate having a first conductivity type;
- forming an isolation layer over said silicon substrate;
- forming a shield layer on a surface region of said isolation layer;
- depositing in sequence a layer of phosphosilicate glass and a layer of silicon oxide over said shield layer and an exposed surface of said isolation layer;
- patterning said layers of phosphosilicate glass and silicon oxide by lithography and etching to form a phosphosilicate glass/silicon oxide composite sacrificial layer;
- depositing a first structural layer over said phosphosilicate glass/silicon oxide composite sacrificial layer and the exposed surface of said isolation layer;
- patterning said first structural layer by lithography and etching to form a rotor and a stator of said micro electro-static motor, the rotor having a bearing contact surface overlying the substrate;
- forming a first block-out mask over said rotor and stator, the first block-out mask exposing a portion of the phosphosilicate glass/silicon oxide composite sacrificial layer to form a bearing region;

- etching the bearing region of the phosphosilicate glass/silicon oxide composite sacrificial layer to form a curved bearing opening;
- removing said first block-out mask;
- depositing a second sacrificial layer over all of the exposed surface with a bearing anchor opening therethrough to expose a portion of said shield layer;
- depositing a second structure layer and defining it to form a curved bearing residing in said bearing anchor opening and said curved bearing opening, said curved bearing having a rotor contact surface extending between the rotor and the substrate, the rotor contact surface being transverse to the bearing contact surface; and
- removing all of said phosphosilicate glass/silicon oxide composite sacrificial layer and said second sacrificial layer by etching to release said rotor, so that said rotor is rotatably supported by said rotor contact surface of said curved bearing.

5,510,300

**SEALING GLASS COMPOSITIONS USING CERAMIC
COMPOSITE FILLER**

Byung C. Lim, Kyungki; Yoo S. Hong, Seoul; Ki Y. Lee, and
Tae H. Park, both of Kyungki, all of, Rep. of Korea, assign-
ors to Samsung Corning Co., Ltd., Rep. of Korea

Continuation of Ser. No. 167,377, Dec. 15, 1993, abandoned.

This application Jun. 29, 1995, Ser. No. 496,546

Claims priority, application Rep. of Korea, Dec. 16, 1992,
92-24483; Dec. 8, 1993, 92-26921; Dec. 8, 1993, 93-26922Int. Cl.⁶ C03C 8/24

U.S. Cl. 501—18

2 Claims

1. A sealing glass composition having low temperature PbO-
B₂O₃ glass powder and filler comprising

- 60 to 75 wt % of low temperature PbO-B₂O₃ glass powder, and
- 25 to 40 wt % of filler, wherein said filler is zinc zirconium silicate composite comprising zircon and willemite crystal phase synthesized by heat-treating an oxide powder mixture of 15 to 60 wt % of ZnO, 15 to 60 wt % of ZrO₂, and 28 to 32 wt % of SiO₂, at 1350° to 1450° C.

5,510,301

SEALING FRIT PASTES

Kimberly S. Fink, R.D. #2, Box 27C, Arkport, N.Y. 14807, and
Joshua U. Otaigbe, 1222 Scott Ave., Ames, Iowa 50010

Filed Oct. 24, 1994, Ser. No. 328,167

Int. Cl.⁶ C03C 8/16

U.S. Cl. 501—20

11 Claims

1. A frit paste formulation designed for sealing preformed glass parts comprising a mixture of lead-free glass frit particles in a lacquer with 0.0005–2% by weight total of said lacquer of an additive selected from the group consisting of a substituted sorbitol in the polyol acetal family, a fumed silica treated with dimethyldichlorosilane, a mixture of (i) a titanium ortho ester complex having the general formula (RO)_nTi, wherein n is about 4 and R represents an organic group which is compatible with the lacquer and frit, and (ii) an alkyl organic phosphate ester, one of the above additives in conjunction with a co-additive selected from the group consisting of hectorite clay; a polyacrylic acid; a polymeric fatty ester; castor oil; and a 50–55% by weight solution of a zinc salt of alkyl naphthalene sulfonic acid in alkyl glycol butyl ether; and a blend of two or more of the co-additives with one another.

5,510,302

Patent Not Issued For This Number

5,510,303

CERAMIC MATRIX COMPOSITE MATERIAL

Tsuneji Kameda, Tokyo; Masahiro Asayama, and Shoko
Suyama, both of Yokohama, all of, Japan, assignors to
Kabushiki Kaisha Toshiba, Kanagawa, Japan

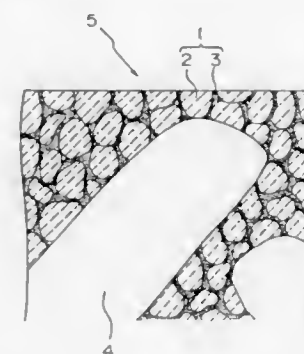
Filed Jul. 22, 1994, Ser. No. 279,162

Claims priority, application Japan, Jul. 26, 1993, 5-183913

Int. Cl.⁶ C04B 35/577

U.S. Cl. 501—92

8 Claims



1. A ceramic matrix composite material, comprising:

a matrix having a silicon carbide phase as a primary component and a silicon nitride phase as a secondary component, said silicon nitride phase containing up to 1% by weight of iron; and

reinforcements dispersed in said matrix,

wherein said silicon nitride phase is formed of silicon nitride particles having an average diameter of 1 μm or less.

5,510,304

COARSE REACTION BONDED SILICON NITRIDE

Craig A. Willkens, Sterling, Mass., assignor to Saint-Gobain/
Norton Industrial Ceramic Corporation, Worcester, Mass.

Continuation-in-part of Ser. No. 123,617, Sep. 17, 1993, abandoned. This application Sep. 14, 1994, Ser. No. 305,640

Int. Cl.⁶ C04B 35/59

U.S. Cl. 501—96

21 Claims



1. A reaction bonded silicon nitride ceramic comprising:

- between 20 w/o and 90 w/o unnecked composite grains comprising:
 - between 5 w/o and 100 w/o silicon nitride, and
 - between 0 w/o and 95 w/o free silicon, said composite grains having lengths of at least 50 microns and widths of at least 10 microns, and
- between 10 w/o and 80 w/o matrix grains having lengths of less than 20 microns.

5,510,305

**NON-REDUCIBLE DIELECTRIC CERAMIC
COMPOSITION**

Harunobu Sano, Kyoto, and Yukio Hamaji, Nagaokakyo, both
of, Japan, assignors to Murata Manufacturing Co., Ltd.,
Japan

Filed Jun. 14, 1994, Ser. No. 259,483

Claims priority, application Japan, Jun. 15, 1993, 5-169622;

Sep. 2, 1993, 5-243698

Int. Cl.⁶ C04B 35/49

U.S. Cl. 501—138

5 Claims

1. A non-reducible dielectric ceramic composition consisting essentially of a main component and at least one oxide selected from the group consisting of oxides of Mn, Fe, Cr, Co and Ni, said main component having a composition of the general formula (I):



wherein R1 is at least one element selected from the group consisting of La, Ce, Nd, Pr and Sm, R2 is at least one element selected from the group consisting of Dy, Ho, Er, Yb and Y, and wherein o, p, q, r, x, y and m meet the following conditions: $0 < o \leq 0.32$, $0 \leq p \leq 0.20$, $0 < q \leq 0.02$, $0 < r \leq 0.02$, $0 < x \leq 0.24$, $0 < y \leq 0.16$, $1.00 \leq m \leq 1.03$, and $0 < q+r \leq 0.03$; the content of said oxide being 0.02 to 2.0 moles per 100 moles of said main component when calculated in terms of respective oxides, MnO, Fe₂O₃, Cr₂O₃, CoO and NiO.

5,510,306

**PROCESS FOR ISOMERIZING LINEAR OLEFINS TO
ISOOLEFINS**

Brendan D. Murray, Houston, Tex., assignor to Shell Oil Com-
pany, Houston, Tex.

Filed Dec. 29, 1993, Ser. No. 175,004

Int. Cl.⁶ B01J 29/06

U.S. Cl. 502—64

13 Claims

1. A process for preparing a catalyst for structurally isomerizing a linear olefin of at least 4 carbon atoms to its corresponding methyl branched isoolefin comprising:

- mixing
 - a zeolite powder comprising at least one zeolite with at least one one-dimensional pore structure having pore size ranging from greater than 0.42 nm to less than 0.7 nm,
 - an alumina-containing binder,
 - water,
 - from about 0.1 weight percent to about 6 weight percent, based on (i) and (ii), of at least one acid selected from the group consisting of monocarboxylic acids and inorganic acids and,
 - from about 0.1 weight percent to about 6 weight percent, based on (i) and (ii), of at least one polycarboxylic acid thereby producing a mixture;
- forming a pellet of said mixture; and
- calcining said pellet at a temperature of from about 200° C. to about 700° C.

5,510,307

FREE RADICAL INITIATOR DELIVERY SYSTEM

Kolazi S. Narayanan, Wayne, N.J., and Waldo De Thomas,
Saylorsburg, Pa., assignors to ISP Investments Inc., Wilm-
ington, Del.

Continuation-in-part of Ser. No. 44,520, Apr. 8, 1993, Pat. No. 5,270,271, and a continuation-in-part of Ser. No. 44,136, Apr. 8, 1993, Pat. No. 5,362,698. This application Nov. 28, 1994, Ser. No. 345,173

Int. Cl.⁶ B01J 31/00

U.S. Cl. 502—159

11 Claims

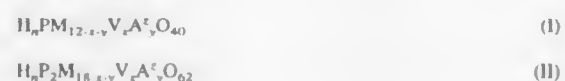
1. A stable free radical delivery system for a free radical polymerization of a monomer containing olefinic unsaturation which

comprises: a pumpable aqueous emulsion of from 0.01 to 100 micron diameter coprecipitated microparticles of a water insoluble free radical initiator with a polymer having a number average molecular weight of between 3,000 and 1,000,000 derived from a monomer having olefinic unsaturation combined in a weight ratio of between about 1:5 and about 1:1.5.

5,510,308 CATION AND VANADIUM SUBSTITUTED HETEROPOLYACID CATALYSTS FOR VAPOR PHASE OXIDATION

Kostantinos Kourtakakis, Hockessin, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.
Filed Oct. 19, 1994, Ser. No. 325,840

Int. Cl.⁶ B01J 27/18; 27/19; 27/198; C07D 307/34
U.S. Cl. 502—209 9 Claims
1. A heteropolyacid catalyst for the oxidation of n-butane to maleic anhydride consisting essentially of crystalline oxide of formula I or formula II:



wherein:

- P is a phosphorus heteroatom;
M independently is at least one metal in the +6 oxidation state selected from Mo and W, said metal occupying an octahedral site surrounding the phosphorus heteroatom;
x is an integer selected from 1, 2 and 3;
y is an integer selected from 1, 2 and 3;
A is at least one cation selected from the group consisting of Li, Mg, Se, Ti, Cr, Mn, Fe, Co, Ni, Cu, Zn, Zr, Nb, Ru, Rh, Pd, Ta, Re, Os, Ir, Pt, Al, Ga, Ge, Sn, Pb, As, Sb, Bi, Po, Tb, and Pa, said cation occupying an octahedral site surrounding the phosphorus atom;
z is a number from 1–6 representing a weighted average of the oxidation states of all of the A cations; and
n is a number calculated as follows in formula I: $n=3-yz+x+6y$, and in formula II: $n=6+x+6y-yz$.

5,510,309
METHOD FOR PREPARING A MODIFIED SOLID OXIDE
Clarence D. Chang, Princeton, N.J.; Charles T. Kresge, West Chester, Pa.; Jose G. Santiesteban, Yardley, Pa., and James C. Vartuli, West Chester, Pa., assignors to Mobil Oil Corporation, Fairfax, Va.
Filed May 2, 1994, Ser. No. 236,073
Int. Cl.⁶ B01J 23/30

U.S. Cl. 502—308 17 Claims
1. A method for preparing a catalyst comprising an acidic solid comprising a Group IVB metal oxide modified with an oxyanion of tungsten, said method comprising co-precipitating the Group IVB metal oxide along with the oxyanion of tungsten, followed by calcining the co-precipitate at a temperature from about 750° C. to about 900° C.

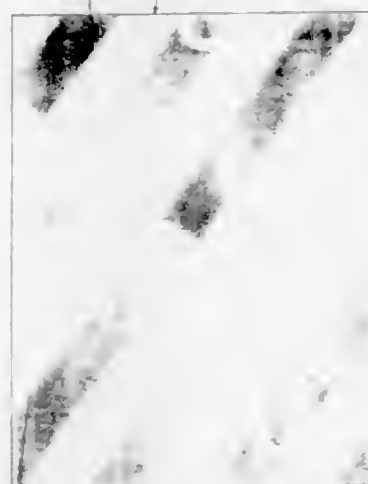
5,510,310
FLOOR DRY MATERIAL AND METHOD OF
MANUFACTURE
Harold J. Manning, Pasco, Wash., assignor to Cerad Industries, Inc., Oklahoma City, Okla.
Continuation-in-part of Ser. No. 131,492, Oct. 4, 1993, Pat. No. 5,372,314. This application Oct. 26, 1993, Ser. No. 142,680
Int. Cl.⁶ B01J 20/10

U.S. Cl. 502—412 18 Claims
1. A method of manufacturing floor dry material comprising the following steps:

- (1) shredding waste cellulosic fibrous material, to obtain a shredded fiber;
- (2) mixing the shredded fiber of step (1) with a biodegradable surfactant, calcium oxide, and water until a temperature of about 140° F. to 150° F. is achieved to obtain a first mixture slurry;
- (3) mixing a natural citric-based solvent degreaser with the first mixture slurry of step (2) to obtain a second mixture slurry; and
- (4) mixing with the second mixture slurry of step (3) a material selected from the group consisting of silica diatomite plankton and non-swelling clay to obtain a finished floor dry material.

5,510,311
CARBONLESS COPY MATERIAL
Michael P. Bond, Barnrodden Farm Shuckburgh Rd., Warwickshire CV238RY, United Kingdom, and Victor G. Atkinson, 38, Dark Lane, Hollywood Birmingham, United Kingdom
PCT No. PCT/GB94/00048, § 371 Date Sep. 12, 1994, § 102(e) Date Sep. 12, 1994, PCT Pub. No. WO94/15795, PCT Pub. Date Jul. 21, 1994
PCT Filed Jan. 11, 1994, Ser. No. 302,785
Claims priority, application United Kingdom, Jan. 13, 1993, 9300555

Int. Cl.⁶ B41M 5/128; 5/132
U.S. Cl. 503—201 14 Claims



12. A method of printing onto a sheet (18;28) of copy material of the type having on one face (18a;28a) thereof a coating (B) incorporating a colour-forming substance of the kind which when released onto a receptor material (F) produces a visible mark, and having an opposite face (18b;28b) free from said coating; wherein a plurality of said sheets (18;28) are arranged into a stack (20;30) in which all of said sheets have said one face (18a;28a) provided with said coating (B) facing towards one end of the stack and wherein at said one end of the stack (20;30) at least one of said sheets has a visible image (I) formed on said one face (18a;28a) before the deposition of said coating (B) so that said visible image (I) is discernible through the coating (B) and visible at said one end of said stack, by removing the sheets (18;28) successively from the stack (20;30) and passing them successively through printing apparatus whereby said further image (II) is printed on each of said opposite faces (18b;28b), the stack (20;30) being oriented in relation to the printing apparatus by reference to said visible image (I) on said one face (18a;28a) of that sheet (18;28) which is end-most in the stack.

5,510,312
Patent Not Issued For This Number

5,510,313
THERMAL TRANSFER PRINTING DYESHEET
Richard A. Hann, and Kenneth A. D. Mcallister, both of Ipswich, England, assignors to Imperial Chemical Industries PLC, London, England
PCT No. PCT/GB93/01761, § 371 Date May 4, 1995, § 102(e) Date May 4, 1995, PCT Pub. No. WO94/04369, PCT Pub. Date Mar. 3, 1994
PCT Filed Aug. 19, 1993, Ser. No. 387,842
Claims priority, application United Kingdom, Aug. 21, 1992, 9217799

Int. Cl.⁶ B41M 5/035; 5/38
U.S. Cl. 503—227 4 Claims
1. A thermal transfer dyesheet comprising an elongated substrate supporting print-size portions of first, second and third colour dye-coats arranged in a repeated sequence, said dye-coats each comprising one or more thermal transfer dyes dissolved or dispersed in a polymeric binder, characterised in that at least one of the second and third colour dye-coats has a clawback factor in respect of the first or second colour respectively, with a value in the range 1±0.3; wherein clawback occurs when some of a dye previously transferred to a receiver is removed while being over-printed by a subsequent colour, and the clawback factor is the ratio of the optical density loss through clawback and the density of the subsequent colour at the same wavelength; the optical density loss being defined as the sum of the densities of the two colours separately minus the density of the overprint, at the wavelength characteristic of the previously transferred dye.

5,510,314
THERMAL DYE TRANSFER SYSTEM WITH RECEIVER
CONTAINING REACTIVE CARBONYL GROUP
Steven Evans; Kristine B. Lawrence, both of Rochester, and Ellen J. Pyszczek, Leroy, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Mar. 24, 1995, Ser. No. 410,195
Int. Cl.⁶ B41M 5/035; 5/38

U.S. Cl. 503—227 11 Claims
6. A process of forming a dye transfer image comprising imagewise-heating a dye-donor element comprising a support having thereon a dye layer comprising a dye dispersed in a polymeric binder, said dye being substituted with a reactive primary or secondary aliphatic amino group, and imagewise transferring said dye to a dye-receiving element to form said dye transfer image, said dye-receiving element comprising a support having thereon a dye image-receiving layer, said dye image-receiving layer comprising a polymer containing a plurality of functional groups:



wherein:

- R² represents alkyl, aryl, alkoxy or aryloxy;
X represents oxygen or sulfur; and
R³ represents aryl or hetaryl; with the proviso that R² or R³ and R³ are directly attached to the polymer chain.

5,510,315
FRESHNESS RETENTIVE FOR CUT FLOWERS
Takahiro Kurotsu; Hiroyuki Itob, and Sadatoshi Sakuma, all of Odawara, Japan, assignors to Meiji Milk Products Company Limited, Japan
PCT No. PCT/JP92/01439, § 371 Date Jul. 8, 1993, § 102(e) Date Jul. 8, 1993, PCT Pub. No. WO93/08685, PCT Pub. Date May 13, 1993
PCT Filed Nov. 6, 1992, Ser. No. 87,812
Claims priority, application Japan, Nov. 8, 1991, 3-293467
Int. Cl.⁶ A01N 3/02

U.S. Cl. 504—115 5 Claims
1. A freshness retentive of cut flowers, which comprises: (a) a mixture of a silver compound, a primary amine, and a nucleic

acid-related substance; (b) a reaction product of a silver compound, a primary amine, and a nucleic acid-related substance; or (c) a mixture of a silver compound, a primary amine, and a nucleic acid-related substance and reaction products thereof.

5,510,316
PHIOMOPSIS SPECIES FUNGUS USEFUL AS A BROAD-
SPECTRUM BIOHERBICIDE TO CONTROL SEVERAL
SPECIES OF PIGWEEDS
Raghavan Charudattan, Gainesville, Fla.; Yasser M. Shabana, El-Mansoura, Egypt; James T. DeValerio, Starke, and Erin N. Rosskopf, Newberry, both of Fla., assignors to University of Florida, Gainesville, Fla.
Division of Ser. No. 77,695, Jun. 15, 1993, Pat. No. 5,393,728.
This application Jan. 10, 1995, Ser. No. 370,960
Int. Cl.⁶ A01N 63/04; C12N 1/14

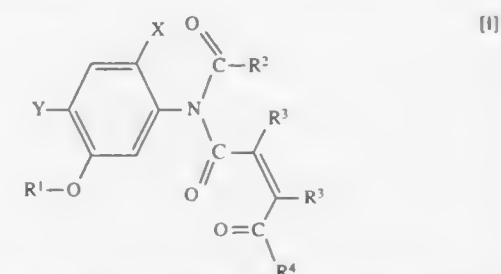
U.S. Cl. 504—117 1 Claim
1. A substantially pure *Phomopsis* sp., isolate having activity against an amaranth, said isolate having the identifying characteristics of culture deposit ATCC 74226.

5,510,317
N-ACYL-N-PHENYLMALEAMIC ACID DERIVATIVES,
METHODS OF PRODUCING SAME, AND HERBICIDES
CONTAINING SAME AS EFFECTIVE COMPONENTS
Tetsuo Takematsu, Utsunomiya; Takashi Kume; Takeo Komata, both of Kawagoe; Kiyoshi Suzuki, Utsunomiya; Yukio Ikeda, Kawachi; Matsue Kawamura, and Kaoru Mori, both of Kawagoe, all of Japan, assignors to Central Glass Co. Ltd., Ube, Japan

PCT No. PCT/JP93/01755, § 371 Date Jul. 20, 1994, § 102(e) Date Jul. 24, 1994, PCT Pub. No. WO94/12468, PCT Pub. Date Jun. 9, 1994

PCT Filed Dec. 2, 1993, Ser. No. 256,683
Claims priority, application Japan, Dec. 2, 1992, 4-323469
Int. Cl.⁶ A01N 27/00; 29/04; 29/10; C07C 229/36

U.S. Cl. 504—147 9 Claims
1. An N-acyl-N-phenylmaleamic acid derivative represented by the general formula [I],



wherein X and Y each individually represent hydrogen atoms or halogen atoms, R¹ represents a hydrogen atom, a halogen atom, a lower alkyl group, a lower alkenyl group, a lower alkynyl group, a lower alkoxyalkyl group or a lower alkoxy-carbonylalkyl group, R² represents a lower alkyl group, a halogenated lower alkyl group or a substituted or unsubstituted phenyl group, R³ represents a hydrogen atom or a lower alkyl group, and R⁴ represents a hydroxyl, a lower alkoxy group, a lower alkenyloxy group, a lower alkynyloxy group, a lower alkoxyalkoxy group, a benzyloxy group or a lower alkoxyalkoxyalkoxy group.

5,510,318

HERBICIDAL OXAZINE ETHERS

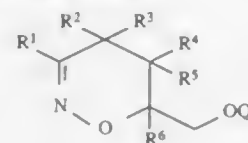
Kanu M. Patel, Wilmington, and Thomas M. Stevenson, Newark, both of Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 618,146, Nov. 26, 1990, abandoned. This application May 25, 1993, Ser. No. 64,004

Int. Cl.⁶ C07D 265/02; A01N 43/72

U.S. Cl. 504—223

1. A compound selected from



wherein:

R¹ is C₁–C₆ alkyl optionally substituted with a substituent selected from halogen, phenyl and C₁–C₃ alkoxy optionally substituted with 1–3 halogens; C₃–C₆ cycloalkyl; phenyl optionally substituted with one to two groups selected from halogen, SCH₃, CN, C₁–C₂ alkyl optionally substituted with 1–3 halogens and C₁–C₂ alkoxy optionally substituted with 1–3 halogens; and CR⁹R¹⁰X;

X is CN, CO₂R¹³, C(O)R¹⁴, CHO, OR¹⁵ or CR¹¹R¹²Y;

Y is OR¹⁶;

R², R³, R⁴, R⁵, R¹³, R¹⁴, R¹⁵, R¹⁶, R²⁰ and R²¹ are independently

H or C₁–C₃ alkyl;

R⁶ is H, C₁–C₃ alkyl or C₂–C₄ alkenyl;

R¹ and R² may be taken together to form a 5–6 membered ring substituted with R²⁰ and R²¹ and optionally fused to a benzene ring;

R⁹ and R¹¹ are independently H or CH₃;

R¹⁰ and R¹² are independently H, CH₃ or OCH₃;

Q is CH₂W; and

W is phenyl optionally substituted with 1–3 substituents selected from halogen, C₁–C₃ alkyl, C₁–C₃ alkoxy, OH, CN, C₁–C₃ haloalkyl, C₁–C₃ haloalkoxy, C₁–C₃ alkylthio, C₂–C₄ alkenyl and C₂–C₄ alkynyl.

5,510,319

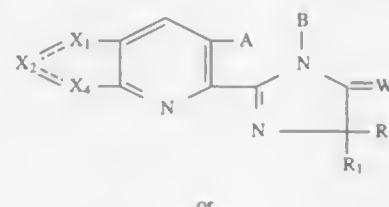
(2-IMIDAZOLIN-2-YL) FUSED HETEROPYRIDINE COMPOUNDS, INTERMEDIATES FOR THE PREPARATION OF AND USE OF SAID COMPOUNDS AS HERBICIDAL AGENTS

Barrington Cross, Rocky Hill; Marinus Los, Pennington; Robert F. Doehner, Jr., East Windsor; David W. Ladner, Hamilton Square, and Jerry L. Johnson, Lawrenceville, all of N.J., assignors to American Cyanamid Company, Madison, N.J. Division of Ser. No. 465,569, Jan. 16, 1990, Pat. No. 5,252,538, which is a continuation of Ser. No. 178,408, Apr. 6, 1988, abandoned, which is a continuation of Ser. No. 876,599, Jun. 20, 1986, abandoned, which is a continuation-in-part of Ser. No. 808,578, Dec. 13, 1985, abandoned, and a continuation-in-part of Ser. No. 612,531, May 21, 1984, abandoned. This application Sep. 20, 1993, Ser. No. 123,827

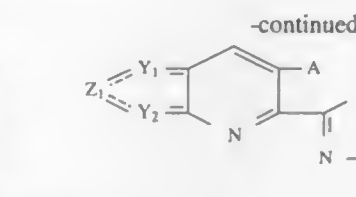
Int. Cl.⁶ A01N 43/90; 59/06; 59/16; C07D 471/06

U.S. Cl. 504—246

1. A (2-imidazolin-2-yl) fused heteropyridine compounds having the structure



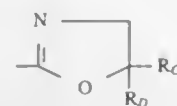
(II)



(IV)

wherein

A is COOR₈, CHO, CH₂OH, COCH₂OH, CONH₂, CH₂CH₂OH, CONHOH or



R_C and R_D are each hydrogen or C₁–C₄ alkyl;

R₈ is hydrogen, C₁–C₄ alkyl which may be interrupted by O or S, or is optionally substituted with C₁–C₄ alkoxy, halogen, hydroxy, C₃–C₆ cycloalkyl, benzyloxy, furyl, phenyl, furfuryl, halophenyl, C₁–C₄ alkylphenyl, C₁–C₄ alkoxyphenyl, nitrophenyl, carboxyl, C₁–C₄ alkoxy carbonyl, cyano or C₁–C₄ trialkylammonium; C₃–C₆ alkenyl, optionally substituted with one or two C₁–C₃ alkoxy, phenyl or halogen groups, C₃–C₆ cycloalkyl, optionally substituted with one or two C₁–C₃ alkyl groups; C₃–C₁₀ alkynyl, optionally substituted with phenyl, halogen, C₁–C₃ alkoxy, or a cation selected from the group consisting of alkali metals, alkaline earth metals, manganese, copper, iron, ammonium and organic ammonium;

B is H, COR₉ or SO₂R₁₀, R₉ is C₁–C₁₁ alkyl, chloromethyl, C₁–C₄ alkoxy or phenyl optionally substituted with one chloro, one nitro, one methyl, or one methoxy group; R₁₀ is C₁–C₅ alkyl, phenyl, or phenyl substituted with one methyl, halogen, nitro or C₁–C₄ alkoxy;

R₁ is C₁–C₄ alkyl;

R₂ is C₁–C₄ alkyl or C₃–C₆ cycloalkyl;

and when taken together with the carbon to which they are attached, R₁ and R₂ may represent C₃–C₆ cycloalkyl, optionally substituted with methyl;

== represents a single or double bond;

W is O or S;

X₁, X₂, and X₄ are any combination of CR₄, CR₅R₆, N or NR₃ and are the same or different, with the proviso that one of X₁, X₂ and X₄ must be N or NR₃ and two of X₁, X₂ and X₄ must be CR₄ or CR₅R₆;

Y₁ and Y₂ are N or CR₄; Z₁ is NR₃ or CR₅R₆ with the proviso that if Z₁ is NR₃ then Y₁ and Y₂ are CR₄ and are the same or different and if Z₁ is CR₅R₆ then one of Y₁ and Y₂ must be N and the other is CR₄;

R₃ is C₁–C₄ alkyl, which may be optionally substituted with phenyl or one or more halogens; C₃–C₆ alkenyl, optionally substituted with phenyl or one or more halogens; C₃–C₆ alkynyl, optionally substituted with phenyl or halogen; C₁–C₄ alkoxy, optionally substituted with phenyl or one or more halogens; C₃–C₆ alkenyloxy optionally substituted with phenyl or one or more halogens; C₃–C₆ alkenyloxy optionally substituted with halogen or phenyl; or C₂–C₆ alkanoyloxy, optionally substituted with halogen or phenyl;

R₄ is hydrogen, halogen; C₁–C₆ alkyl; C₁–C₄ alkoxy; C₂–C₆ alkanoyloxy; C₁–C₄ alkylthio; phenoxy; C₁–C₄ haloalkyl; C₁–C₄ haloalkoxy; nitro, C₁–C₄ alkoxy carbonyl; C₁–C₄ dialkylamino; C₁–C₄ alkylsulfonyl or phenyl, optionally substituted with one or two C₁–C₄ alkyl, C₁–C₄ alkoxy, halogen or C₁–C₄ haloalkyl;

R₅ and R₆ are each hydrogen; C₁–C₄ alkyl; C₁–C₄ alkoxy; C₁–C₄ haloalkoxy; nitro; C₁–C₄ alkylsulfonyl or phenyl optionally substituted with one or two C₁–C₄ alkyl, C₁–C₄ alkoxy, halogen or C₁–C₄ haloalkyl; or any combination of these groups except when R₅ and R₆ are the same group, they are either both hydrogen or both C₁–C₄ alkyl; and when taken together, R₅ and R₆ may form a ring in which R₅R₆ are represented by the structure —(CH₂)_n— where n is an integer of 4 or 5, or when taken together, R₅ and R₆ may form a

5,510,321

PLANT GROWTH REGULATOR COMPOSITION COMPRISING A CYCLOHEXANONE COMPOUND AND ADJUVANTS

Yoshinori Hirabayashi, Shizuoka; Toshihiro Ikeuchi, Shimizu; Susumu Kato, Shizuoka; Takeshige Miyazawa, Shizuoka, and Kanji Nakamura, Shimizu, all of Japan, assignors to Kumiai Chemical Industry Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 152,132, Nov. 16, 1993, Pat. No. 5,436,225. This application Feb. 9, 1995, Ser. No. 385,889

Claims priority, application Japan, Nov. 19, 1992, 4-332221

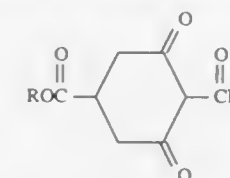
Int. Cl.⁶ A01N 43/10; 37/08; 35/06; 25/30

U.S. Cl. 504—289

5 Claims

1. A plant growth regulator composition, consisting essentially of an effective amount of each of:

(a) cyclohexane compound of the formula:



wherein R is hydrogen, lower alkyl, lower alkylthioalkyl, unsubstituted phenyl or phenyl substituted by halogen, lower alkyl or lower alkoxy; and R¹ is lower cycloalkyl, unsubstituted benzyl or benzyl substituted by halogen, lower alkyl or lower alkoxy; phenethyl, phenoxymethyl, 2-thienylmethyl, lower alkoxyethyl, lower alkylthiomethyl or a salt thereof; and

(b) a nitrogen-containing water-soluble substance selected from the group consisting of ammonium sulfate, ammonium nitrate, ammonium chloride, ammonium phosphate, sodium nitrate, potassium nitrate and urea.

5,510,322

METHODS FOR REGULATING THE GROWTH OF PLANTS AND GROWTH REGULANT COMPOSITIONS COMPRISING POLYLACTIDES

Donald C. Young, Fullerton, Calif., assignor to Entek Corporation, Brea, Calif.

Division of Ser. No. 551,161, Jul. 6, 1983, Pat. No. 4,863,506.

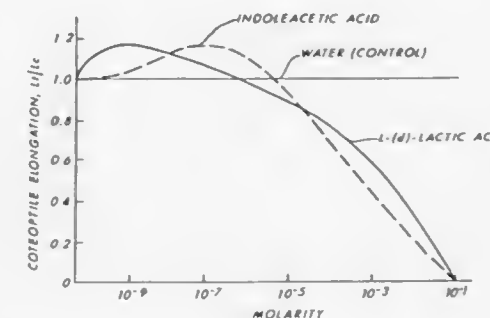
This application Jul. 17, 1989, Ser. No. 380,615

The portion of the term of this patent subsequent to Sep. 5, 2006, has been disclaimed.

Int. Cl.⁶ A01N 37/36

U.S. Cl. 504—313

31 Claims



1. A method for stimulating the productivity of plants which comprises contacting said plants with a productivity stimulating amount of a composition which comprises polylactides of lactic acid, wherein the L-(d)-isomer of lactic acid constitutes a major portion of said polylactides.

group =O or =NR₇ wherein R₇ is phenyl, C₁–C₄ alkyl, C₁–C₄ alkoxy, C₁–C₄ alkylamino;

R₃, R₄, R₅ and R₆, when present on adjacent positions may, along with the atoms to which they are attached, form a ring and such R₃–R₆ pairs are represented by the structure —(CH₂)_m— or —(CH)_m— where m is an integer of 3 or 4; with the provisos that

== represents a single bond between:

X₁ and X₂ when either X₁ or X₂ is NR₃ or CR₅R₆; and

X₂ and X₄ when either X₂ or X₄ is NR₃ or CR₅R₆; and

when B is COR₉ or SO₂R₁₀ and R₈ is hydrogen, then == represents an aromatic bond, R₃ is C₁–C₄ alkyl, and R₄, R₅ and R₆ may not be halogen.

5,510,320

HERBICIDAL TRIAZOLECARBOXAMIDES

Chi-Ping Tseng, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

PCT No. PCT/US92/08822, § 371 Date Apr. 26, 1994, § 102(e)

Date Apr. 26, 1994, PCT Pub. No. WO93/09100, PCT Pub.

Date May 13, 1993

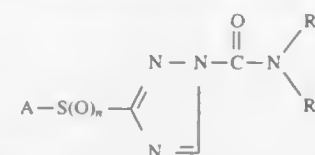
Continuation-in-part of Ser. No. 784,343, Oct. 29, 1991, abandoned. This PCT application Oct. 22, 1992, Ser. No. 211,721

Int. Cl.⁶ A01N 43/653; C07D 249/12

U.S. Cl. 504—273

8 Claims

1. A compound of the formula:



wherein

A is a pyrazole ring substituted with 1 to 3 substituents selected from R³, R⁴, R⁵ and R⁶;

R¹ is H; C₁–C₆ alkyl optionally substituted with C₁–C₃ alkoxy or 1 to 5 halogens; C₂–C₆ cycloalkyl; C₂–C₆ alkenyl optionally substituted with 1 to 3 halogens; C₂–C₆ alkynyl; or C₁–C₃ alkoxy;

R² is C₁–C₆ alkyl optionally substituted with C₁–C₃ alkoxy or 1 to 5 halogens; C₂–C₆ cycloalkyl; C₂–C₆ alkenyl optionally substituted with 1 to 3 halogens; or C₂–C₆ alkynyl;

R³, R⁴ and R⁵ are independently H; halogen; C₁–C₆ alkyl optionally substituted with one or more halogen, C₁–C₆ alkoxy, CN, CO₂R⁷, S(O)_nR⁸, C(O)NR⁹R¹⁰ or SO₂NR¹³R¹⁴; C₂–C₆ cycloalkyl; C₂–C₆ alkenyl; C₂–C₆ haloalkenyl; C₂–C₆ alkynyl; C₁–C₆ alkoxy; CN; CO₂R¹¹; S(O)_nR¹²; C(O)NR¹⁵R¹⁶; SO₂NR¹⁷R¹⁸; C(O)R¹⁹, C(OR²⁰) (OR²¹) R²²; CR²³=NOR²⁴; NO₂; NR²⁵R²⁶; or phenyl or benzyl, each ring optionally substituted with 1 to 3 substituents selected from halogen, C₁–C₃ alkyl, C₁–C₃ haloalkyl and C₁–C₃ alkoxy;

R⁶ is H; C₁–C₆ alkyl optionally substituted with one or more halogen, C₁–C₆ alkoxy, CN, CO₂R⁷, S(O)_nR⁸, C(O)NR⁹R¹⁰ or SO₂NR¹³R¹⁴; C₂–C₆ alkenyl; C₂–C₆ haloalkenyl; C₂–C₆ alkynyl; CN; CO₂R¹¹; SO₂R¹²; C(O)NR¹⁵R¹⁶; SO₂NR¹⁷R¹⁸; or phenyl or benzyl, each ring optionally substituted with 1 to 3 substituents selected from halogen, C₁–C₃ alkyl, C₁–C₃ haloalkyl and C₁–C₃ alkoxy;

R⁷ and R¹¹ are independently H, C₁–C₃ alkyl or allyl;

R⁸ and R¹² are independently C₁–C₃ alkyl;

R⁹, R¹⁰, R¹³, R¹⁴, R¹⁵, R¹⁶, R¹⁷ and R¹⁸ are independently H or C₁–C₃ alkyl;

R¹⁹, R²² and R²³ are independently H or C₁–C₃ alkyl;

R²⁰ and R²¹ are independently C₁–C₃ alkyl;

R²⁴ is H or C₁–C₃ alkyl;

R²⁵ and R²⁶ are independently H or C₁–C₃ alkyl; and

m, n and p are independently 0, 1 or 2;

provided that

a) R³, R⁴ and R⁵ are independently bonded to carbon, and R⁶ is bonded to nitrogen; and

b) when S(O)_n is bonded to nitrogen then n is 2.

5,510,323

$Tl_{1-x}Sr_xCa_2Cu_2O_{7-y}$ OXIDE SUPERCONDUCTOR AND METHOD OF PRODUCING THE SAME

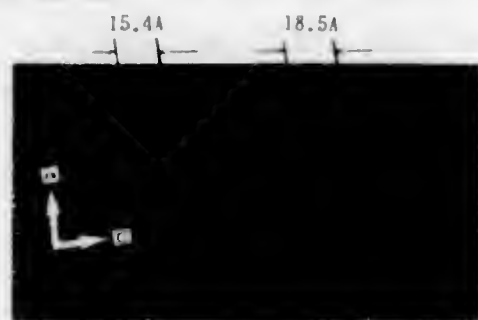
Tomoichi Kamo, Ibaraki; Seizi Takeuchi, Hitachilota; Shinpei Matsuda, Ibaraki; Atsuko Soeta, Mito; Takaaki Suzuki, Katsuta, and Yutaka Yoshida, Hitachi, all of, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 31,466, Mar. 15, 1993, abandoned, which is a continuation of Ser. No. 625,439, Dec. 11, 1990, abandoned, which is a continuation-in-part of Ser. No. 385,101, Jul. 26, 1989, abandoned. This application Apr. 7, 1995, Ser. No. 418,476

Claims priority, application Japan, Jul. 29, 1988, 63-188470; Feb. 13, 1989, 1-31058; Feb. 27, 1989, 1-42998

Int. Cl.⁶ H01B 12/00; H01L 39/12

U.S. Cl. 505—120



1. An oxide superconductor which comprises a perovskite type oxide compound of thallium, strontium, barium, calcium and copper, wherein said oxide superconductor has a composition represented by the general formula of



wherein $0 < x < 1.0$ and $5 \leq z \leq 14$.

5,510,324

METHOD FOR MANUFACTURING A SUPERCONDUCTING DEVICE HAVING AN EXTREMELY THIN SUPERCONDUCTING CHANNEL

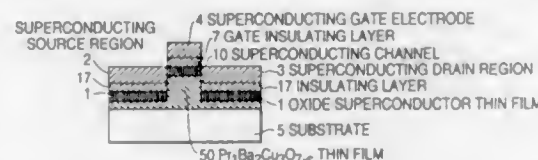
Takao Nakamura; Michitomo Iiyama, and Hiroshi Inada, all of Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Division of Ser. No. 990,841, Dec. 14, 1992, Pat. No. 5,408,108. This application Dec. 2, 1994, Ser. No. 353,396

Claims priority, application Japan, Dec. 12, 1991, 3-351668; Feb. 17, 1992, 4-61183; Dec. 8, 1992, 4-351722

Int. Cl.⁶ H01L 39/24; 39/22

U.S. Cl. 505—330



1. A method of manufacturing a superconducting device, comprising the steps of:

forming on a principal surface of a substrate a non-superconducting oxide layer having a similar crystal structure to that of a c-axis oriented oxide superconductor thin film and a flat-top projection at its center portion,

forming the c-axis oriented oxide superconductor thin film having an extremely thin thickness on the non-superconducting oxide layer so as to form a superconducting channel on the projecting portion of the non-superconducting oxide layer,

forming an insulating layer on the c-axis oriented oxide superconductor thin film so as to form a gate insulating layer on the superconducting channel, and

forming an a-axis oriented oxide superconductor thin film so as to form a superconducting gate electrode on the gate insulating layer and a superconducting source region and a superconducting drain region whose upper surfaces are coplanar with an upper surface as of the superconducting channel.

5,510,325
ESSENTIAL OIL

Charles Ehret, and Martin Petrzilka, both of Wetzikon, Switzerland, assignors to Givaudan-Roure Corporation, Clifton, N.J.

Continuation of Ser. No. 185,992, Jan. 14, 1992, abandoned. This application Mar. 8, 1995, Ser. No. 400,489

Claims priority, application European Pat. Off., May 20, 1992, 92108469

Int. Cl.⁶ A61K 7/46

U.S. Cl. 512—5

1. A process for the preparation of hypoallergenic moss oils, comprising reacting:

- (1) a starting material selected from the group consisting of moss oils, concretes, or absolutes thereof, the starting material containing at least one aldehyde allergen, with
- (2) an aldehyde reducing agent selected from the group consisting of alkali metal hydrides, complex metal hydrides, substituted complex metal hydrides, ammonium hydrides, and substituted ammonium hydrides,

in an organic solvent selected from the group consisting of non-halogenated aliphatic hydrocarbons, halogenated aliphatic hydrocarbons, non-halogenated aromatic hydrocarbons, halogenated aromatic hydrocarbons, esters, alcohols, ethers, and mixtures thereof,

under conditions such that allergenic aldehydes are reduced to non-allergenic alcohols.

5,510,326

MULTI-SUBSTITUTED TETRAHYDROFURANS

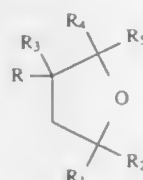
Paul D. Nohre, New York City, N.Y., assignor to Givaudan-Roure Corporation, Clifton, N.J.

Filed Dec. 23, 1994, Ser. No. 363,685

Int. Cl.⁶ C07D 307/06; A61K 7/46

U.S. Cl. 512—11

1. A compound selected from the group consisting of a tetrahydrofuran of structure 1



wherein R is a mono-carbocyclic group

where mono-carbocyclic refers to a ring of 5, 7 or 8 carbon atoms, and with at least two methyl groups on the ring, or a bi-carbocyclic group, substituted with at least two methyl groups, and where $R_1=CH_3$, or higher alkyl group, $R_2=H$, CH_3 , or higher alkyl group, $R_3=H$, or CH_3 , R_4 and $R_5=H$, CH_3 , or higher alkyl group.

5,510,327

HIGHLY CONCENTRATED TCF PHARMACEUTICAL PREPARATIONS

Hitoshi Iiyasaka, Ohaza-ishihashi; Nobuyuki Kawashima, Ishibashimachi; Masatsugu Ueda, Kawagoe, and Eitaro Kumazawa, Ohaza-yakushiji, all of, Japan, assignors to Snow Brand Milk Products Co., Ltd., Hokkaido, Japan

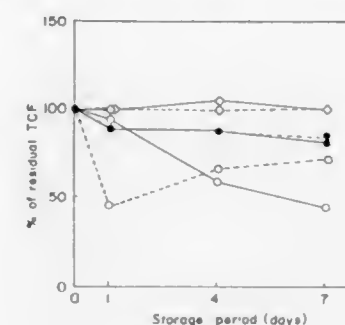
Filed Feb. 18, 1994, Ser. No. 198,893

Claims priority, application Japan, Feb. 23, 1993, 5-057826

Int. Cl.⁶ A61K 38/17

U.S. Cl. 514—8

17 Claims



1. A tumor cytotoxic factor (TCF) composition comprising: TCF;

a basic amino acid or a salt of a basic amino acid; and

a pharmacologically acceptable organic or inorganic salt; wherein the amount of TCF is sufficient such that when the composition is dissolved or dispersed in a liquid carrier, the concentration of TCF is at least about 5 mg/ml.

5,510,328

COMPOSITIONS THAT INHIBIT WOUND CONTRACTION AND METHODS OF USING SAME

James Polarek, Del Mar; Richard Tamura, San Diego, and John Harper, Carlsbad, all of Calif., assignors to La Jolla Cancer Research Foundation, La Jolla, Calif.

Filed Apr. 28, 1994, Ser. No. 234,979

Int. Cl.⁶ A61K 38/16; C07K 7/08

U.S. Cl. 514—8

2 Claims

1. A method for reducing or inhibiting wound contraction in a mammalian subject, comprising administering to said mammalian subject a pharmaceutical composition, comprising decorin and a pharmacologically acceptable carrier.

5,510,329

PREPARATIONS FOR THE TREATMENT OF EYES

Michael Belkin; Naphtali Savion, both of Givat Shmuel, and Nahum Landshman, Tel Aviv, all of, Israel, assignors to Ramot University for Applied Research and Industrial Development Ltd., Tel Aviv, Israel

Continuation of Ser. No. 673,867, Mar. 22, 1991, abandoned, which is a continuation of Ser. No. 185,893, Apr. 26, 1988, abandoned. This application Dec. 28, 1992, Ser. No. 997,664

Int. Cl.⁶ A61K 38/00

U.S. Cl. 514—12

20 Claims

1. A method for enhancing the regeneration of the corneal endothelium in an eye of a human patient in need of said regeneration, comprising administering one injection into the anterior chamber of said human eye of an effective quantity of a composition containing a fibroblast growth factor in a physiologically acceptable carrier.

5,510,330

COMBINATIONS OF THROMBOLYTICALLY ACTIVE PROTEINS AND NON-HEPARIN ANTICOAGULANTS, AND USES THEREOF.

Ulrich Martin, Mannheim, and Stephan Fischer, Polling, both of, Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Germany

Filed Mar. 25, 1994, Ser. No. 217,618

Int. Cl.⁶ A61K 38/00; 38/48

U.S. Cl. 514—12

10 Claims

1. Method for treating a subject in need of thrombolytic therapy, comprising administering to said subject an effective amount of:

- (i) BM 06.022, which consists of SEQ ID NO: 1 and
- (ii) via bolus injection, hirudin.

5,510,331

ANTIHYPERTENSIVE PEPTIDES

Gilles Hamon, Le Raincy; Eve Mahe, and Dung Le-Nguyen, both of Montpellier, all of, France, assignors to Roussel UCLAF, France

Continuation of Ser. No. 795,426, Nov. 20, 1991, abandoned.

This application Oct. 13, 1994, Ser. No. 322,707

Claims priority, application France, Nov. 21, 1990, 90 14498

Int. Cl.⁶ A61K 35/34; 38/39; C07K 14/435

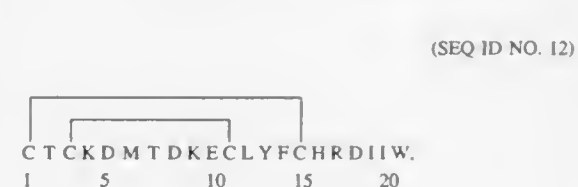
U.S. Cl. 514—13

3 Claims

1. A peptide selected from the group consisting of



1. A peptide selected from the group consisting of



5,510,332
PROCESS TO INHIBIT BINDING OF THE INTEGRIN $\alpha_4\beta_1$ TO VCAM-1 OR FIBRONECTIN AND LINEAR PEPTIDES THEREFOR

Timothy P. Kogan; Kaijun Ren, both of Sugar Land; Peter Vanderslice, and Pamela J. Beck, both of Houston, all of Tex., assignors to Texas Biotechnology Corporation, Houston, Tex.

Filed Jul. 7, 1994, Ser. No. 271,830
Int. Cl.⁶ A61K 38/00; C07K 1/00

U.S. Cl. 514—14 15 Claims

1. An isolated and purified peptide of from 4 to about 13 amino acid residues having (a) an N-terminal amine group, acetyl group or a polyethylene glycol moiety of from about 400 to about 12,000 Daltons average molecular weight linked through an amide bond to the N-terminal residue; and (b) a C-terminal carboxylic acid group or amide group; said peptide comprising the amino acid residue sequence of SEQ ID NO:1 or a single amino acid substituent analog thereof, wherein the analog has the amino acid residue sequence of SEQ ID NO:2 or 3.

5. A process of selectively inhibiting the binding of $\alpha_4\beta_1$ integrin to VCAM-1 comprising exposing a cell that expresses $\alpha_4\beta_1$ integrin to a cell that expresses VCAM-1 in the presence of an effective inhibiting amount of a peptide of claim 1.

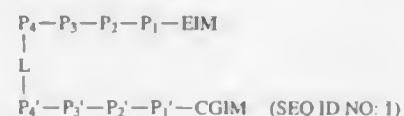
5,510,333
INHIBITORS OF CATHEPSIN G AND ELASTASE FOR PREVENTING CONNECTIVE TISSUE DEGRADATION

Michael R. Angelastro; Phillippe Bey, both of Cincinnati, Ohio; Niall S. Doherty, Stonington, Conn.; Michael J. Janusz, Oregonia, Ohio; Shujaath Mehdi, and Norton P. Peet, both of Cincinnati, Ohio, assignors to Merrell Pharmaceuticals Inc., Cincinnati, Ohio

Continuation of Ser. No. 342,999, Nov. 21, 1994, abandoned, which is a continuation of Ser. No. 222,552, Apr. 4, 1994, abandoned, which is a continuation of Ser. No. 987,587, Dec. 8, 1992, abandoned, which is a continuation of Ser. No. 704,499, May 23, 1991, abandoned. This application Jun. 5, 1995, Ser. No. 462,456
Int. Cl.⁶ A61K 38/07; 38/08

U.S. Cl. 514—18 10 Claims

1. A compound of the formula



wherein

P_1 is Val or Nva;
 P_1' is Phe;
 P_2 is Pro;
 P_2' is Pro or is absent;
 P_3 is Lys, Ala, Ile or Val;
 P_3' is Ala, Val or is absent;
 P_4 is Ala or is absent;
 P_4' is Ala or is absent;
L is a $-C(O)-phenylene-C(O)-$ group;
EIM and CGIM are each independently selected from the group consisting of $-CF_2CF_3$, $-CF_3$, $-CF_2H$, $-CO_2R_3$, $-CONHR_3$, $-H$, or $-C(O)R$,
wherein
 R_3 is H, alkyl, phenyl, benzyl,
R is OH or alkoxy
or a pharmaceutically acceptable salt thereof.

5,510,334

Patent Not Issued For This Number

5,510,335
EXERCISE HYDRATION REGIMEN TO ENHANCE EXERCISE ENDURANCE AND PERFORMANCE

Paul Montner, Albuquerque, N.M.; Thomas W. Chlck, Bay City, Tex.; Dan Stark, and Marvin L. Riedesel, both of Albuquerque, N.M., assignors to University of New Mexico, Albuquerque, N.M.

Continuation of Ser. No. 55,003, Apr. 30, 1993, Pat. No. 5,403,921. This application Jan. 6, 1995, Ser. No. 369,757
Int. Cl.⁶ A61K 31/70

U.S. Cl. 514—23 3 Claims

1. A pre-exercise glycerol enhanced hyper hydration formulation comprising a carbohydrate free solution of water and glycerol, wherein said sole active ingredient consists of glycerol present in a proportion of from 3% to 8% of said solution.

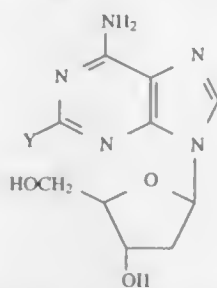
5,510,336
2-HALO-2'-DEOXYADENOSINE TREATMENT FOR HISTIOCYTOSIS

Alan Saven, 13016 Walking Path Pl., San Diego, Calif. 92130, and Lawrence D. Piro, 1339 Dell Crest La., La Jolla, Calif. 92037

Filed Sep. 6, 1994, Ser. No. 301,243
Int. Cl.⁶ A61K 31/70

U.S. Cl. 514—46 12 Claims

1. A method for treating Class I histiocytosis in a mammal in need thereof comprising administering to said mammal a therapeutically effective dose of a substituted adenine derivative or a pharmacologically acceptable acid addition salt thereof, in an amount of about 0.5 to 0.9 mg/kg of body weight over a course of about 5 to 9 days, said adenine derivative having a structure represented by the formula:



wherein Y is a halogen, and wherein no more than two courses of treatment are administered.

5,510,337
AGENTS FOR SUPPRESSION OR LOWERING OF BLOOD LIPIDS

Tsutomu Aritsuka, Hokkaido, Japan, assignor to Nippon Tensai Kaisha, Ltd., Tokyo, Japan

Continuation of Ser. No. 106,636, Aug. 16, 1993, abandoned. This application Nov. 8, 1994, Ser. No. 336,757
Claims priority, application Japan, Sep. 8, 1992, 4-264158; Jun. 1, 1993, 5-152606

U.S. Cl. 514—57 10 Claims

1. A method for lowering or suppressing cholesterol and neutral fat levels in the bloodstream comprising administering to a subject a blood cholesterol neutral fat lowering or suppressing effective amount of a composition comprising an isolated, purified edible dietary fiber which is derived from a plant and which comprises cellulose and lignin compounds as its major constituents, wherein 50% or more of said lignin and cellulose compounds are bound

together in the same manner that these compounds are bound in a native plant material.

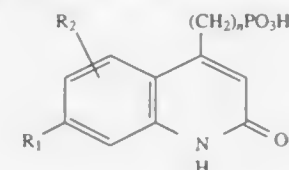
5,510,338
PHOSPHONOALKYLQUINOLIN-2-ONES AS NOVEL ANTAGONISTS OF NON-NMDA IONOTROPIC EXCITATORY AMINO ACID RECEPTORS

Gregory S. Hamilton, Catonsville, Md., assignor to Guilford Pharmaceuticals Inc., Baltimore, Md.

Division of Ser. No. 984,453, Dec. 2, 1992, Pat. No. 5,342,946. This application Jun. 14, 1994, Ser. No. 260,239
Int. Cl.⁶ C07D 215/227; 215/118; 215/38; A61K 31/47

U.S. Cl. 514—82 6 Claims

1. A method for treating a mammal in need thereof with an excitatory amino acid inhibitory compound, comprising the step of administering an effective amount of the following compound:



wherein n is 1, 2 or 3; R_1 and R_2 are independently selected from the group consisting of hydrogen, halogen, halomethyl, nitro, amino alkoxy, hydroxyl, hydroxymethyl, C_1 to C_6 lower alkyl and C_7 to C_{12} higher alkyl, aryl and aralkyl, or the pharmaceutically acceptable salts thereof, except R_1 and R_2 are not nitro and chloro when n is 1.

5,510,339
METHOD FOR THE TREATMENT OF BRONCHIAL ASTHMA BY ADMINISTRATION OF TOPICAL ANESTHETICS

Gerald J. Gleich, Rochester, Minn.; Tsukasa Ohnishi, Tokyo, Japan, and Loren W. Hunt, Rochester, Minn., assignors to Mayo Foundation for Medical Education and Research, Rochester, Minn.

Filed Feb. 2, 1993, Ser. No. 12,343
Int. Cl.⁶ A61K 31/56; 31/16

U.S. Cl. 514—171 10 Claims

1. A method for treating bronchial asthma comprising administering to the respiratory tract of a human afflicted with bronchial asthma and subjected to extended steroid therapy, by spraying or by nebulization, an amount of a topical anesthetic effective to counteract the symptoms of said bronchial asthma and to gradually reduce the dependence of said human on chronic steroid therapy wherein the topical anesthetic is administered at a daily dose of about 2.0–15 mg/kg.

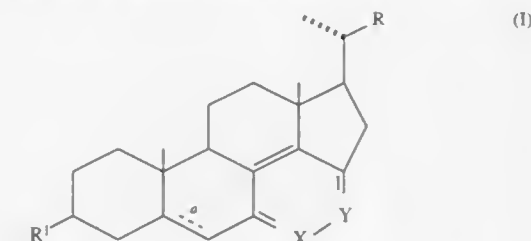
5,510,340
ANTIHYPERCHOLESTEROLEMIC COMPOUNDS AND RELATED PHARMACEUTICAL COMPOSITIONS AND METHODS OF USE

Wesley K. M. Chong, Encinitas; Wan-Ru Chao, Sunnyvale; Dennis M. Yasuda, Campbell; John G. Johansson, Menlo Park, all of Calif.; Mitchell A. Avery, Grand Forks, N. Dak., and Masato Tanabe, Palo Alto, Calif., assignors to SRI International, Menlo Park, Calif.

Filed Jun. 12, 1992, Ser. No. 898,934
Int. Cl.⁶ C07J 71/00; A61K 31/58

U.S. Cl. 514—172 31 Claims

1. A compound having the structural formula (I)



wherein:

R is selected from the group consisting of CH_3 , CH_2OH , $CH_2CH_2CH_2CH(CH_3)_2$, $CH_2CH_2CH_2C(CH_3)_2-OH$, $CH_2CH_2CH_2C(CH_3)_2-F$, $CH=CH-CH(CH_3)-CH(CH_3)_2$, $CH_2CH_2CH(CH_2CH_3)CH(CH_3)_2$, and $CH=CH-CH(CH_2CH_3)CH(CH_3)_2$;

R^1 is selected from the group consisting of $-OH$, $=O$, $-OR^8$, $-O(CO)R^9$, $-O(CO)-(CH_2)_n-COOH$, a sulfate group, or an Mg, Na, or K salt of a sulfate group, where R^8 is lower alkyl, R^9 is a C_1 - C_{20} aliphatic group or phenyl, and n is an integer in the range of 2 to 6 inclusive;

X and Y may be the same or different, and are selected from the group consisting of N, $N \rightarrow O$, CH, $C-OH$, $C-OCH_3$, and $C-Z$ where Z is halogen, with the proviso that at least one of X and Y is N or $N \rightarrow O$; and

a represents either a single bond or a double bond, with the proviso that if X and Y are both N, R is other than $CH=CH-CH(CH_3)-CH(CH_3)_2$.

5,510,341
OVULATION-INHIBITING PREPARATION FOR HORMONAL CONTRACEPTION

Marika Ehrlich, Bahnhofstrasse 1, 6509 Framersheim, and Herbert Kuhl, Hotzelstrasse 18, 8750 Aschaffenburg, both of, Germany, assignors to Marika Ehrlich, Framersheim, and Herbert Kuhl, Aschaffenburg, both of, Germany

Continuation of Ser. No. 833,294, Feb. 10, 1992, Pat. No. 5,280,023. This application Oct. 6, 1993, Ser. No. 132,287
Claims priority, application Germany, Feb. 9, 1991, 41 04 385.5

The portion of the term of this patent subsequent to Jan. 18, 2011, has been disclaimed.

Int. Cl.⁶ A61K 31/56

U.S. Cl. 514—177 8 Claims

1. A method of hormonal contraception, comprising the step of: administering to a woman an ovulation-inhibiting preparation comprising:

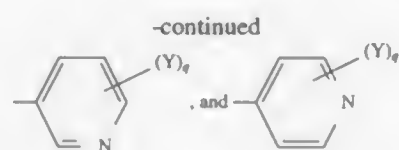
two hormone constituents packed spatially separate in a packing unit intended for chronological, sequential oral administration, said constituents each comprising a plurality of daily hormone units accommodated spatially separate and individually removable in the packing unit,

wherein a first hormone constituent consists essentially of an estrogen preparation which effects a disturbance of the follicle stimulation, and a second hormone constituent consists of an estrogen preparation and gestagen preparation in a dosage at least adequate to inhibit ovulation;

The image displays a collection of chemical structures for various substituted 1,3-butadiene derivatives. The structures are arranged in four rows:

- Row 1:** Three 1,3-butadiene derivatives. The first has a vinylidene group (CH₂=C(CH₃)-) at the 1-position and a substituent (Y)_n at the 3-position. The second has a vinylidene group at the 3-position and a substituent (Y)_n at the 1-position. The third has a vinylidene group at the 1-position and a substituent (Y)_n at the 3-position, with an additional R² group attached to the nitrogen atom of the vinylidene group.
- Row 2:** Three 1,3-butadiene derivatives. The first has a vinylidene group at the 1-position and a substituent (Y)_n at the 3-position. The second has a vinylidene group at the 3-position and a substituent (Y)_n at the 1-position. The third has a vinylidene group at the 1-position and a substituent (Y)_n at the 3-position, with an additional R² group attached to the nitrogen atom of the vinylidene group.
- Row 3:** Three 1,3-butadiene derivatives. The first has a vinylidene group at the 1-position and a substituent (Y)_p at the 3-position. The second has a vinylidene group at the 3-position and a substituent (Y)_p at the 1-position. The third has a vinylidene group at the 1-position and a substituent (Y)_p at the 3-position, with an additional R² group attached to the nitrogen atom of the vinylidene group.
- Row 4:** Three 1,3-butadiene derivatives. The first has a vinylidene group at the 1-position and a substituent (Y)_p at the 3-position. The second has a vinylidene group at the 3-position and a substituent (Y)_p at the 1-position. The third has a vinylidene group at the 1-position and a substituent (Y)_p at the 3-position, with an additional R² group attached to the nitrogen atom of the vinylidene group.

R¹ and R² and/or R³ and R⁴, together with the adjacent nitrogen atom and optionally with an additional oxygen or nitrogen



wherein R^2 is hydrogen, loweralkyl or loweralkanoyl, Y is selected from the group consisting of halogen, hydroxyl, loweralkyl, loweralkoxy, and trifluoromethyl, n is an integer having a value from 0 to 3 inclusive, p is an integer having a value of 0 or 1, and q is an integer having a value from 0 to 4 inclusive; X is selected from the group consisting of halogen, hydroxyl, nitro, loweralkyl, loweralkoxy, and trifluoromethyl; m is an integer having a value from 0 to 2 inclusive; R is selected from the group consisting of hydrogen, loweralkyl, aryl, aralkyl, cycloalkyl, loweralkenyl, and loweralkynyl; and R^1 is selected from the group consisting of hydrogen, loweralkyl, and aralkyl, wherein for each value of m, n, p, or q each X or Y may be the same or different; the optical antipodes; geometrical isomers; or pharmaceutically acceptable acid addition salts thereof.

5,510,347

THIENOTHIAZIAZINE SULFONAMIDES USEFUL AS CARBONIC ANHYDRASE INHIBITORS

Thomas R. Dean, Weatherford, Tex., and Abdelmoula Namil, Cappelle en Pevèle, France, assignors to Alcon Laboratories, Inc., Fort Worth, Tex.

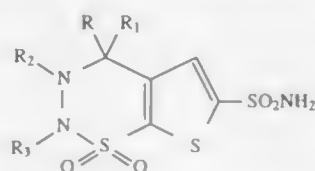
Filed Sep. 9, 1994, Ser. No. 303,991

Int. Cl.⁶ C07D 285/16; A61K 31/54

U.S. Cl. 514—222.8

6 Claims

1. A compound having the following structure:



or a pharmaceutically acceptable salt thereof wherein:

R is H or C_{1-2} alkyl;

R_1 is H; C_{1-6} alkyl unsubstituted or substituted optionally with OH, C_{1-4} alkoxy, NR_4R_5 , $OC(=O)R_6$ or $C(=O)R_6$;

R_2 is H; C_{1-6} alkyl; C_{2-4} alkyl substituted with OH, NR_4R_5 , halogen, C_{1-4} alkoxy, C_{2-4} alkoxy, $OC(=O)R_6$, $S(=O)_mR_7$, or $C(=O)R_6$; $C(=O)R_6$;

R_3 is H; C_{1-8} alkyl; C_{1-8} alkyl substituted with OH, NR_4R_5 , halogen, C_{1-4} alkoxy, C_{2-4} alkoxy, $OC(=O)R_6$, $S(=O)_mR_7$, or $C(=O)R_6$; C_{3-7} alkenyl unsubstituted or substituted optionally with OH, NR_4R_5 , or C_{1-4} alkoxy; C_{3-7} alkynyl unsubstituted or substituted optionally with OH, NR_4R_5 , or C_{1-4} alkoxy; C_{6-3} alkyl substituted with R_7 which can be unsubstituted or substituted optionally with C_{1-3} alkyl, C_{1-3} haloalkyl, OH, $(CH_2)_mNR_4R_5$, halogen, C_{1-4} alkoxy, C_{1-4} haloalkoxy, $OC(=O)R_6$, $C(=O)R_6$, $S(=O)_mR_8$ or $SO_2NR_4R_5$, wherein m is 0–2 and n is 0–2;

R_4 and R_5 are the same or different and are H; C_{1-8} alkyl; C_{2-4} alkyl substituted optionally with OH, halogen, C_{1-4} alkoxy or $C(=O)R_6$; OH; C_{1-4} alkoxy; C_{2-4} alkoxy substituted optionally with OH, halogen, C_{1-4} alkoxy or $C(=O)R_6$; or R_4 and R_5 can be joined to form a ring of 5 or 6 atoms selected from O, S, C or N which can be unsubstituted or substituted optionally on carbon with OH, $(=O)$, halogen, C_{1-4} alkoxy, $C(=O)R_6$, C_{1-6} alkyl, C_{1-6} alkyl substituted optionally with OH, halogen, C_{1-4} alkoxy, $C(=O)R_6$ or on nitrogen with C_{1-4} alkoxy, $C(=O)R_6$, $S(=O)_mR_8$, C_{1-6} alkyl or C_{2-6} alkyl substituted optionally with OH, halogen, C_{1-4} alkoxy, $C(=O)R_6$ or on sulfur by $(=O)_m$, wherein m is 0–2;

R_6 is C_{1-8} alkyl; C_{1-4} alkyl substituted optionally with OH, NR_4R_5 , halogen, C_{1-4} alkoxy or $C(=O)R_6$; C_{1-4} alkoxy; C_{2-4}

alkoxy substituted optionally with OH, NR_4R_5 , halogen or C_{1-4} alkoxy; or NR_4R_5 ;

R_7 is a monocyclic ring system selected from the group consisting of benzene, furan, thiophene, pyrrole, pyrazole, imidazole, triazole, tetrazole, oxazole, isoxazole, isothiazole, thiazole, thiadiazole, pyridine, pyrimidine, pyridazine, and pyrazine;

R_8 is C_{1-4} alkyl; C_{2-4} alkyl substituted optionally with OH, NR_4R_5 , C_{1-4} alkoxy or $C(=O)R_6$; R_7 which can be unsubstituted or substituted optionally with OH, $(CH_2)_mNR_4R_5$, halogen, C_{1-4} alkoxy, C_{1-4} haloalkoxy, $C(=O)R_6$, $S(=O)_mC_{1-4}$ alkyl or $SO_2NR_4R_5$; wherein m is 0–2 and n is 0–2; and

R_9 is C_{1-4} alkyl; C_{1-4} alkoxy; amino, C_{1-3} alkylamino, or di- C_{1-3} alkylamino.

5,510,348

FUNGICIDAL MIXTURES

Horst Wingert; Hubert Sauter, both of Mannheim; Eberhard Ammermann, Heppenheim; Gisela Lorenz, Neustadt; Reinhold Saur, Böhl-Iggelheim; Klaus Schelberger, Gönheim, and Manfred Hampel, Neustadt, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Division of Ser. No. 311,320, Sep. 23, 1994, Pat. No. 5,472,963.

This application Jun. 7, 1995, Ser. No. 479,201

Claims priority, application Germany, Sep. 24, 1993, 43 32 579.3

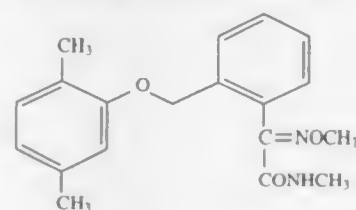
Int. Cl.⁶ A61K 31/535; A01N 37/18

U.S. Cl. 514—231.2

7 Claims

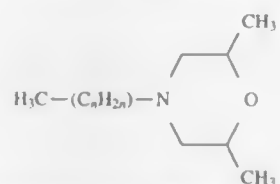
1. A fungicidal mixture containing synergistic fungicidally effective amounts of

a) the oxime ether carboxamide of formula I



and

b) a morpholine compound of formula II



wherein n=10–13 and compounds a) and b) are present in a weight ratio of 20:1 to 0.1:2.

5,510,349

RETROVIRAL PROTEASE INHIBITORS

John J. Talley; Daniel P. Getman, both of Chesterfield; Gary A. DeCrescenzo, St. Peters; Ko-Chung Lin, St. Louis, all of Mo.; Michael L. Vazquez, Gurnee; Richard A. Mueller, Glencoe, both of Ill.; Kathryn L. Reed, Raleigh, N.C.; Robert M. Heintz, Ballwin, Mo.; Michael Clare, Skokie, Ill.; John N. Freskos, Clayton, Mo., and Eric T. Sun, Buffalo Grove, Ill., assignors to G.D. Searle & Co., Chicago, Ill.

Division of Ser. No. 152,934, Nov. 15, 1993, Pat. No.

5,482,947, which is a continuation of Ser. No. 886,558, May 20, 1992, abandoned, which is a continuation-in-part of Ser.

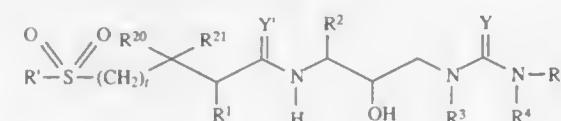
No. 789,646, Nov. 14, 1991, abandoned, which is a continuation-in-part of Ser. No. 615,210, Nov. 19, 1990, abandoned. This application Jun. 7, 1995, Ser. No. 471,898

Int. Cl.⁶ A61K 31/17; C07C 275/18

U.S. Cl. 514—237.5

46 Claims

1. Compound represented by the formula:



wherein

R^1 represents alkyl, alkenyl, hydroxyalkyl, alkoxyalkyl, cycloalkyl, cycloalkylalkyl, heterocycloalkyl, heterocycloalkylalkyl, aryl, aralkyl, aralkoxycarbonylalkyl, heteroaralkyl, aminoalkyl and aminocarbonylalkyl radicals, wherein the amino group of said aminoalkyl and aminocarbonylalkyl radicals may be mono- or di-substituted with substituents selected from alkyl, aryl, aralkyl, cycloalkyl, cycloalkylalkyl, heteroaryl and heteroaralkyl radicals;

R^1 represents hydrogen, $-CH_2SO_2NH_2$, $-CO_2CH_3$, $-CONHCH_3$, $-CON(CH_3)_2$, $-CH_2C(O)NHCH_3$, $-CH_2C(O)N(CH_3)_2$, $-CONH_2$, $-C(CH_3)_2(SCH_3)$, $-C(CH_3)_2(S[O]CH_3)$, $-C(CH_3)_2(S[O]CH_3)$, alkyl, haloalkyl, alkenyl, alkynyl and cycloalkyl radicals and amino acid side chains selected from asparagine, S-methyl cysteine and the corresponding sulfoxide and sulfone derivatives thereof, glycine, leucine, isoleucine, alloisoleucine, tert-leucine, phenylalanine, ornithine, alanine, histidine, norleucine, glutamine, valine, threonine, serine, aspartic acid, beta-cyano alanine, and allothreonine side chains;

R^2 represents alkyl, aryl, cycloalkyl, cycloalkylalkyl and aralkyl radicals optionally substituted with a group selected from $-OR^9$, $-SR^9$, and halogen radicals, wherein R^9 represents hydrogen and alkyl radicals;

R^3 represents alkyl, alkenyl, alkynyl, hydroxyalkyl, alkoxyalkyl, cycloalkyl, cycloalkylalkyl, heterocycloalkyl, heteroaryl, heterocycloalkylalkyl, aryl, aralkyl, heteroaralkyl, aminoalkyl and mono- and disubstituted aminoalkyl radicals, wherein said substituents are selected from alkyl, aryl, aralkyl, cycloalkyl, cycloalkylalkyl, heteroaryl, heteroaralkyl, heterocycloalkyl, and heterocycloalkylalkyl radicals, or in the case of a disubstituted aminoalkyl radical, said substituents along with the nitrogen atom to which they are attached, form a heterocycloalkyl or a heteroaryl radical;

R^4 and R^5 , independently represent hydrogen and radicals as defined by R^3 , or R^4 and R^5 together with the nitrogen atom to which they are bonded represent heterocycloalkyl and heteroaryl radicals; and

R^{20} and R^{21} represent radicals as defined for R^1 ; and Y and Y' independently represent O and S.

5,510,350

BENZANILIDE DERIVATIVES

Alexander W. Oxford; William L. Mitchell; John Bradshaw; John W. Clitherow, and Malcolm Carter, all of Ware, Great Britain, assignors to Glaxo Group Limited, England

Division of Ser. No. 946,098, Sep. 17, 1992, Pat. No. 5,340,810.

This application May 3, 1994, Ser. No. 237,297

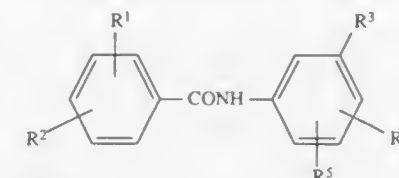
Claims priority, application United Kingdom, Sep. 18, 1991, 9119931; Mar. 12, 1992, 9205338

Int. Cl.⁶ A61K 31/495

U.S. Cl. 514—252

4 Claims

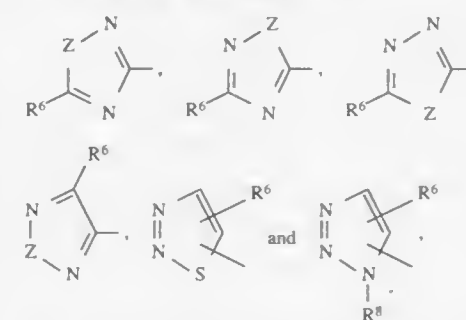
1. A method for the treatment or prophylaxis of CNS disorders which comprises administering to a patient in need of such treatment an effective amount of a compound of formula (I):



wherein

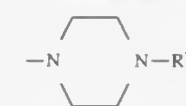
R^1 represents a hydrogen atom or a halogen atom or a C_{1-6} alkyl or C_{1-6} alkoxy group;

R^2 represents a phenyl group substituted by a group selected from the group consisting of



and optionally further substituted by one or two substituents selected from the group consisting of halogen atoms, C_{1-6} alkoxy, hydroxy and C_{1-6} alkyl;

R^3 represents the group



R^4 and R^5 , which may be the same or different, each independently represent a hydrogen atom or a halogen atom or a group selected from the group consisting of hydroxy, C_{1-6} alkoxy and C_{1-6} alkyl;

R^6 represents a hydrogen atom or a group which is $-NR^9R^{10}$ or a C_{1-6} alkyl group optionally substituted by one or two substituents selected from the group consisting of C_{1-6} alkoxy, hydroxy, C_{1-6} acyloxy or $-SO_2R^{11}$;

R^7 , R^8 and R^9 , which may be the same or different, each independently represent a hydrogen atom or a C_{1-6} alkyl group;

R^{10} represents a hydrogen atom or a group selected from the group consisting of C_{1-6} alkyl, C_{1-6} acyl, benzoyl and $-SO_2R^{11}$;

R^{11} represents a C_{1-6} alkyl group or a phenyl group;

Z represents an oxygen atom or a NR^8 or $S(O)_k$ group; and k represents zero, 1 or 2, or a physiologically acceptable salt or solvate thereof.

5,510,357

BENZOTHIOPHENE COMPOUNDS AS ANTI-ESTROGENIC AGENTS

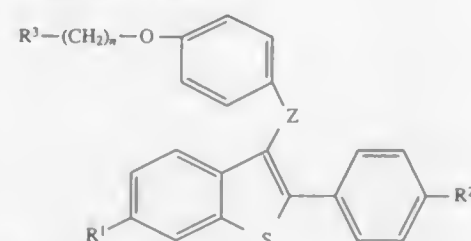
Alan D. Palkowitz, Carmel, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Feb. 28, 1995, Ser. No. 396,401

Int. Cl.⁶ A61K 31/445; C07D 409/12

U.S. Cl. 514—324

1. A compound of formula 1



wherein

R¹ is —H, —OH, —O(C₁–C₄ alkyl), —OCOC₆H₅, —OCO(C₁–C₆ alkyl), or —OSO₂(C₂–C₆ alkyl);R² is —H, —OH, —O(C₁–C₄ alkyl), —OCOC₆H₅, —OCO(C₁–C₆ alkyl), —OSO₂(C₂–C₆ alkyl), or halo, providing when Z is —S—, R² is not halo;R³ is 1-piperidinyl, 1-pyrrolidinyl, methyl-1-pyrrolidinyl, dimethyl-1-pyrrolidinyl, 4-morpholino, dimethylamino, diethylamino, diisopropylamino, or 1-hexamethyleneimino;

n is 2 or 3; and

z is —O— or —S—; or a pharmaceutically acceptable salt thereof.

5,510,358

BENZOTHIOPHENE COMPOUNDS, INTERMEDIATES, COMPOSITIONS, AND METHOD OF TREATING ENDOMETRIOSIS

Alan D. Palkowitz, Carmel, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

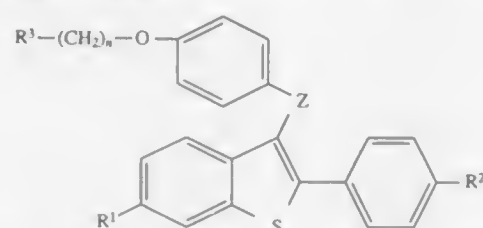
Division of Ser. No. 396,401, Feb. 28, 1995. This application Jun. 6, 1995, Ser. No. 471,506

Int. Cl.⁶ A61K 31/445; C07D 409/12

U.S. Cl. 514—324

1 Claim

1. A method for inhibiting endometriosis comprising administering to a woman in need of treatment an effective amount of a compound of formula 1



wherein

R¹ is —H, —OH, —O(C₁–C₄ alkyl), —OCOC₆H₅, —OCO(C₁–C₆ alkyl), or —OSO₂(C₂–C₆ alkyl);R² is —H, —OH, —O(C₁–C₄ alkyl), —OCOC₆H₅, —OCO(C₁–C₆ alkyl), —OSO₂(C₂–C₆ alkyl), or halo, providing when Z is —S—, R² is not halo;R³ is 1-piperidinyl, 1-pyrrolidinyl, methyl-1-pyrrolidinyl, dimethyl-1-pyrrolidinyl, 4-morpholino, dimethylamino, diethylamino, diisopropylamino, or 1-hexamethyleneimino;

n is 2 or 3; and

z is —O— or —S—;

or a pharmaceutically acceptable salt thereof.

5,510,359

HETEROAROMATIC 5-HYDROXYTRYPTAMINE RECEPTOR AGONISTS

Jose L. Castro Pineiro, Harlow, and Victor G. Matassa, Furneux Pelham, both of, United Kingdom, assignors to Merck Sharp & Dohme Ltd., Hoddesdon Hertfordshire, England

PCT No. PCT/GB93/00789, § 371 Date Oct. 7, 1994, § 102(e) Date Oct. 7, 1994, PCT Pub. No. WO93/21182, PCT Pub. Date Oct. 28, 1993

PCT Filed Apr. 14, 1993, Ser. No. 318,610

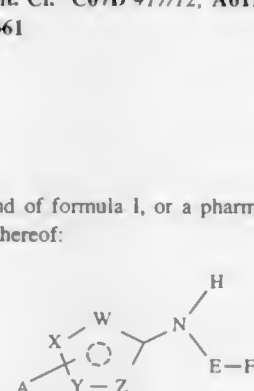
Claims priority, application United Kingdom, Apr. 16, 1992, 9208463

Int. Cl.⁶ C07D 417/12; A61K 31/42

U.S. Cl. 514—361

5 Claims

1. A compound of formula 1, or a pharmaceutically acceptable salt or prodrug thereof:



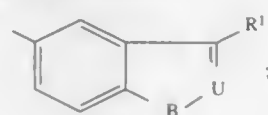
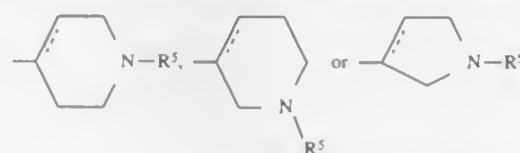
wherein the broken circle represents two non-adjacent double bonds in any position in the five-membered ring;

W, X, Y and Z independently represent oxygen, sulphur, nitrogen or carbon, provided that one of W, X, Y and Z represents oxygen or sulphur and at least one of W, X, Y and Z represents carbon;

A represents hydrogen, hydrocarbon, a heterocyclic group, halogen, cyano, trifluoromethyl, —OR¹, —SR¹, —NR¹R², —NR¹CO₂R³, —NR¹CO₂R⁴, —NR¹SO₂R⁵, or —NR¹CTNR¹R⁶;

E represents a bond or a straight or branched alkylene chain containing from 1 to 4 carbon atoms;

F represents a group of formula

U represents nitrogen or C—R²;B represents oxygen, sulphur or N—R³;R¹ represents —CH₂—CHR⁴—NR⁶R⁷ or a group of formula

in which the broken line represents an optional chemical bond;

R², R³, R⁴, R⁵, R⁶ and R⁷ independently represent hydrogen or C₁–C₆ alkyl;R¹ and R² independently represent hydrogen, hydrocarbon or a heterocyclic group, or R¹ and R² together represent a C₂–C₆ alkylene group;R³ represents hydrogen, hydrocarbon or a heterocyclic group;

T represents oxygen, sulphur or a group of formula —N.G.; and

G represents hydrocarbon, a heterocyclic group or an electron-withdrawing group.

5,510,360

AZOLIDINEDIONES AS ANTIHYPERGLYCEMIC AGENTS

Michael S. Malamas, Jamison, Pa., and Iwan Gunawan, Somerset, N.J., assignors to American Home Products Corporation, Madison, N.J.

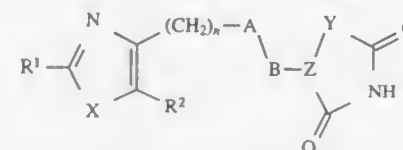
Division of Ser. No. 245,734, May 18, 1994. This application Apr. 13, 1995, Ser. No. 421,111

Int. Cl.⁶ C07D 413/12; 413/14; A61K 31/41

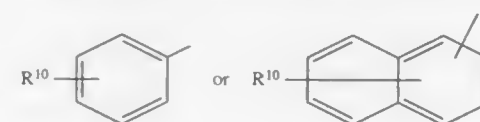
U.S. Cl. 514—364

9 Claims

1. A compound according to formula 1 below



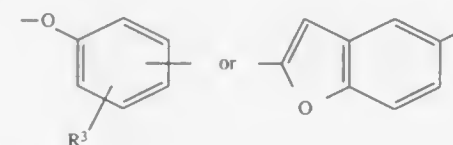
wherein:

R¹ is C₁–C₆ alkyl, C₃–C₈ cycloalkyl, thienyl, furyl, pyridyl,where R¹⁰ is hydrogen, C₁–C₆ alkyl, fluorine, chlorine, bromine, iodine, C₁–C₆ alkoxy, trifluoroalkyl or trifluoroalkoxy;R² is hydrogen or C₁–C₆ alkyl;

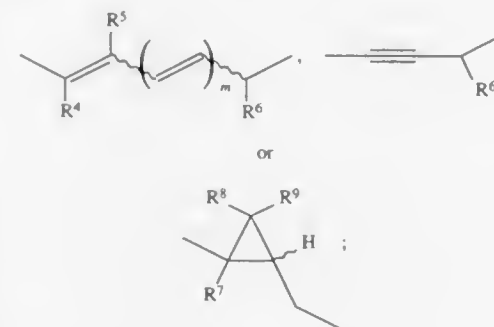
X is O or S;

n is 1 or 2;

A is

where R³ is hydrogen, C₁–C₆ alkyl, halogen, C₁–C₆ alkoxy, trifluoroalkyl or trifluoroalkoxy;

B is



where

R⁴ is hydrogen, C₁–C₆ alkyl, allyl, C₆–C₁₀ aryl, C₆–C₁₀ aryl-(CH₂)_{1–6}, fluorine, chlorine, bromine, iodine, trimethylsilyl or C₃–C₈ cycloalkyl;R⁵ is hydrogen, C₁–C₆ alkyl, C₆–C₁₀ aryl, or C₆–C₁₀ aryl-(CH₂)_{1–6};

m is 0, 1, or 2;

R⁶ is hydrogen or C₁–C₆ alkyl;R⁷ is hydrogen or C₁–C₆ alkyl;R⁸ and R⁹ are selected independently from hydrogen, C₁–C₆ alkyl, fluorine, chlorine, bromine, or iodine;

Y is O;

Z is N;

or a pharmaceutically acceptable salt thereof.

5,510,361

DI-TERT-BUTYLPHENOL COMPOUNDS WITH HETEROCYCLIC MOIETY, USEFUL AS ANTI-INFLAMMATORY AGENTS

Michael W. Scherz, West Chester, and Stanislaw Pikul, Cincinnati, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

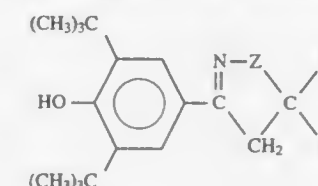
Filed Oct. 20, 1994, Ser. No. 326,619

Int. Cl.⁶ A61K 31/41; 31/42; C07D 231/06; 261/04

U.S. Cl. 514—378

14 Claims

1. A compound having the structure:



wherein

a) each R is independently substituted or unsubstituted cycloalkyl or alkyl having from 1 to about 7 carbon atoms;

b) Z is O or N—X;

c) X is selected from the group consisting of hydrogen, alkyl having from 1 to about 7 carbon atoms, C(O)Y, C(S)Y, and SO₂Y;d) Y is selected from the group consisting of R¹, OR¹ and NR²; ande) R¹ is selected from the group consisting of hydrogen, alkyl having from 1 to about 7 carbon atoms, and phenyl.

5,510,362

IMIDAZOLE, TRIAZOLE AND TETRAZOLE DERIVATIVES

Victor G. Matassa, Furneux Pelham; Austin J. Reeve, Great Dunmow; Francine Sternfeld, London; Helen Routledge, Chester-Le-Street, and Leslie Street, Harlow, all of, United Kingdom, assignors to Merck, Sharp and Dohme Limited, Hoddesdon, England

PCT No. PCT/GB93/00474, § 371 Date Sep. 8, 1994, § 102(e) Date Sep. 8, 1994, PCT Pub. No. WO93/18029, PCT Pub. Date Sep. 16, 1993

PCT Filed Mar. 5, 1993, Ser. No. 295,884

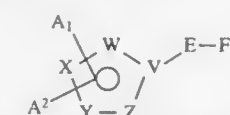
Claims priority, application United Kingdom, Mar. 13, 1992, 9205482; Jul. 24, 1992, 9215731

Int. Cl.⁶ A61K 31/41; C07D 403/14

U.S. Cl. 514—381

8 Claims

1. A compound of Formula I, or a pharmaceutically acceptable salt or prodrug thereof:



wherein the circle represents two non-adjacent double bonds in any position in the five-membered ring;

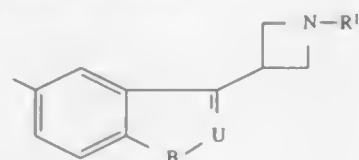
two, three or four of V, W, X, Y and Z represent nitrogen and the remainder represent carbon provided that, when two of V, W, X, Y and Z represent nitrogen and the remainder represent carbon, then the said nitrogen atoms are in non-adjacent positions within the five-membered ring;

A¹ represents hydrogen, hydrocarbon, a heterocyclic group, halogen, cyano, trifluoromethyl, —OR¹, —SR¹, —NR¹R², —NR¹CO₂R³, —NR¹CO₂R⁴, —NR¹SO₂R⁵, or —NR¹CTNR¹R⁶;A² represents a non-bonded electron pair when four of V, W, X, Y and Z represent nitrogen and the other represents carbon; or, when two or three of V, W, X, Y and Z represent nitrogen

and the remainder represent carbon, A² represents hydrogen, hydrocarbon, a heterocyclic group, halogen, cyano, trifluoromethyl, —OR², —SR², —NR²R³, —NR²COR², —NR²CO₂R², —NR²SO₂R², or —NR²CTNR²R²; wherein A¹ and A² can further be independently substituted by trifluoromethyl, C₁₋₆ alkoxy, C₂₋₆ alkoxy-carbonyl, C₂₋₆ alkyl-carbonyl, C₁₋₆ alkylsulfonyl, arylsulfonyl, amino, mono- or di(C₁₋₆)alkylamino, C₂₋₆ alkylcarbonylamino, arylcarbonylamino, (C₂₋₆ alkoxy-carbonylamino, C₁₋₆ alkylsulfonylamino, arylsulfonylamino, C₁₋₆ alkylsulfonylamino-methyl, aminocarbonylamino, mono- or di(C₁₋₆)alkylaminocarbonylamino, mono- or diarylamino-carbonylamino, pyrrolidyl-carbonylamino, aminocarbonyl, mono- or di(C₁₋₆)alkylaminocarbonyl, C₁₋₆ alkylaminosulfonyl, aminosulfonylmethyl, and mono- or di(C₁₋₆)alkylaminosulfonylmethyl;

E represents a bond or a straight or branched alkylene chain containing 1 to 4 carbon atoms;

F represents a group of formula



U represents nitrogen or C-R²;

B represents oxygen, sulphur or N-R³;

R¹, R² and R³ independently represent hydrogen or C₁₋₆ alkyl;

R⁴ and R⁵ independently represent hydrogen, hydrocarbon or a heterocyclic group, or R⁴ and R⁵ together represent a C₂₋₆ alkylene group;

R⁶ represents hydrogen, hydrocarbon or a heterocyclic group; represents oxygen, sulphur or a group of formula =N/G; and

G represents hydrocarbon, a heterocyclic group or a electron-withdrawing group.

5,510,363

SYNERGISTIC INSECTICIDAL COMPOSITIONS

Muthuvelu Thirugnanam, Langhorne, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

Division of Ser. No. 340,574, Nov. 16, 1994. This application Jun. 6, 1995, Ser. No. 467,383

Int. Cl.⁶ A01N 37/18; 43/64

U.S. Cl. 514—383

3 Claims

1. A synergistic insecticidal composition comprising synergistic effective amounts of N-(4-ethylbenzoyl)-N'-(3,5-dimethylbenzoyl)-N'-tert-butylhydrazine and diniconazole in a ratio of from 1:0.1 to 1:1000.

5,510,364
2-CYANOBENZIMIDAZOLES AND THEIR USE, AND NEW PRECURSORS

Winfried Lunkenheimer, Wuppertal; Heinz-Wilhelm Dehne, and Ulrike Wachendorff-Neumann, both of Monheim, all of, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Nov. 24, 1992, Ser. No. 981,035

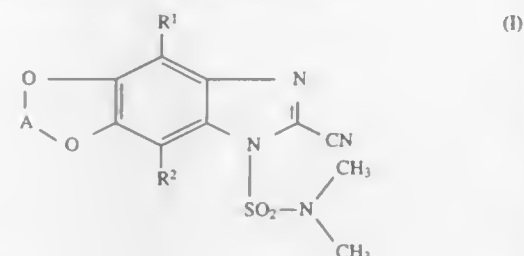
Claims priority, application Germany, Dec. 4, 1991, 41 39 950.1

Int. Cl.⁶ A01N 43/90; C07D 491/056; 235/02

U.S. Cl. 514—395

10 Claims

1. A 2-cyanobenzimidazole of the formula (I)



in which

R¹ represents hydrogen, halogen or alkyl,

R² represents hydrogen, halogen or alkyl and

A represents a halogen substituted divalent C₁—C₄ alkanediy radical.

5,510,365

MEDICAMENTS CONTAINING 1-THIOCARBAMOYL-5-HYDROXY-PYRAZOLES AND THEIR USE AS AGENTS FOR COMBATING SEPTIC SHOCK

Peter Wachtler, Köln; Lutz Heuer, Krefeld; Michael Sperzel, and Klaus G. Stünkel, both of Wuppertal, all of, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Aug. 4, 1994, Ser. No. 286,080

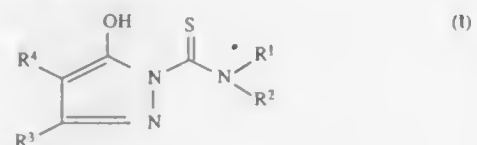
Claims priority, application Germany, Aug. 11, 1993, 43 26 904.4; Apr. 28, 1994, 44 14 792.9

Int. Cl.⁶ A61K 31/415; C07D 231/20

U.S. Cl. 514—407

6 Claims

I. Compounds of the formula (I)



in which

R¹ and R² denote hydrogen,

R³ denotes substituted alkyl or aralkyl, and

R⁴ denotes hydrogen or unsubstituted or substituted alkyl or aralkyl.

5,510,366

INDOLE DERIVATIVES, SALTS THEREOF, AND CONGESTIVE HEART FAILURE THERAPEUTIC AGENTS COMPRISING THE SAME

Yoshinori Kyotani; Katsumi Kawamine; Tsutomu Toma; Tadaaki Ohgiya, all of Higashimurayama; Takashi Yamaguchi, Urawa; Kazuhiro Onogi, Iruma; Seichi Sato, Tokyo; Noboru Shimizu, Higashimurayama; Hiromichi Shigyo, Fuchu; Tomio Ohta, Sayama; Toshiaki Oda, Higashimurayama; Yukihiko Okuno, Higashimurayama; Kimiyuki Shihuya, Higashimurayama; Yoshio Takahashi; Mikio Fujii, both of Iruma, and Yasumi Uchida, Ichikawa, all of, Japan, assignors to Kowa Co., Ltd., Nagoya, Japan

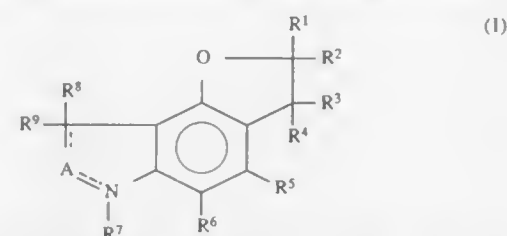
Filed Oct. 28, 1994, Ser. No. 330,670

Claims priority, application Japan, Oct. 29, 1993, 5-271770 Int. Cl.⁶ A61K 31/40; C07D 491/056

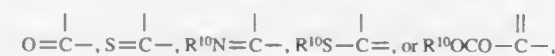
U.S. Cl. 514—411

9 Claims

1. An indole derivative represented by the following formula (I),



wherein at least one of R¹, R², R³, or R⁴ is a lower alkyl or alkenyl group which may have substituents selected from halogen atoms, hydroxy group, alkylsulfonyloxy groups, alkylsilyloxy groups, azido group, cyano group, amino group, alkylamino groups having 1-8 carbon atoms, dialkylamino groups having 2-16 carbon atoms, phenyl alkylamino groups having 7-12 carbon atoms, alkanoylamino groups having 1-6 carbon atoms, alkoxy-carbonylamino groups having 2-10 carbon atoms, pyrrole, pyrrolidine, imidazole, imidazoline, oxazole, oxazoline, thiazole, thiazoline, piperidine, piperazine, and morpholine (wherein these cyclic amino groups may further contain substituents selected from alkyl or alkenyl groups having 1-8 carbon atoms, phenyl alkyl groups having 7-15 carbon atoms, alkanoyl groups having 1-6 carbon atoms, benzoyl group, alkoxybenzoyl groups having 1-8 carbon atoms, and di(C₁₋₈)alkoxybenzoyl groups), and others represent a hydrogen atom or a lower alkyl group; R⁵ and R⁶ individually represent a hydrogen atom, a halogen atom, a lower alkyl or acyl group, or a lower alkyl group which may have substituents selected from hydroxy group, halogens, cyano group, alkoxy-carbonyl groups, and carboxy groups; R⁷ may either represent a hydrogen atom or a benzyl group, or form a double bond with A; and R⁸ and R⁹ individually represent a hydrogen atom, a halogen atom, a hydroxy group, or a lower alkyl group which may have substituents selected from hydroxy group, halogens, cyano group, alkoxy-carbonyl groups, and carboxy groups, or R⁸ and R⁹ may together represent an oxygen atom, an alkenyl group, or either one of R⁸ and R⁹ may form a double bond with A; and A represents a group



wherein R¹⁰ is a hydrogen atom or a group; and the dotted line indicates that the bond may be a double bond; or a pharmaceutically acceptable salt thereof.

5,510,367

INDOLE DERIVATIVES

Alfredo Cugola, and Giovanni Gaviraghi, both of Verona, Italy, assignors to Glaxo SpA, Italy

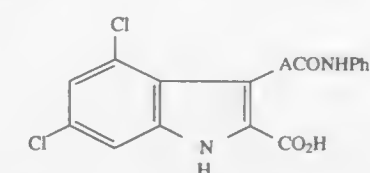
Continuation of Ser. No. 046,947, Apr. 15, 1993, Pat. No. 5,373,018. This application Dec. 8, 1994, Ser. No. 351,762 Claims priority, application United Kingdom, Apr. 16, 1992, 9208492

Int. Cl.⁶ A61K 31/405

U.S. Cl. 514—419

7 Claims

1. A method for the treatment or prevention of neurotoxic injury or neurodegenerative disease in a mammal including man which comprises administration of an effective amount of a compound of formula (I)



wherein A represents an unsubstituted ethenyl group in the trans (E) configuration, or a physiologically acceptable salt or metabolically labile ester thereof.

5,510,368

N-BENZYL-3-INDOLEACETIC ACIDS AS ANTIINFLAMMATORY DRUGS

Cheuk K. Lau, Ile Bizard; Cameron Black, Pointe Claire, and Michel Belley, Pierrefonds, all of, Canada, assignors to Merck Frosst Canada, Inc., Kirkland, Canada

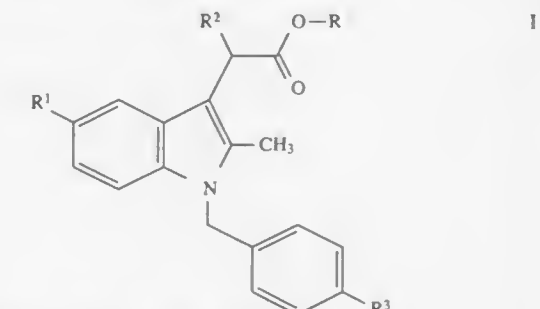
Filed May 22, 1995, Ser. No. 445,625

Int. Cl.⁶ A61K 31/405; C07D 209/22

U.S. Cl. 514—419

9 Claims

1. A compound of structural Formula I:



or a pharmaceutically acceptable salt thereof, wherein:

R is H, methyl, ethyl or propyl;

R¹ is halo or methyl;

R² is —H, methyl or ethyl;

R³ is Br.

5,510,369

PYRROLIDINE THROMBIN INHIBITORS

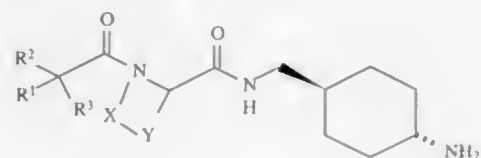
William C. Lumma, Pennsburg; Roger M. Freidinger, Lansdale; Stephen E. Brady; Philip E. Sanderson, both of Philadelphia; Dong-Mei Feng, Harleysville; Terry A. Lyle, Lederach; Kenneth J. Stauffer, Pottstown; Thomas J. Tucker, North Wales, and Joseph P. Vacca, Telford, all of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Jul. 22, 1994, Ser. No. 279,460
Int. Cl.⁶ A61K 31/40; C07D 207/06

U.S. Cl. 514—422

5 Claims

I. A compound having the formula:



wherein

R¹ and R² are independently hydrogen, phenyl, naphthyl, biphenyl,

a 5- to 7- membered mono- bicyclic heterocyclic ring or bicyclic heterocyclic ring system any ring of which may be saturated or unsaturated, and which consists of carbon atoms and from one to three heteroatoms selected from the group consisting of N, O and S,

C₁₋₄ alkyl, branched C₁₋₄ alkyl, C₃₋₇ cycloalkyl, C₅₋₁₂ bicyclic alkyl, C₁₁₋₁₆ tricyclic alkyl, (CH₂)_nR⁴, CH(R⁴)₂, wherein R⁴ is the same or different, CH(R⁴)(OR⁴), (CH₂)_nOR⁴, or

R² may be joined with R¹ to form a four- to seven membered carbon ring in which zero to two carbon atoms may be substituted with heteroatoms independently selected from the list N, O, and S,

where n is 1, 2, 3 or 4;

R³ is

H,
N(R¹)₂, wherein R¹ is the same or different,
R¹OCONH,
R¹CONH,
(CH₂)_pOH, where p is 0, 1, 2, 3 or 4,
R¹SO₂NH, or
(R¹)_mNCONH, where m is 1 or 2, wherein R¹ is the same or different;

R⁴ is

phenyl,
naphthyl,
biphenyl,

a 5- to 7- membered mono- or bicyclic heterocyclic ring or bicyclic heterocyclic ring system any ring of which may be saturated or unsaturated, and which consists of carbon atoms and from one to three heteroatoms selected from the group consisting of N, O and S,

C₁₋₄ alkyl, branched C₁₋₄ alkyl, C₃₋₇ cycloalkyl, C₅₋₁₂ bicyclic alkyl, or C₁₁₋₁₆ tricyclic alkyl;
X is (CH₂)_q, where q is 2; and
Y is (CH₂)_r, where r is 1.

5,510,370

PARATHYROID HORMONE AND RALOXIFENE FOR INCREASING BONE MASS

Janet M. Hock, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Continuation of Ser. No. 96,480, Jul. 22, 1993, abandoned.

This application Mar. 6, 1995, Ser. No. 400,436

Int. Cl.⁶ A61K 31/38; 31/44; 31/505; 31/495

U.S. Cl. 514—443

12 Claims

I. A method for increasing bone mass in a subject, comprising administering a pharmaceutically effective dose of PTH and a pharmaceutically effective dose of raloxifene, to the subject.

5,510,371

INHIBITORS OF FARNESYL-PROTEIN TRANSFERASE

Sheo B. Singh, Edison; George M. Garrity, Westfield, both of N.J.; Olga Genilloud, Madrid, Spain; Russell B. Lingham, Watchung, N.J.; Isabel Martin, Madrid, Spain; Mary N. Omstead, E. Greenwich, R.I.; Keith C. Silverman, Somerset, and Deborah L. Zink, Manalapan, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

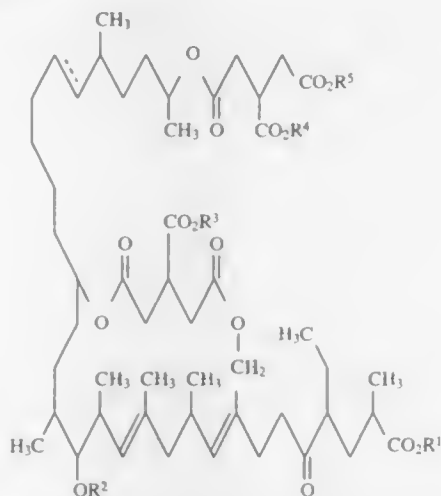
Filed Jun. 6, 1994, Ser. No. 254,228

Int. Cl.⁶ A61K 31/335; 31/225

U.S. Cl. 514—450

20 Claims

I. A compound which inhibits farnesyl-protein transferase of the formula I:



wherein:

R¹, R³, R⁴ and R⁵ are independently selected from:

- hydrogen;
- C₁₋₃ alkyl; and
- C₁₋₅ alkyl substituted with a member of the group consisting of:
 - phenyl,
 - phenyl substituted with methyl, methoxy, halogen (Cl, Br, F, I) or hydroxy; and

R² is selected from hydrogen, C₁₋₄ alkyl, benzoyl or acetyl; wherein the dashed line represents the presence of a second bond, which results in a double bond, or the absence of a second bond; and

wherein at least two R¹, R³, R⁴ or R⁵ are hydrogen; or a pharmaceutically acceptable salt thereof.

5,510,372

ANTIPARASITIC MACROLIDE ANTIBIOTICS

Mark A. Haxell; David A. Perry; Hiroshi Maeda, and Junsuke Tone, all of New York, N.Y., assignors to Pfizer Inc, New York, N.Y.

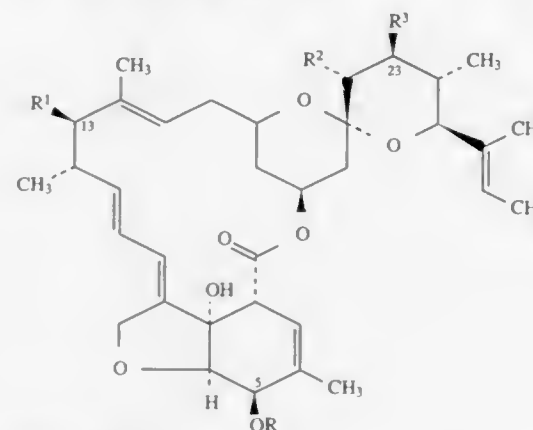
Continuation of Ser. No. 703,578, May 20, 1991, abandoned, which is a continuation of Ser. No. 314,734, Feb. 23, 1989, abandoned. This application Jan. 27, 1995, Ser. No. 378,997
Claims priority, application United Kingdom, Feb. 25, 1988, 8804440

Int. Cl.⁶ A61K 31/35; C07D 493/22

U.S. Cl. 514—450

19 Claims

I. A compound of the formula



wherein R is H;

R¹ is H or OCOCH(CH₃)₂;R² is OH; andR³ is H or OCOCH(CH₃)₂; and with the proviso that R¹ and R³ may not both be H.

5,510,373

CARDIOPROTECTIVE AGENTS

J. Martin Grisar, Wissembourg; Margaret A. Petty, Strasbourg, both of, France, and Frank Bolkenius, Kehl, Germany, assignors to Merrell Pharmaceuticals Inc., Cincinnati, Ohio

PCT No. PCT/US93/02102, § 371 Date Oct. 5, 1994, § 102(e) Date Oct. 5, 1994, PCT Pub. No. WO93/20058, PCT Pub. Date Oct. 14, 1993

PCT Filed Mar. 8, 1993, Ser. No. 318,784

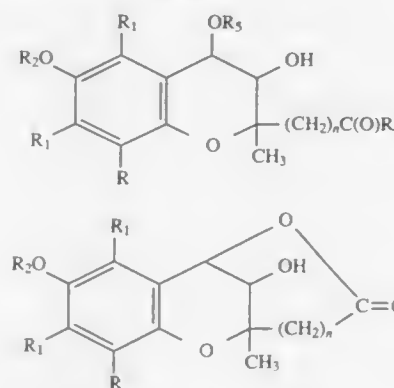
Claims priority, application European Pat. Off., Apr. 6, 1992, 92400957

Int. Cl.⁶ C07D 493/08; 31/124; A61K 31/35; 31/365

U.S. Cl. 514—455

31 Claims

I. A compound of the formulae



their individual stereoisomers and mixtures thereof, or the pharmaceutically acceptable salts thereof wherein

R is H or C₁₋₄ alkyl,R₁ is C₁₋₄ alkyl,

R₂ is H or C(O)R₃,
R₃ is H or C₁₋₉ alkyl,
R₄ is OR or N(R)₂,
R₅ is H, —C(O)R or C₁₋₄ alkyl, and
n is zero or one.

5,510,374

3-AMINOCHROMAN COMPOUNDS

Gérald Guillaumet, Orleans, and Béatrice Guardiola, Saint Cloud, both of, France, assignors to Adir et Compagnie, Courbevoie, France

(I) Continuation-in-part of Ser. No. 33,156, Mar. 16, 1993, Pat. No. 5,346,916, which is a division of Ser. No. 959,044, Oct. 9, 1992, Pat. No. 5,314,907, which is a division of Ser. No. 677,136, Mar. 29, 1991, Pat. No. 5,252,578. This application Jul. 18, 1994, Ser. No. 276,553

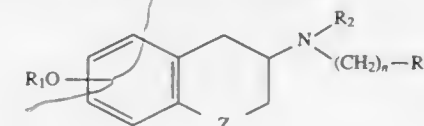
Claims priority, application France, Apr. 9, 1990, 90 04481

Int. Cl.⁶ C07D 311/04; A61K 31/35

U.S. Cl. 514—456

9 Claims

I. A compound of general formula (I):



in which:

z represents oxygen,
R₁ represents (C₁—C₆) alkyl,
R₂ represents hydrogen or (C₁—C₆) alkyl,
n is an integer of 1 to 6, inclusive,
R₃ represents an amino group substituted with:
a (C₁—C₆) acyl group which is substituted with phenyl which is optionally substituted with alkyl, alkoxy, hydroxyl, or halogen, its enantiomers, diastereoisomers and epimers as well as its addition salts with a pharmaceutically-acceptable acid.

5,510,375

COUMARIN DERIVATIVES AS PROTEASE INHIBITORS AND ANTIVIRAL AGENTS

John M. Domagala, Canton; Susan E. Hagen, Canton Township; Elizabeth Lunney, Ann Arbor, and Bradley D. Tait, Canton, all of Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.

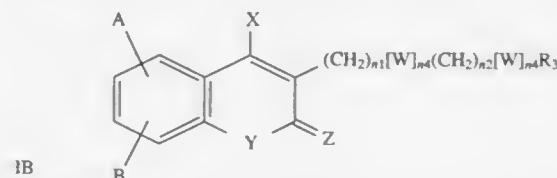
Filed Nov. 19, 1993, Ser. No. 155,728

Int. Cl.⁶ A61K 31/35

U.S. Cl. 514—457

8 Claims

I. A compound or a pharmaceutically acceptable salt thereof of formula



wherein

X is OR₁ or SH wherein R₁ is hydrogen or COR₂ wherein R₂ is a straight or branched alkyl chain containing 1 to 5 carbon atoms, a cyclic alkyl containing 3 to 6 carbon atoms, or a hydrogen atom;

Z is oxygen or sulfur;

Y is oxygen;

W is oxygen, NR₃, C(R₃)₂, NCOV_mR₃, NR₃COV_m, CO, CH=CH, S(O)_n, C≡C, CNOR₄, or CR₃OR₃ wherein V is oxygen, sulfur, NR₃, or CHR₃; R₃ is (CH₂)_nAr wherein Ar is

- (e) from 0-15 weight percent of an impact modifier;
 (f) from 0-35 weight percent of a polyetherester or polyether-imide ester resin;
 (g) from 30-80 weight percent of an inorganic filler selected from the group consisting of barium sulfate, strontium sulfate, zinc oxide and zinc sulfate;
 (h) from 0-30 percent of a fibrous glass reinforcing filler; and
 (i) an effective amount of a non-dispersing pigment sufficient to provide said extruded thermoplastic composition with a speckled surface, said non-dispersing pigment having an aspect ratio greater than 20.

5,510,399

AQUEOUS, HIGH-SOLIDS SYNTHETIC RUBBER EMULSION AND ITS PREPARATION

Thomas Sauer, Haltern, Germany, assignor to Huels Aktiengesellschaft, Marl, Germany

Filed Nov. 18, 1994, Ser. No. 344,583

Claims priority, application Germany, Dec. 30, 1993, 43 44 992.1

Int. Cl.⁶ C08J 3/02

U.S. Cl. 523-335 13 Claims

1. A process for the chemical agglomeration of a finely dispersed, aqueous synthetic rubber emulsion comprising:

- contacting the finely dispersed, aqueous synthetic rubber emulsion with an agglomeration agent comprising a water-soluble or water-dispersible copolymer comprising
 10 to 90% by weight of one or more hydrophobic, water-insoluble, olefinically unsaturated monomers; and
 90 to 10% by weight of one or more hydrophilic, water-soluble and salt-forming, olefinically unsaturated monomers selected from the group consisting of olefinically unsaturated sulphonic acid compounds and salts thereof;

at a temperature and concentration sufficient to cause agglomeration of the finely dispersed, aqueous synthetic rubber emulsion.

5,510,400

CATIONIC ELECTRODEPOSITION COATING COMPOSITION

Hiroyuki Kageyama, Itami; Tatsuo Yoshida, Kyoto, and Yoshio Kojima, Nara, all of, Japan, assignors to Nippon Paint Co., Ltd., Osaka, Japan

Filed Nov. 1, 1994, Ser. No. 332,077

Claims priority, application Japan, Nov. 2, 1993, 5-274208

Int. Cl.⁶ C08L 63/02; C09D 5/44

U.S. Cl. 523-404 6 Claims

1. A cationic electrodeposition coating composition comprising:

- (A) a cationic resin;
 (B) a low-temperature dissociation blocked isocyanate curing agent wherein the curing agent has a low curing temperature of 160° C. or less; and
 (C) a pigment paste containing a pigment dispersed in a cationic pigment dispersing resin,

wherein said cationic pigment grinding resin is prepared by introducing primary amino groups into a hydrophobic epoxy resin for pigment dispersion and neutralizing it with acid, said hydrophobic epoxy resin having a solubility parameter (SP) value of 10.0 to 11.0, a number of amino groups in one molecule averaging 1.6 to 4.0 and an epoxy equivalent of 180 to 1,000 and wherein (A):(B):(C) is present in a weight ratio of 10 to 88:10 to 50:2 to 50 based on solid content of the coating composition.

5,510,401

STARCH-BASED COMPOSITION

Claude Dehennau, and Thierry Depireux, both of Waterloo, Belgium, assignors to Solvay (Société Anonyme), Brussels, Belgium

Continuation of Ser. No. 14,679, Feb. 8, 1993, abandoned.

This application Apr. 12, 1994, Ser. No. 227,230

Claims priority, application Belgium, Feb. 7, 1992, 09200130 Int. Cl.⁶ C08L 3/00; 89/00; C08K 5/10; 5/05

U.S. Cl. 524-47 18 Claims

1. A composition, comprising a starch and a polymer acting as coupling agent which is chosen from the group consisting of polyethylene modified by grafting maleic anhydride, and terpolymers containing units derived from maleic anhydride, the ratio of the dynamic modulus of elasticity G' of said composition to the dissipative modulus G'' of said composition, measured at 160° C. and at a frequency of 0.1 rad per s (0.1 s⁻¹), being greater than 1.6.

5,510,402

CARBOXYLIC ACID ESTERS OF HYDROXYPHENYLALKANOLS AS STABILIZERS

Paul Dubs, Marly, and Rita Pitteloud, Praroman, both of, Switzerland, assignors to Ciba-Geigy Corporation, Tarrytown, N.Y.

Continuation of Ser. No. 46,044, Apr. 12, 1993, abandoned,

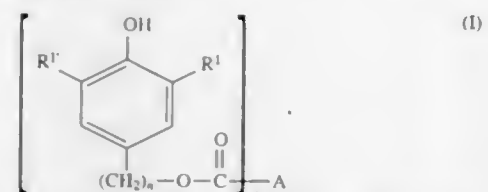
which is a continuation-in-part of Ser. No. 18,602, Feb. 17, 1993, abandoned. This application Nov. 24, 1993, Ser. No. 158,177

Claims priority, application Switzerland, Feb. 24, 1993, 547/92

Int. Cl.⁶ C07C 323/51; 69/708; 69/34; C08K 5/3; 5/134; 5/15; 5/11; 5/36

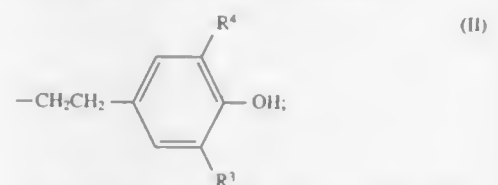
U.S. Cl. 524-84 18 Claims

1. A compound of the formula I



in which n is an integer from the range from 4 to 8 and m is an integer from the range from 1 to 4;

if m=1, A is C₁-C₂₅alkyl, which is unsubstituted or substituted by C₃-C₈cycloalkyl; or is C₂-C₂₅alkyl which is interrupted by C₃-C₈cycloalkyl or one or more groups selected from —S—, —O— and —NR²—; or, if m=1, A is C₃-C₈cycloalkyl, which is unsubstituted or substituted by C₁-C₁₂alkyl or C₂-C₁₂alkenyl; C₂-C₁₂alkenyl; C₆-C₁₀bicycloalkenyl; C₇-C₁₂phenylalkyl; C₈-C₁₂phenylalkenyl; C₁₁-C₁₆naphthylalkyl; C₁₂-C₁₆naphthylalkenyl; C₁₃-C₁₈biphenylalkyl; C₁₄-C₁₈biphenylalkenyl; a group of the formula II



if m=2, A is a direct bond; C₁-C₁₂alkylene; C₂-C₁₂alkenylene; C₃-C₈cycloalkylene, which is unsubstituted or substituted by C₁-C₁₂alkyl or C₂-C₁₂alkenyl; C₆-C₈cycloalkenylene, which is unsubstituted or substituted by C₁-C₁₂alkyl or

C₂-C₁₂alkenyl; C₆-C₁₀bicycloalkenylene; phenylene; naphthylene; a divalent heterocyclic radical from the group comprising furan, thiophene or pyrrole, which is saturated on the nitrogen atom by hydrogen or the substituent —R²—; or, if m=2, A is C₂-C₈alkylene which is interrupted by C₃-C₈cycloalkylene or phenylene or one or more groups selected from —O— and —NR²—;

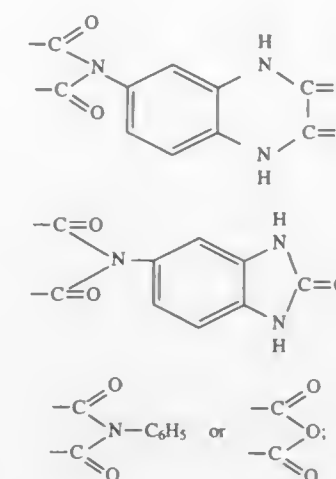
if m=3, A is C₁-C₈alkanetriyl; C₂-C₈alkenetriyl; benzenetriyl; naphthalenetriyl; or C₂-C₁₈alkanetriyl, which is interrupted by at least one of the groups —S—, —O— or —NR²—;

if m=4, A is a benzene radical, naphthyl radical, tetrahydrofuryl radical or cyclohexyl radical having 4 free valencies;

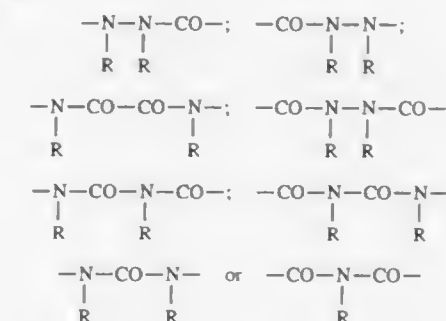
R¹ and R^{1'}, independently of one another, are C₁-C₁₀alkyl or C₅-C₈cycloalkyl;

R² is H or C₁-C₄alkyl;

R³ and R⁴, independently of one another, are C₁-C₄alkyl; and with the proviso that, when n is 4, R¹ tert-butyl or cyclohexyl, and R^{1'} is methyl, tert-butyl or cyclohexyl, and with the further proviso that, when A contains an ethylenic double bond, R¹ is tert-butyl and R^{1'} is methyl.



R₃ is



where R is hydrogen or C₁-alkyl unsubstituted or substituted by 1 to 4 groups selected from halogen, cyano, C₁-alkoxy, phenyl, phenoxy, acyl, acyloxy or acylamino; and

R₄ together with the two carbon atoms to which it is attached forms a 5 or 6-membered carbocyclic or heterocyclic group or a 9- or 10-membered bicyclic carbocyclic or heterocyclic group, the rings of R₄ being unsubstituted or substituted by 1, 2 or 3 groups R_{2a} where R_{2a} has a significance of R₂ other than hydrogen or R₄ is —NH—CO—C(CN)=C(CH₃)—, —N(CH₃)—CO—C(CN)=C(CH₃)—, —N(C₃H₇)—CO—C(CN)=C(CH₃)—, or —N(C₆H₅)—CO—C(CN)=C(CH₃)—.

5,510,404

STABILIZED RESIN COMPOSITION

Kiyohiko Nakae, Tokyo; Kozo Kotani, Osaka; Taiichi Sakaya, Osaka, and Makoto Nakagahara, Osaka, all of, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

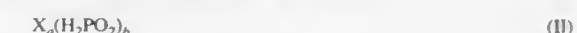
Continuation of Ser. No. 672,925, Mar. 21, 1991, abandoned.

This application Sep. 14, 1993, Ser. No. 120,239

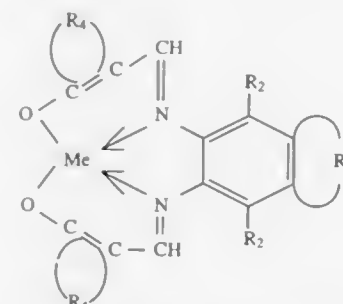
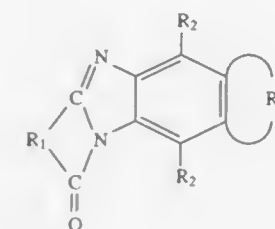
Claims priority, application Japan, Mar. 22, 1990, 2-75222 Int. Cl.⁶ C08K 5/34; 3/32

U.S. Cl. 524-99 14 Claims

1. A resin composition comprising:
 an olefin polymer or a copolymer of an olefin and a polar vinyl compound;
 a hindered piperidinyloxy compound prepared by oxidizing a hindered amine base weathering stabilizer with m-chloroperbenzoic acid; and
 a hypophosphite compound of the formula:



wherein X is a metal ion, an ammonium ion or a phosphonium ion, wherein a and b are positive numbers provided that they satisfy the



in which R₂ is hydrogen, trifluoromethyl, halogen, C₁-alkyl, C₁-alkoxy, cyano, nitro, hydroxyl, amino, C₁-alkylamino, di-(C₁-alkyl)alkylamino, phenylamino, N-C₁-alkyl-N-phenylamino; acyl, acyloxy or acylamino,
 Me is a divalent metal atom;

R₁ is 1,2-phenylene, 1,2-, 2,3- or 1,8-naphthylene or 2,2'-diphenylene, the phenylene and naphthylene groups of R₁ being unsubstituted or mono- or di-substituted by R_{2a} where R_{2a} has a significance of R₂ other than hydrogen or by 3 or 4 halogen atoms; or in the naphthylene group two adjacent carbon atoms can be bridged by —NH—CO—NH—, —N=C(CH₃)—NH—, —N=C(C₆H₅)—NH—, —CO—N(C₆H₅)—CO—, —CO—NH—CO—,

equation: (a) (c)=b in which c is a valency of X, and wherein a weight ratio of the hypophosphite compound to the hindered piperdinyloxy compound is at least 0.001.

5,510,405

PLUG-TYPE CONNECTOR FOR COAXIAL CABLES

Reimar Heucher, Pulheim; Juergen Wiehelhaus, Wuppertal; Kurt Schueller, and Bettina Becker, both of Monheim, all of, Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Germany

PCT No. PCT/EP92/01096, § 371 Date Jan. 27, 1994, § 102(e) Date Jan. 27, 1994, PCT Pub. No. WO92/22104, PCT Pub. Date Dec. 10, 1992

PCT Filed May 19, 1992, Ser. No. 142,452

Claims priority, application Germany, May 28, 1991, 41 17 395.3

Int. Cl.⁶ C08K 5/20; C08F 8/30; H01R 13/52

U.S. Cl. 524—233 20 Claims

1. A plug connection for electrically conductive cables, comprising an assembly including:

an inner conductor of the insulated cable being connected to a contact bushing or a contact pin;

an outer bushing being pushed over an end of the cable;

a cavity being formed in the space between said contact pin or contact bushing and said outer bushing;

molten hotmelt adhesive having a melt viscosity of at least 8,000 mPa.s at 200° C. being formed in said cavity, wherein said hotmelt adhesive secures said outer bushing, contact pin or contact bushing, inner conductor of said insulated cable, and said insulated cable together, while serving as an electrical insulator therebetween.

5,510,406

FLUOROPOLYMER COMPOSITION FOR COATING AND ARTICLE COATED WITH THE SAME

Masashi Matsuo; Masaru Yamauchi, both of Kanagawa; Nobuko Matsunaga, Tokyo; Shunsuke Yokotsuka, and Masao Unoki, both of Kanagawa, all of, Japan, assignors to Asahi Glass Company, Ltd., Tokyo, Japan

Continuation of Ser. No. 698,078, May 10, 1991, abandoned.

This application May 9, 1994, Ser. No. 240,504

Claims priority, application Japan, Jun. 1, 1990, 2-141578

Int. Cl.⁶ C08K 5/17

U.S. Cl. 524—237

11 Claims

1. A fluoropolymer composition for coating, which comprises: (A) a polymer having a fluorine-containing cycloaliphatic ether-cyclic structure of an at least 5-membered ring containing at least one group of the formula —MR¹_nR²_m, wherein M is a member selected from the group consisting of Si, Ti, Zr, Hf, Th and Al; R¹ is a member selected from the group consisting of halogen, hydroxyl, amino group, alkoxy, alkoxy-substituted alkoxy, hydroxyalkoxy, acyloxy, aminoxy, ketoxime and amide group; R² is alkyl or aryl; n is 2 or 3; and a is 1 or 2, provided that a is 0 or 1 when n is 2, and

(B) a solvent for dissolving said polymer

5,510,407

MOLD RELEASE AGENT COMPOSITION

Masayuki Yamana, and Seiji Takubo, both of Settsu, Japan, assignors to Daikin Industries Ltd., Osaka, Japan

PCT No. PCT/JP93/00366, § 371 Date Feb. 25, 1994, § 102(e) Date Feb. 25, 1994, PCT Pub. No. WO93/19918, PCT Pub. Date Oct. 14, 1993

PCT Filed Mar. 26, 1993, Ser. No. 142,380

Claims priority, application Japan, Mar. 30, 1992, 4-073791

Int. Cl.⁶ C08K 5/24

U.S. Cl. 524—269

14 Claims

1. A mold release agent composition comprising:

A) 12.5 to 95% by weight of a copolymer of a polyfluoroalkyl acrylate or methacrylate ester having a polyfluoroalkyl group having 1 to 20 carbon atoms and a vinyl compound having an alkyl group having 8 to 30 carbon atoms, wherein the copolymer comprises 20 to 85% by weight of the perfluoroalkyl acrylate or methacrylate ester and 80 to 15% by weight of the vinyl compound, and

B) 87.5 to 5% by weight of a silicone.

5,510,408

METHACRYLIC RESIN COMPOSITION AND METHOD FOR PRODUCTION THEREOF

Yoshio Fuchigami, Okayama; Kouichi Warino, Ibaraki; Shigeo Matsumaru, Saitama, and Yosokichi Kobayashi, Niigata, all of, Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan

Filed May 26, 1994, Ser. No. 249,431

Claims priority, application Japan, May 31, 1993, 5-152924

Int. Cl.⁶ C08K 5/10; 5/05; 5/01; C08L 91/06

U.S. Cl. 524—317

4 Claims

1. A methacrylic resin composition which comprises a methyl methacrylate copolymer, a higher alcohol having 12–18 carbon atoms (x), a monoglyceride of a higher fatty acid having 16–22 carbon atoms (y), and a paraffin (z), providing the individual contents of x, y, and z are in the respective ranges of 0.05 to 0.2% by weight, 0.05 to 0.2% by weight, and 0.02 to 0.15% by weight and the total content of x, y, and z is in the range of 0.2 to 0.35% by weight.

5,510,409

FOAM CONTROL AGENTS FOR LATEX PAINTS

Andrew A. Romano, Sparta, N.J., assignor to Ashland Inc., Columbus, Ohio

Filed Oct. 26, 1993, Ser. No. 143,002

Int. Cl.⁶ C08K 5/09; 5/24; 3/34; C08L 91/08

U.S. Cl. 524—322

4 Claims

1. A foam control agent having no volatile organic compounds comprising:

(a) soybean oil,

(b) a hydrophobic wax having an average particle size of from about 5 to 75 microns, and a surface energy of from about 20 to about 30 dynes/cm², and

(c) a polydimethylsiloxane, a substituted polydimethyl-siloxane, or mixtures thereof,

wherein the weight ratio of soybean oil to hydrophobic wax to polydimethylsiloxane is about 85:5:0.5 to 90:10:2, said weight ratio being based upon the total weight of the foam control agent.

5,510,410

AUTODEPOSITION COATING COMPOSITION

Takumi Honda; Kazuhisa Naito, and Mitsuyuki Koga, all of Kanagawa, Japan, assignors to Henkel Corporation, Plymouth Meeting, Pa.

PCT No. PCT/US93/00138, § 371 Date Jul. 29, 1994, § 102(e) Date Jul. 29, 1994, PCT Pub. No. WO93/15155, PCT Pub. Date Aug. 5, 1993

PCT Filed Jan. 15, 1993, Ser. No. 256,913

Claims priority, application Japan, Jan. 31, 1992, 4-040570

Int. Cl.⁶ C08K 3/10; 5/51; 5/04

U.S. Cl. 524—407

17 Claims

1. An aqueous autodeposition coating composition having a pH in the range of about 1.6 to about 5.0 which comprises:

a) a water dispersible or water-soluble organic film forming resin;

b) at least one of fluoride ion or fluoride ion and complex fluoride ion;

c) at least one of water-soluble hexavalent chromium ion or water-soluble hexavalent chromium ion and trivalent chromium ion;

d) at least one of tungstate ion and molybdate ion; and
e) water.

5,510,411

FLASK FOR MICROWAVE PROCESSING OF DENTAL PROTHESES

Robert E. McKinstry, and Ivo Zini, both of Pittsburgh, Pa., assignors to University of Pittsburgh, Pittsburgh, Pa.

Continuation of Ser. No. 404,872, Sep. 8, 1989, abandoned.

This application Nov. 22, 1991, Ser. No. 803,652

Int. Cl.⁶ C08K 3/30

U.S. Cl. 524—418

16 Claims

1. A dental flask suitable for use in microwave, irradiation processing of dentures, obturators and other dental prostheses manufactured from a composition comprising a predominant amount of a liquid, polymerizable plastic resin selected from the group consisting of methyl methacrylate, polystyrene, polycarbonate and polyesters mixed with lesser amounts of (i) a gypsum-based material selected from the group consisting of plaster (Type II), artificial dental stone (Type III) and improved dental stone (Type IV), and (ii) fibers selected from the group consisting of nylon fibers, Dacron™ fibers and glass fibers.

5,510,412

RESINOUS SOFT MAGNETIC COMPOSITION

Keiichi Suzuki, and Masahito Tada, both of Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 22, 1994, Ser. No. 199,706

Claims priority, application Japan, Feb. 26, 1993, 5-062757; Aug. 31, 1993, 5-237130

Int. Cl.⁶ C08J 5/10; C08K 3/08; C08L 81/04

U.S. Cl. 524—440

10 Claims

1. A resinous soft magnetic composition, comprising:

(a) 80–95 wt. % of a powdery soft magnetic material, and

(b) 5–20 wt. % of a resin component comprising

(1) 70–99.5 wt. % of a polyarylene sulfide resin, and

(2) 0.5–30 wt. % of an ultrahigh-molecular weight polyethylene having a weight-average molecular weight of from about 4×10⁵ to about 7×10⁶.

5,510,413

POLYMER COMPOSITIONS

James D. McCullough; Thomas F. Browncombe, and Ananda M. Chatterjee, all of Houston, Tex., assignors to Shell Polypropylene Company, Houston, Tex.

Filed Dec. 20, 1991, Ser. No. 811,218

Int. Cl.⁶ C08K 3/34

U.S. Cl. 524—450

22 Claims

1. A stabilized composition comprising a thermoplastic polymer and a stabilizing quantity of a synthetic basic zeolite, wherein the sum of any earlier applied basic material and Group II metal compound is greater than that required to fully cation exchange the zeolite when in the acid form.

5,510,414

POLYCARBONATE RESIN COMPOSITION AND PROCESS FOR PRODUCING THE SAME

Masaya Okamoto, and Jiro Chiba, both of Ichihara, Japan, assignors to Idemitsu Petrochemical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 84,259, Jul. 12, 1993, abandoned.

This application Feb. 14, 1995, Ser. No. 389,978

Claims priority, application Japan, Nov. 15, 1991, 3-300345; Nov. 15, 1991, 3-300347; Nov. 19, 1991, 3-303153; Dec. 27, 1991, 3-346352

Int. Cl.⁶ C08K 3/40

U.S. Cl. 524—494

6 Claims

1. A polycarbonate resin composition having a haze of not more than 22% which comprises

(A) 10 to 95% by weight of a polycarbonate-based copolymer selected from the group consisting of a polycarbonate-polyorganosiloxane copolymer having a degree of polymerization of not more than 50 and 2.2 to 30.3% by weight of organosiloxane unit in the copolymer, and a polycarbonate-acrylcopolymer having 6.2 to 55.8% by weight of polyacrylate unit in the copolymer,

(B) 5 to 70% by weight of glass and

(C) 0 to 85% by weight of polycarbonate resin,

the difference between the refractive index of the mixed resin of (A) and (C), and that of (B) glass being not more than 0.004.

5,510,415

INK JET COMPOSITION FOR PRINTING ON TEXTILES

Peter Zahrobky, Glen Ellyn, and Bruce Lent, Oak Park, both of Ill., assignors to Videojet Systems, Inc., Wood Dale, Ill.

Filed Apr. 25, 1994, Ser. No. 232,496

Int. Cl.⁶ C08L 83/04; 35/06; C09D 11/10

U.S. Cl. 524—506

25 Claims

1. An ink jet ink composition for use with textiles, comprising a pigment dispersed with an acrylic resin, from about 3% to about 30% silicone resin by weight of the ink composition, and at least one non-aqueous solvent, where the ink composition has a viscosity from about 2 to about 8 centipoises at 25° C., an electrical resistivity from about 50 to about 2000 ohms-cm-1, and a sonic velocity from about 1,200 to about 2,000 m/sec, and where the ink composition contains less than about 5% water by weight of the ink composition.

5,510,416

PUMPABLE DESICCATED MASTIC

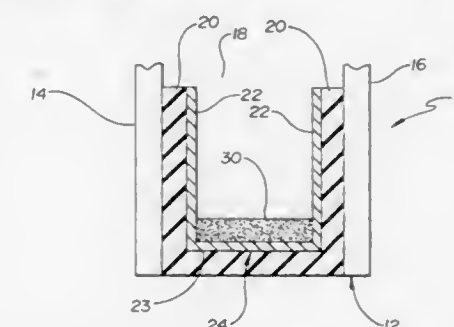
Paul J. Meyer, New Brighton, and Anne Spinks, Hugo, both of Minn., assignors to H. B. Fuller Licensing & Financing, Inc., Arden Hills, Minn.

Filed Mar. 15, 1993, Ser. No. 31,602

Int. Cl.⁶ C08L 23/00

U.S. Cl. 524—528

31 Claims



1. A pumpable thermoplastic hot melt mastic composition comprising:

4–30 weight percent of the composition of a film former selected from the group consisting of polyisobutylene polymers having

a weight average molecular weight in the range of about 35,000 to about 60,000, and mixtures of such polymers with minor amounts of a butyl rubber having a weight average molecular weight of up to about 500,000;

20-50 weight % of the composition of a non-crystalline homopolymer, copolymer, terpolymer or graft copolymer comprising polypropylene;

0-20 weight % of the composition of a low volatile UV stable tackifier compatible with the film former and polypropylene components; and

20 to about 50 weight % of the composition of an adsorbent component comprising 20 to about 50% by weight of the composition of a moisture or moisture and volatile organic chemical adsorbing material, and 0-10% by weight of the composition of an adsorbent of volatile organic compounds,

the composition, when tested as set forth in ASTM D-1238, Procedure B using a 1100 gram load and an 8 gram sample at 190° C., having a melt flow time of no more than 60 seconds.

5,510,417

AQUEOUS POLYESTER DISPERSION SUITABLE FOR USE AS A COATING COMPOSITION

Hiroshi Tachika; Keiichi Togawa, and Hiroshi Fujimoto, all of Ohtsu, Japan, assignors to Toyo Boseki Kabushiki Kaisha, Osaka, Japan

Continuation-in-part of Ser. No. 51,061, Apr. 21, 1993, abandoned. This application Nov. 4, 1994, Ser. No. 334,147

Claims priority, application Japan, Apr. 21, 1992, 4-100980

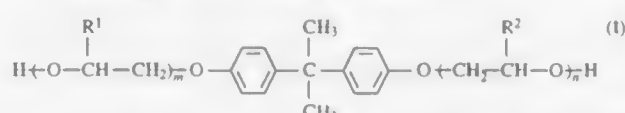
Int. Cl.⁶ C08J 3/03; C08K 3/20; C08L 77/00

U.S. Cl. 524-608

21 Claims

1. An aqueous dispersion comprising:

(A) a polyester having about 0.45 to about 1.00 carboxyl groups per chain end, and comprising, as a polycarboxylic acid component, an aromatic dicarboxylic acid in a proportion of about 70% to about 100% by mole based on the entire acid component, a polyol having the formula I:



wherein each of R¹ and R² is a hydrogen or a methyl, and each of m and n is a numeral greater than or equal to 1, provided that 2 ≤ (m+n) ≤ 6, in a proportion of about 30% to about 95% by mole based on the entire polyol component, and at least one of a dicarboxylic acid containing a metal base of sulfonic acid in a proportion of about 0.01% to about 10% by mole based on the entire acid component, and a polyol containing a metal base of sulfonic acid in a proportion of about 0.01% to about 10% by mole based on the entire polyol component,

(B) a water-soluble organic compound having a boiling point of about 60° C. to about 250° C.,

(C) water, and

(D) a neutralizer; wherein

the amounts of the components (A), (B), (C), and (D) satisfy the following ratios (1) to (3):

(1) A/B/C being about 1% to about 70% by weight/about 0% to about 69% by weight/about 9% to about 99% by weight,

(2) B/(B+C) being about 0 to about 0.7 (weight ratio), and

(3) the equivalent ratio of D to A being about 0.1 to about 20.

5,510,418

GLYCOSAMINOGLYCAN-SYNTHETIC POLYMER CONJUGATES

Woonza M. Rhee, Palo Alto, and Richard A. Berg, Los Altos, both of Calif., assignors to Collagen Corporation, Palo Alto, Calif.

Continuation-in-part of Ser. No. 907,518, Jul. 2, 1992, Pat. No. 5,324,775, which is a continuation-in-part of Ser. No.

433,441, Nov. 14, 1989, Pat. No. 5,162,430, which is a continuation-in-part of Ser. No. 274,071, Nov. 21, 1988, abandoned. This application Nov. 3, 1993, Ser. No. 146,843

Int. Cl.⁶ C08G 63/91

U.S. Cl. 525-54.2

29 Claims

1. A biocompatible, biologically inert conjugate comprising a chemically derivatized glycosaminoglycan chemically conjugated to a synthetic hydrophilic polymer.

5,510,419

POLYMER-MODIFIED RUBBER COMPOSITION

Michael D. Burgoyne, Georgetown; James F. Fisher, and James R. Jury, both of Brampton, all of Canada, assignors to National Rubber Technology Inc., Toronto, Canada

Filed Sep. 16, 1994, Ser. No. 305,976

Int. Cl.⁶ C08F 12/08; 112/08

U.S. Cl. 525-98

16 Claims

1. A vulcanizable rubber composition formed by blending together:

(a) about 5% to about 60% vulcanized styrene-butadiene rubber crumb;

(b) about 5% to about 60% uncured rubber;

about 5% to about 30% of a styrenic thermoplastic resin;

(d) about 1% to about 10% homogenizing agent for facilitating physical mixing of aromatic with non-aromatic polymers; and

(e) about 1% to about 10% curing agent for said uncured rubber; to form a blend wherein said thermoplastic resin (c) is substantially homogeneously blended with said rubbers (a) and (b); all said percentages by weight based on the total weight of the composition.

5,510,420

MATARIX RESIN FOR HIGH-TEMPERATURE STABLE PHOTOIMAGEABLE COMPOSITIONS

Ralph R. Dammel, and Owen B. Evans, both of Coventry, R.I., assignors to Hoechst Celanese Corporation, Somerville, N.J.

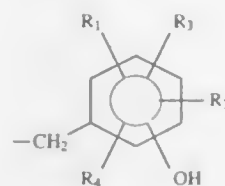
Filed Dec. 9, 1994, Ser. No. 353,000

Int. Cl.⁶ C08L 61/10

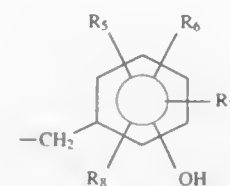
U.S. Cl. 525-134

8 Claims

1. A process for preparing a composition useful as a matrix resin in a photoimageable composition, consisting essentially of a parent polymer containing aromatic rings with reactive sites to which graft groups of the general formula are attached by a covalent bond:



wherein R₁ to R₄ are hydrogen, C₁ to C₄ alkyl, hydroxy or methylene aryl groups of the general formula:



where R₅ to R₈ are hydrogen, C₁ to C₄ alkyl or hydroxy wherein the number of aromatic rings in the graft group is 1 to 4, wherein the process comprises mixing the parent polymer and the graft groups in a nucleophilic addition reaction under conditions conducive to the formation of a covalent chemical bond between the graft groups and the parent polymer.

5,510,421

AZLACTONE-FUNCTIONAL MEMBRANES AND METHODS OF PREPARING AND USING SAME

Kathleen A. Dennison, Grant Township, Washington County; Monserrat R. La Londe, Stillwater, and James S. Stefely, Woodbury, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed May 26, 1994, Ser. No. 249,877

Int. Cl.⁶ C08L 39/04; 81/06; 71/02; 27/12; 33/06; 29/12

U.S. Cl. 525-204

8 Claims

1. An azlactone-functional membrane comprising azlactone-functional membrane surfaces formed by solvent phase inversion, wherein the membrane further comprises a blending polymer.

5,510,422

SYNTHESIS OF LATEX CAPSULES

Robert M. Blankenship, Harleysville; Ronald W. Novak, Chalfont; Clarence J. Neyhart, Harleysville; Martin Vogel, Jenkintown, and Alexander Kowalski, Plymouth Meeting, all of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Division of Ser. No. 233,089, Apr. 24, 1994, which is a continuation of Ser. No. 866,924, Apr. 10, 1992, abandoned. This application Jun. 6, 1995, Ser. No. 467,642

Int. Cl.⁶ C08F 265/02; B32B 27/30

U.S. Cl. 525-301

4 Claims

1. An improved process for making an aqueous dispersion of water-insoluble polymer particles comprising:

(a) sequentially emulsion polymerizing in an aqueous medium containing a free radical initiator, a core monomer system comprising one or more monoethylenically unsaturated monomers and at least about 5 mole percent of an ethylenically unsaturated carboxylic acid or anhydride monomer, whereby dispersed core particles are formed having an average diameter of from about 0.05 to 1 micron, and

(b) polymerizing in the presence of the dispersed core particles resulting from (a), a shell monomer system comprising: at least one monoethylenically unsaturated monomer having no ionizable group to form a shell polymer on the core particles, wherein any monoethylenically unsaturated carboxylic acid in the shell monomer mixture is present in an amount of no more than about 10 mole percent of the shell monomers, wherein the equivalents of acid in said shell polymer do not exceed one-third of the equivalents of acid in said core particle, the resultant core-shell particles having an average diameter before neutralization and swelling of from about 0.07 to 4.5 microns, the relative amounts of core-forming monomer(s) and shell-forming monomer(s) being such that the ratio of the weight of the core to the weight of the total polymer in the resulting dispersed particles is from about 1:2 to 1:100, and (c) neutralizing said particles formed with a base so as to swell said core and form particles containing a microvoid in the core, wherein the improvement comprises swelling said core

to a point where said shell explodes, forming particles containing a microvoid in the core and at least one channel connecting the microvoids to the exterior of the particle.

5,510,423

LINEAR BLOCK COPOLYMERS, PROCESS FOR THEIR PREPARATION AND ADHESIVE COMPOSITION CONTAINING THEM

Menno A. Van Dijk; Jacqueline M. Veurink; Birgitte M. L. C. Van de Vliet, and Jeroen Van Westrenen, all of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed Mar. 31, 1995, Ser. No. 414,842

Claims priority, application European Pat. Off., Apr. 11, 1994, 94200965

Int. Cl.⁶ G08F 297/04

U.S. Cl. 525-316

8 Claims

1. Block copolymers of the structure A-B-C-D derived from a vinyl aromatic monomer and a conjugated diene, having a total bound vinyl aromatic content in the range of from 10 to 40 wt. %, wherein the conjugated diene has been polymerized in a 1,2 or 3,4 addition in an amount of from 1 to 20% of the total bound conjugated diene, and wherein A represents a predominantly poly(vinyl aromatic) block, B represents a predominantly poly(conjugated diene), D represents a predominantly poly(vinyl aromatic) block, and C represents a tapered block of the conjugated diene occurring in the block B and the vinyl aromatic constituting the block D, wherein the tapering in block C shows an increasing content of vinyl aromatic monomer in the direction to block D, wherein the weight ratio of the conjugated diene occurring in block B and the conjugated diene occurring in block C is in the range of from 5:5 to 9:1, and wherein the total apparent molecular weight is from 130,000 to 300,000.

5,510,424

HOMOGENEOUS POLYMER ALLOYS BASED ON SULFONATED AROMATIC POLYETHER KETONES

Freddy Helmer-Metzmann, Mainz; Otto Hermann-Schönherr, Bensheim, and Uwe Kampschulte, Hattersheim, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Germany

Continuation of Ser. No. 173,999, Dec. 28, 1993, abandoned.

This application Feb. 2, 1995, Ser. No. 383,620

Claims priority, application Germany, Dec. 30, 1992, 42 44 526.4

Int. Cl.⁶ C08L 77/00

U.S. Cl. 525-420

13 Claims

1. A homogeneous polymer alloy comprising a sulfonated aromatic polyether ketone and at least one polyamide as the main constituents, wherein the polyamide is a completely aromatic polyamide.

5,510,425

POLYIMIDES, THERMOSETTING RESIN COMPOSITIONS CONTAINING THE POLYIMIDES, FORMED ARTICLES OF THE RESIN COMPOSITIONS, AND PRODUCTION PROCESS OF THE POLYIMIDES

Hidekazu Matsuura, Oyama; Yoshihide Iwasaki, Tsukuba; Kaori Ikeda, Beppu; Takayuki Suzuki; Masashi Tanaka, both of Shimodate, and Yasuo Miyadera, Tsukuba, all of Japan, assignors to Hitachi Chemical Company, Ltd., Japan

Division of Ser. No. 853, Jan. 5, 1993, abandoned. This application Jul. 1, 1994, Ser. No. 270,182

Claims priority, application Japan, Jan. 7, 1992, 4-810; Jan. 10, 1992, 4-3124; Jun. 15, 1992, 4-153943

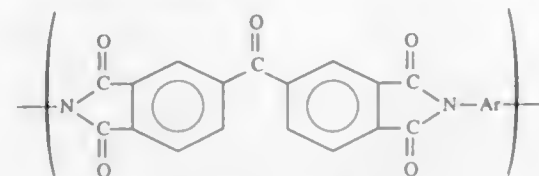
Int. Cl.⁶ C08F 283/04; C08L 63/00

U.S. Cl. 525-423

2 Claims

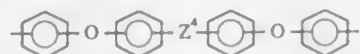
1. A thermosetting resin composition comprising:

(A) a polyimide comprising structural units represented by the following formula (I):



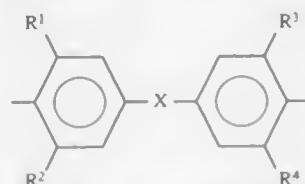
wherein Ar is a group consisting of:

i) 10-90 mole % of a structural sub-unit represented by the following formula (a):



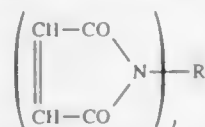
wherein Z⁴ represents —SO₂— or —C(CH₃)₂—

ii) 90-10 mole % of another structural sub-unit represented by the following formula (b):



wherein R¹, R², R³, and R⁴ independently represent a hydrogen atom or a C₁₋₄alkyl or alkoxy group, at least two of which are independently an alkyl or alkoxy group and X is —CH₂—, —C(CH₃)₂—, —O—, —SO₂—, —C(=O)—, or —CO—NH—;

(B) a polymaleimide represented by the following formula (II):



wherein I stands for an integer of 2 or greater and R is a group having 2 or more carbon atoms and a valence of I; and
(C) an epoxy resin.

5,510,426

COPOLYMERS OF POLYASPARTIC ACID

Louis L. Wood, Rockville, Md., assignor to SRCHEM, Inc., Elkridge, Md.
Division of Ser. No. 373,088, Jan. 17, 1995, Pat. No. 5,466,760, Ser. No. 261,425, Jun. 17, 1994, Pat. No. 5,391,642, Ser. No. 195,036, Feb. 14, 1994, Pat. No. 5,357,004, Ser. No. 44,900, Apr. 7, 1993, Pat. No. 5,286,810, and Ser. No. 926,242, Aug. 7, 1992, abandoned. This application May 17, 1995, Ser. No. 442,812

Int. Cl.⁶ C08G 69/48

U.S. Cl. 525—435

5 Claims

1. A copolymer of polysuccinimide wherein the polymer of polysuccinimide is crosslinked with a polyamine.

5,510,427

COPOLYMERS OF POLYASPARTIC ACID

Louis L. Wood, Rockville, Md., assignor to SRCHEM, Inc., Elkridge, Md.
Division of Ser. No. 373,088, Jan. 17, 1995, Pat. No. 5,466,760, Ser. No. 261,425, Jun. 17, 1994, Pat. No. 5,391,642, Ser. No. 195,036, Feb. 14, 1994, Pat. No. 5,357,004, Ser. No. 44,900, Apr. 7, 1993, Pat. No. 5,286,810, and Ser. No. 926,242, Aug. 7, 1992, abandoned. This application May 17, 1995, Ser. No. 442,822

Int. Cl.⁶ C08G 69/48

U.S. Cl. 525—435

3 Claims

1. A process for the preparation of copolymers of polysuccinimide comprising reacting aspartic acid and a polyamine at temperatures greater than 120° C.

5,510,428

COMPOSITIONS, EPOXIDIZED COMPOSITIONS, A HEAT CURABLE RESIN COMPOSITION, AN EPOXY RESIN COMPOSITION, RADICALLY POLYMERIZED COMPOSITIONS, A CURABLE RESIN COMPOSITION AND A POLYMER HAVING EPOXY GROUPS

Yoshiyuki Harano; Sozo Namai; Katsuyuki Maeda, and Takaaki Mural, all of Otake, Japan, assignors to Daicel Chemical Industries, Ltd., Tokyo, Japan

Continuation of Ser. No. 90,769, Jul. 13, 1993, abandoned, which is a division of Ser. No. 968,380, Oct. 29, 1992, abandoned. This application Nov. 21, 1994, Ser. No. 342,633

Claims priority, application Japan, Oct. 31, 1991, 3-286444; Nov. 15, 1991, 3-300369; Apr. 6, 1992, 4-83739; May 11, 1992, 4-117296; Jun. 19, 1992, 4-161032; Jun. 19, 1992, 4-161033; Jul. 14, 1992, 4-187086; Jul. 21, 1992, 4-193870; Sep. 3, 1992, 4-235676; Sep. 4, 1992, 4-237231; Sep. 11, 1992, 4-243466; Sep. 22, 1992, 4-251549; Oct. 2, 1992, 4-264592

Int. Cl.⁶ C08F 20/00; C07D 301/14

U.S. Cl. 525—438

18 Claims

1. An epoxy composition prepared by epoxidizing a composition consisting essentially of compounds having vinyl groups as side chains, said compounds being obtained by reacting (a) with (d); wherein

(a) is at least one compound having at least one vinyl group and one epoxy group in the molecule and

(d) is an unsaturated monocarboxylic ester having a hydroxyl group or a lactone modified unsaturated monocarboxylic ester having a hydroxyl group wherein said epoxidation is carried out by reaction of the vinyl groups with peracid or hydroperoxide.

5,510,429

POLYCARBONATE-G-POLYACRYLATE GRAFT COPOLYMERIZATION

Sunggyu Lee, Akron, and Ronald A. Sobocinski, Seven Hills, both of Ohio, assignors to The University of Akron, Akron, Ohio

Filed Jul. 25, 1994, Ser. No. 279,532

Int. Cl.⁶ C08F 283/02

U.S. Cl. 525—468

8 Claims

1. A method of grafting at least one alkyl (alkyl)acrylate monomer onto a polycarbonate comprising contacting a polycarbonate which is in the solid phase with an alkyl (alkyl)acrylate monomer which is in the gaseous phase in the presence of a suitable free radical initiator at a temperature sufficient to activate the free radical initiator for a time sufficient to achieve a desired degree of grafting onto the solid polycarbonate.

5,510,430

METHOD OF FUNCTIONALIZING ORGANOSILOXANE CONDENSATION PRODUCTS

Slawomir Rubinsztajn, Schenectady, and Jeffrey H. Wengrovius, Scotia, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

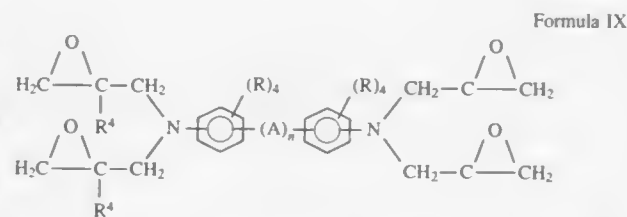
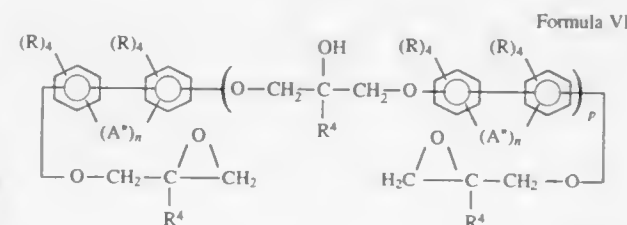
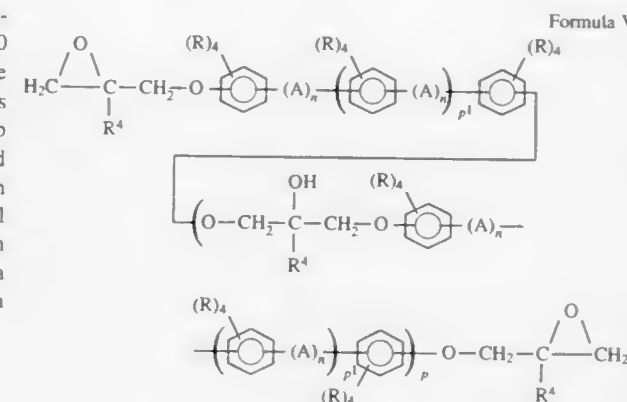
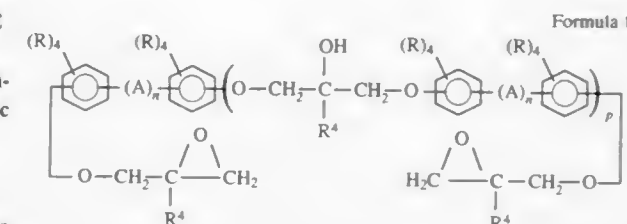
Filed Mar. 31, 1995, Ser. No. 414,166

Int. Cl.⁶ C08F 283/00

U.S. Cl. 525—478

9 Claims

1. A method for making a substantially silanol-free functionalized MQ resin which comprises effecting reaction between (A) 10 to 100 parts by weight of a functionalized organosilicon source material selected from the group consisting of organohalosilanes and organosiloxanes and having radicals selected from the group consisting of dialkylsilyl, alkenyldialkylsilyl, aryldialkylsilyl and haloalkyldialkylsilyl, and (B) 100 parts by weight of an MQ resin having about 30-70 mole percent of M units based on total silicon-containing units, in the presence of about 10-10,000 ppm of a catalytic material comprising a linear phosphonitrilic halide, a linear phosphazene having 0-4 NPCl₂ units or an acid having a negative pK_a.



5,510,431

CURE CONTROLLED CATALYZED MIXTURES OF EPOXY RESINS AND CURING AGENTS CONTAINING MESOGENIC MOIETIES

Jimmy D. Earls; Robert E. Hefner, Jr.; James L. Bertram, all of Lake Jackson, and Louis L. Walker, Clute, all of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 196,355, Feb. 15, 1994, Pat. No.

5,458,929. This application Jun. 1, 1995, Ser. No. 457,070

Int. Cl.⁶ C08G 59/06; 59/10; C08L 63/00; 63/02

U.S. Cl. 525—481

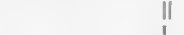
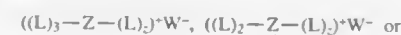
6 Claims

1. A curable composition comprising:

(A) at least one epoxy resin having an average of more than one vicinal epoxide group per molecule;

(B) at least one curing agent for said epoxy resin in an amount which provides from about 0.8 to about 1.5 equivalents of curing agent per epoxide group; and

(C) about 0.00005 to about 0.1 mole per epoxide equivalent of a cure controlling catalyst represented by any of the following formulas:

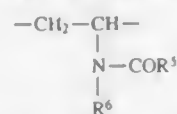


wherein each L is independently a hydrocarbyl group or inertly substituted hydrocarbyl group having from 1 to about 18 carbon atoms, which group also can contain one or more oxygen, sulfur or nitrogen atoms or two of such L groups can combine to form a heterocyclic ring containing one or more atoms other than carbon atoms; each L¹ is independently hydrogen or L; Z is nitrogen, phosphorus, sulfur or arsenic; W is a weak nucleophilic anion selected from the group consisting of BF₄⁻, BCl₄⁻, NO₃⁻, F⁻, Cl⁻, CH₃CO₂⁻, HOCH₂CO₂⁻, SbF₆⁻, SbCl₆⁻, AsF₆⁻, AsCl₄⁻, FP(O)₂(OH)⁻, (F₂)PO(O)₂⁻, F₃B(OH)⁻, F₂B(OH)₂⁻ and ClP(O)₂(OH)⁻; and z has a value of zero or 1 depending on the valence of Z;

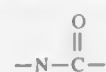
wherein at least one epoxy resin of component (A) is an epoxy resin which contains at least one mesogenic moiety represented by any one or more of the following formulas:

wherein: each R is independently hydrogen or a monovalent hydrocarbyl or hydrocarboxy group having from one to about carbon atoms, a halogen atom, a nitro group, a nitrile group or a —CO—R² group; R² is hydrogen or a monovalent hydrocarbyl group having from one to about 10; n has a value of zero or one; each A is independently a direct single bond, a divalent hydrocarbyl group having from one to about carbon atoms, —O—, —CO—, —SO—, —SO₂—, —S—, —S—S—, —CR¹=CR¹—, —C≡C—, —N=N—, —CR¹=N—, —N=CR¹—, —O—CO—, —CO—O—, —S—CO—, —CO—S—, —NR¹—CO—, —CO—NR¹—, —CR¹=N—N=CR¹—, —CO—CR¹=CR¹—, —CR¹=CR¹—CO—, —CR¹=N—O—OC—, —CO—O—N=CR¹—, —CO—NR¹—NR¹—OC—, —CR¹=CR¹—O—OC—, —CO—O—CR¹=CR¹—, —O—CO—CR¹=CR¹—, —CR¹=CR¹—CO—O—, —(CHR¹)_n—O—CO—CR¹=CR¹—, —CR¹=CR¹—CO—O—(CHR¹)_n—, —(CHR¹)_n—CO—O—CR¹=CR¹—, —CH¹=CH¹—O—CO—(CHR¹)_n—, —CH₂—CH₂CO—O—, —O—OC—CH₂—CH₂—, —C≡C—C≡C—, —CR¹=CR¹—CR¹=CR¹—, —CR¹=CR¹—C≡C—, —C≡C—CR¹=CR¹—, —CR¹=CR¹—CH₂—O—OC—, —CO—O—CH₂—CR¹=CR¹—, —O—CO—C≡C—CO—O—, —O—CO—CR¹=CR¹—CO—O—, —O—CO—CH₂—CH₂—CO—O—, —S—CO—CR¹=CR¹—CO—S—, —CO—CH₂—NH—CO—, —CO—NH—CH₂—CO—, —NH—C(CH₃)=CH—CO—, —CO—CH=C(CH₃)—NH—, —CR¹=C(CH₃)—, —C(CH₃)=CR¹—, —CR¹=C(CH₃)—, —C(CH₃)=CR¹—, —C(CH₃)=CR¹—, —N=C(CH₃)—, —C(CH₃)=N—, —CR¹=C(CH₃)—CO—O—, —O—CO—C(CH₃)=CR¹—,

in which X is a halogen, R³ and R⁴, independently of one another, are C₁-C₆-alkyl, formula III must be present in an amount up to 60% by weight of groups of the formula



in which R⁵ and R⁶, independently of one another, are hydrogen, methyl or ethyl or R⁵ and R⁶ together are a propylene group which with inclusion of the radical



forms a pyrrolidone radical, and 0-30% by weight of groups of the formula



in which R⁷ is hydrogen or methyl and R⁸ is CONH₂, CON(CH₃)₂, cyano, SO₃H, SO₃Me, C₆H₄SO₃H, C₆H₄SO₃Me, CH₂SO₃H, CH₂SO₃Me, COOH, COOMe, or carboxy-C₁-C₁₅-alkyl, and Me is an ammonium cation or an alkali metal cation, and the order of components I to IV can be in any sequence.

5,510,437 ORGANOPLATINUM POLYMER AND METHOD FOR PRODUCING THE SAME

Shigeru Shimada, and Masato Tanaka, both of Tsukuba, Japan, assignors to Director-General of Agency of Industrial Science and Technology, Tokyo, Japan

Filed Mar. 2, 1995, Ser. No. 398,170

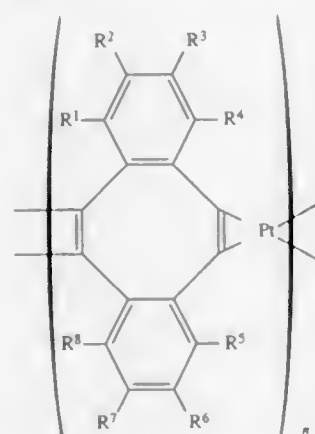
Claims priority, application Japan, Mar. 11, 1994, 6-068018

Int. Cl.⁶ C08F 238/00; 230/04

U.S. Cl. 526—241

10 Claims

9. An organoplatinum polymer represented by the following formula (III):



wherein R¹, R², R³, R⁴, R⁵, R⁶, R⁷, and R⁸ each represent a monovalent group, and n is 2 or more.

5,510,438 LOW BANDGAP POLYMERS FROM FUSED DITHIOPHENE DIESTER

John P. Ferraris, Dallas; Tim L. Lambert, Austin, and Santiago Rodriguez, Richardson, all of Tex., assignors to Board of Regents, The University of Texas System, Austin, Tex.

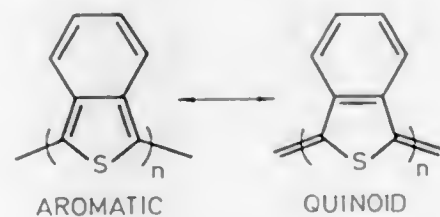
PCT No. PCT/US92/07604, § 371 Date Mar. 11, 1994, § 102(e) Date Mar. 11, 1994, PCT Pub. No. WO93/05077, PCT Pub. Date Mar. 18, 1993

Continuation-in-part of Ser. No. 758,859, Sep. 12, 1991, Pat. No. 5,275,058. This PCT application Sep. 9, 1992, Ser. No. 211,013

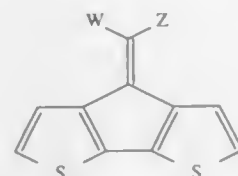
Int. Cl.⁶ C08G 75/00

U.S. Cl. 526—256

2 Claims



1. A polymer having a bandgap of less than about 1 eV and the structure:



where W and Z are CO₂R; R is C₂H₅, C₇H₁₅, or C₁₆H₃₃; and n is 5 to 500.

5,510,439 VINYL ALKOXYSILANE COPOLYMER POLYELECTROLYTES FOR PITCH DEPOSIT CONTROL

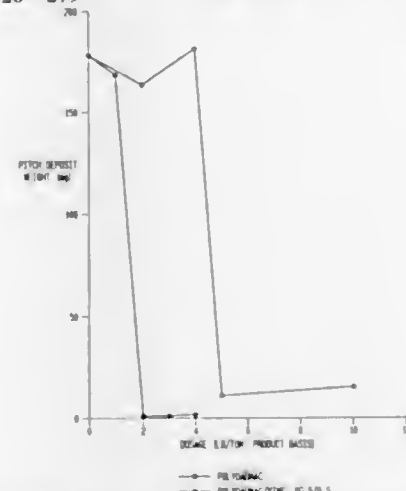
Chandrashekar S. Shetty, Lisle, and Manian Ramesh, Naperville, both of Ill., assignors to Nalco Chemical Company, Naperville, Ill.

Filed Nov. 4, 1993, Ser. No. 147,877

Int. Cl.⁶ C08F 30/08

U.S. Cl. 526—279

5 Claims



1. A surface active water-soluble polyelectrolyte polymer made by free radical polymerization of 0.01 to 10 mole percent of a vinyl alkoxy silane monomer, and from 90 to 99.99 mole percent of a monomer selected from the group consisting of dimethylamino-

hyl(propyl)acrylate methyl chloride quaternary, diallyldimethyl ammonium chloride, dimethylaminoethylacrylate benzyl chloride quaternary, 3-methylacrylamide propyl trimethyl ammonium chloride, and combinations thereof.

5,510,440 STYRENE-BASED DICARBOXYLIC ACID-FUNCTIONAL MONOMERS AND POLYMERS PREPARED FROM SAME

Rodney M. Harris, Chicago, Ill., assignor to The Sherwin-Williams Company, Cleveland, Ohio

Division of Ser. No. 176,606, Jan. 3, 1994, Pat. No. 5,410,078.

This application Apr. 18, 1995, Ser. No. 424,685

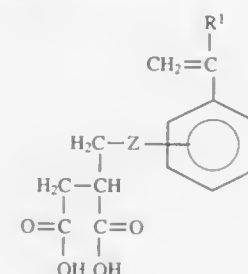
Int. Cl.⁶ C08F 222/02; 220/04

U.S. Cl. 526—318.2

8 Claims

1. An acid-functional polymer which comprises the free radical polymerization reaction product of:

(i) 1% to 100% by weight of an unsaturated acid-functional monomer having the structure:



wherein R¹ is hydrogen or methyl and Z is nothing or is a divalent alkyl radical having 1 to about 20 carbon atoms; and (ii) 0% to 99% by weight of at least one other unsaturated monomer copolymerizable with the unsaturated acid-functional monomer.

5,510,441 PROCESS FOR PRODUCING OCTAMETHYLTRISILOXANE

John S. Razzano, Cohoes, N.Y., assignor to General Electric Company, Waterford, N.Y.

Continuation-in-part of Ser. No. 92,450, Jul. 15, 1993, Pat. No. 5,420,221. This application Aug. 25, 1994, Ser. No. 294,808

The portion of the term of this patent subsequent to May 30, 2012, has been disclaimed.

Int. Cl.⁶ C08G 77/08

U.S. Cl. 528—12

9 Claims

1. A process for producing low molecular weight linear siloxanes of the formula:



wherein M is trimethylsiloxane, D is dimethylsiloxane, x is an integer greater than 0, said process comprising the steps of

- (A) mixing siloxanes comprising hexamethyldisiloxane units with siloxanes comprising diorganosiloxane units;
- (B) adding a catalytic amount of a rearrangement catalyst into the mixture of said step (A) causing siloxane rearrangement;
- (C) deactivating the rearrangement catalyst; and
- (D) collecting the low molecular weight linear siloxanes.

5,510,442 ORGANOSILICON-CONTAINING MATERIALS USEFUL FOR BIOMEDICAL DEVICES

Ronald E. Bambury, Fairport, and Jay F. Kunzler, Canandaigua, both of N.Y., assignors to Bausch & Lomb Incorporated, Rochester, N.Y.

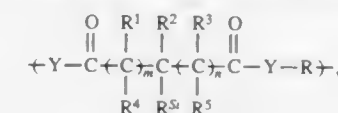
Division of Ser. No. 45,459, Apr. 8, 1993. This application May 11, 1995, Ser. No. 439,215

Int. Cl.⁶ C08G 77/04

U.S. Cl. 528—28

15 Claims

1. A macromonomer comprising repeating units of the formula:



said macromonomer endcapped with at least one terminal ethylenically unsaturated radical, wherein:

each Y is —O— or —NR³⁰— wherein R³⁰ is H or C₁-C₆ alkyl; each R¹, R², R³, R⁴ and R⁵ is independently selected from the group consisting of H, C₁-C₆ alkyl, C₁-C₆ haloalkyl, C₂-C₆ alkyl wherein at least one methylene group is replaced with —O—, C₂-C₆ haloalkyl wherein at least one methylene group is replaced with —O—, and —R⁵¹; m and n are independently 0 or an integer of 1 to 6; each R⁵¹ is independently an organosilicon radical; and R is the divalent residue of an α,ω-dihydroxyl compound or an α,ω-diamino compound.

5,510,443 PROCESS FOR PREPARING A COATING WITH IMPROVED RESISTANCE TO YELLOWING AND THE RESULTING COATING

Myron W. Shaffer, Coraopolis; Terry A. Potter, Beaver, both of Pa.; Lanny D. Venham, Paden City, and Peter D. Schmitt, Glen Dale, both of W. Va., assignors to Bayer Corporation, Pittsburgh, Pa.

Filed Mar. 15, 1993, Ser. No. 31,423

Int. Cl.⁶ C08G 18/32

U.S. Cl. 528—45

32 Claims

1. A process for preparing a coated substrate having a high glass and improved resistance to yellowing which comprises coating a substrate with a one-component coating composition comprising

- a) a blocked polyisocyanate which is the reaction product of a polyisocyanate with an oxime or lactam blocking agent for isocyanate groups and
 - b) a compound containing at least two isocyanate-reactive groups,
- provided that component a) and/or component b) contains the group, —CO—(R)—N(R)—CO—, wherein R represents hydrogen or an optionally substituted hydrocarbon radical, in an amount of 0.01 to 5% by weight, based on the solids content of components a) and b),

by applying said one-component coating composition wet-on-wet to a coating composition containing acid groups and/or melamine resins which has previously been applied to the substrate or by adding a melamine resin to the one-component coating composition prior to applying it to the substrate, which may optionally have been precoated.

5,510,444

POWDER COATING COMPOSITIONS AND THEIR USE FOR COATING HEAT-RESISTANT SUBSTRATES

Reinhard Halpaap, Odenthal; Hans-Ulrich Meler-Westhues, Leverkusen; Christian Wamprecht, Neuss; Manfred Bock, Leverkusen; Wolfgang Schultz, Krefeld, and Lothar Kahl, Bergisch Gladbach, all of, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Feb. 16, 1995, Ser. No. 390,393

Claims priority, application Germany, Feb. 25, 1994, 44 06 157.9

Int. Cl.⁶ C08G 18/80

U.S. Cl. 528—45

20 Claims

1. A powder coating composition for the production of non-yellowing, flexible coatings which comprises

A) a resin mixture which is solid below 30° C. and liquid above 120° C., containing

A1) a polyisocyanate component which has an NCO content of 5.0 to 23% by weight, an average NCO functionality of at least 2.1 and a content of monomeric diisocyanates having a molecular weight of less than 300 of less than 0.5% by weight and which contains one or more lacquer polyisocyanates having free isocyanate groups bound to primary and/or secondary carbon atoms and

A2) a polyol component containing one or more polyhydroxyl compounds having an OH number of 30 to 200 and comprising a member selected from the group consisting of polyhydroxy polyurethanes, polyhydroxy polyacrylates and polyhydroxy polyesters,

wherein at least 50% of the hydroxyl groups present in component A2) are bound to secondary or tertiary carbon atoms and wherein components A1) and A2) are present in amounts sufficient to provide an equivalent ratio of isocyanate groups to hydroxyl groups of 0.6:1 to 1.2:1, and optionally

B) catalysts for the reaction between hydroxyl groups and isocyanate groups.

5,510,445

PROCESS FOR CASTABLE POLYUREA ELASTOMERS

Karl W. Haider, New Martinsville; William E. Slack, Moundsville; Rick L. Adkins, New Martinsville; James W. Rosthauser, Glen Dale, all of W. Va., and Peter H. Markusch, McMurray, Pa., assignors to Bayer Corporation, Pittsburgh, Pa.

Filed Nov. 22, 1994, Ser. No. 343,402

Int. Cl.⁶ C08G 18/32; 18/50

U.S. Cl. 528—60

9 Claims

1. A one-step process for preparing polyurea cast elastomers comprising reaction in an open mold at an isocyanate index of from 90 to 200 of

(a) one or more aliphatic and/or cycloaliphatic diisocyanates;

(b) 25 to 70 equivalent percent, relative to the total of components (b) and (c), of one or more liquid amine-terminated polymers containing at least two aromatically bound isocyanate-reactive primary amino groups and/or aliphatically bound isocyanate-reactive secondary amino groups as the only isocyanate reactive groups and having a molecular weight of from 400 to 6000; and

(c) 75 to 30 equivalent percent, relative to the total of components (b) and (c), of one or more aromatic diamine chain extenders having a molecular weight of from 108 to 399, optionally in admixture with one or more crosslinkers.

5,510,446

METHOD OF PREPARING NAPHTHOL-MODIFIED PHENOLIC RESIN AND EPOXY RESIN MOLDING MATERIAL FOR SEALING ELECTRONIC PARTS

Haruaki Sue; Shinsuke Hagiwara, and Hiroyuki Saitoh, all of Shimodate, Japan, assignors to Hitachi Chemical Company, Ltd., Tokyo, Japan

Division of Ser. No. 193,468, Feb. 8, 1994, Pat. No. 5,459,223. This application Jun. 2, 1995, Ser. No. 458,702

Claims priority, application Japan, Feb. 12, 1993, 5-023142; Mar. 23, 1993, 5-062381

Int. Cl.⁶ C08G 8/04; 14/04

U.S. Cl. 528—153

6 Claims

1. A method of preparing a naphthol-modified phenolic resin comprising adding a naphthol, a phenol and an acid catalyst selected from the group consisting of a strong acid, a super acid and a mixture thereof to a phenolic resin to obtain a mixture, heating the mixture under ambient pressure at 120° to 180° C. for 1 to 12 hours to obtain a reaction mixture, and subjecting the reaction mixture to vacuum concentration and/or steam distillation to obtain the naphthol-modified phenolic resin.

5,510,447

POLYMERIC VEHICLE FOR COATINGS

Frank N. Jones, Fargo, N. Dak.; Der-Shyang Chen, Winnipeg, Canada; Adel F. Dimian, and Daozhang Wang, both of Fargo, N. Dak., assignors to North Dakota State University, Fargo, N. Dak.

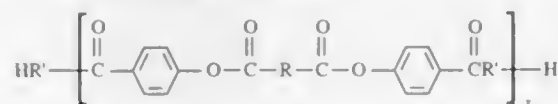
Division of Ser. No. 36,820, Mar. 25, 1993, Pat. No. 5,378,546, which is a continuation of Ser. No. 695,421, May 3, 1991, Pat. No. 5,244,699, which is a division of Ser. No. 170,907, Mar. 21, 1988, Pat. No. 5,043,192, which is a continuation-in-part of Ser. No. 168,231, Mar. 15, 1988, abandoned, which is a continuation-in-part of Ser. No. 86,504, Aug. 18, 1987, abandoned, which is a continuation-in-part of Ser. No. 31,395, Mar. 27, 1987, abandoned, and Ser. No. 31,397, Mar. 27, 1987, abandoned. This application Oct. 19, 1994, Ser. No. 325,789

Int. Cl.⁶ C08G 63/181

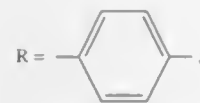
U.S. Cl. 528—195

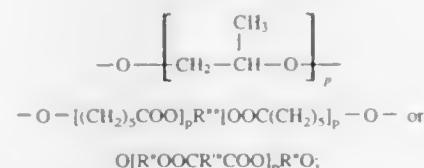
6 Claims

1. A polyol which has the formula



wherein
x=1 to 10
R=



$$\text{R}'=\text{O}(\text{CH}_2)_n\text{O}, \text{O}[(\text{CH}_2)_n\text{O}]_m,$$


R* and R**=an aliphatic or cycloaliphatic radical having 12 carbon atoms or less;

R**=an aromatic radical having 10 carbon atoms or less, a cycloaliphatic radical having 12 carbon atoms or less, or an aliphatic radical having 36 carbon atoms or less;

n=5 to 16;

m=2 to 200; and

p=1 to 20.

5,510,448
COPOLYESTERCARBONATE COMPOSITION DERIVED FROM DIHYDRICPHENOL, CARBONATE PRECURSOR AND α,ω -DICARBOXYLIC ACID

Luca P. Fontane, Evansville; Kenneth F. Miller, Mt. Vernon, Ind.; Christianus A. A. Claesen, Bergen op Zoom, Netherlands; Peter W. van Es, Hoogerheide, Netherlands; Theodor O. N. de Vroomen, Dordrecht, Netherlands; Clayton V. Quinn, Burnt Hills, N.Y., and Richard W. Campbell, Evansville, Ind., assignors to General Electric Company, Pittsfield, Mass.

Division of Ser. No. 219,128, Mar. 29, 1994, which is a division of Ser. No. 44,852, Apr. 8, 1993, Pat. No. 5,321,114, which is a division of Ser. No. 627,517, Dec. 14, 1990, abandoned, which is a continuation-in-part of Ser. No. 476,068, Jan. 30, 1990, abandoned, which is a continuation-in-part of Ser. No. 455,118, Dec. 22, 1989, abandoned. This application Jan. 17, 1995, Ser. No. 373,155

Int. Cl.⁶ C08G 64/00

U.S. Cl. 528—196

14 Claims

1. A composition comprising a copolyestercarbonate derived from a dihydric phenol, a carbonate precursor, and an aliphatic alpha omega dicarboxylic acid or ester precursor wherein the dicarboxylic acid or ester precursor has from 10 to about 20 carbon atoms, inclusive, is present in the copolyestercarbonate in quantities of from about 2 to 30 mole percent of the dihydric phenol and is converted to a salt before reaction with the dihydric phenol and the carbonate precursor and wherein the carbonate precursor is added over a period of time and, from about 0 to about 95% of the period of time, the pH of the reaction is from about 8 to 8.5 and, for the remainder of the period, the pH of the reaction is from about 10 to 12.

5,510,449

CATALYST SYSTEM FOR POLYCARBONATE MANUFACTURE

Larry I. Flowers; Paul D. Sybert, both of Evansville, and David L. Ramsey, Mt. Vernon, all of Ind., assignors to General Electric Company, Pittsfield, Mass.

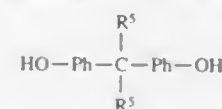
Filed May 10, 1994, Ser. No. 241,306

Int. Cl.⁶ C08G 64/00

U.S. Cl. 528—199

14 Claims

1. A method for making polycarbonate, comprising:
(A) affecting reaction under interfacial reaction conditions at a pH in the range of 9 to 12.5 between a phenolic chain-stopper and a bisphenol of the formula,



where R⁵ is selected from the same or different C₍₁₋₄₎ alkyl group, and a substantially stoichiometric amount of phosgene in the presence of a phase transfer catalyst comprising a catalyst selected from the group consisting of:

(R)_nN+XR¹(R)₃Q+X and(R²)_a(R³)_{3-a}N-(CH₂)_nN-(R³)_{3-a}(R²)_a2X

where R is selected from the same or different C₍₄₋₁₀₎ alkyl group, R¹ is a C₍₁₋₃₎ alkyl group, R² is selected from the same or different C₍₁₋₂₎alkyl group, R³ is selected from the same or different C₍₃₋₁₀₎ alkyl group, Q is a nitrogen or phosphorus atom, X is a halogen atom or an —OR⁴ group, R⁴ is a member selected from H, C₍₁₋₁₈₎ alkyl or C₍₆₋₁₈₎ aryl, and "a" is a whole number equal to 0 or 1, and additionally a methyl tertiary amine present in an amount ranging from about 0.001 to about 0.200 mole % based on the quantity of bisphenol, wherein the phase transfer catalyst is utilized in an

amount which is effective for providing a polycarbonate having a molecular weight determined by gel permeation chromatography in the range of about 10⁵ to about 180⁵, and,
(B) substantially eliminating chloroformate end groups in the resulting mixture of (A) prior to polycarbonate recovery.

5,510,450

METHOD OF PRODUCING COPOLYMERIZED POLYCARBONATES

Takeshi Sakashita; Tomoaki Shimoda, both of Iwakuni, and Takashi Nagai, Otake, all of, Japan, assignors to General Electric Company, Pittsfield, Mass.

Division of Ser. No. 116,304, Sep. 3, 1993, Pat. No. 5,384,388, which is a continuation of Ser. No. 863,922, Apr. 6, 1992, abandoned. This application Nov. 4, 1994, Ser. No. 334,702
Claims priority, application Japan, Feb. 21, 1992, 4-35306; Apr. 9, 1992, 3-76478

Int. Cl.⁶ C08G 64/00

U.S. Cl. 528—199

8 Claims

1. An improved method for copolymerizing polycarbonate by melt polycondensing two or more aromatic dihydroxy compounds with from 1.0 to 1.3 moles of a carbonate diester per mole of aromatic-dihydroxy compound in the presence of a catalyst selected from the group consisting of alkali metal compounds and alkaline-earth metal compounds wherein the improvement comprises melt-polycondensing aromatic dihydroxy compounds wherein resorcin, substituted resorcin or mixtures thereof are 2–90 mole % of the aromatic dihydroxy compounds at atmospheric pressure and at a temperature of from 80° C. to 250° C. for from 0 to 5 hours and then at a reduced pressure of less than 5 mm Hg and a temperature of from 240° C. to 320° C. and adding thereto an acidic compound whereby the copolymerized polycarbonate contains the residual catalyst but has a glass transition temperature in the range of from 100° C. to 150° C., a thermal decomposition temperature in the range of from 350° C. to 380° C. and a melt flow rate at a temperature of 280° C. and under a load of 1.2 kg of from 5 to 30 g/10 min.

5,510,451

COPOLYESTER AMIDES

Reinoud J. Gaymans, Enschede, Netherlands, and Jeannette L. de Haan, Unterföhring, Germany, assignors to General Electric Company, Pittsfield, Mass.

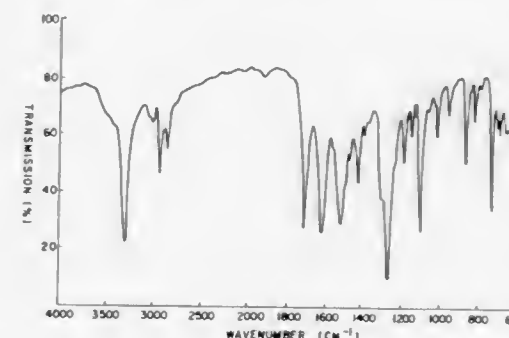
Continuation of Ser. No. 796,205, Nov. 22, 1991, abandoned.

This application Aug. 11, 1994, Ser. No. 289,329

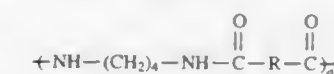
Int. Cl.⁶ C08G 63/44

U.S. Cl. 528—288

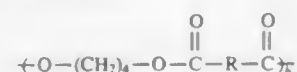
8 Claims



1. A copolyester amide comprising amide units of the formula



and ester units of the formula



where R is a paraphenylene radical and said amide units are present in said copolyester amide at a level up to about 35 mole percent based on the total moles of amide unit and ester units in said copolyester amide wherein said mole percent amide is calculated by $a/(a+b) \times 100$; wherein a and b represent the number of repeat units of said amide and said ester, respectively.

5,510,452

POURABLE LIQUID POLYESTERAMIDE RHEOLOGICAL ADDITIVES AND THE USE THEREOF
Mahalingam Santhanam, East Windsor, N.J., assignor to Rheox, Inc., Hightstown, N.J.

Filed Jul. 11, 1994, Ser. No. 272,458

Int. Cl.⁶ C08G 63/668; 63/672; 69/44

U.S. Cl. 528—291

12 Claims

I. A liquid rheological additive for liquid organic systems, free of diluent and pourable at ambient temperature, which imparts thixotropy to such systems, comprising the reaction product of:

- the carboxyl terminated reaction product of one or more liquid polyalkoxylated nitrogen containing compounds containing more than one hydroxyl group and which also contain a pendant aliphatic radical of 6 to 40 carbon atoms selected from the group consisting of tertiary amines and amides of secondary amines and one or more polycarboxylic acids; and
- a chain ending agent different than each of the compounds of a) which contains one or more hydroxyl groups and one or more primary or secondary amino groups wherein the reaction with the chain ending agent forms the thermodynamically favored amide, and wherein said agent is selected from the group consisting of aliphatic, aromatic and cycloaliphatic amino-alcohols.

5,510,453

POLYMERIZABLE, HIGHLY CROSSLINKING LACQUER BINDERS AND THEIR USE FOR THE PRODUCTION OF LACQUERS

Burkhard Kressdorf, Walsrode; Erhard Lüthmann, Bomlitz; Wolfgang Dannhorn, Fallingb., and Lutz Hoppe, Walsrode, all of, Germany, assignors to Wolff Walsrode Aktiengesellschaft, Walsrode, Germany

Continuation of Ser. No. 75,206, Jun. 10, 1993, abandoned.

This application Apr. 7, 1995, Ser. No. 418,927

Claims priority, application Germany, Jun. 10, 1992, 42 19 768.6

Int. Cl.⁶ C08G 63/52

U.S. Cl. 528—306

9 Claims

I. Self-emulsifiable, polymerizable, branched polyester comprising co-condensed units of (A) an α,β -unsaturated polycarboxylic acid or anhydride thereof, (B) a hydroxyl compound containing at least one allyl group, (C) polyethylene glycol, polypropylene glycol or both and optionally (D) more than one monohydric alcohol, wherein the polyester contains (E) cocondensed units of at least one triol or tetra to hexahydric polyol as branch points.

5,510,454

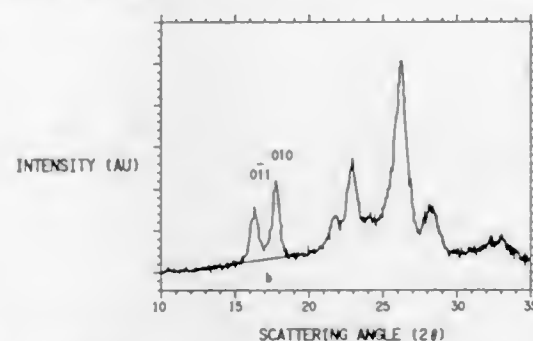
PRODUCTION OF POLY(ETHYLENE TEREPHTHALATE)
Jan M. Stouffer, Hockessin; Elwood N. Blanchard, Wilmington, both of Del., and Kenneth W. Leffew, Kennett Square, Pa., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jan. 20, 1995, Ser. No. 376,600

Int. Cl.⁶ C08G 63/16

U.S. Cl. 528—308.1

17 Claims



I. A composition, comprising, modified or unmodified poly(ethylene terephthalate) having a degree of polymerization of about 5 to about 35, an average apparent crystallite size of 9 nm or more, and a melting point of 270° C. or less.

5,510,455

THERMOTROPIC POLYMERS CONTAINING 2,5-DICARBOXYTHIOPHENE UNITS

Wilfried Hatke, Hofheim, Germany, assignor to Hoechst Celanese Corp., Somerville, N.J.

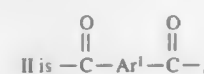
Filed Dec. 22, 1994, Ser. No. 361,614

Int. Cl.⁶ C08G 75/00; 73/10

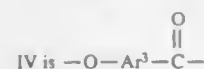
U.S. Cl. 528—310

25 Claims

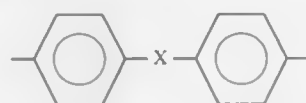
I. A thermotropic aromatic polymer comprising monomer units I, II, III, and IV, where



and



wherein Ar¹, Ar² and Ar³ are each selected from the group consisting of 1,3-phenylene, 1,4-phenylene, 2,6-naphthylene, 2,7-naphthylene, 4,4'-biphenylene, bis-aryl moieties having the structure



and mixtures thereof, where each X is independently selected from the group consisting of S, O, CO, SO, SO₂, C(CH₃)₂ and C(CF₃)₂; wherein said bis-aryl moieties comprise less than about 50% of the total number of moles of said Ar¹, Ar² and Ar³; wherein one or more of the hydrogen atoms on said aromatic moieties Ar¹, Ar², and Ar³ may optionally be replaced with substituents independently selected from the group consisting of Br, F, Cl, I, phenyl, tolyl, and alkyl and fluoroalkyl groups

having the formula C_nH_{2n}F_n, where n is an integer from 1 to 4, x and y are integers from 0 to 2n+1, and the sum of x and y is 2n+1;

wherein said polymer comprises on a mole basis about 2% to about 45% of monomer unit I, about 0% to about 40% of monomer unit II, about 5% to about 47% of monomer unit III, and about 6% to about 90% of monomer unit IV; and

wherein the combined amount of monomer units I and II is about equal to the amount of monomer unit III.

5,510,457

METHOD FOR PREPARING PROCESSABLE POLYISOTHIANAPHTHENE

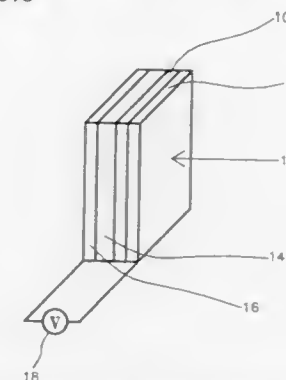
Show-An Chen, Hsinchu, and Chin-Chang Lee, Tao, both of, Taiwan, assignors to National Science Council, Taipei, Taiwan

Filed Apr. 24, 1995, Ser. No. 427,249

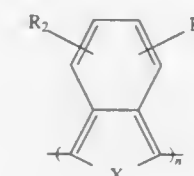
Int. Cl.⁶ C08G 75/00

U.S. Cl. 528—378

11 Claims

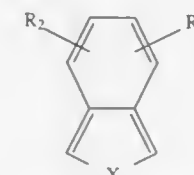


I. A method for preparing a processable polyisothianaphthene polymer as follows:

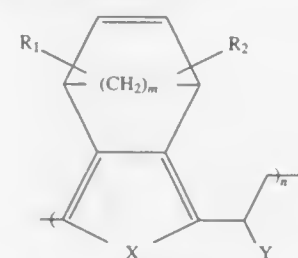


wherein either one of R₁ and R₂ is selected from a group consisting of hydrogen, alkyl group having one to eight carbon atoms, alkoxy group having one to eight carbon atoms, alkyl sulfide group, cyanide group, chlorine, and bromine, X is one selected from a group consisting of S, Se, and Te, and n is an integer ranged from 5 to 500, comprising steps of:

(a) dissolving an isothianaphthene monomer having a formula as follows in a solvent wherein R₁, R₂, and X are the same as defined above,

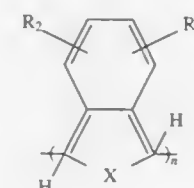


I. A polymer containing repeating units, having the formula (III) comprising a heterocyclic structure in which the six-membered ring is internally bridged at 4- and 7- positions by a methano group (m=1) or an ethano group (m=2):



wherein R₁ and R₂ each independently represents H, a straight or branched alkyl group or alkoxy group having 1 to 20 carbon atoms, X is S, O, or NR₃, R₃ represents H, a straight or branched alkyl group having 1 to 6 carbon atoms, or a phenyl group, Y represents R₄S⁺R₅M⁻ or OR₆, R₄ and R₅ each independently represents H, a straight or branched alkyl having 1 to 5 carbon atoms, or forms a tetrahydrothienium ring together with sulfur, and M⁻ is an anion, R₆ represents H or a straight or branched alkyl group having 1 to 10 carbon atoms, m is 1 or 2, and n represents a degree of polymerization and is a value larger than 5.

(III) and introducing an initiator to initiate a polymerization reaction to produce a precursor of poly(dihydroisothianaphthene) having a formula as follows wherein R₁, R₂, X, and n are the same as defined above;



(b) dissolving thoroughly said precursor of poly(dihydroisothianaphthene) as a solute in said solvent in an appropriate ratio to obtain a poly(dihydroisothianaphthene) solution;

(c) proceeding a dehydrogenation reaction for said poly(dihydroisothianaphthene) solution by introducing a dehydrogenation agent to obtain a polyisothianaphthene microgel solution, wherein said dehydrogenation agent is one selected from a

group consisting of tert-butyl hypochlorite (tBHC) and sulfonyl chloride (SO_2Cl_2); and
(d) terminating said dehydrogenation reaction by introducing an inhibitor.

5,510,458 CRF ANTAGONISTS

Wayne D. Kornreich, San Diego, Calif.; Jean F. Hernandez, Noyarey, France; Jean E. Rivier, La Jolla, Calif.; Catherine L. Rivier, La Jolla, Calif., and Wylie W. Vale, Jr., La Jolla, Calif., assignors to The Salk Institute For Biological Studies, La Jolla, Calif.

PCT No. PCT/US92/05101, § 371 Date Dec. 14, 1993, § 102(e) Date Dec. 14, 1993, PCT Pub. No. WO92/22576, PCT Pub. Date Dec. 23, 1992

Continuation-in-part of Ser. No. 715,752, Jun. 14, 1991, Pat. No. 5,245,009. This PCT application Jun. 12, 1992, Ser. No. 162,178

Int. Cl.⁶ C07K 14/695

U.S. Cl. 530—306 4 Claims

1. The CRF antagonist having the formula: D-Phe^{12} , Aib^{22} , $\text{Nle}^{21,38}$ -rCRF(12-41) or the formula:
 D-Phe^{12} , Aib^{31} , $\text{Nle}^{21,38}$ -rCRF(12-41).

5,510,459 GLUCAGON ANTAGONISTS

Robert A. Smith, Seattle, and James R. Piggott, Bothell, both of Wash., assignors to ZymoGenetics, Inc., Seattle, Wash.
Continuation-in-part of Ser. No. 741,931, Aug. 8, 1991, Pat. No. 5,408,037, which is a continuation-in-part of Ser. No. 641,343, Jan. 17, 1991, abandoned. This application Aug. 27, 1992, Ser. No. 937,132

Int. Cl.⁶ A61K 38/26; C07K 14/00; 14/605

U.S. Cl. 530—308 12 Claims

1. A glucagon antagonist which is a substituted glucagon having an alanine at position 2 and which additionally has an amino acid substitution at position 1, 3, 4, 5, 9, 10, 11, 21 or 29.

5,510,460 PEPTIDE PROCESS

Christopher F. Hayward, Macclesfield, England, assignor to Zeneca Limited, London, United Kingdom

Continuation of Ser. No. 199,015, Feb. 18, 1994, abandoned, which is a continuation of Ser. No. 897,496, Jun. 12, 1992, abandoned. This application May 26, 1995, Ser. No. 451,980

Claims priority, application United Kingdom, Jun. 14, 1991, 9112859

Int. Cl.⁶ C07K 7/23; 7/06

U.S. Cl. 530—328 1 Claim

1. A process for solid phase synthesis of goserelin which comprises:

- synthesizing all the amino acids of goserelin except the C-terminal aza-glycine by conventional solid phase synthesis;
- cleaving the peptide from the support with hydrazine or a substituted hydrazine; and
- reacting the hydrazide thus released with a cyanate ion to form goserelin.

5,510,461 PP: A NEWLY IDENTIFIED CD45-ASSOCIATED PROTEIN

Stefan Meuer; Burkhardt Schraven, both of Heidelberg, Germany; David Schoenhaut, Worcester, and Sheldon Ratnoffsky, West Newton, both of Mass., assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Continuation-in-part of Ser. No. 4,199, Jan. 13, 1993, abandoned, which is a continuation of Ser. No. 688,019, Apr. 19, 1991, abandoned. This application Feb. 14, 1994, Ser. No. 197,793

Int. Cl.⁶ C12Q 1/68; C07K 1/00; 14/00; 16/00

U.S. Cl. 530—350 4 Claims

1. An isolated pp32 protein which can associate with CD45 comprising an amino acid sequence shown in SEQ ID NO: 2.

5,510,462 IL-1 β PROTEIN PRECURSOR

Philip E. Auron, Middlesex County; Charles A. Dinarello, Suffolk County; Andrew C. Webb, Norfolk County; Alexander Rich, Middlesex County, and Sheldon M. Wolff, Norfolk County, all of Mass., assignors to New England Medical Centers Hospitals, Inc.; Trustees of Tufts College, both of Boston; Wellesley College, Wellesley, and Massachusetts Institute of Technology, Cambridge, all of Mass.

Division of Ser. No. 4,319, Jan. 8, 1987, Pat. No. 4,766,069, which is a continuation of Ser. No. 611,669, May 18, 1984, abandoned. This application Apr. 25, 1988, Ser. No. 185,731

Int. Cl.⁶ C07K 14/545

U.S. Cl. 530—351 1 Claim

1. A substantially pure protein having the following amino acid sequence:

MAEVPKLAASEMMAYYSNGEDDLFFEA₂₆
DGPQKMGSGFQDLDCPLDGGIQLR₅₂
SDHHYSKGFQAKSVVAVMDKLR₇₈
L₇₈VPCPQTFQENDLSTFFPFIFEEPIF₁₀₄
FDTWDNEAYVHDAPVRSNLCTLRDSQ₁₃₀
QKSLVMSGPYELKALHLQGGDMEQQV₁₅₆
VFSMSFVQGEESNDKIPVALGLKEKN₁₈₂
LYLSCVLKDDKPTLQLESVDPKNYPK₂₀₈
KKMEKRFVFNKIEINNKLFEFSAQFP₂₃₄
NWIYSTSQAEINMPVFLGGTKGGQDIT₂₆₀
DFTMQFVSS₂₆₉

5,510,463 PROCESS FOR PRODUCING ZEIN

Hidekazu Takahashi, and Norimasa Yanai, both of Chiba, Japan, assignors to Showa Sangyo Co., Ltd., Tokyo, Japan

Filed Dec. 23, 1993, Ser. No. 172,078

Claims priority, application Japan, Dec. 25, 1992, 4-346082

Int. Cl.⁶ A23J 1/12

U.S. Cl. 530—373 6 Claims

1. A process for producing zein, comprising the steps of (a) treating corn gluten meal with a hydrocarbon solvent having 5 to 9 carbon atoms to extract oil and fat from the corn gluten meal and form a treated corn gluten meal; (b) extracting the zein and pigment from the treated corn gluten meal using an extraction solvent to form an extract solution containing the zein and the pigment; and (c) separating the zein and the pigment, wherein if said extraction solvent is ethanol, it comprises 93 to 95% by volume ethanol.

5,510,464 ADMINISTRATION OF LOW DOSE HEMOGLOBIN TO INCREASE PERFUSION

Robert J. Przybelski, Antioch, Ill., assignor to Baxter International Inc., Deerfield, Ill.

Continuation of Ser. No. 828,429, Jan. 30, 1992, Pat. No. 5,334,706. This application May 3, 1994, Ser. No. 237,471
The portion of the term of this patent subsequent to Aug. 2, 2011, has been disclaimed.

Int. Cl.⁶ A61K 35/14; 38/20

U.S. Cl. 530—385 9 Claims

1. A method for increasing perfusion in an animal suffering from stroke comprising administering to said animal intramolecularly or intermolecularly cross-linked stroma free hemoglobin in a perfusion-increasing effective amount ranging from 30 mg/kg up to 2,500 mg/kg.

5,510,465 HEAT-TREATED IGM ANTIBODY PREPARATIONS

Grace C. Tsay, Walnut Creek, and Gary Jesmok, Pinole, both of Calif., assignors to Bayer Corporation, Elkhart, Ind.

Division of Ser. No. 504,161, Apr. 3, 1990, Pat. No. 5,256,771.

This application Jul. 26, 1993, Ser. No. 96,398

Int. Cl.⁶ C07K 16/06; A61K 39/395

U.S. Cl. 530—389.1 5 Claims

1. An antibody preparation comprising antibodies of the IgM type wherein said antibodies of the IgM type comprise at least about 20% by weight of the total amount of antibodies the preparation having the characteristics of generating non-specific complement activation of less than about 1.0 ug/ml C_{4a} in an in vitro assay while being capable of generating specific complement activating activity.

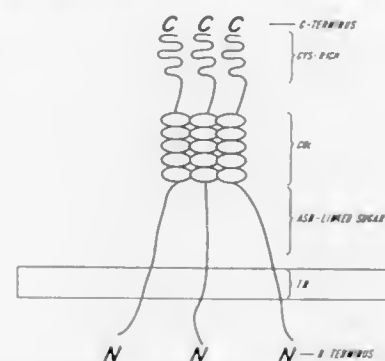
5,510,466 SCAVENGER RECEPTOR PROTEIN AND ANTIBODY THERE TO

Monty Krieger, Needham, and Tatsuhiko Kodama, Waban, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Continuation of Ser. No. 997,113, Dec. 24, 1992, abandoned, which is a continuation of Ser. No. 391,486, Aug. 9, 1989, abandoned, which is a continuation-in-part of Ser. No. 272,002, Nov. 15, 1988, abandoned. This application Sep. 16, 1994, Ser. No. 307,400

Int. Cl.⁶ C07H 21/04; C07K 14/47; 14/705; 17/00

U.S. Cl. 530—395 17 Claims



1. A substantially pure receptor protein capable of binding acetylated low density lipoprotein, said protein found on the surface of macrophages and characterized by:

being formed by combining three isolated subunits, each having an apparent molecular weight on polyacrylamide gels of about 77,000 daltons, the protein when glycosylated having an apparent molecular weight on SDS-polyacrylamide gels of about 220,000 daltons, and having a capacity for acetylated

low density lipoprotein of approximately 1.4 mg of Acetyl-LDL protein/mg receptor protein, wherein the subunits are encoded by a DNA sequence specifically hybridizing to the DNA sequence shown in FIGS. 3A, 3B and 3C or FIGS. 4A, 4B and 4C.

5,510,467 SALTS OF METAL-FREE ANIONIC PHENYLAZOPYRAZOLONE DYES HAVING CATIONS CONTAINING STERICALLY HINDERED AMINE GROUPS

Bansi L. Kaul, Biel-Benken, Switzerland, and Angelos-Elie Vougioukas, St. Louis, France, assignors to Sandoz Ltd., Basle, Switzerland

Continuation of Ser. No. 968,785, Oct. 30, 1992, abandoned, which is a continuation of Ser. No. 689,408, Apr. 22, 1991, abandoned, which is a continuation-in-part of Ser. No. 592,163, Oct. 3, 1990, abandoned. This application Dec. 13, 1993, Ser. No. 166,410

Claims priority, application Germany, Oct. 3, 1989, 39 32 913.5

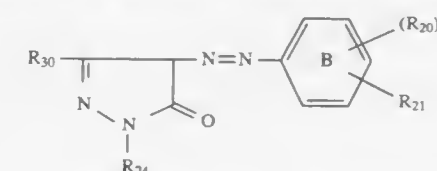
Int. Cl.⁶ C09B 31/00

U.S. Cl. 534—728 7 Claims

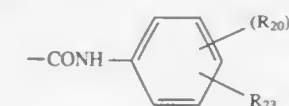
1. A salt of the formula

F_nA

wherein F is an anion of a compound of the formula



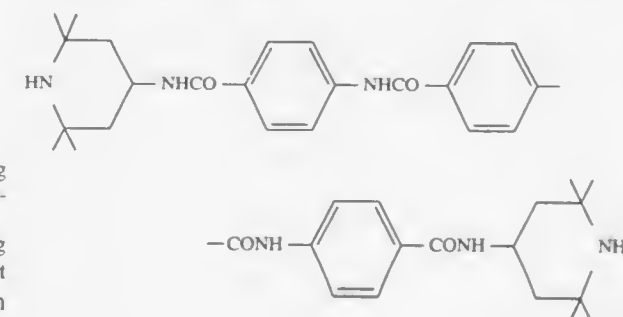
wherein R₂₁ is hydrogen, sulfo, C₁₋₄alkyl, C₁₋₄alkoxy, halo, trihalomethyl or



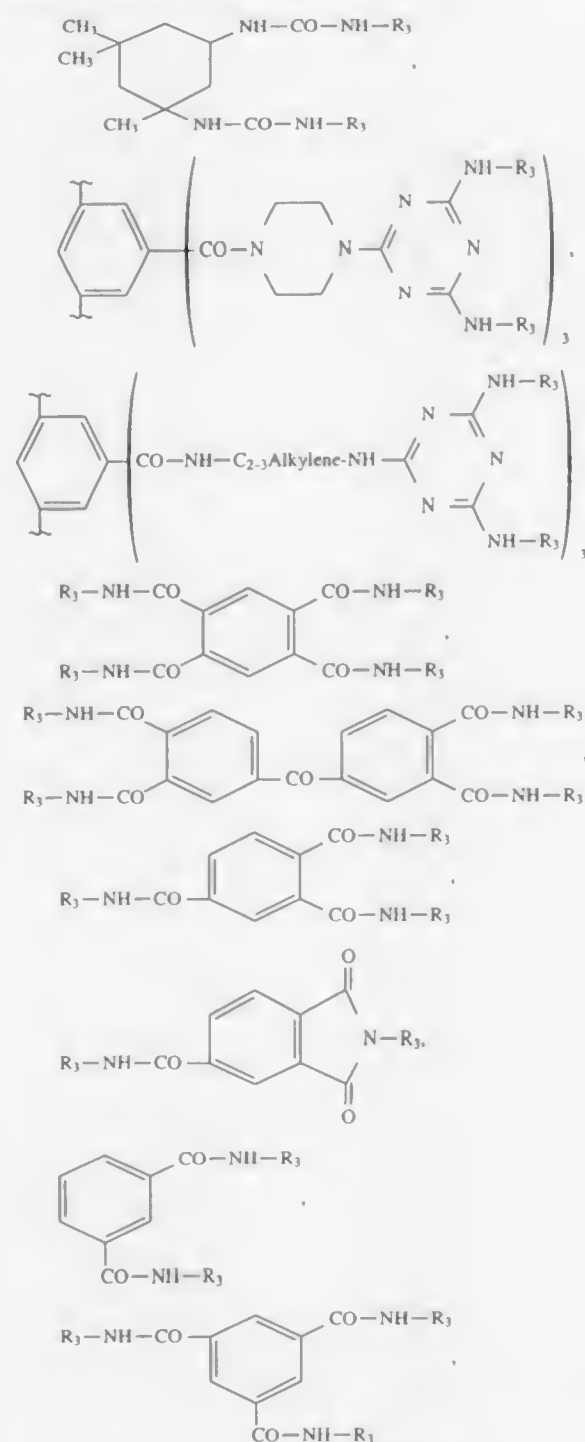
R₂₄ is phenyl or phenyl monosubstituted by sulfo, and R₃₀ is carboxy or C₁₋₄alkyl, with the proviso that R₃₀ must be carboxy when R₂₄ is phenyl and Ring B does not bear a sulfo group,

wherein each R₂₀ is independently hydrogen, halo, C₁₋₄alkyl or C₁₋₄alkoxy, and R₂₃ is hydrogen, sulfo, halo, C₁₋₄alkyl or C₁₋₄alkoxy,

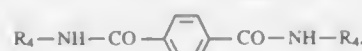
A is a cation of an amine selected from the group consisting of 1,3,5-tri-(1',2',2',6',6'-pentamethylpiperid-4'-yl)trimesic acid triamide, 2,4-bis-(2',2',6',6'-tetramethylpiperid-4'-ylamino)-6-chloro-1,3,5-triazine, 2,4,6-tri-(2',2',6',6'-tetramethylpiperid-4'-ylamino)-1,3,5-triazine,



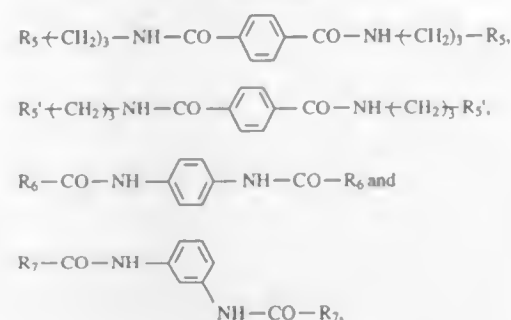
bis-(2',2',6',6'-tetramethylpiperid-4'-yl)terephthalic acid amide, 2,4-bis-(2',2',6',6'-tetramethylpiperid-4'-ylamino)quinazoline, 2,3-bis-(2',2',6',6'-tetramethylpiperid-4'-ylamino)quinoxaline, 1,4-bis-(2',2',6',6'-tetramethylpiperid-4'-ylamino)phthalazine, 2-chloro-4,6-bis-(2',2',6',6'-tetramethylpiperid-4'-ylamino)pyrimidine, 2,5-dichloro-4,6-bis-(2',2',6',6'-tetramethylpiperid-4'-ylamino)pyrimidine, 2-fluoro-5-chloro-4,6-bis-(2',2',6',6'-tetramethylpiperid-4'-ylamino)pyrimidine, 2,4,6-tri-(2',2',6',6'-tetramethylpiperid-4'-ylamino)pyrimidine, 2,4,6-tri-(2',2',6',6'-tetramethylpiperid-4'-ylamino)pyrimidine, 2,4,6-tri-(2',2',6',6'-tetramethylpiperid-4'-ylamino)-5-chloropyrimidine,



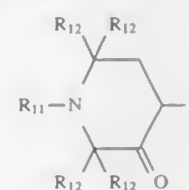
bis-(1,2,2,6,6-pentamethylpiperid-4-yl)terephthalic acid amide, and bis-(1,2,2,6,6-pentamethylpiperid-4-yl)isophthalic acid amide,



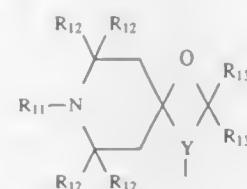
-continued



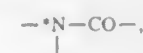
wherein each R_3 is 2,2,6,6-tetramethylpiperid-4-yl, each R_4 is



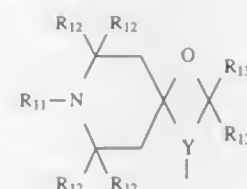
each R_5 is



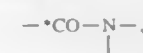
wherein Y is



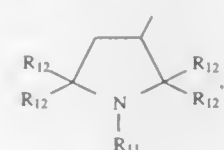
each R_5 is



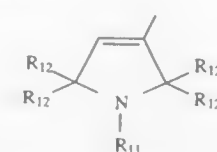
wherein Y is



each R_6 is



each R_7 is



wherein R_{11} is hydrogen or C_{1-4} alkyl, each R_{12} is independently C_{1-6} alkyl, each R_{13} is independently hydrogen, methyl, ethyl or phenyl, with the proviso that not more than one R_{13} is phenyl, or both R_{13} 's taken together are $-(CH_2)_t-$, wherein t is 5 to 11, inclusive, and the * identifies the atom attached to the piperidyl group, and n is 1 or 2.

5,510,468

AMINO BENZOPIHENONE DYE

Gunther Lamm, Hassloch; Helmut Reichelt, Neustadt, and Ortwin Schaffer, Ludwigshafen, all of, Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany Division of Ser. No. 87,792, Jul. 16, 1993, Pat. No. 5,380,859. This application Jul. 27, 1994, Ser. No. 281,035

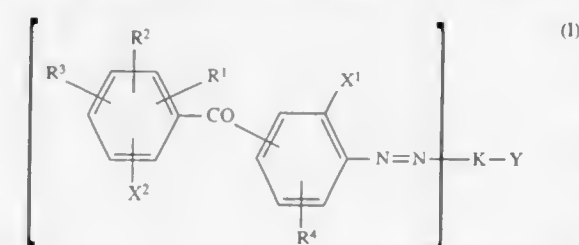
Claims priority, application Germany, Feb. 20, 1991, 41 05 257.9

Int. Cl.⁶ C09B 29/42; 31/153

U.S. Cl. 534-772

24 Claims

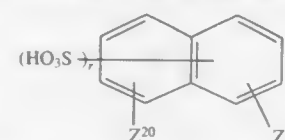
1. A benzophenoneazo dye of the Formula 1



wherein

m is 1 or 2;

K is a 6-hydroxypyrid-2-one radical which in ring position 3 is unsubstituted or substituted by carbamoyl, C_2-C_5 -alkanoyl, hydroxysulfonylmethyl or hydroxysulfonyl, the radical of a phenylazopyridone, imidazopyridine, aminopyrazole, hydroxypyrazole, aminothiazole, pyrimidine, quinolone or aniline coupling component or the radical of a coupling component of the formula IIa



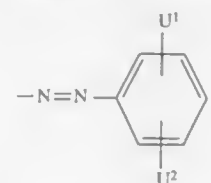
where

Z^{19} is amino, phenylamino, C_{1-4} -alkanoylamino or benzoylamino,

Z^{20} is hydrogen or hydroxyl, and

r is 1;

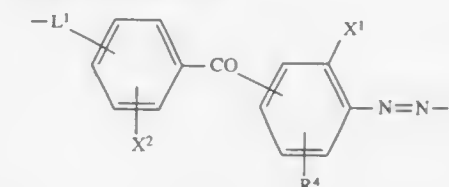
Y, when m is 1, is hydrogen, the radical:



U^1 is hydrogen, C_{1-4} -alkyl or hydroxysulfonyl and U^2 is hydrogen, unsubstituted or sulfato-substituted C_{1-4} -alkyl, hydroxysulfonyl, phenylsulfonyloxy or 6-methyl-7-hydroxysulfonylbenzothiazol-2-yl; or the radical $-N=N-Q^2$, wherein Q^2 is the radical of a coupling component, or Y, when m is 2, is hydrogen;

one of the two radicals X^1 and X^2 is hydrogen and the other is hydroxysulfonyl;

R^1 , R^2 and R^3 are identical or different and each is independently of the others hydrogen, halogen, C_{1-12} -alkyl, cyclohexyl, phenyl, 2-hydroxyethylsulfonyl or C_{1-4} -alkoxy or, when m is 1 and Y is hydrogen, one of R^1 , R^2 or R^3 is a radical of the formula:



where L^1 is a covalent bond, C_{1-4} -alkylene, oxygen or a radical of the formula $O-CH_2-$, $O-CH_2CH_2-O$, $O-CH_2CH_2CH_2-O$ or $O-CH(CH_3)CH_2-O$, and X^1 , X^2 , R^4 , and K are each as defined above, and R^4 is hydrogen, halogen or C_{1-4} -alkoxy.

5,510,469

2-ACYLOXY-4-MORPHOLINYL ANTHRACYCLINES

Daniela Faiardi, Pavia; Alberto Bargiotti, and Antonino Suarato, both of Milan, all of, Italy, assignors to Farmitalia Carlo Erbg S.R.L., Milan, Italy

PCT No. PCT/EP91/01506, § 371 Date May 12, 1993, § 102(e) Date May 12, 1993, PCT Pub. No. WO92/04362, PCT Pub. Date Mar. 19, 1992

PCT Filed Aug. 8, 1991, Ser. No. 987,281

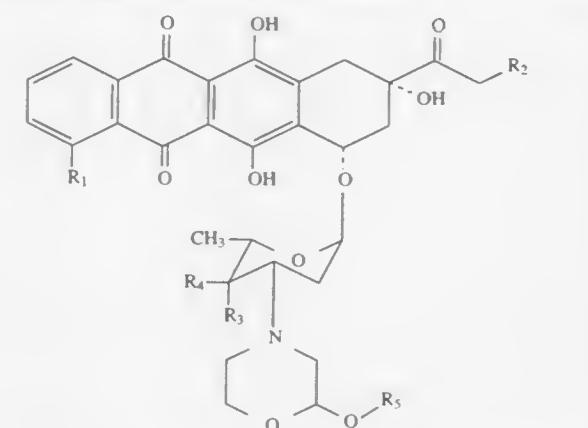
Claims priority, application United Kingdom, Sep. 12, 1990, 9019934.0

Int. Cl.⁶ C07H 15/24

U.S. Cl. 536-6.4

2 Claims

1. An anthracene glycoside of formula 1:



wherein R_1 is a methoxy group; R_2 is hydroxy; R_3 is hydroxy; R_4 represents hydrogen; R_5 represents an acyl residue $-COX$ in which X is a phenyl group; or a pharmaceutically acceptable salt thereof.

5,510,470

CHIRAL, BIDENTATE ORGANOPHOSPHORUS LIGAND
Albert L. Casanuovo, and Thallyil V. Rajanbabu, both of
Wilmington, Del., assignors to E. I. Du Pont de Nemours and
Company, Wilmington, Del.

Continuation of Ser. No. 201,947, Feb. 25, 1994, which is a
division of Ser. No. 961,593, Oct. 15, 1992, Pat. No. 5,312,957,
which is a division of Ser. No. 790,322, Nov. 12, 1991, Pat.
No. 5,175,335. This application Apr. 19, 1995, Ser. No.

424,674

The portion of the term of this patent subsequent to Feb. 25,
2014, has been disclaimed.

Int. Cl.⁶ C07H 11/00; 11/04; C07F 15/04

U.S. Cl. 536—18.4

9 Claims

1. A chiral, nonracemic, bidentate organophosphorus ligand of
the formula:



wherein

each R¹ is 3,5-bis(trifluoromethyl)phenyl; and

R³ is a C₄ to C₄₀ dideoxycarbohydrate, optionally substituted
with one or more hydrocarbyl, halogen, ether, ester, alcohol,
amide or ketone groups.

5,510,471

CHIMERIC GENE FOR THE TRANSFORMATION OF
PLANTS

Michel Lebrun, Lyons; Bernard Leroux, Lozanne, and Alain
Sailland, Lyons, all of, France, assignors to Rhone-Poulenc
Agrochimie, Lyons, France

Continuation of Ser. No. 846,211, Mar. 4, 1992, abandoned.

This application May 31, 1994, Ser. No. 251,621

Claims priority, application France, Mar. 5, 1991, 91 02872

Int. Cl.⁶ C07H 17/00; C12N 15/00; 15/29; 15/82

U.S. Cl. 536—23.4

11 Claims

1. A nucleic acid construct which codes for a polypeptide
sufficient for localization of a gene product in a chloroplast of a
plant cell which polypeptide comprises a fusion which in the
direction of translation comprises a first chloroplast transit peptide
from a ribulose-1,5-bisphosphate carboxylase small subunit, an
N-terminal domain of a mature ribulose-1,5-bisphosphate carboxy-
lase small subunit protein and a second chloroplast transit peptide
from a ribulose-1,5-bisphosphate carboxylase small subunit.

5,510,472

PRODUCTION OF RECOMBINANT HUMAN
INTERFERON-BETA2

Michel Revel, Rehovot, Israel, and Pierre Tiliolais, Paris,
France, assignors to Yeda Research and Development Co.
Ltd., Rehovot, Israel

Continuation-in-part of Ser. No. 208,925, Nov. 20, 1980, and a
continuation of Ser. No. 449,447, Dec. 12, 1989, which is a
continuation of Ser. No. 860,883, May 8, 1986, abandoned,
which is a continuation-in-part of Ser. No. 208,925, Nov. 20,
1980. This application May 15, 1992, Ser. No. 883,633

Claims priority, application Israel, Nov. 21, 1979, 58765;
Oct. 14, 1985, 76714

Int. Cl.⁶ C12N 15/22; 15/24

U.S. Cl. 536—23.5

3 Claims

1. A DNA molecule including a portion of the DNA which codes
for IFN-β_{2A}, which DNA molecule is capable of hybridizing to
mRNA encoding human IFN-β_{2A} in 50% formamide at 50°.

5,510,473

CLONING OF THE RECA GENE FROM THERMUS
AQUATICUS YT-1

Rafael D. Camerini-Otero, Kensington, and Evelina Angov,
Bethesda, both of Md., assignors to The United States of
American as represented by the Secretary of Health and
Human Services, Washington, D.C.

Continuation-in-part of Ser. No. 41,341, Apr. 1, 1993, aban-
doned, and Ser. No. 89,910, Jul. 12, 1993, which is a contin-
uation of Ser. No. 733,744, Jul. 24, 1991, abandoned, which is
a continuation-in-part of Ser. No. 611,268, Nov. 9, 1990, aban-
doned, said Ser. No. 41,341 is a continuation of Ser. No.
611,268, Nov. 9, 0. This application Jul. 26, 1993, Ser. No.

97,831

Int. Cl.⁶ C12N 15/32; 15/70; 15/00

U.S. Cl. 530—23.5

6 Claims

1. An isolated DNA molecule encoding *Thermus Aquaticus* recA
protein as shown in SECT ID NO:2.

5,510,474

PLANT UBIQUITIN PROMOTER SYSTEM

Peter H. Quail, Richmond; Alan H. Christensen, Albany, both
of Calif.; Howard P. Hershey, West Chester, Pa.; Robert A.
Sharrock, El Cerrito, Calif., and Thomas D. Sullivan, Mad-
ison, Wis., assignors to Mycogen Plant Science, Inc., San
Diego, Calif.

Continuation of Ser. No. 191,134, Feb. 3, 1994, abandoned,
which is a continuation of Ser. No. 76,363, Jun. 11, 1993,
abandoned, which is a continuation of Ser. No. 670,496, Mar.
15, 1991, abandoned, which is a continuation of Ser. No.
194,824, May 17, 1988, abandoned. This application Aug. 25,
1994, Ser. No. 296,268

Int. Cl.⁶ C07H 21/04; C12N 15/67; 15/82

U.S. Cl. 536—24.1

1 Claim

1. An isolated DNA fragment, useful in effecting expression in
both monocots and dicots of coding sequences placed 3' to said
fragment, wherein said DNA is approximately 2 kb in length, and
said DNA fragment further comprises, in the following order
beginning with the 5' most element and proceeding toward the 3'
terminus of said DNA fragment:

- two heat shock elements, which overlap;
- a promoter comprising a transcription start site;
- an intron of about 1 kb in length; and
- a translation start site;

wherein said DNA fragment comprising said elements (a)–(d)
regulates gene expression in both dicots and monocots, and
wherein said DNA fragment comprises the nucleotide sequence
shown from position –899 to 1092 of the maize ubiquitin sequence
listed in FIG. 2.

5,510,475

OLIGONUCLEOTIDE MULTIPLE REPORTER
PRECURSORS

Sudhir Agrawal, Shrewsbury, and Jin-Yan Tang, Worcester,
both of Mass., assignors to Hybridon, Inc., Worcester, Pa.
Continuation of Ser. No. 610,541, Nov. 8, 1990, abandoned.

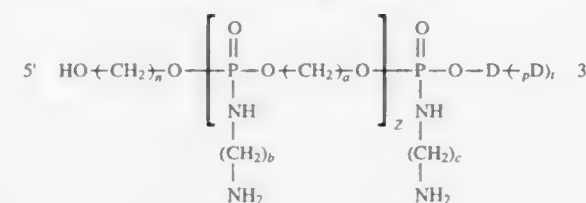
This application Oct. 7, 1994, Ser. No. 320,835

Int. Cl.⁶ C07H 21/00; 21/04

U.S. Cl. 536—24.3

3 Claims

1. A compound represented by the formula:



wherein

D=a ribonucleoside or deoxyribonucleotide;

p=a 5' to 3'-phosphodiester or phosphoramidate
linkage,

n= 1 to 20;

a= 1 to 20;

b= 1 to 20;

c= 1 to 20;

z= 0 to 20;

t= 1 to 100; and

wherein

for each repeating unit, "a" represents the same number or a
different number than that number represented by "a" in every
other repeating unit; and for each repeating unit "b" repre-
sents the same number or a different number than represented
by "b" in every other repeating unit.

5,510,476

CARBOCATION SCAVENGING DURING
OLIGONUCLEOTIDE SYNTHESIS

Vasulunga Ravikumar; Mark Andrade, both of Carlsbad,
Calif.; Dennis Mulvey, Conroe, Tex., and Douglas L. Cole,
San Diego, Calif., assignors to Isis Pharmaceuticals, Inc.,
Carlsbad, Calif.

Filed Jul. 7, 1994, Ser. No. 271,181

Int. Cl.⁶ C07H 1/00; 21/00; 21/04; 21/02

U.S. Cl. 536—25.31

24 Claims

1. A process for the synthesis of oligonucleotides comprising the
steps of:

- attaching a protected nucleoside to a solid support, said
nucleoside protected at the 5'-O hydroxyl position with an
acid labile protecting group that forms a carbocation upon
cleavage with acid;
- removing said 5' protecting group with an acidic solution
containing a carbocation scavenging agent to give the free 5'
hydroxyl;
- washing said solid support to remove excess acid solution and
scavenged carbocation;
- reacting in the presence of a catalyst said free 5' hydroxyl
with a nucleotide containing an active phosphite;
- oxidizing the phosphite to a phosphate;
- capping remaining reactive sites with a solution containing an
acid anhydride;
- repeating steps b through f at least once for subsequent
couplings of additional nucleotides; and
- cleaving said oligonucleotide from said solid support.

5,510,477

PROCESS FOR THE ACYLATION OF LACTAMS

Alan D. Willey, and Larry E. Miller, both of Cincinnati, Ohio,
assignors to The Procter & Gamble Company, Cincinnati,
Ohio

Filed Mar. 1, 1994, Ser. No. 204,113

Int. Cl.⁶ C07B 43/06; C07D 223/10; 207/12

U.S. Cl. 540—529

1 Claim

1. A process comprising the steps of:

- heating acetic anhydride, benzoic acid, and caprolactam at a
temperature of about 130° to about 170° C. to form volatile
acetic acid and benzoyl caprolactam;
- removing the acetic acid formed during step (a) such that less
than about 5 mole percent of acetic acid is present in the
reaction mixture; and
- recovering the benzoyl caprolactam product.

5,510,478

2-ARYLAMIDOTHIAZOLE DERIVATIVES WITH CNS
ACTIVITY

Annamarie L. Sabb, Pennington, N.J., assignor to American
Home Products Corporation, Madison, N.J.

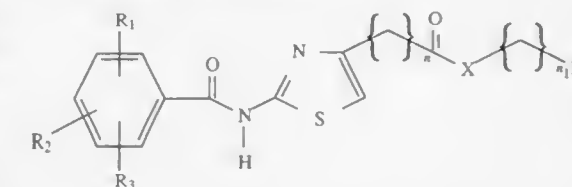
Filed Nov. 30, 1994, Ser. No. 347,524

Int. Cl.⁶ C07D 277/46; 417/14; 417/06; 453/02

U.S. Cl. 540—585

21 Claims

1. A compound of the formula:



where

R₁, R₂ and R₃ are, independently, H, alkyl of 1 to 6 carbon
atoms, halo, perhaloalkyl of 1 to 6 carbon atoms, hydroxy,
alkoxy of 1 to 6 carbon atoms, aryl of 6 to 10 carbon atoms or
aryalkyl of 7 to 12 carbon atoms;

n is one of the integers 0, 1, 2, 3, 4 or 5;

R is azabicyclo[2.2.2] octyl or azabicyclo[2.2.1] heptyl when n₁
is zero, or R is NR₄R₅ when n₁ is 1, 2, 3, 4, or 5, in which R₄
and R₅ are alkyl of 1 to 6 carbon atoms or R₄ and R₅, taken
with the nitrogen atom to which they are attached, are
N-(substituted aryl)piperazinyl in which said substituent is
alkoxy of 1 to 6 carbon atoms, halo, or perhaloalkyl of 1 to 6
carbon atoms, and the aryl group contains 6 to 10 carbon
atoms; N-(pyridyl)piperazinyl; N-(pyrimidinyl)piperazinyl; or
3-azabicyclo-[3.2.2]non-3-yl;

X is oxygen or NH;

n and n₁ are, independently, one of the integers 0, 1, 2, 3, 4 or 5;
or a pharmaceutically acceptable salt thereof.

5,510,479

HYDROPHOBIC VITAMIN B₁₂ DERIVATIVES

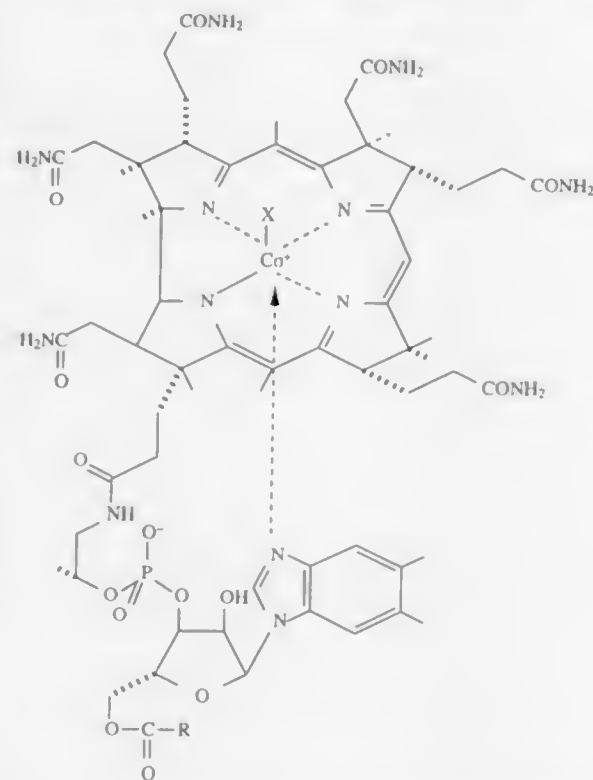
Tetsuo Toraya, Mamoru Yamanishi, both of Okayama; Yusuke Takahata, Kita-Kanbara, and Ichiro Kojima, Yokosuka, all of, Japan, assignors to Nippon Oil Company, Tokyo, Japan
Filed May 25, 1994, Ser. No. 248,810

Claims priority, application Japan, May 27, 1993, 5-126257
Int. Cl.⁶ C07H 23/00; A61K 31/68

U.S. Cl. 536—26.4

1 Claim

1. A vitamin B₁₂ derivative represented by the formula:



wherein R represents an alkyl group having 2 to 17 carbon atoms, and X represents a cyano group, an alkyl group, or a hydroxyl group.

5,510,480

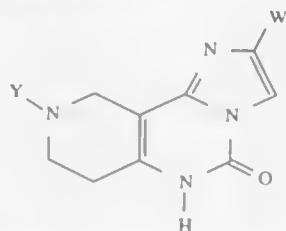
CERTAIN AZACYCLOALKYL IMIDAZOPYRIMIDINES:
A NEW CLASS OF GABA BRAIN RECEPTOR LIGANDS

Pamela Albaugh, Clinton, Conn., assignor to Neurogen Corporation, Branford, Conn.
Continuation of Ser. No. 971,765, Feb. 1, 1993, Pat. No. 5,328,912, which is a continuation-in-part of Ser. No. 557,577, Jun. 24, 1990, Pat. No. 5,095,015. This application Jul. 11, 1994, Ser. No. 273,497

Int. Cl.⁶ C07D 471/12; 243/12; A61K 31/55; 31/505
U.S. Cl. 544—251

12 Claims

1. A compound of the formula:



or the pharmaceutically acceptable non-toxic salts thereof wherein

W is phenyl, 2- or 3-thienyl or 2-, 3-, or 4-pyridyl; or phenyl, 2- or 3-thienyl or 2-, 3-, or 4-pyridyl, each of which is mono or disubstituted with halogen, lower alkyl, or straight or branched chain lower alkoxy having 1-6 carbon atoms; and Y is

- hydrogen, phenyl, 2- or 3-thienyl, 2-, 3- or 4-pyridyl, 2- or 4(5)-imidazolyl, 2-pyrimidinyl, or 1-indanyl;
- phenyl, 2- or 3-thienyl, 2-, 3- or 4-pyridyl, 2- or 4(5)-imidazolyl, or 2-pyrimidinyl, each of which is mono or disubstituted with halogen, lower alkyl having 1-6 carbon atoms, lower alkoxy having 1-6 carbon atoms, or alkoxy-alkyl where the alkoxy portion is straight or branched chain alkoxy having 1-6 carbon atoms and the alkyl portion is straight or branched chain alkyl having 1-6 carbon atoms;
- straight or branched chain alkyl having 1-6 carbon atoms;
- straight or branched chain alkyl having 1-6 carbon atoms, wherein each alkyl is substituted with the groups of ii;
- cycloalkyl having 3-10 carbon atoms, cycloalkyl alkyl where the cycloalkyl portion has 3-7 carbon atoms and the alkyl portion has 1-6 carbon atoms;
- aminoalkyl where the alkyl portion is straight or branched chain alkyl having 1-6 carbon atoms, or mono or dialkyl aminoalkyl where each alkyl is a straight or branched chain alkyl having 1-6 carbon atoms; or
- COR₇ or SO₂R₇ where R₇ is straight or branched chain lower alkyl having 1-6 carbon atoms, phenyl, 2- or 3-thienyl, 2-, 3- or 4-pyridyl, 2- or 4(5)-imidazolyl, or 2-pyrimidinyl; or R₇ is phenyl, 2- or 3-thienyl, 2-, 3- or 4-pyridyl, 2- or 4(5)-imidazolyl, or 2-pyrimidinyl each of which may be mono or disubstituted with halogen, lower alkyl having 1-6 carbon atoms, straight or branched alkoxy having 1-6 carbon atoms, or alkoxyalkyl where the alkoxy portion is straight or branched chain alkoxy having 1-6 carbon atoms and the alkyl portion is straight or branched chain alkyl having 1-6 carbon atoms.

5,510,481

SELF-ASSEMBLED MOLECULAR FILMS
INCORPORATING A LIGAND

Mark D. Bednarski; Troy E. Wilson, both of Berkeley, Calif., and Mark S. Mastandrea, Brookline, Mass., assignors to The Regents, University of California, Oakland, Calif.

Continuation of Ser. No. 617,988, Nov. 26, 1990, abandoned.

This application Oct. 29, 1993, Ser. No. 146,485

Int. Cl.⁶ C07H 15/04; 15/00; 23/00; B32B 9/04

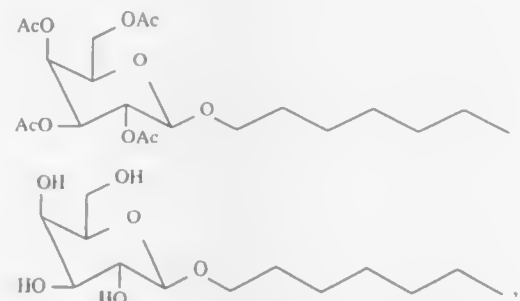
U.S. Cl. 536—120

1 Claim

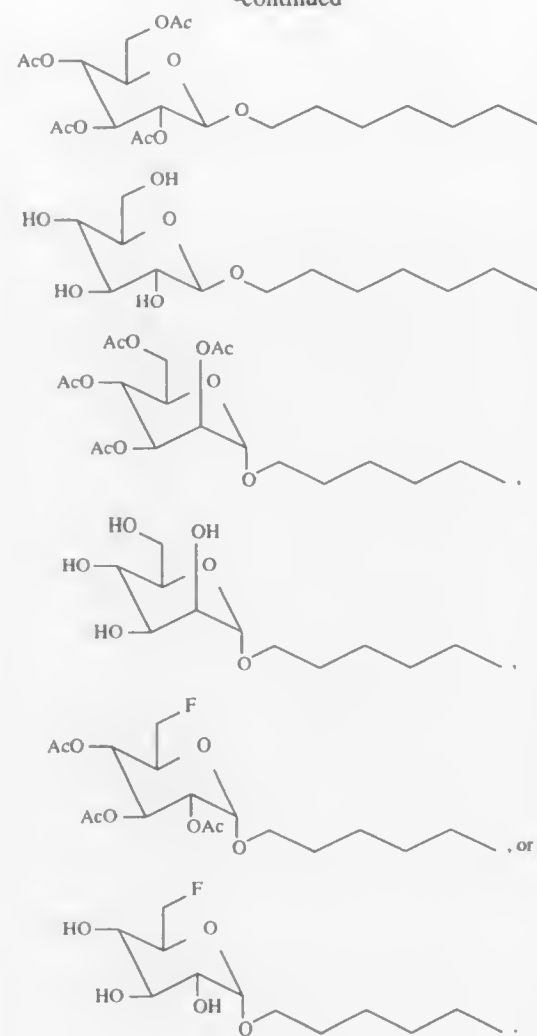
1. A monomer capable of molecular self-assembly selected from the group consisting essentially of:



wherein R is



-continued



(3) kneading said plasticized mass at a temperature in the range of from about 50° C. to about 150° C. to form a bleached surface active alkyl glycoside product in the form of a plastic mass.

5,510,483

2-(ARYLSULFONYLAMINO)-PYRIMIDINE
INTERMEDIATES FOR AZO DYES

Jordi B. Barra, and Jose R. Sorolla, both of Barcelona, Spain, assignors to Sandoz Ltd., Basel, Switzerland

Continuation of Ser. No. 430,794, Apr. 28, 1995, which is a continuation of Ser. No. 212,087, Mar. 14, 1994, abandoned.

This application Jun. 6, 1995, Ser. No. 471,593

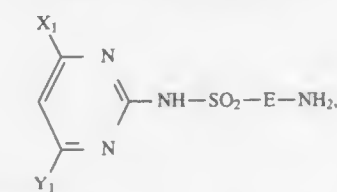
Claims priority, application United Kingdom, Mar. 16, 1993, 9305374

Int. Cl.⁶ C07D 239/47; 239/48; 239/545; 239/69

U.S. Cl. 544—297

6 Claims

1. A compound of the formula (I)



in which

X₁ and Y₁ are NH₂ and

E is an aromatic bivalent radical, and in which the amino group linked to the —SO₂—bound radical E may be optionally acylated.

5,510,482

PROCESS FOR BLEACHING DISCOLORED SURFACE-
ACTIVE ALKYL GLYCOSIDES AND FOR WORKING UP
THE BLEACHED MATERIAL

Willi Wuest, Ratingen; Rainer Eskuchen, Duesseldorf; Paul Schulz, Wuppertal; Volker Bauer, Duesseldorf; Franz-Josef Carduck, Haan; Herbert Esser, Troisdorf; Christiane Zeise, Korschenbroich; Manfred Weuthen, Solingen, and Josef Penninger, Hilden, all of, Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Germany
Continuation of Ser. No. 960,427, Feb. 11, 1993, abandoned.

This application Oct. 17, 1994, Ser. No. 324,318

Claims priority, application Germany, Jun. 15, 1990, 40 19 175.3

Int. Cl.⁶ C07H 1/06; 15/04

U.S. Cl. 536—127

19 Claims

1. A process for bleaching a discolored surface active alkyl glycoside comprising the steps of:

- providing an alkyl glycoside reaction product having less than about 5.0% by weight of residual fatty alcohol;
- forming a plasticized mass having less than about 10% by weight of water and having a pH of from about 8 to about 10, at a temperature in the range of from about 50° C. to about 150° C., by adding an aqueous solution of an oxidizing agent and an aqueous alkaline solution to said alkyl glycoside reaction product; and

5,510,484

PROCESS FOR PREPARING 1,3-DIMETHYL-4,5-
DIAMINOURACIL

Rolf Dach, Gau-Algesheim, and Wilfried Goldschmidt, Ingelheim am Rhein, both of, Germany, assignors to Boehringer Ingelheim KG, Ingelheim am Rhein, Germany

Filed Apr. 7, 1994, Ser. No. 225,011

Claims priority, application Germany, Apr. 7, 1993, 43 11 538.1

Int. Cl.⁶ C07D 239/02

3 Claims

1. A process for preparing 1,3-dimethyl-4,5-diaminouracil by catalytic reduction of 1,3-dimethyl-4-amino-5-nitrosouracil in the presence of a palladium/charcoal catalyst, characterised in that, in an aqueous suspension, the 1,3-dimethyl-4-amino-5-nitrosouracil is adjusted to a pH in the range from 7 to 10 with an aqueous solution of an alkali compound and subsequently hydrogenation is carried out under a hydrogen pressure in the range from 1 to 20 bar within a temperature range from 20° to 60° C. and after the uptake of hydrogen has ceased, formic acid is added to the reaction mixture at a temperature in the range from 15° to 40° C. until all the 1,3-dimethyl-4,5-diaminouracil has gone into solution, the reaction mixture is filtered off from the catalyst and the 1,3-dimethyl-4,5-diamino-uracil is isolated in the form of the formate thereof.

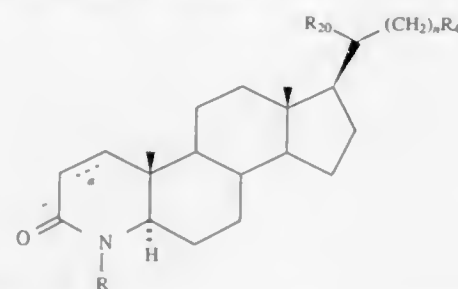
5,510,485
17-ESTER, AMIDE, AND KETONE DERIVATIVES OF
3-OXO-4-AZASTEROIDS AS 5A-REDUCTASE
INHIBITORS

Donald W. Graham, Mountainside; Susan D. Aster, Teaneck; William Hagmann, Westfield, and Richard L. Tolman, Warren, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J. Continuation-in-part of Ser. No. 886,021, May 20, 1992, abandoned. This application Nov. 10, 1994, Ser. No. 335,792 Int. Cl. C07D 241/12; A61K 31/495

U.S. Cl. 544—336

3 Claims

1. A compound of the formula:



wherein:

dashed line "a" can represent a double bond when present;

R is selected from hydrogen, methyl and ethyl;

R₂₀ is selected from hydrogen and methyl;

n is an integer from 0 to 10;

R₄ is selected from:

(a) COR₁, where R₁ is C₆-C₁₀ aryl, substituted C₆-C₁₀ aryl, and heteroaryl;

(b) CONHR₂, where R₂ is substituted phenyl, heteroaryl, substituted heteroaryl, or C₇-C₁₂ cycloalkyl; and

(c) CO₂R₃, where R₃ is C₆-C₁₀ aryl, substituted C₆-C₁₀ aryl, or C₇-C₁₂ cycloalkyl;

wherein aryl is selected from phenyl, benzyl, 1- and 2-phenethyl and naphthyl;

wherein heteroaryl is selected from pyridyl, pyrrol, thienyl, isothiazolyl, thiazolyl, imidazolyl, tetrazolyl, pyrazinyl, quinolyl, isoquinolyl, benzothienyl, isobenzofuryl, pyrazolyl, indolyl, isoxazolyl, triazolyl, furanyl, oxazolyl, and thiadiazolyl;

wherein cycloalkyl is selected from 1- and 2-adamantyl, norbomyl, and bicyclo(2.2.2)octyl;

wherein the above aryl or heteroaryl radical can further be substituted with one or two substituents;

and the pharmaceutically acceptable salts thereof.

5,510,486
PROCESS FOR PREPARING 2-(1-AZABICYCLO[2.2.2]OCT-3-YL)-2,3,3A,4,5,6-HEXAHYDRO-1H-BENZ[DE]ISOQUINOLIN-1-ONE

James Robinson, III, East Palo Alto; John C. Rohloff, Mountain View, and Bruce A. Kowalczyk, Cupertino, all of Calif., assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif. Filed Jul. 26, 1994, Ser. No. 280,265

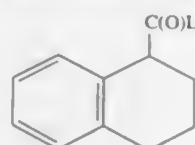
Int. Cl. C07D 221/04

U.S. Cl. 546—99

8 Claims

1. A process for preparing 2-(1-azabicyclo[2.2.2]oct-3-yl)-2,3,3a,4,5,6-hexahydro-1H-benz[de]isoquinolin-1-one and the pharmaceutically acceptable salts, individual stereoisomers and mixture of stereoisomers thereof, which process comprises:

(A) reacting a compound of Formula 5:



in which L is a leaving group, with 1-azabicyclo[2.2.2]oct-3-ylamine to give N-(1-azabicyclo[2.2.2]oct-3-yl)-1,2,3,4-tetrahydronaphthalen-1-ylcarboxamide;

(B) reducing the N-(1-azabicyclo[2.2.2]oct-3-yl)-1,2,3,4-tetrahydronaphthalen-1-ylcarboxamide to give (1-azabicyclo[2.2.2]oct-3-yl)-(1,2,3,4-tetrahydronaphthalen-1-ylmethyl)amine;

(C) reacting the (1-azabicyclo[2.2.2]oct-3-yl)-(1,2,3,4-tetrahydronaphthalen-1-ylmethyl)amine with a formylating agent and then treating with a Lewis acid to give 2-(1-azabicyclo[2.2.2]oct-3-yl)-2,3,3a,4,5,6-hexahydro-1H-benz[de]isoquinolin-1-one; and

(D) optionally separating a diastereomeric mixture of the 2H-(1-azabicyclo[2.2.2]oct-3-yl)-2,3,3a,4,5,6-hexahydro-1H-benz[de]isoquinolin-1-one into individual stereoisomers or mixtures of stereoisomers;

(E) optionally converting the 2-(1-azabicyclo[2.2.2]oct-3-yl)-2,3,3a,4,5,6-hexahydro-1H-benz[de]isoquinolin-1-one to a pharmaceutically acceptable acid addition salt; and

(F) optionally converting an acid addition salt of the 2-(1-azabicyclo[2.2.2]oct-3-yl)-2,3,3a,4,5,6-hexahydro-1H-benz[de]isoquinolin-1-one to non-salt form.

5,510,487

RETROVIRAL PROTEASE INHIBITORS

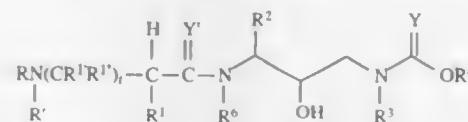
John J. Talley, Chesterfield, Mo., and Kathryn L. Reed, Raleigh, N.C., assignors to G.D. Searle & Co., Chicago, Ill. Continuation of Ser. No. 886,663, May 20, 1992, abandoned, which is a continuation-in-part of Ser. No. 789,643, Nov. 14, 1991, abandoned, which is a continuation-in-part of Ser. No. 615,210, Nov. 19, 1990, abandoned. This application May 25, 1995, Ser. No. 452,603

Int. Cl. C07D 215/48; C07C 271/20

U.S. Cl. 546—169

6 Claims

1. Compound represented by the formula:



or a pharmaceutically acceptable salt, prodrug or ester thereof, wherein

R represents hydrogen, alkoxycarbonyl, aralkoxycarbonyl, cycloalkylcarbonyl, cycloalkylalkoxycarbonyl, alkanoyl, aroyl, aryloxyalkanoyl, heterocyclylcarbonyl, heterocyclyloxyalkyl, alkoxyalkanoyl, hydroxyalkanoyl, heterocyclylalkoxycarbonyl, heteroalkoxycarbonyl, heteroaryl, alkyl, aralkyl, aminoalkanoyl, aminocarbonyl, alkylaminoalkanoyl, dialkylaminoalkanoyl, alkylaminocarbonyl or dialkylaminocarbonyl radicals;

R' represents hydrogen or alkyl radicals; or R and R' together with the nitrogen to which they are attached form a heterocycloalkyl or heteroaryl radical;

R¹ represents hydrogen, —CH₂SO₂NH₂, —CO₂CH₃, —CH₂CO₂CH₃, —CO₂H, —CH₂CO₂H, —CH₂CH₂CONH₂, —CH₂CONH₂, —CONH₂, —CONHCH₃, —CON(CH₃)₂, —CH₂CONHCH₃, —CH₂CON(CH₃)₂, —CH₂SC₂H₅, —CH₂S(O)CH₃, —CH₂S(O)₂CH₃, —C(CH₃)₂(SCH₃), —C(CH₃)₂(S(O)CH₃), —C(CH₃)₂(S(O)₂CH₃), alkyl, aminoalkyl, hydroxyalkyl, cyanoalkyl, haloalkyl, alkenyl, alkynyl or cycloalkyl radicals;

R¹ represents hydrogen or alkyl radicals;

R¹ represents hydrogen, alkyl, CO₂CH₃ or CONH₂ radicals; or R¹ together with R¹ and the carbon atoms to which they are attached, represent a cycloalkyl radical;

R² represents alkyl, aryl, cycloalkyl, cycloalkylalkyl, or aralkyl radicals, which radicals are optionally substituted with alkyl, halogen, —NO₂, OR⁹ or SR⁹ radicals, wherein R⁹ represents hydrogen or alkyl radicals;

R³ represents alkyl, alkenyl, alkynyl, hydroxyalkyl, alkoxyalkyl, cycloalkyl, cycloalkylalkyl, heterocycloalkyl, heteroaryl, heterocycloalkylalkyl, aryl, aralkyl, or heteroaralkyl radicals;

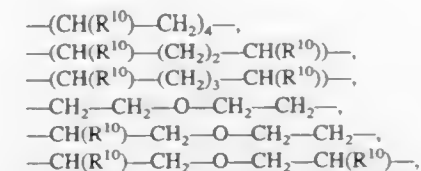
R⁴ represents alkyl, cycloalkyl or aralkyl radicals;

R⁶ represents hydrogen and alkyl radicals;

t represents 0 or 1; and

Y and Y' independently represent O or S; and

wherein alkyl, alone or in combination, is a straight-chain or branched-chain alkyl radical containing from 1 to 8 carbon atoms; alkenyl, alone or in combination, is a straight-chain or branched-chain hydrocarbon radical having one or more double bonds and containing from 2 to 8 carbon atoms; alkynyl, alone or in combination, is a straight-chain hydrocarbon radical having one or more triple bonds and containing from 2 to about 10 carbon atoms; cycloalkyl, alone or in combination, is a saturated or partially saturated monocyclic, bicyclic or tricyclic alkyl radical wherein each cyclic moiety contains from 3 to 8 carbon atoms; aryl, alone or in combination, is an unsubstituted phenyl radical, unsubstituted naphthyl radical, or phenyl or naphthyl radical substituted with one or more alkyl, alkoxy, halogen, hydroxy, amino, nitro, cyano or haloalkyl radicals; heterocycloalkyl, alone or in combination, is a saturated or partially unsaturated monocyclic heterocycle, having 5 to 6 ring members wherein at least one ring member is a nitrogen, oxygen or sulphur atom and which is unsubstituted or substituted on one or more substitutable carbon atoms with halogen, alkyl, alkoxy or oxo, or on a ring secondary nitrogen atom with alkyl, aralkoxycarbonyl, alkanoyl, phenyl or phenylalkyl; and heteroaryl, alone or in combination, is an aromatic monocyclic, bicyclic or tricyclic heterocycle, each ring having from 5 to 11 members wherein at least one ring member is a nitrogen, oxygen or sulphur atom and which is unsubstituted or substituted on one or more substitutable carbon atoms with halogen, alkyl, alkoxy or oxo, on a ring secondary nitrogen atom with alkyl, aralkoxycarbonyl, alkanoyl, phenyl or phenylalkyl, or on a ring tertiary nitrogen atom by oxido.



wherein R¹⁰ is alkyl of from one to four carbon atoms provided R⁸ and R⁹ are not both methyl; and

R¹¹ or R¹² is independently alkyl of from one to three carbon atoms or phenyl or

R¹¹ and R¹² are taken together as —(CH₂)_n— wherein n is 4 or 5.

5,510,489

METHOD OF PREPARING 1-AMINO-2,6-DIMETHYLPYRIDINE

Wolfgang Rybczynski, Rodenbach; Wolfgang Bauer; Eckard Kujath, both of Maintal, and Manfred Schrod, Weiterstadt, all of Germany, assignors to Cassella Aktiengesellschaft, Frankfurt am Main, Germany

PCT No. PCT/EP92/02594, § 371 Date May 17, 1994, § 102(e) Date May 17, 1994, PCT Pub. No. WO93/10110, PCT Pub. Date May 27, 1993

PCT Filed Nov. 12, 1992, Ser. No. 244,142

Claims priority, application Germany, Nov. 20, 1991, 41 38 143.2

Int. Cl. C07D 711/98

13 Claims

U.S. Cl. 546—244

1. In the process for the preparation of 1-amino-2,6-dimethylpyridine by catalytic hydrogenation of i-nitroso-2,6-dimethylpyridine in the presence of a palladium catalyst partly poisoned with iron ions, the improvement which comprises increasing the yield to more than about 90% by carrying out the hydrogenation in an aqueous solvent containing from about 0.1 to 10% by weight of at least one surfactant.

5,510,488
PROCESS TRANS-6-[2-(SUBSTITUTED-PYRROL-1-YL)ALKYL]PYRAN-2-ONE INHIBITORS OF CHOLESTEROL SYNTHESIS

Donald E. Butler, Holland; Tung Van Le, Jenison, and Thomas N. Nanninga, Holland, all of Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.

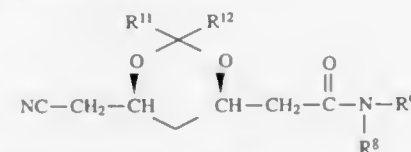
Division of Ser. No. 374,356, Jan. 18, 1995, Pat. No. 5,470,981, which is a division of Ser. No. 323,291, Oct. 19, 1994, Pat. No. 5,446,054, which is a division of Ser. No. 243,673, May 16, 1994, Pat. No. 5,397,792, which is a division of Ser. No. 135,385, Oct. 12, 1993, Pat. No. 5,342,952, which is a division of Ser. No. 25,701, Mar. 3, 1993, Pat. No. 5,298,627. This application May 15, 1995, Ser. No. 440,795

Int. Cl. C07D 211/10

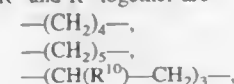
U.S. Cl. 546—207

8 Claims

1. A compound of Formula VI



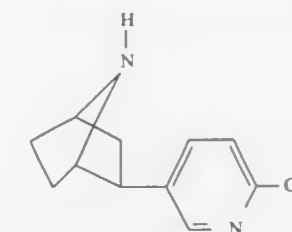
wherein R⁸ or R⁹ is independently alkyl of from one to ten carbon atoms, cyclopropyl, cyclobutyl, cyclopentyl, cyclohexyl, benzyl or phenyl or R⁸ and R⁹ together are



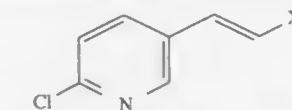
U.S. Cl. 546—268

9 Claims

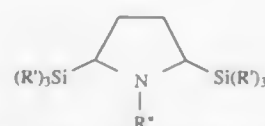
1. A process for synthesis of epibatidine of formula:



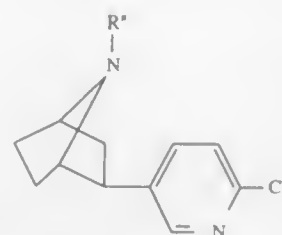
which comprises, reacting 6-chloro-3-vinyl pyridine of formula



wherein X represents CO₂Et, CHO, SO₂Ph, COCH₃ or H with N-1-alkyl-2,5 di (trialkyl silyl) pyrrolidine of formula



where R' and R* are each an alkyl group, at a temperature of from 0° to 30° C. in an organic solvent to produce N-alkyl epibatidine of formula



where R' is as defined above, and converting said N-alkyl epibatidine to epibatidine by catalytic hydrogenation.

(5) B is a chemical bond, CR₈CR₉,



SO₂, SO or S;
F is



SO₂, SO, S or CR₁₂R₁₃;

Ring G is a mono or bicyclic fused ring system containing 5 to 10 ring carbon atoms and containing 1 or 2 ring heteroatoms selected from the group consisting of S, N and O, with the proviso that at least one of the heteroatoms is O or N; and R₈, R₉, R₁₁, R₁₂, R₁₃ are independently hydrogen or lower alkyl.

5,510,492 PROCESS OF PREPARING PYRAZOLO [1,5-b][1,2,4] TRIAZOLES

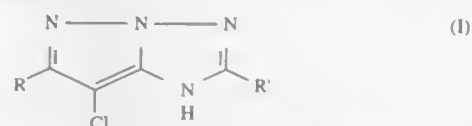
Ping-Wah Tang, and Terrence C. Mungal, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y. Continuation of Ser. No. 841,462, Feb. 26, 1992, abandoned. This application Oct. 28, 1993, Ser. No. 142,112

Int. Cl.⁶ C07D 487/04

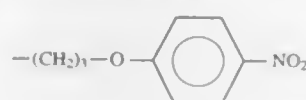
U.S. Cl. 548—262.4

4 Claims

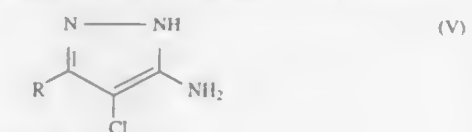
1. A process of preparing a 1H-pyrazolo [1,5-b][1,2,4] triazole compound of formula (I)



wherein R is selected from the group consisting of methyl, ethyl, n-propyl, n-butyl, and t-butyl and R' is



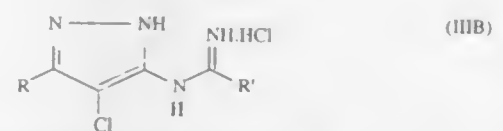
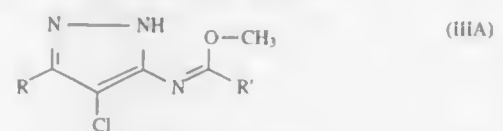
said process comprising reacting a compound of the formula (V)



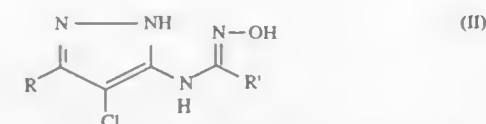
with a compound of the formula (VI)



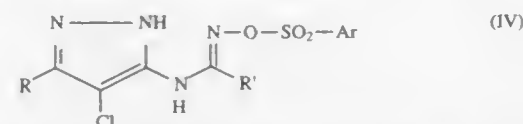
to obtain compounds of formula (IIIA) and (IIIB)



converting, in the presence of a first base, the compounds of formula (IIIA) and (IIIB) to a compound of formula (II),

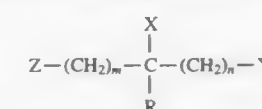


wherein R and R' are as previously defined, and reacting the compound of formula (II) with para-fluorobenzene-sulfonylchloride in the presence of a second base to obtain a compound of formula (IV)

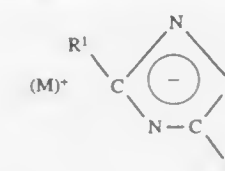


and cyclizing the compound of formula (IV) in the presence of a third base to obtain the compound of formula (I).

m is in an integer with a value of zero or one; n is an integer with a value of one or two which comprises the reaction of an intermediate compound of the formula:



wherein Z, R, X, m and n are as defined above and Y is selected from halo, tosyl and mesyl with a triazole salt of the formula:



wherein M is a cation or a mixture of cations; R¹ and R² are the same or different and have the same definition as R; and the triazole salt is added to the intermediate compound in multiple additions;

such that the ratio of the production of the 1H-(1,2,4-triazole) to the 4H-(1,2,4-triazole) is greater than about 13:1.

5,510,493 PROCESS FOR ALKYLATION WITH TRIAZOLES Deborah D. Graves, Blue Bell, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

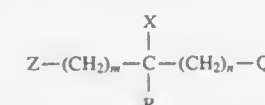
Filed Nov. 14, 1994, Ser. No. 337,710

Int. Cl.⁶ C07D 249/14; 249/08

U.S. Cl. 548—267.4

19 Claims

1. A process for the preparation of a triazole compound of the formula:



wherein Z is an unsubstituted (C₆-C₁₀)aryl group or a substituted (C₆-C₁₀)aryl group with up to three substituents selected from the group consisting of halogen, nitro, trihalomethyl, cyano, (C₁-C₄)alkyl, (C₁-C₄)alkoxy, (C₁-C₄)alkylthio, (C₁-C₄)alkylsulfinyl and (C₁-C₄)alkylsulfonyl;

R is a hydrogen atom, a (C₁-C₁₂)alkyl group, a (C₃-C₈)cycloalkyl group, a (C₂-C₈)alkenyl group, a (C₃-C₈)cycloalkenyl group, a (C₂ to C₈)alkenyl group, an unsubstituted (C₇ to C₁₄)aralkyl group or a (C₇ to C₁₄)aralkyl group substituted with up to three substituents selected from the group consisting of halogen, nitro, trihalomethyl, cyano, (C₁-C₄)alkyl, (C₁-C₄)alkoxy, (C₁-C₄)alkylthio, (C₁-C₄)alkylsulfinyl and (C₁-C₄)alkylsulfonyl; a (C₂ to C₄)alkoxy group, an unsubstituted (C₆ to C₁₀)aryloxy group or (C₆ to C₁₀)aryloxy group substituted with up to three substituents selected from the group consisting of halogen, nitro, trihalomethyl, cyano, (C₁-C₄)alkyl, (C₁-C₄)alkoxy, (C₁-C₄)alkylthio, (C₁-C₄)alkylsulfinyl and (C₁-C₄)alkylsulfonyl; or a hydroxy group; Q is an unsubstituted 1-(1,2,4-triazolyl) or 4-(1,2,4-triazolyl) or substituted 1-(1,2,4-triazolyl) or 4-(1,2,4-triazolyl) with two substituents selected from the group consisting of halogen, Cl-C 4)alkyl, nitro and cyano; X is hydrogen or CN;

5,510,494 PROCESS FOR THE PREPARATION OF C₁-C₄-ALKYL OR C₁-C₄-ALKOXY AND UNSUBSTITUTED 2-(CYANOMETHYL)BENZIMIDAZOLE

Erwin Dietz, Kelkheim/Ts., and Gustav Kapaun, Bad Soden, both of Germany, assignors to Hoechst AG, Germany Filed Feb. 23, 1994, Ser. No. 200,743

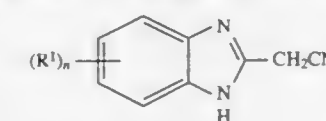
Claims priority, application Germany, Feb. 25, 1993, 43 05 714.4

Int. Cl.⁶ C07D 235/14

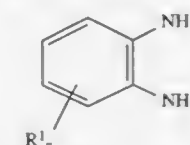
U.S. Cl. 548—309.7

10 Claims

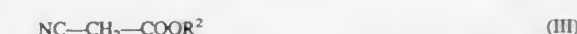
1. A process for the preparation of alkylated or alkoxyated or unsubstituted 2-(cyanomethyl)benzimidazole, of the formula (I)



by reacting an o-phenylenediamine of the formula (II)



in which R¹ is C₁-C₄-alkyl or C₁-C₄-alkoxy and n is an integer from 0 to 2, with a cyanoacetic ester of the formula (III)



in which R² is unsubstituted or substituted, linear, branched or cyclic C₂-C₁₂-alkyl said alkyl optionally substituted by one to three alkoxy groups at a temperature of 150°-175° C. in a halogen-free inert solvent wherein the solvent is an aromatic araliphatic or alkoxyaromatic substance whose boiling point is 150° C. or above or an aromatic hydrocarbon fraction whose lower limit of the boiling range is 150° C. or above or in a mixture of two or more of such solvents, without adding an aromatic sulfonic acid as catalyst.

5,510,495

PROCESS FOR THE ISOLATION AND PURIFICATION OF ESTER FUNCTIONALIZED IMIDAZOLE INTERMEDIATES BY SELECTIVE HYDROLYSIS

Gregory D. Harris, Wilmington, Del., assignor to The Du Pont Merck Pharmaceutical Company, Wilmington, Del.

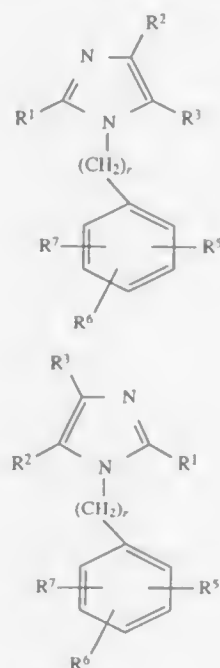
Filed Sep. 19, 1994, Ser. No. 307,441

Int. Cl.⁶ C07D 233/90; 233/68

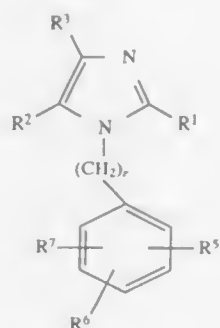
U.S. Cl. 548—334.5

9 Claims

1. A method for the isolation and purification of a compound of the formula (I) from a mixture of compounds of the formula (I) and (II)



(I)



(II)

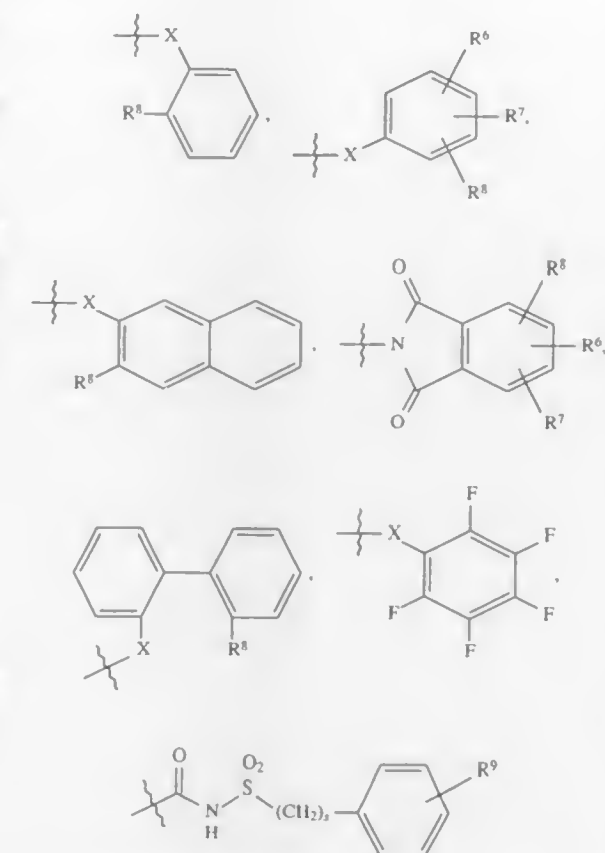
wherein

R¹ is selected from H; C₁-C₆ alkyl, C₁-C₆ fluoroalkyl, C₂-C₁₀ alkenyl, or C₂-C₁₀ alkynyl; C₁-C₆ alkyl-CO₂-(C₁-C₆ alkyl), C₁-C₆ fluoroalkyl-CO₂-(C₁-C₆ alkyl), C₂-C₁₀ alkenyl-CO₂-(C₁-C₆ alkyl), or C₂-C₁₀ alkynyl-CO₂-(C₁-C₆ alkyl); C₄-C₁₀ cycloalkylalkyl, C₃-C₆ cycloalkyl, C₅-C₁₀ cycloalkylalkenyl, or C₅-C₁₀ cycloalkylalkynyl; C₄-C₁₀ cycloalkylalkyl substituted by 1-13 —F, C₃-C₆ cycloalkyl substituted by 1-13 —F, C₅-C₁₀ cycloalkylalkenyl substituted by 1-13 —F, or C₅-C₁₀ cycloalkylalkynyl substituted by 1-13 —F; C₄-C₁₀ cycloalkylalkyl-CO₂-(C₁-C₆ alkyl), C₃-C₆ cycloalkyl-CO₂-(C₁-C₆ alkyl), C₅-C₁₀ cycloalkylalkenyl-CO₂-(C₁-C₆ alkyl), or C₅-C₁₀ cycloalkylalkynyl-CO₂-(C₁-C₆ alkyl); phenyl, naphthyl, or aryl-(C₁-C₄ alkyl); phenyl substituted with —F, naphthyl substituted with —F, or aryl-(C₁-C₄ alkyl) substituted with —F; phenyl-CO₂-(C₁-C₆ alkyl), naphthyl-CO₂-(C₁-C₆ alkyl), or aryl-(C₁-C₄ alkyl)-CO₂-(C₁-C₆ alkyl); —(CH₂)₃O(CH₂)_mR²; —(CH₂)₃O(CH₂)_mR³ substituted with —F; —(CH₂)₃O(CH₂)_mR³ substituted with —CO₂-(C₁-C₆ alkyl); benzyl; or benzyl substituted with up to 2 groups selected from halo, C₁-C₄ alkoxy, NO₂, or C₁-C₄ alkyl;

R² is C₁-C₆ alkyl, C₂-C₆ alkenyl, C₂-C₆ alkynyl, phenyl-(C₁-C₆)alkyl, phenyl-(C₁-C₆)alkenyl, (C₁-C₆)alkoxy-(C₁-C₆)alkyl, hydroxy-(C₁-C₆)alkyl, hydroxy-(C₂-C₆)alkenyl, hydroxy-(C₂-C₆)alkynyl, aminocarbonylalkyl, carbonylaminoalkyl, halogen;

R³ is —CN; —CONHR¹; or —CO₂R¹ where R¹ as defined above is not H;

R⁴ is H, Br, I, F, CF₃, (C₁-C₄)alkyl, —C(CF₃)₂OH, —NHSO₂CH₃, —C(=O)NHNHSO₂CF₃,



aryl; or aryl substituted by R⁹;

R⁶ is H, halo, NO₂, C₁-C₄ alkyl, C₁-C₄ alkoxy, —NHSO₂CH₃, —NHSO₂CF₃, —CONHO—(C₁-C₄)alkyl, tetrazolyl, trityl tetrazolyl, or furyl;

R⁷ is H, halo, C₁-C₄ alkyl, or C₁-C₄ alkoxy;

X is a single bond, —CO—, —CH₂—, —O—, —CONH—, —NHCO—, —OCH₂—, —CH₂O—, —NHSO₂—, —SO₂NH—, —CH=CH—, —CF=CH—, —CH=CF—, —CF=CF—, —CH₂CH₂—, —CF₂CF₂—, or



R⁸ is H, —NHSO₂CH₃, —NHSO₂CF₃, —NHCOCF₃, or —CONHNHSO₂CF₃;

R⁹ is H, C₁-C₄ alkyl, or phenyl;

r is 0 to 2;

m is 1 to 5; and

s is 0 to 5;

said method comprising the steps of:

treating a mixture of a compound of formula (I) and its regioisomer of formula (II) in a solvent system, which is:

a) a solvent or mixture of solvents, selected from a halogenated solvent, an ether solvent, a hydrocarbon solvent, a protic solvent, or an aprotic solvent, said solvent or mixture of solvents forming a single liquid phase; or

b) a solvent mixture of at least two immiscible solvents, selected from the solvent groups defined in a) above, that results in more than one liquid phase, said solvent mixture additionally containing a phase transfer catalyst present in the range of 1-20% mole based upon the mixture of compounds of formula (I) and formula (II);

5,510,497

POLYMERIZABLE ALIPHATIC CYCLOBUTENE COMPOSITIONS

Larry S. Corley, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

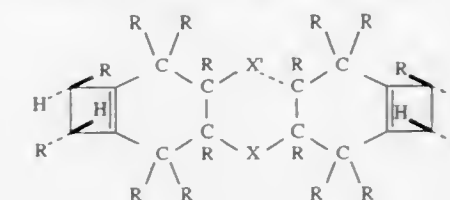
Filed Oct. 30, 1992, Ser. No. 969,654

Int. Cl.⁶ C07D 209/56; C07C 69/74; 49/613

U.S. Cl. 548—451

10 Claims

1. A composition of matter of the structural formula



in which each R is selected independently from hydrogen, halide, C₁₋₁₀ alkyl, aryl and C₁₋₁₀ heteroatomic; X is a carbonyl linking group and X' is selected from hydrogen and carbonyl linking groups.

5,510,496

SUBSTITUTED PYRAZOLYL BENZENESULFONAMIDES

John J. Talley, St. Louis, Mo.; Thomas D. Penning, Elmhurst, Ill.; Paul W. Collins, Deerfield, Ill.; James W. Malecha, Libertyville, Ill.; Stephen R. Bertenshaw, Brentwood, and Matthew J. Graneto, St. Louis, both of Mo., assignors to G.D. Searle & Co., Chicago, Ill.

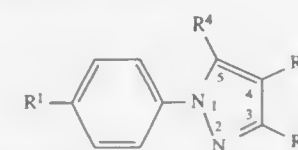
Division of Ser. No. 160,594, Nov. 30, 1993, Pat. No. 5,466,823. This application Jun. 1, 1995, Ser. No. 456,441

Int. Cl.⁶ C07D 231/12

U.S. Cl. 548—365.7

8 Claims

1. A compound of Formula I



wherein R¹ is sulfamyl;

wherein R² is selected from hydrido, halo, haloalkyl, cyano, nitro, formyl, carboxyl, alkoxy, carbonyl, carboxyalkyl, alkoxyalkyl, amidino, cyanoamidino, amido, alkoxy, amidoalkyl, N-monoalkylamido, N-monoarylamido, N,N-dialkylamido, N-alkyl-N-arylamido, alkylcarbonyl, alkylcarbonylalkyl, hydroxyalkyl, alkylthio, alkylsulfenyl, alkylsulfonyl, N-alkylsulfamyl, N-arylsulfamyl, arylsulfonyl, dialkylsulfamyl, N-alkyl-N-arylsulfamyl, heterocyclic, heterocycloalkyl and aralkyl; and

wherein R³ is selected from hydrido, alkyl, halo, haloalkyl, cyano, nitro, formyl, carboxyl, alkoxy, carbonyl, carboxyalkyl, alkoxyalkyl, amidino, cyanoamidino, amido, alkoxy, amidoalkyl, N-monoalkylamido, N-monoarylamido, N,N-dialkylamido, N-alkyl-N-arylamido, alkylcarbonyl, alkylcarbonylalkyl, hydroxyalkyl, alkylthio, alkylsulfenyl, alkylsulfonyl, N-alkylsulfamyl, N-arylsulfamyl, arylsulfonyl, dialkylsulfamyl, N-alkyl-N-arylsulfamyl, heterocyclic, heterocycloalkyl and aralkyl; and

wherein R⁴ is selected from aryl, cycloalkyl, cycloalkenyl and heterocyclic; wherein R⁴ is optionally substituted at a substitutable position with one or more radicals selected from halo, alkylthio, alkylsulfenyl, alkyl, alkylsulfonyl, cyano, carboxyl, alkoxy, carbonyl, amido, N-monoalkylamido, N-monoarylamido, N,N-dialkylamido, N-alkyl-N-arylamido, haloalkyl, hydroxyl, alkoxy, hydroxyalkyl, haloalkoxy, sulfamyl, N-alkylsulfamyl, amino, N-alkylamino, N,N-dialkylamino, heterocyclic, nitro and acylamino; provided R² and R³ are not identical radicals selected from hydrido, carboxyl and ethoxycarbonyl; further provided that R² is not carboxyl when R³ is hydrido and when R⁴ is phenyl; and further provided that R³ is not hydrido or alkyl when R² is haloalkyl;

or a pharmaceutically-acceptable salt thereof.

5,510,498

BENZOTHIOPHENE COMPOUNDS, INTERMEDIATES, COMPOSITIONS, AND METHODS

Alan D. Palkowitz, Carmel, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

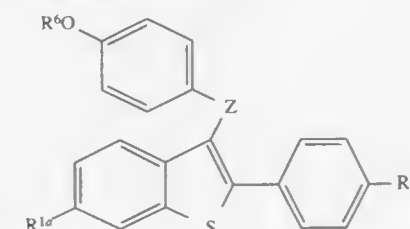
Division of Ser. No. 396,401, Feb. 28, 1995. This application Jun. 6, 1995, Ser. No. 470,536

Int. Cl.⁶ C07D 333/62; 333/64

U.S. Cl. 549—52

23 Claims

1. A compound of formula II



wherein

R^{1a} is —H or —OR⁷ in which R⁷ is a hydroxy protecting group; R^{2a} is —H, halo, or —OR⁸ in which R⁸ is a hydroxy protecting group, providing when Z is —S—, R^{2a} is not halo;

R⁶ is —H or a hydroxy protecting group which can be selectively removed; and

Z is —O— or —S—;

or a pharmaceutically acceptable salt thereof.

5,510,499

PROCESS FOR THE ISOLATION OF PURIFIED ETHYLENE GLYCOL CARBONATE (EGC)

Christine Mendoza-Frohn, Erkrath; Paul Wagner, Düsseldorf, and Hans-Peter Wirges, Krefeld, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Jul. 18, 1994, Ser. No. 276,748

Claims priority, application Germany, Jul. 26, 1993, 43 25 016.5

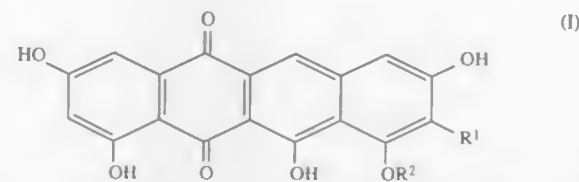
Int. Cl.⁶ C07D 317/38

U.S. Cl. 549—229

7 Claims

1. A process for the isolation of purified ethylene glycol carbonate (EGC) from a contaminated EGC which contains impurities

from the group comprising starting materials, by-products and/or catalysts of the preparation process, wherein the contaminated EGC is subjected to a fractional melt crystallization wherein the melt of the EGC to be purified is cooled in range from 38° to 20° C. at a cooling rate of the cooling medium of 40 to 0.1 K/h and is carried out with the aid of a tube-bundle crystallizer, plate heat exchanger or a falling-film crystallizer and the crystals of the purified EGC formed in this case are mechanically separated off from the remaining impurities dissolved in the residual melt.



wherein R¹ is hydrogen and R² is SO₂OH, or R¹ is acetyl and R² is H.

5,510,500

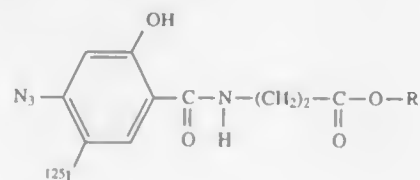
DERIVATIVES OF RYANODINE AND DEHYDRORYANODINE

Koert Gerzon; Rod A. Humerickhouse; Henry R. Besch, Jr., and Keshore R. Bidasee, all of Indianapolis, Ind., assignors to Indiana University Foundation, Bloomington, Ind. Division of Ser. No. 25,150, Mar. 2, 1993, Pat. No. 5,432,288, which is a continuation-in-part of Ser. No. 857,622, Mar. 25, 1992, abandoned, which is a continuation-in-part of Ser. No. 687,712, Apr. 18, 1991, abandoned. This application May 17, 1995, Ser. No. 443,273

Int. Cl.⁶ C07C 25/02

U.S. Cl. 552—8

1. A compound of the formula



in which R is H or a lower alkyl group.

5,510,501

SAINTOPIN DERIVATIVES

Hirofumi Nakano; Noboru Fujii; Yoshinori Yamashita; Yutaka Saitoh; Tsutomu Agatsuma; Katsuhiko Ando; Yasushi Nishiie, all of Machida; Katsunori Kita; Naoki Morishima, both of Shizuoka, and Katsushige Gomi, Susono, all of Japan, assignors to Kyowa Hakko Kogyo, Co. Ltd., Tokyo, Japan

PCT No. PCT/JP93/01680, § 371 Date Jul. 21, 1994, § 102(e) Date Jul. 21, 1994, PCT Pub. No. WO94/12458, PCT Pub. Date Jun. 9, 1994

PCT Filed Nov. 17, 1993, Ser. No. 256,711

Claims priority, application Japan, Jan. 12, 1992, 4-321694

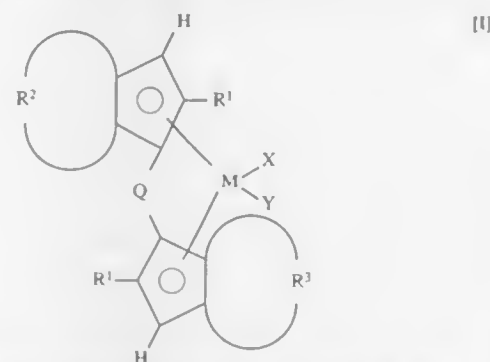
Int. Cl.⁶ C07C 49/423

U.S. Cl. 552—201

1 Claim

1. Saintopin derivatives which are represented by the following formula (I):

wherein R¹s each independently represent a hydrogen atom, a hydrocarbon group having 1 to 6 carbon atoms or a hydrocarbon group having 1 to 12 carbon atoms with a silicon atom contained therein; each of R² and R³ independently represents a divalent saturated or unsaturated hydrocarbon group having 3 to 20 carbon atoms which forms a ring condensed with the five-membered ring to which it is attached, provided that at least one of R² and R³ forms the ring condensed which is a seven- to twelve-membered ring having an unsaturated bond inherent in R² or R³ used; Q represents a divalent hydrocarbon group having 1 to 20 carbon atoms, a silylene group, a silylene group with a hydrocarbon group having 1 to 20 carbon atoms, a germylene group, or a germylene group with a hydrocarbon group having 1 to 20 carbon atoms, which group combines the two five-membered rings with each other; X and Y each independently represent a hydrogen atom, a halogen atom, a hydrocarbon group having 1 to 20 carbon atoms, or a hydrocarbon group having 1 to 20 carbon atoms with an oxygen atom, a nitrogen atom, a silicon atom or a phosphorus atom contained therein; and M represents a Group IVB to VIB transition metal of the Periodic Table.



5,510,503

BISPHOSPHINES FOR ASYMMETRIC HYDROGENATION CATALYSTS

Christian Laue, Monheim; Georg Schröder, Leverkusen; Dieter Arlt, Cologne, and Rolf Grosser, Leverkusen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Sep. 2, 1994, Ser. No. 300,507

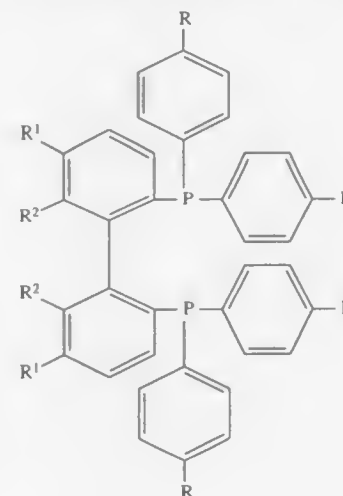
Claims priority, application Germany, Sep. 10, 1993, 43 30 730.2

Int. Cl.⁶ C07F 15/00; 9/02; C07C 5/02

U.S. Cl. 556—21

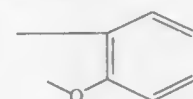
14 Claims

1. An enantiomerically pure bisphosphine of the formula



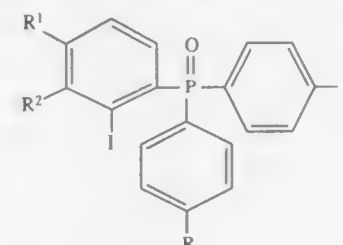
in which

R is hydrogen or alkyl having from 1 to 4 carbon atoms, R¹ is hydrogen and R² is chlorine, or R¹ and R² together form the radical of the formula



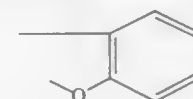
in their (R)- or (S)-form.

4. A compound of the formula

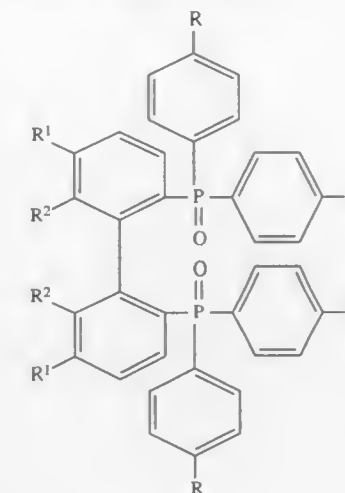


in which

R is hydrogen or alkyl having from 1 to 4 carbon atoms, R¹ is hydrogen and R² is chlorine, or R¹ and R² together form the radical of the formula

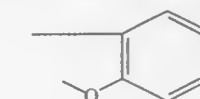


5. A compound of the formula



in which

R is hydrogen or alkyl having from 1 to 4 carbon atoms, R¹ is hydrogen and R² is chlorine, or R¹ and R² together form the radical of the formula



5,510,504

PROCESS FOR THE PREPARATION OF DERIVATIVES OF BIS(AMINO-METHYL) PHOSPHINIC ACID Anuschirwan Peyman; Karl-Heinz Budt, both of Kelkheim; Jörg Spanig, Berlin, all of Germany; Jian-Qi Li, Shanghai, China, and Bernd Stowasser, Rüsselsheim, Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt Am Main, Germany

PCT No. PCT/EP93/00838, § 371 Date Jan. 4, 1995, § 102(e) Date Jan. 4, 1995, PCT Pub. No. WO93/20086, PCT Pub. Date Oct. 14, 1993

PCT Filed Apr. 5, 1993, Ser. No. 313,044

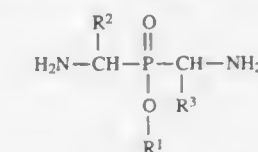
Claims priority, application Germany, Apr. 6, 1992, 42 11 536.1

Int. Cl.⁶ C07F 9/32; 9/30

(V) U.S. Cl. 558—145

7 Claims

1. A process for the preparation of α- or α,α'-substituted derivatives of the bis(aminomethyl)phosphinic acid of the formula I and their acid or basic salts

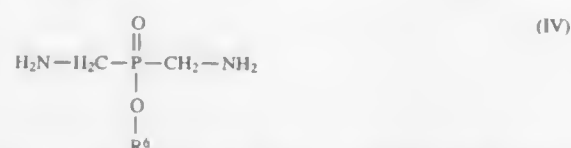


in which R¹ is R⁶=C₁-C₁₈ alkyl, C₂-C₁₈ alkenyl, C₂-C₁₈ alkynyl, C₆-C₁₂ aryl or C₇-C₂₀ arylalkyl and aryl or arylalkyl may be mono- or polysubstituted by fluorine, chlorine, bromine, NO₂, CN, OH, COOH, C₁-C₆ alkyl, C₁-C₆ alkoxy, C(O)-O-(C₁-C₆) alkyl, C(O)-(C₁-C₆) alkyl or O-C(O)-(C₁-C₆) alkyl and R¹ is also hydrogen or basic or acid salt radicals of α- or α,α'-substituted derivatives of the bis(aminomethyl)phosphinic acid, R² and R³ are identical or different and are, independently of each other, hydrogen, C₁-C₁₈ alkyl, C₂-C₁₈ alkenyl, C₂-C₁₈ alkynyl, C₆-C₁₂ aryl or C₇-C₂₂ arylalkyl, where alkyl, alkenyl or alkynyl may each be mono- or

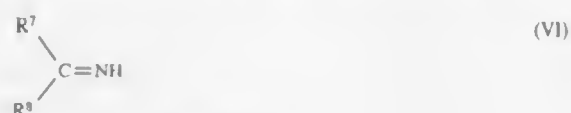
polysubstituted by fluorine, chlorine, bromine, NO₂, NH₂, CN, OH, COOH, C(O)—O—(C₁—C₆) alkyl, C(O)—(C₁—C₆) alkyl, O—C(O)—(C₁—C₆) alkyl or C₁—C₆ alkoxy and aryl or arylalkyl may be mono- or polysubstituted by fluorine, chlorine, bromine, NO₂, CN, OH, COOH, C₁—C₆ alkyl, C₁—C₆ alkoxy, C(O)—O—(C₁—C₆) alkyl, C(O)—(C₁—C₂) alkyl or O—C(O)—(C₁—C₆) alkyl, with the proviso that if R²=hydrogen and R³ has the abovementioned meaning, R³ must not also be hydrogen, and vice versa,

which comprises

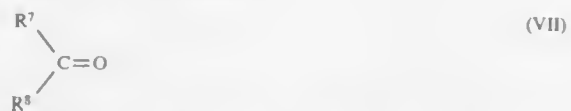
- esterifying bis(aminomethyl)phosphinic acid, after introducing amino protective groups, with a compound of the formula R⁶—OH in which R⁶ has the meaning mentioned under R¹, or
- initially esterifying bis(chloromethyl)phosphinyl chloride with a compound of the formula R⁶—OH, reacting the compound thus obtained with benzylamine to give the bis(N-benzylaminomethyl) phosphinate, then, after removing the amino protective groups from the compounds obtained by a) or b), reacting the bis(aminomethyl)phosphinate of the formula IV



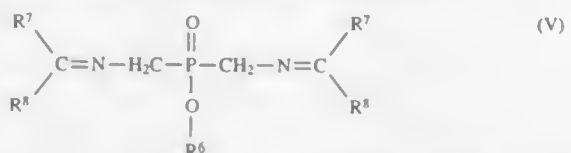
in which R⁶ is as defined above, with a compound of the formula VI



or a compound of the formula VII

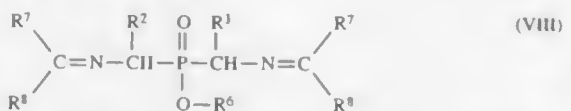


in which R⁷ and R⁸ are identical or different and are hydrogen, C₁—C₂₀ alkyl, C₂—C₂₀ alkenyl, C₂—C₂₀ alkynyl or C₆—C₁₂ aryl or R⁷ and R⁸ together form a ring system, under conditions in which water is removed, to give a compound of the formula V



in which R⁶, R⁷ and R⁸ have the abovementioned meaning,

e₁) converting the compound of the formula V to a compound of the formula VIII



in which R²=R³ and R³, R⁶, R⁷ and R⁸ have the abovementioned meaning, except for R³=hydrogen, after reaction with 2-3 equivalents of base, with 2-5 equivalents of a compound of the formula R³—X, in which R³ has the abovementioned meaning, except for hydrogen, and X is a leaving group, or

e₂) proceeding in an analogous manner to e₁), but using 1 to 1.2 equivalents of base and 1 to 1.2 equivalents of R³—X, obtaining a compound of the formula VIII in which R² is hydrogen and R³, R⁶, R⁷ and R⁸ have the abovementioned meaning, except for R³=hydrogen, optionally

e₃) reacting the compound of the formula VIII obtained in e₂), after reaction with a further 1 to 1.2 equivalents of a base, with 1 to 1.2 equivalents of a compound of the formula

R²—X in which R² and X have the abovementioned meaning, except for R²=hydrogen, to give a compound of the formula VIII in which R², R³, R⁶, R⁷ and R⁸ have the abovementioned meaning, except for R² and R³=hydrogen, or

f₁) reacting the compound of the formula V with a catalyst of the formula R⁹R¹⁰R¹¹R¹²NZ 2 to 3 equivalents of a compound of the formula R³—X and 2-25 equivalents of an alkali metal hydroxide or alkaline earth metal hydroxide, where N is nitrogen or phosphorus, Z is an anion of an inorganic salt, R⁹, R¹⁰, R¹¹ and R¹² are identical or different and, independently of each other, are C₆—C₁₀ alkyl, C₂—C₂₀ alkenyl, C₂—C₂₀ alkynyl, C₆—C₁₂ aryl or C₇—C₂₀ arylalkyl and R³ and X are as defined in e₁), in the presence of a water-immiscible solvent with water, to give a compound of the formula VIII in which R²=R³ and R³, R⁶, R⁷ and R⁸ have the abovementioned meaning, except for R³=hydrogen, or

f₂) proceeding in an analogous manner to f₁), but using 2-10 equivalents of an alkali metal or alkaline earth metal hydroxide and 1 to 1.2 equivalents of R³—X obtaining a compound of the formula VIII in which R² is hydrogen and R³, R⁶, R⁷ and R⁸ have the abovementioned meaning, except for R³=hydrogen, optionally

f₃) reacting the compound of the formula VIII obtained by f₂), under the conditions mentioned in f₁), with R²—X instead of R³—X to give a compound of the formula VIII in which R², R³, R⁶, R⁷ and R⁸ have the abovementioned meaning, except for R² and R³=hydrogen, using, however, 2 to 10 equivalents of the alkali metal or alkaline earth metal hydroxide and 1 to 1.2 equivalents of R²—X, or

g) proceeding in an analogous manner to f₁)-f₃), but using no solvent, and with methyltriethylammonium chloride instead of R⁹R¹⁰R¹¹R¹²NZ obtaining a compound of the formula VIII with the meanings mentioned in f₁)-f₃),

h) reacting the compound of the formula VIII obtained by e), f) or g) with 5-15% strength aqueous HCl or HBr to give a compound of the formula I, in which R¹ is R⁶ and R² and R³ have the meaning mentioned in e), f) or g), or

i) reacting the compound of the formula VIII obtained by e), f) or g) or optionally the compound of the formula I obtained by h) with 30% strength HBr or HCl in glacial acetic acid to give a compound of the formula I in which R² and R³ have the meaning mentioned in e), f) or g) and R¹ is defined as above, R¹, however, not being R⁶.

5,510,505

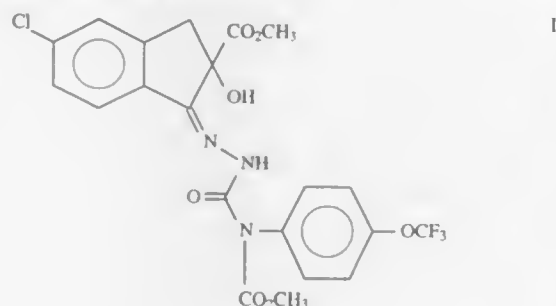
ARTHIPODICIDAL OXADIAZINE INTERMEDIATE
Gary D. Annis, Landenberg, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 6, 1995, Ser. No. 418,047

Int. Cl. C07C 261/00

U.S. Cl. 560—28

I. A compound having the formula:



5,510,506

PROCESS FOR PRODUCING CARBOXYLIC ACID DERIVATIVES

Akira Takase, Otsu; Hiroyuki Kai, Yamatokoriyama; Moriyasu Masui, Yokkaichi; Katuhisa Masumoto, Ibaraki; Akihiko Nakamura, Takatsuki; Yujiro Kiyoshima, Oita, and Mikio Sasaki, Ibaraki, all of Japan, assignors to Shionogi & Co., Ltd., and Sumitomo Chem. Co., Ltd., both of Osaka, Japan

PCT No. PCT/JP94/01075, § 371 Date Mar. 27, 1995, § 102(e) Date Mar. 27, 1995, PCT Pub. No. WO95/01328, PCT Pub. Date Jan. 12, 1995

PCT Filed Jul. 1, 1994, Ser. No. 392,852

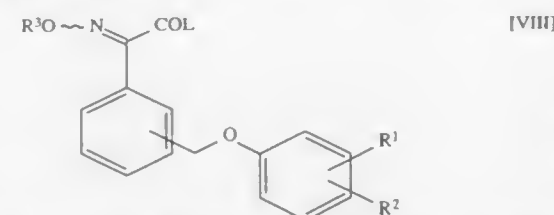
Claims priority, application Japan, Jul. 2, 1993, 5-164710; Jul. 2, 1993, 5-164711; Jul. 2, 1993, 5-164712; Feb. 17, 1994, 6-020497

Int. Cl. C07C 229/02

U.S. Cl. 560—35

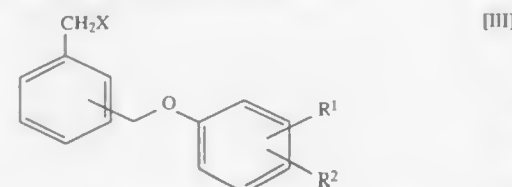
12 Claims

1. A process for producing a carboxylic acid derivative of the general formula [VIII]:

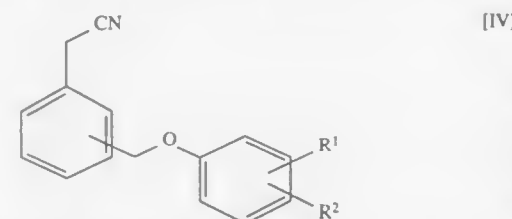


wherein R¹, R² and R³ are each as defined below and L is halogen or C₁—C₅ alkoxy, characterized in that:

a benzyl halide of the general formula [III]:

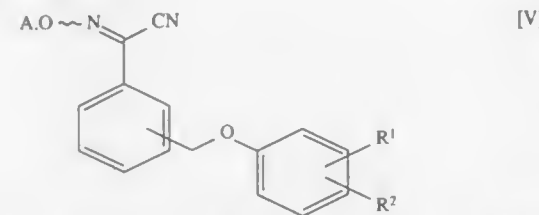


wherein R¹ and R² are the same or different and are independently hydrogen, C₁—C₅ alkyl, C₁—C₅ alkoxy, C₂—C₄ alkenyl, halogen or trifluoromethyl, and X is halogen, is reacted with a cyano compound to give a phenylacetone nitrile of the general formula [IV]:



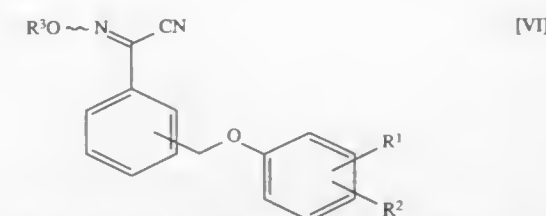
wherein R¹ and R² are each as defined above;

this compound is reacted with an alkyl nitrite in the presence of a base to give an α-hydroxyiminophenylacetone nitrile of the general formula [V]:



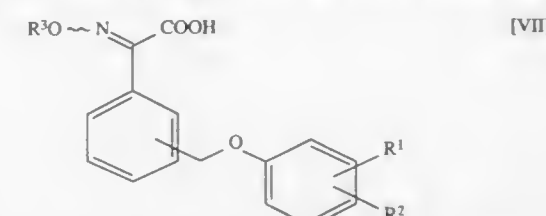
wherein R¹ and R² are each as defined above and A is an alkali metal or an alkaline earth metal;

this compound is reacted with an alkylating agent to give an α-alkoxyiminophenylacetone nitrile of the general formula [VI]:



wherein R¹ and R² are each as defined above and R³ is C₁—C₅ alkyl;

this compound is hydrolyzed in the presence of a base, or this compound is hydrated and treated with an acid, followed by hydrolysis in the presence of a base, to give an α-alkoxyiminophenylacetic acid of the general formula [VII]



wherein R¹, R² and R³ are each as defined above; and this compound is reacted with an acid halide forming agent, or converted into a metal salt and then reacted with an alkylating agent, or reacted with a lower alcohol in the presence of an acid catalyst.

5,510,507

SELECTIVE ASYMMETRIC HYDROGENATION OF DEHYDROAMINO ACID DERIVATIVES USING RHODIUM AND IRIIDIUM DIPHOSPHINITE CARBOHYDRATE CATALYST COMPOSITIONS

Timothy A. Ayers, and Thaliyil V. Rajanbabu, both of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 179,859, Jan. 11, 1994, Pat. No. 5,481,006.

This application Apr. 24, 1995, Ser. No. 427,327

Int. Cl. C07C 229/34

U.S. Cl. 560—41

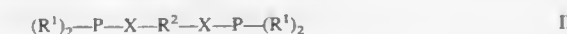
11 Claims

1. A process for asymmetric hydrogenation, comprising: reacting a dehydroamino acid derivative of formula I



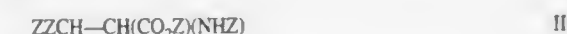
wherein each Z is independently H or a C₁ to C₄₀ carboalkoxy, C₁ to C₄₀ aromatic or nonaromatic hydrocarbyl or C₁ to C₄₀ aromatic or nonaromatic heterocyclic radical; optionally substituted with one or more halo, alkoxy, carboalkoxy, nitro, haloalkyl, hydroxy, amido, keto or sulfur containing groups;

with a source of hydrogen; in the presence of a catalyst composition comprising iridium or rhodium and a chiral, nonracemic diphosphinite ligand of formula II



wherein R² is a C₄ to C₄₀ dideoxycarbohydrate; each X is independently O or NR³, wherein R³ is H, C₁ to C₂₀ alkyl or aryl; and

each R¹ is independently an aromatic hydrocarbyl substituted with one or more amino, dialkylamino, hydroxy, alkoxy, alkyl, trialkylsilyl, trialkylaryl groups or an aromatic heterocycle substituted with one or more amino, dialkylamino, hydroxy, alkoxy, alkyl, trialkylsilyl, or triarylsilyl groups; to yield a chiral, nonracemic mixture of compounds of formula III



wherein Z is defined as above.

5,510,508

METHOD OF PREPARING A COMPOUND DERIVED FROM ASPARTAME, USEFUL AS A SWEETENING AGENT

Nofre Claude, 119 Cours Albert Thomas, 69003 Lyons, and Jean-Marie Tinti, 5, Impasse de la Drelatière, 69680 Chas-sieu, both of, France

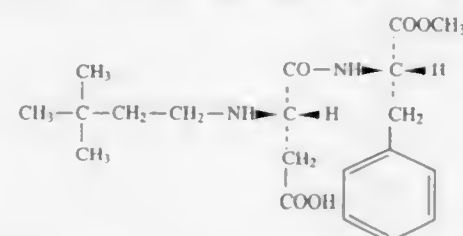
Filed May 8, 1995, Ser. No. 436,576

Claims priority, application France, May 9, 1994, 94 05674
Int. Cl.⁶ C07C 229/36

U.S. Cl. 560—41

8 Claims

I. A method of preparing N-[N-(3,3-dimethylbutyl)-L-α-aspartyl]-L-phenylalanine 1-methyl ester of the formula



which comprises treating a solution of aspartame and 3,3-dimethylbutyraldehyde, at room temperature, with hydrogen at a relative pressure equal to or less than 1 bar (0.1MPa), in the presence of a catalyst based on platinum or palladium.

5,510,509

PREPARATION OF ESTERS OF CYCLOPROPANE-1,1-DICARBOXYLIC ACID

Klaus-Dieter Steffen, Hlennef, Germany, assignor to Hüls Aktiengesellschaft, Marl, Germany

Filed Aug. 8, 1994, Ser. No. 287,156

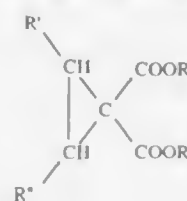
Claims priority, application Germany, Aug. 11, 1993, 43 26 917.6

Int. Cl.⁶ C07C 69/74

U.S. Cl. 560—124

1 Claim

I. The method of preparing a di-lower alkyl cyclopropane-1,1-dicarboxylate of the formula:



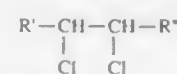
wherein

R is alkyl of 1 to 4 carbon atoms, and R' and R'', which may be identical to or different from each other, are each hydrogen, methyl, ethyl or chlorine, provided that at least one of R' and R'' is hydrogen, in the presence of dimethylformamide or dimethylacetamide, which comprises reacting a di-lower alkyl malonate of the formula



wherein

R has the same meanings as in formula I, with comminuted potassium carbonate having a particle size distribution of 85% or more smaller than 0.1 mm and 70% or more smaller than 0.05 mm, and with a 1,2-dichloroalkane of the formula



wherein

R' and R'' have the same meanings as in formula I, at a temperature of 90° to 160° C.,

while continuously azeotropically distilling off the water released by the reaction, the molar ratio of dialkyl malonate: 1,2-dichloroalkane: potassium carbonate being 1: (2.5 to 3.5) : (1.0 to 1.4).

5,510,510

INHIBITORS OF FARNESYL PROTEIN TRANSFERASE

Dinesh V. Patel, Fremont, Calif., and Scott A. Biller, Ewing, N.J., assignors to Bristol-Meyers Squibb Company, Princeton, N.J.

Continuation-in-part of Ser. No. 240,356, May 10, 1994, abandoned. This application Jun. 28, 1994, Ser. No. 267,080

Int. Cl.⁶ C07C 69/02

U.S. Cl. 560—129

7 Claims

I. A compound of the formula



or an enantiomer, diastereomer, pharmaceutically acceptable salt, prodrug or solvate thereof, wherein:

X is —ONR¹C(O)— or —N(OH)C(O)—;

Y is —CO₂R², —SO₂R² or —P(O)(OR²)(R³);

R is alkyl, substituted alkyl, alkenyl, substituted alkenyl, alkenylene or aryl;

R¹ is —(O),R⁴;

R¹, R² and R⁴ are each independently hydrogen, alkyl, aryl or aralkyl;

m and n are each independently 0 or an integer from 1 to 5; and t is 0 or 1.

5,510,511

PROCESS FOR PREPARING N,O-DIALKYLHYDROXYLAMINE, ITS SALTS OR INTERMEDIATES IN THEIR SYNTHESIS

Satoshi Inoki; Mitsuyuki Takesue; Isao Hashimoto; Noriaki Kihara, and Kiyonori Sugi, all of Kuga, Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Filed Jul. 27, 1993, Ser. No. 97,225

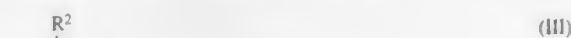
Claims priority, application Japan, Jul. 31, 1992, 4-205804; (1) Oct. 14, 1992, 4-276381; Oct. 23, 1992, 4-286283; Mar. 26, 1993, 5-068664; Jun. 30, 1993, 5-162981

Int. Cl.⁶ C07C 261/00

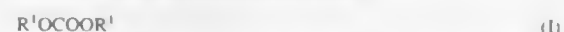
U.S. Cl. 560—157

13 Claims

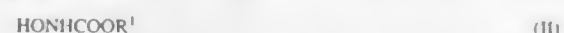
I. A process for preparing N,O-dialkylhydroxycarbamic acid ester represented by the following formula (III)



wherein R¹ is a hydrocarbon group, and R² is a lower alkyl group, comprising reacting hydroxylamine represented by the formula NH₂OH or its salt at a temperature of from 0° to 10° C. and at a pH of from 12 to 13 with dihydroxycarbonyl carbonate represented by the following formula (I)



wherein R¹ is as defined above, in the presence of a basic compound to prepare hydroxycarbamic acid ester represented by the following formula (II)



wherein R¹ is as defined above, and alkylating the hydroxycarbamic acid ester of formula (II) at a temperature of from 0° to 10° C. and a pH of from 12 to 13 with an alkylating agent in the presence of a basic compound to produce a solution containing the N,O-dialkylhydroxycarbamic acid ester of formula (III).

4. A process for recovering N,O-dialkylhydroxycarbamic acid ester represented by the following formula (III)

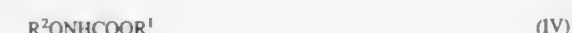


wherein R¹ is a hydrocarbon group, and R² is a lower alkyl group, comprising azeotropically distilling the N,O-dialkylhydroxycarbamic acid ester with water.

6. A process for recovering N,O-dialkylhydroxycarbamic acid ester represented by the following formula (III)



wherein R¹ is a hydrocarbon group, and R² is a lower alkyl group, comprising azeotropically distilling N,O-dialkylhydroxycarbamic acid ester with water from a solution containing the N,O-dialkylhydroxycarbamic acid ester and O-alkylhydroxycarbamic acid ester represented by the following formula (IV)



wherein R¹ and R² are as defined above.

5,510,512

PROCESS FOR PREPARATION OF 2-(DIALKOXYMETHYL)-CARBOXYLIC ACID ESTERS

Helnz Strutz, Frankfurt am Main, Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Continuation of Ser. No. 84,183, Jul. 1, 1993, abandoned. This application Nov. 14, 1994, Ser. No. 339,639

Claims priority, application Germany, Jan. 5, 1991, 41 00 178.8

Int. Cl.⁶ C07C 69/708

U.S. Cl. 560—186

19 Claims

I. A process for the preparation of 2-(dialkoxyethyl)carboxylic acid esters of the formula I



wherein

R¹ is a non-aromatic hydrocarbon radical or a heterocyclic non-aromatic radical, which apart from oxygen, nitrogen and/or sulfur atoms in the ring only contains carbon and hydrogen atoms, and each of which has 1 to 20 carbon atoms, it being possible for the radical R¹ to carry 1 to 5 substituents and the substituents being identical or different and being halogen, an aryl, carbalkoxy, dialkylamino, diarylamino or cyano group or an alkoxy groups, the alkyl being substituted or unsubstituted C₁- to C₁₂-alkyl, or is an aryloxy group, the aryl being substituted or unsubstituted C₆- to C₁₄-aryl, a substituted or unsubstituted benzyl or phenethyl radical or an R⁴O—(R⁵O)_x—R⁵ group, where R⁴ is substituted or unsubstituted C₁- to C₁₂-alkyl or C₆- to C₁₄-aryl, R⁵ is a branched or unbranched hydrocarbon radical having 1 to 4 carbon atoms or phenylene and x=1 to 6,

R² is hydrogen or alkyl having 1 to 5 carbon atoms and R³ is unsubstituted or substituted C₆- to C₁₄-aryl or a radical mentioned under R¹, which comprises the step of:

conducting an oxidizing β-acetalization reaction of acrylic acid esters with alcohols R¹OH, wherein R¹ has the meaning mentioned, in the presence of: an oxidant selected from the group consisting of pure oxygen or atmospheric oxygen

a catalyst system containing one or more metals of the platinum group and/or compounds thereof and of a copper compound, said catalyst system containing 1 to 4

equivalents of anions, based on the sum of the metal atoms and the metal cations, of which at most 3 equivalents are halide ions, the halogen having a molecular weight of at least 35;

at a temperature of up to 80° C.

5,510,513

FLUORINE CONTAINING DIESTER OF ALKYL-OR ALKENYLSUCCINIC ACID, PREPARATION THEREOF AND MAGNETIC RECORDING MEDIUM

Yoshiaki Kai, Neyagawa; Kiyosi Takahashi, Ibaraki, and Yukikazu Ohchi, Kadoma, all of, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

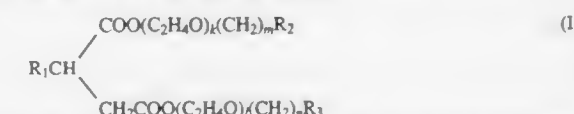
Filed Apr. 5, 1994, Ser. No. 223,001

Claims priority, application Japan, Apr. 5, 1993, 5-077819
Int. Cl.⁶ C07C 69/40; 69/52

U.S. Cl. 560—197

2 Claims

I. A fluorine containing diester of an alkyl- or alkenylsuccinic acid represented by the general formula:



wherein R₁ represents an alkyl or alkenyl group, at least one of R₂ and R₃ is a fluoroalkyl or fluoroalkenyl group, the remaining of R₂ and R₃ are an alkyl or alkenyl group, k, l, m and n are each 0 or an integer of 1 to 20, respectively, and k+l is an integer of 2 to 20.

5,510,514

PROCESS FOR THE PRODUCTION OF ALKYL (METH)ACRYLATES BY DIRECT ESTERIFICATION

Michel Fauconet, Valmont; Norbert Richard, Creutz Wald; Marc Esch, Frey Ming - Merlebach, and Nadine Colin, Saint-Avoid, all of, France, assignors to Elf Atochem S.A., Puteaux, France

Filed Jan. 27, 1994, Ser. No. 187,282

Claims priority, application France, Jan. 27, 1993, 93 00827
Int. Cl.⁶ C07C 67/48

U.S. Cl. 560—218

14 Claims

I. A process for the production of a C₁-C₁₅alkyl (meth)acrylate comprising:

- conducting a direct esterification of (meth)acrylic acid by a C₁-C₁₅ alcohol, said esterification being catalyzed by sulphuric acid and resulting in a crude reaction mixture comprising C₁-C₁₅ alkyl (meth)acrylate, the alcohol, (meth)acrylic acid, C₁-C₁₅ alkyl hydrogen sulphate, and sulphuric acid;
- adding to said crude reaction mixture an aqueous solution of a base to neutralize the (meth)acrylic acid, the C₁-C₁₅ alkyl hydrogen sulphate, and the sulphuric acid thereby forming an organic phase and an aqueous phase, the resulting salts passing into the aqueous phase of the said mixture;
- separating the resulting organic phase from the resultant aqueous phase;
- recovering the alkyl (meth)acrylate product from said organic phase;
- adding acid to said resultant aqueous phase and subjecting the alkyl hydrogen sulphate present in its salt form in said aqueous phase to acid hydrolysis so as to form a C₁-C₁₅ alcohol and sulphuric acid in the said phase;
- neutralizing the acidic species resulting from the said hydrolysis by introduction of a base into the medium; and
- recovering the C₁-C₁₅ alcohol from the resulting aqueous phase from step (f).

5,510,515

PROCESS FOR PURIFYING POLAR VINYL COMPOUND
Toshiyuki Akizawa; Hiroyuki Hasegawa; Hitoshi Nakamura, all of Oita; Katsufumi Urabe, Kobe; Shingo Yoshida, Kobe; Yuichi Matsuda, Kobe, and Tamiharu Sakai, Kobe, all of Japan, assignors to Showa Denko K. K., Tokyo, and Kabushiki Kaisha Kobe Seiko Sho, Iiyogo, both of Japan
Filed Sep. 16, 1994, Ser. No. 305,962

Claims priority, application Japan, Sep. 21, 1993, 5-235011; Sep. 22, 1993, 5-236824; Sep. 22, 1993, 5-236825

Int. Cl.⁶ C07C 67/48

U.S. Cl. 560—218

12 Claims

1. A process for purifying a polar vinyl compound, comprising pressurizing crude polar vinyl compound containing impurities, including polymerization inhibiting substances and starting materials used in preparation of the polar vinyl compound, to 500–3000 atm at 0°–100° C., the polar vinyl compound having at least one member selected from the group consisting of an oxygen atom, a nitrogen atom and a sulfur atom, to thereby form crystals of the polar vinyl compound and separating the crystals of the polar vinyl compound from a liquid phase under pressure to thereby obtain a highly purified polar vinyl compound.

5,510,516

PROCESS FOR SELECTIVE EPOXIDATION OF UNSATURATED (METH)ACRYLATES, NEW FUNCTIONAL (METH)ACRYLATES OBTAINED AND THEIR APPLICATION TO THE SYNTHESIS OF NEW POLYMERS

Paul Caubere, Nancy; Yves Fort, Vandoeuvre les Nancy, and Agnès Ortat, Jarny, all of France, assignors to ATOCIEM, Paris La Defense, France

Division of Ser. No. 725,318, Jul. 8, 1991, Pat. No. 5,283,360.

This application May 4, 1993, Ser. No. 55,884

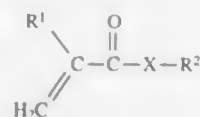
Claims priority, application France, Jul. 6, 1990, 90/08 607

Int. Cl.⁶ C07C 69/52

U.S. Cl. 560—220

12 Claims

1. A process for the epoxidation of an unsaturated (meth)acrylic compound of formula I:



wherein:

X is oxygen, sulphur, NH, -NR³ in which R³ is an alkyl group having 1 to 12 carbon atoms, or —O—(CH₂)_n in which n is an integer ranging from 1 to 16 inclusive, R² is a hydrocarbon of 2 to 20 carbon atoms, which is straight-chain or branched alkyl, monocyclic or polycyclic cycloalkyl or heterocycloalkyl, and alkylaryl chains, said hydrocarbon comprising an olefinic double bond,

R¹ is hydrogen or alkyl of 1 to 5 carbon atoms, comprising reacting said unsaturated (meth) acrylate, at a temperature of between 10° C. and 60° C. with at least one oxidizing compound chosen from:

hydrogen peroxide in the presence of at least one catalyst chosen from alkali metal molybdates and tungstates and in the presence of at least one phase transfer agent, and when R² denotes a polycyclic cycloalkyl or heterocycloalkyl chain, an organic peracid or hydrogen peroxide in the presence of at least one heteropolyacid.

5,510,517

PROCESS FOR PRODUCING N-AMINO-1-HYDROXY-ALKYLIDENE-1,1-BISPHOSPHONIC ACIDS

Richard R. Dauer, Longmont, Colo.; Lisa DiMichele, North Plainfield, N.J.; Mauricio Futran, and Gerard R. Kieczkowski, both of Westfield, N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 239,640, May 9, 1994, abandoned, which is a continuation of Ser. No. 111,751, Aug. 25, 1993, abandoned. This application Aug. 4, 1994, Ser. No. 286,151

Int. Cl.⁶ C07F 9/28

U.S. Cl. 562—13

5 Claims

1. A compound of the structural Formula I

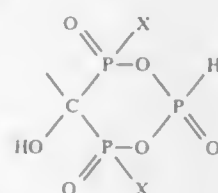


I

wherein Z is selected from the group consisting of:

a) H₂N—C₂₋₅alkyl—;

R₁ is:



a)

wherein X is —OH or Cl.

5,510,518

PROCESS FOR THE HYDROSULFINATION OF OLEFINS

Jürgen K. Herwig, and Wilhelm Keim, both of Aachen, Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Germany

Filed Sep. 1, 1994, Ser. No. 299,746

Claims priority, application Germany, Sep. 4, 1993, 43 29 932.6

Int. Cl.⁶ C07C 31/04

U.S. Cl. 562—125

5 Claims

1. A process for the hydrosulfination of a C₃–C₁₈ olefin, which comprises carrying out the hydrosulfination in the presence of a palladium catalyst, SO₂ and hydrogen at a temperature above the ceiling temperature of the SO₂/olefin copolymer system up to a temperature of 160° C.

5,510,519

OPTICALLY ACTIVE SECONDARY AMINE COMPOUND, PROCESS FOR PRODUCING OPTICALLY ACTIVE SECONDARY AMINE COMPOUND AND PROCESS FOR PRODUCING OPTICALLY ACTIVE CARBOXYLIC ACID BY USING SAID COMPOUND

Yukio Yoneyoshi; Junko Kudo, both of Misawa, and Toshio Nishioka, Toyonaka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Division of Ser. No. 863,976, Apr. 6, 1992, Pat. No. 5,298,660.

This application Dec. 13, 1993, Ser. No. 165,716

Claims priority, application Japan, Apr. 8, 1991, 3-075096; Nov. 27, 1991, 3-312490

Int. Cl.⁶ C07B 57/00; C07C 209/88; 209/40

U.S. Cl. 562—401

12 Claims

1. A process of using an optically active secondary amine compound for the preparation of an optically active carboxylic acid, wherein an optically active secondary amine compound of the general formula (I):



wherein R₁ represents a naphthyl or cyclohexyl group, or a phenyl group optionally substituted by halogen, nitro, lower alkyl or lower alkoxy,

R₂ represents a lower alkyl group or a benzyl group optionally substituted by lower alkyl,

R₃ represents a p-hydroxyphenyl or 2-hydroxy-3-lower alkoxyphenyl group when R₂ is lower alkyl, or R₃ represents a p-hydroxyphenyl group when R₂ is benzyl optionally substituted by lower alkyl, and

C* represents an asymmetric carbon atom,

is reacted with a racemic carboxylic acid selected from the group consisting of (±)-chrysanthemic acid, (±)-ibuprofen, (±)-naproxen, (±)-flurbiprofen, (±)-ketoprofen, (±)-2-(4-chlorophenyl)isovaleric acid, (±)-mandelic acid, (±)-2-hydroxy-4-phenylbutanoic acid and (±)-permethic acid, and the resultant amine salt is then subjected to an optical resolution operation.

5,510,520

OPTICAL RESOLUTION METHOD

Masatoshi Kawashima, Yokohama, Japan, assignor to Kankyo Kagaku Center Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 974,826, Nov. 16, 1992, Pat. No. 5,395,962, which is a continuation of Ser. No. 739,314, Aug. 1, 1991, abandoned. This application Aug. 19, 1994, Ser. No. 293,036

Claims priority, application Japan, Aug. 6, 1990, 2-206846; Sep. 14, 1990, 2-242706; Dec. 27, 1990, 2-414693; Apr. 23, 1991, 3-117859

Int. Cl.⁶ C07D 227/06

U.S. Cl. 562—401

5 Claims

1. A method for optically resolving a bifunctional compound, which comprises the steps of:

reacting an optically active bifunctional resolving reagent with said bifunctional compound to form a liquid material, precipitating first crystals from said liquid material, separating said first crystals from said liquid material,

(a) treating said first crystals thus separated with an acidic material, a basic material, or both a basic material and an acidic material,

(b) heating the separated liquid material, cooling it or allowing it to stand, whereby second crystals are formed, separating said second crystals from the liquid material, and then treating the separated second crystals with an acidic material, a basic material, or both a basic material and an acidic material, and

collecting only one enantiomer of a pair of enantiomers of an optically active bifunctional compound from said steps (a) and (b).

wherein said bifunctional compound is a compound selected from the group consisting of dihydroxy compounds, hydroxy-oxime compound and diamino compounds, and said optically active bifunctional resolving reagent is an optically active diamino compound or an optically active dihydroxy compound.

5,510,521

PROCESS FOR THE PRODUCTION OF AROMATIC CARBOXYLIC ACIDS

James F. McGehee; Sunday O. Ogundiran, and Robert Lin, all of Kingsport, Tenn., assignors to Eastman Chemical Company, Kingsport, Tenn.

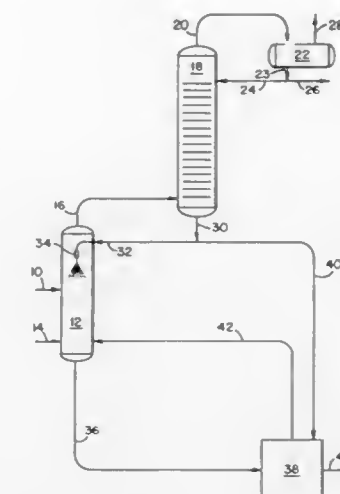
Filed Mar. 27, 1995, Ser. No. 411,363

Int. Cl.⁶ C07C 51/265

U.S. Cl. 562—414

6 Claims

1. A process for the continuous production of an aromatic polycarboxylic acid in a pressurized oxidation reactor by liquid-



phase, exothermic oxidation of an alkyl aromatic hydrocarbon with an oxygen-containing gas in the presence of an oxidation catalyst and aqueous, C₂–C₆ aliphatic, monocarboxylic acid solvent which comprises the steps of:

- (1) continuously feeding to a reactor alkyl aromatic hydrocarbon, aqueous, monocarboxylic acid solvent having oxidation catalyst dissolved therein and oxygen containing gas;
- (2) continuously removing from the lower portion of the reactor product-containing liquid comprising aromatic polycarboxylic acid and the aqueous, monocarboxylic solvent having the oxidation catalyst dissolved therein;
- (3) continuously removing from the upper portion of the reactor and feeding directly into a lower portion of a water removal column reactor off-gas comprising oxygen-depleted gas and vaporized aqueous, monocarboxylic acid solvent;
- (4) continuously removing from the lower portion of the water removal column a bottoms liquid containing partially de-watered monocarboxylic acid solvent;
- (5) returning to the reactor at least a portion of the bottoms liquid obtained in step (4) in the form of a spray above the phase separation of the gas/liquid contents of the reactor;
- (6) continuously removing from the water removal column overhead aqueous vapors having minimal mono-carboxylic acid solvent therein;
- (7) condensing the aqueous vapors into a distillate product; and
- (8) returning to a fractionating zone of the water removal column at least a portion of the distillate product obtained in step (7).

5,510,522

SYNTHESIS OF N-FORMYL-3,4-DI-T-BUTOXYCARBONYLOXY-6-(TRIMETHYLSSTANNYL)-L-PHENYLALANINE ETHYL ESTER AND ITS REGIOSELECTIVE RADIOFLUORODESTANNYLATION TO 6-[¹⁸F]FLUORO-1-DOPA

Nagichettiar Satyamurthy, Los Angeles; Jorge R. Barrio, Agoura Hills, both of Calif.; Allyson J. Bishop, Wahnemuhle, Germany; Mohammad Namavari, Los Angeles, Calif., and Gerald T. Bida, Shreveport, La., assignors to Regents of the University of California, Oakland, Calif.

Continuation-in-part of Ser. No. 903,915, Jun. 25, 1995, Pat. No. 5,393,908. This application Feb. 22, 1995, Ser. No. 393,428

Int. Cl.⁶ C07C 229/00

U.S. Cl. 562—446

3 Claims

1. The process of forming 6-fluoro derivatives of a benzene containing chemical compound selected from the group consisting of L-DOPA and chemicals in the L-DOPA family comprising the steps of:

- (a) in the presence of acetic anhydride, reacting the chemical compound containing a benzene ring with a second chemical compound capable of protecting a chemical moiety on the first benzene carbon;
- (b) reacting the product of step (a) with iodine and silver trifluoroacetate;
- (c) reacting the product of step (b) with BBr_3 ;
- (d) reacting the product of step (c) with di *t*-butyl dicarbonate;
- (e) reacting the product of step (d) with hexamethylditin;
- (f) bubbling an unlabelled or radiolabeled fluorine compound selected from the group consisting of $[\text{F}^{18}]\text{CH}_3\text{COOF}$, $[\text{F}^{18}]\text{F}_2$, and $[\text{F}^{18}]\text{OF}_2$ and combinations thereof through the product of step (e);
- (g) treating the product of step (f) above with hydrobromic acid;
- (h) raising the pH of the product of step (g) above to a value ≤ 7 by the addition of NaOH .

5,510,523

PROCESS FOR THE PREPARATION OF ACETIC ACID
Kenichi Yamaseki, Mitaka; Yasuo Konishi, and Hiroshi Uchida, both of Yokohama, all of, Japan, assignors to Tokyo Gas Company, Limited, Tokyo, Japan

Filed Jun. 19, 1992, Ser. No. 901,140

Claims priority, application Japan, Jun. 21, 1991, 3-175818

Int. Cl. C07C 51/12

U.S. Cl. 562—519

3 Claims

1. A process for preparing acetic acid from methanol and carbon monoxide, which process comprises:

contacting methanol with a gaseous component selected from a group consisting of carbon monoxide and a mixed gas of carbon monoxide with hydrogen of 1% by volume or less in the presence of a carbon-supported rhodium metal catalyst, a methylidide promoter and water in vapor phase under conditions of a reaction temperature of $180^\circ\text{--}220^\circ\text{C}$., a reaction pressure of $5\text{--}10\text{ kg/cm}^2\text{G}$, and a weight of catalyst to feed gas flow rate ratio (W/F) of $10\text{--}20\text{ g/h/mole}$.

5,510,524

PROCESS FOR THE PRODUCTION OF A CARBOXYLIC ACID

Carl S. Garland, Silver Spring, Md.; Martin F. Giles, Middlesex, United Kingdom; Andrew D. Poole, Hampshire, United Kingdom, and John G. Sunley, North Humberston, United Kingdom, assignors to BP Chemicals Limited, London, England

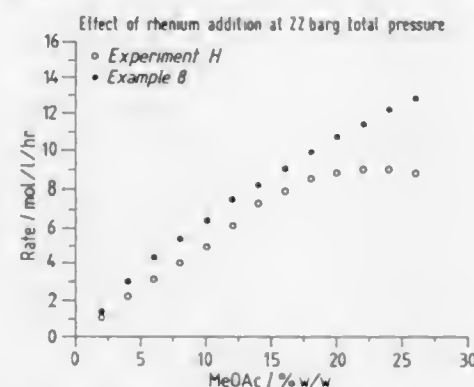
Filed Jun. 2, 1995, Ser. No. 458,692

Claims priority, application United Kingdom, Feb. 21, 1995, 9503384; Feb. 21, 1995, 9503386

Int. Cl. C07C 53/08; 53/12; 51/12

U.S. Cl. 562—519

13 Claims



1. A process for the production of a carboxylic acid by carbonylation of an alkyl alcohol and/or a reactive derivative thereof which process comprises contacting said alcohol and/or a reactive deriva-

tive thereof with carbon monoxide in a liquid reaction composition in a carbonylation reactor; the liquid reaction composition comprising: (a) an iridium catalyst or a rhodium catalyst, (b) alkyl halide, (c) at least a finite concentration of water, and (d) rhenium as promoter.

5,510,525

DIRECT CATALYTIC OXIDATIVE CARBONYLATION OF LOWER ALKANES TO ACIDS

Ayusman Sen, and Minren Lin, both of State College, Pa., assignors to Gas Research Institute, Chicago, Ill.

Continuation-in-part of Ser. No. 95,945, Jul. 22, 1993, Pat.

No. 5,393,922. This application Dec. 16, 1994, Ser. No.

357,437

Int. Cl. C07C 51/16

U.S. Cl. 562—542

20 Claims

1. A process for direct catalytic oxidative carbonylation of lower alkanes to acids having one greater carbon atom than said lower alkane, comprising: contacting said lower alkane with carbon monoxide and oxygen in an aqueous medium and in the presence of a metal salt catalyst wherein said metal is selected from the group consisting of Fe, Ru, Os, Co, Rh, Ir, Ni, Pd, Pt, Cu, Ag, Au and mixtures thereof and a promoter selected from the group consisting of iodide, bromide and chloride ions, metallic metals Fe, Ru, Os, Co, Rh, Ir, Ni, Pd, Pt, Cu, Ag, Au, and mixtures thereof.

5,510,526

LACTIC ACID PRODUCTION, SEPARATION AND/OR RECOVERY PROCESS

Abraham M. Baniel; Aharon M. Eyal, both of Jerusalem; Joseph Mizrahi, Haifa; Betty Hazan, Jerusalem, all of, Israel; Rod R. Fisher, Eden Prairie, Minn.; Jeffrey J. Kolstad, Wayzata, Minn., and Brenda E. Stewart, White Bear Lake, Minn., assignors to Cargill, Incorporated, Minneapolis, Minn.

Continuation-in-part of Ser. No. 84,810, Jun. 29, 1993, abandoned. This application Mar. 8, 1994, Ser. No. 207,773

Int. Cl. C07C 51/48; 51/42

U.S. Cl. 562—580

30 Claims

1. A process for the recovery of lactic acid from a lactate feed solution comprising: the extraction step of combining said lactate feed solution with an extractant comprising at least one water immiscible trialkyl amine having a total of at least 18 carbon atoms in the presence of carbon dioxide at a partial pressure of at least 50 psig to form an aqueous phase and an organic phase containing extracted lactic acid and said extractant and separating lactic acid from said organic phase.

5,510,527

ACID CHLORIDE

Hisao Hachisuka; Katsuhide Kojima; Yutaka Nakazono; Masahiko Hirose; Yasuo Kihara; Masatoshi Maeda; Hisashi Ikebata, and Kenji Matsumoto, all of Osaka, Japan, assignors to Nitto Denko Corporation, Osaka, Japan

Division of Ser. No. 7,763, Jan. 22, 1993, Pat. No. 5,336,409.

This application Feb. 25, 1994, Ser. No. 202,121

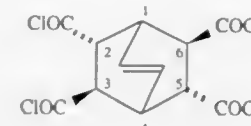
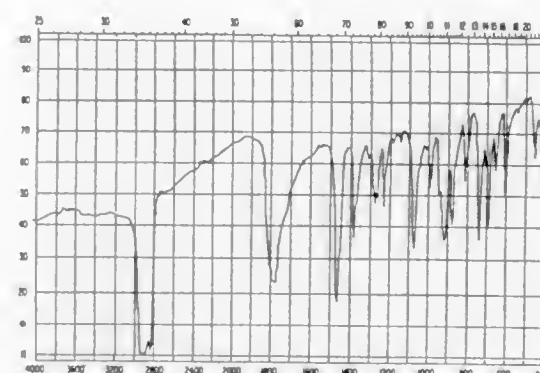
Claims priority, application Japan, Jan. 22, 1992, 4-32536; Jul. 29, 1992, 4-202384; Aug. 20, 1992, 4-221348

Int. Cl. B01D 71/56

U.S. Cl. 562—867

1 Claim

1. A novel acid chloride, bicyclo[2.2.2]oct-7-ene-(2 α ,3 β ,5 α ,6 β)-tetracarboxyl chloride ($\text{C}_{12}\text{H}_8\text{O}_4\text{Cl}_4$) represented by the following formula:



5,510,529

THIOAMIDES AND THEIR USE AS CROP PROTECTION AGENTS

Horst Wingert; Hubert Sauter; Herbert Bayer, all of Mannheim; Klaus Oberdorf, Heidelberg; Gisela Lorenz, Neustadt, and Eberhard Ammermann, Heppenheim, all of, Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Division of Ser. No. 158,390, Nov. 29, 1993, Pat. No.

5,393,782. This application Nov. 4, 1994, Ser. No. 336,044

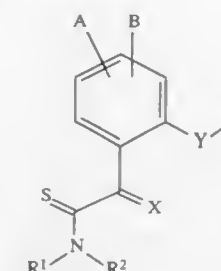
Claims priority, application Germany, Dec. 14, 1992, 42 42 081.4

Int. Cl. C07C 327/40

U.S. Cl. 564—74

1 Claim

1. A thioamide of the formula I,



where A and B are identical or different and each is hydrogen, C_{1-4} -alkyl, C_{1-4} -alkoxy or halogen;

X is =CHCH_3 ; R^1 and R^2 are hydrogen or C_{1-4} -alkyl;Y is $\text{—CH}_2\text{—O—}$; and

R is a phenyl with at least one substituent selected from the group consisting of nitro, C_{1-4} -alkyl, C_{1-4} -alkoxy, C_{1-4} -haloalkyl, C_{1-4} -alkoximino- C_{1-4} -alkyl, aryl, aryloxy, benzyloxy; with the proviso that at least one substituent is always C_{1-4} -alkoximino- C_{1-4} -alkyl.

5,510,530

OPTICALLY ACTIVE SULPHUR-CONTAINING AMINO ACID DERIVATIVES

Michael Grosse-Bley, Cologne; Bruno Bömer, Bergisch Gladbach; Rolf Grosser, Bayerwerk; Dieter Arlt, and Walter Lange, both of Cologne, all of, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Division of Ser. No. 897,196, Jun. 11, 1992, Pat. No. 5,347,042.

This application May 11, 1994, Ser. No. 241,911

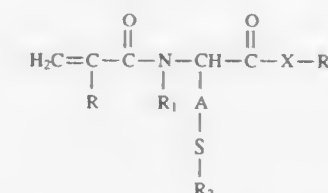
Claims priority, application Germany, Jun. 22, 1991, 41 20 695.9

Int. Cl. C07C 233/09; C07D 277/04

U.S. Cl. 564—154

8 Claims

1. An optically active sulphur-containing amino acid derivative of the formula (I)



in which

R represents hydrogen or methyl

R_1 represents hydrogen, or together with R_2 forms a methylene group or a dimethylene group which can be mono- or disubstituted by C_{1-4} -alkyl,

R_2 represents a straight-chain, branched or cyclic alkyl radical having up to 10 C atoms, $\text{C}_6\text{--C}_{14}$ -aryl, or together with R_1 forms a bridge described for that radical,

R_3 represents a straight-chain, branched or cyclic alkyl radical having from 4 to 20 C atoms, which is optionally mono-, di-

5,510,528

PREPARATION OF HALOMETHYLBENZOLYL CYANIDES AND NOVEL HALOMETHYLBENZOYL CYANIDES

Heinz Isak, Boehl-Iggelheim; Thomas Wettling, Limburgerhof; Michael Keil, Freinsheim; Bernd Wolf, Fussgoenheim, and Reinhard Doetzer, Weinheim, all of, Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Division of Ser. No. 216,416, Mar. 23, 1994, Pat. No.

5,446,199. This application Mar. 17, 1995, Ser. No. 406,056

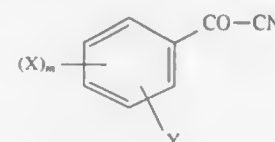
Claims priority, application Germany, Apr. 8, 1993, 43 11 722.8

Int. Cl. C07C 253/14

U.S. Cl. 562—869

2 Claims

1. A halomethylbenzoyl cyanide of the formula I'



where the variables have the following meanings

X is halogen, C_{1-4} -alkyl, C_{1-4} -alkoxy, trifluoromethyl, C_{1-5} -alkyl-(C_{1-5} -alkyl)hydroxyimino and C_{1-5} -alkyl-(C_{2-5} -alkenyl)hydroxyimino;

m 0 to 4 and

y chloromethyl or bromomethyl.

or trisubstituted by halogen, alkoxy having 1 to 4 C atoms, aralkoxy having 7 to 16 C atoms or aryl having 6 to 10 C atoms, or a C₁₀-terpenyl radical, an adamantyl radical or a decahydronaphthyl radical.

X denotes an NR₄ group, in which R₄ represents hydrogen or C₁-C₄-alkyl, and

A represents a methylene or dimethylene group which is optionally mono- or di-C₁-C₄-alkyl-substituted.

5,510,531

PROTEINASE INHIBITOR

Naoki Higuchi, Masayuki Saitoh, both of Osaka, and Hiroshi Shibata, Nara, all of Japan, assignors to Suntory Limited, Osaka, Japan

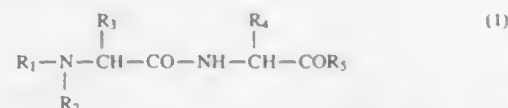
Continuation of Ser. No. 58,669, May 10, 1993, abandoned, which is a continuation of Ser. No. 743,135, Aug. 9, 1991, abandoned, which is a continuation-in-part of Ser. No. 373,811, Jun. 29, 1989, Pat. No. 5,081,284. This application Oct. 5, 1994, Ser. No. 318,557

Claims priority, application Japan, Apr. 10, 1989, 1-89904 Int. Cl.⁶ C07C 233/00

U.S. Cl. 564-159

5 Claims

1. A compound of the general formula (I):



where R₁ is an acyl group derived from a straight-chained or branched carboxylic acid having 2-10 carbon atoms, a t-butyloxycarbonyl group, an adamanyloxycarbonyl group, a p-chlorobenzoyloxycarbonyl group, p-methoxybenzoyloxycarbonyl group, p-nitrobenzoyloxycarbonyl group, p-nitrobenzoyloxycarbonyl group, o-chlorobenzoyloxycarbonyl group; a 2,2,2-trichloroethyloxycarbonyl group, a 2-(trimethylsilyl)ethyloxycarbonyl group, a p-toluenesulfonyl group, a triphenylmethyl group or a 2-benzoyl-1-methylvinyl group;

R₂ is a hydrogen atom or when taken together with R₁, may form a phthaloyl group;

R₃ is an isobutyl group, a n-butyl group or an isopropyl group;

R₄ is a butyl group, and R₅ is a hydrogen atom.

5,510,532

STABLE CONDUCTING POLYMER AND PROCESSES FOR THE PREPARATION THEREOF

Suh B. Rhee; Myong-Hoon Lee, both of Yousung; Chang-Jin Lee, Seo, and Bong S. Moon, Youngsan, all of Rep. of Korea, assignors to Korea Research Institute of Chemical Technology, Daejeon-shi, Rep. of Korea

Filed Dec. 7, 1993, Ser. No. 162,620

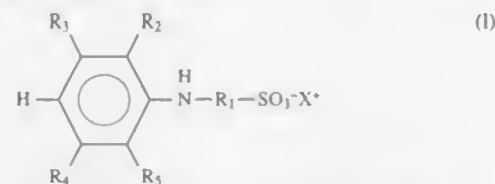
Claims priority, application Rep. of Korea, Dec. 10, 1992, 92-23786

Int. Cl.⁶ C07C 211/00

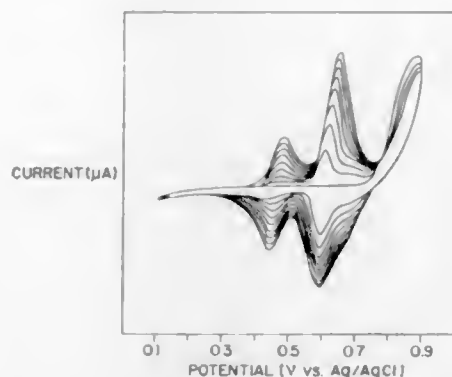
U.S. Cl. 564-284

13 Claims

1. Aniline derivatives of formula (I),



wherein R₁ denotes -(CH₂)_n-; n is an integer between 3 and 12; R₂, R₃, R₄ and R₅ denote hydrogens, or one or two of R₂, R₃, R₄ and R₅ denote a halogen atom, methyl, methoxy or nitro groups and the remainder of R₂, R₃, R₄ and R₅ denote a hydrogen atom; and X denotes hydrogen, an alkali metal ion, an ammonium ion, an



alkyl ammonium ion selected from the group consisting of tetramethylammonium ion, tetraethylammonium ion and tetrabutylammonium ion, or an anilinium ion.

5,510,533

PROCESS FOR PRODUCING 3,5-DIFLUOROANILINE AND DERIVATIVE THEREOF

Hiroshi Kobayashi, Fukuoka; Masaaki Shimizu, Tokyo, and Haruaki Ito, Kanagawa, all of Japan, assignors to SDS Biotech K. K., Tokyo, Japan

Filed Jun. 5, 1991, Ser. No. 710,475

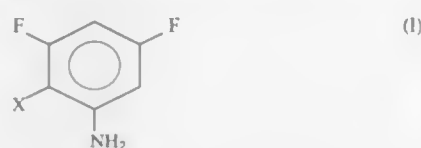
Claims priority, application Japan, Jun. 6, 1990, 2-146219; Jun. 22, 1990, 2-162827; Jul. 4, 1990, 2-175260

Int. Cl.⁶ C07C 209/10

U.S. Cl. 564-407

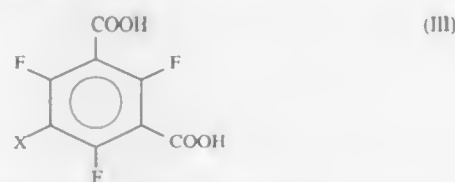
10 Claims

1. A process for producing a 3,5-difluoroaniline compound represented by formula (I)

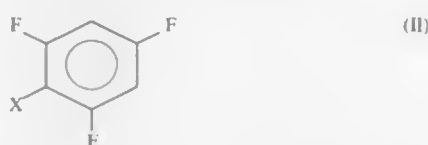


comprising the steps of:

(a) decarboxylating a 2,4,6-trifluoroisophthalic acid compound of formula (III)



to thereby obtain the 1,3,5-trifluorobenzene compound represented by formula (II)



and

(b) reacting an aminating agent with said 1,3,5-trifluorobenzene compound represented by formula (II) to produce said 3,5-difluoroaniline compound represented by formula (I); wherein X represents a hydrogen atom or a chlorine atom.

5,510,534

PROCESS FOR REDUCING THE NITROSAMINE CONTENT OF HERBICIDES

Maria D. C. Breglia De Belcours, and Marta M. D. C. Ruiz, both of Buenos Aires, Argentina, assignors to Atanor S.A., Buenos Aires, Argentina

Filed Mar. 23, 1995, Ser. No. 408,875

Claims priority, application Argentina, Jan. 4, 1995, 330645 Int. Cl.⁶ A01N 33/06; C07C 209/84

U.S. Cl. 564-437

8 Claims

1. Process for reducing the nitrosamine content in a herbicide derived from dinitroaniline comprising:

treating the herbicide with an aqueous solution of alkaline or ammonium persulfate in a proportion of at least 0.5% w/w relative to the weight of the herbicide to form an aqueous suspension;

heating the suspension to at least 70° C.; and

separating the herbicide from the suspension.

BX₃

(IV),

wherein X is a halogen atom, or a substituent of formula (V)

OR

(V),

wherein R is a hydrocarbon group of 1 to 10 carbon atoms which may also include a functional group having no influence on the reaction, or a substituent of formula (VI)

NRR'

(VI),

wherein R and R' are a hydrocarbon group of 1 to 20 carbon atoms, each of which may respectively include a functional group having no influence on the reaction, and where R and R' may combine with each other to form a ring, said boron compound forming a complex of 1:1 to an ether solvent, said boron compound and said pentafluoromagnesium compound being combined in a ratio of 1 equivalent of the boron compound to 2.1-3.9 equivalents of the pentafluorophenylmagnesium compound of formula (III), within a temperature range of 0° C. to 250° C., to produce a coordination complex of tris(pentafluorophenyl)borane of the formula (VII)

(C₆F₅)₃B

(VII),

with the ether solvent, and eliminating the ether solvent complexed with said tris(pentafluorophenyl)borane.

5,510,535

ETHER-LINKED AMINE-TERMINATED POLYETHERS AND A PROCESS FOR THEIR PRODUCTION

Rick L. Adkins, New Martinsville, and William E. Slack, Moundsville, both of W. Va., assignors to Bayer Corporation, Pittsburgh, Pa.

Filed Nov. 22, 1994, Ser. No. 343,295

Int. Cl.⁶ C07C 209/08

U.S. Cl. 564-474

11 Claims

1. A process for the production of an ether-linked amine terminated polyether comprising reacting

- 1) a polyether polyol in which substantially all hydroxyl groups have been converted to a leaving group with
- 2) an aminoalcohol and/or aminothiol and
- 3) a material which is capable of deprotonating 2).

5,510,536

PRODUCTION METHOD OF TRIS(PENTAFLUOROPHENYL)BORANE USING PENTAFLUOROPHENYL MAGNESIUM DERIVATIVES PREPARED FROM PENTAFLUOROBENZENE

Yoshihiko Ikeda, Shinnanyo; Takeo Yamane, Ogori; Eiichi Kaji, and Kenji Ishimaru, both of Shinnanyo, all of Japan, assignors to Tosoh Akzo Corporation, Tokyo, Japan

Filed Dec. 22, 1993, Ser. No. 171,639

Claims priority, application Japan, Dec. 28, 1992, 4-361474

Int. Cl.⁶ C07F 5/00

U.S. Cl. 568-6

6 Claims

1. A method of producing tris(pentafluorophenyl)borane comprising mixing pentafluorobenzene of the formula (I)

C₆F₅H

(I),

with 0.5-1.5 equivalents of an organometallic compound of the formula (II)

R_{2-n}MgX_n

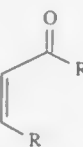
(II),

wherein n is 0 or 1, X is a halogen atom and R is a hydrocarbon group of 1 to 10 carbon atoms which may include a functional group having no influence on the reaction, in an ether solvent or in a non-aqueous mixture of ether solvent and a hydrocarbon, at a temperature range of -40° to 250° C., reacting said mixture at a temperature of not less than 25° C. to prepare a pentafluorophenyl magnesium compound of the formula (III)

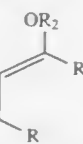
(C₆F₅)_{2-n}MgX_n

(III),

wherein n is 0 or 1, and X is a halogen atom, reacting the pentafluorophenyl magnesium compound of the formula (III) with a boron compound of the formula (IV)



which comprises oxidizing a silyl enol ether of Formula II



with a radical intermediate generated by metal catalyst decomposition of a peroxide in the presence of a halogenated solvent or acetonitrile, at a temperature of -10° to 60° C., and where said metal catalyst is selected from the group of metal salts consisting of cuprous, cupric, manganese, nickel, cesium and chromium or hydrates thereof wherein R is selected from the group consisting of (C₁-C₈) alkyl, phenyl, and substituted phenyl; R₂ is selected from the group consisting of triethylsilyl, trimethylsilyl, triphenylsilyl and diphenylmethylsilyl; and where the ratio of said peroxide to enol ether is 0.01 to 3 equivalents peroxide to 1 equivalent enol ether with the proviso that the peroxide used cannot be hydrogen peroxide.

5,510,538

PROCESS FOR THE OXIDATION OF PRIMARY AND SECONDARY ALCOHOLS TO ALDEHYDES AND KETONES AND FOR THE OXIDATION OF 1,2-DIOLS TO ALPHA-KETOOLS AND ALPHA-DIKETONES

Marco Frigerio; Simona Spatore, both of Milan, and Marco Santagostino, Magenta, all of, Italy, assignors to SIGMA-TAU Industrie Farmaceutiche Riunite S.p.A., Rome, Italy
Filed Dec. 16, 1994, Ser. No. 356,971

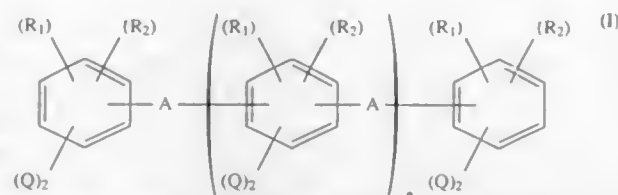
Claims priority, application Germany, Dec. 16, 1993, 43 43 054.6; Italy, Sep. 22, 1994, RM94A0604

Int. Cl.⁶ C07C 45/29

U.S. Cl. 568—347

5 Claims

1. A process for the selective oxidation of a primary or secondary alcohol to an aldehyde or ketone and for the oxidation of a 1,2-diol to an α-ketol or α-diketone, which comprises contacting the alcohol or 1,2-diol with o-iodoxybenzoic acid in a DMSO-containing reaction medium.



wherein n, which is an average repeating number, represents a number of from 0 to 20; R₁ and R₂ each independently represents a hydrogen atom, a halogen atom, an alkyl group, an aryl group, an aralkyl group, an alkoxy group, an aryloxy group, or a cycloalkyl group; Q each independently represents —OH or a group represented by the formula —OROCH=CH₂, wherein R represents an alkylene group having from 1 to 12 carbon atoms, the molar ratio of (—OH)/(—OROCH=CH₂) being from 30/70 to 70/30; and A each independently represents a divalent hydrocarbon group having from 1 to 30 carbon atoms.

5,510,541

PROCESS FOR THE TELOMERIZATION OF CONJUGATED DIENES AND SUITABLE CATALYST THEREFOR

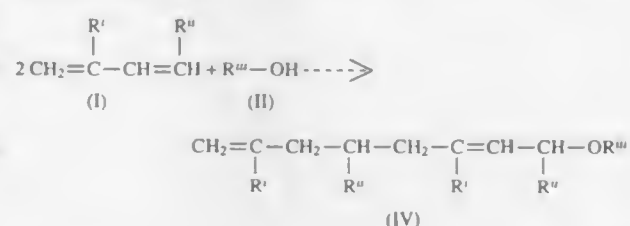
Renata Patrini, and Mario Marchionna, both of Milan, Italy, assignors to Snamprogetti S.p.A., Milan, Italy
Filed Feb. 25, 1994, Ser. No. 201,991

Claims priority, application Italy, Mar. 3, 1993, MI93A0403
Int. Cl.⁶ C07C 41/10

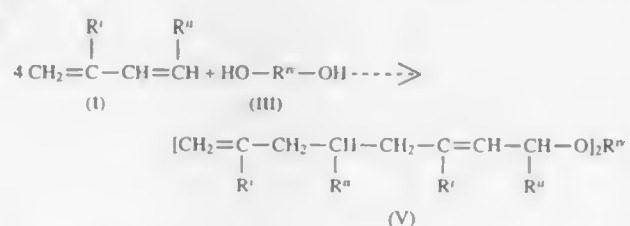
U.S. Cl. 568—654

17 Claims

I. Process for preparing mono-alkadienyl alkyl ethers (IV) by means of the catalyzed reaction of a conjugated diene (I) with an aliphatic alcohol (II):



and for preparing di-alkadienyl alkyl ethers (V) by means of the catalyzed reaction of said conjugated diene (I) with an aliphatic diol (III):



wherein:

R' represents a hydrogen atom or a methyl radical,
R'' represents a hydrogen atom, a C₁–C₈ alkyl radical, or a phenyl radical,
R''' represents a C₁–C₈ alkyl radical, and
R'''' represents a C₂–C₈ alkylene radical;

characterized in that the reaction between the conjugated diene (I) and the alcohol (II) or diol (III) is carried out in an aqueous/organic two-phase liquid system, wherein the organic phase comprises a liquid hydrocarbon, in the presence of a catalytic system formed by:

- a palladium salt or complex;
- an alkyl-, alkylcycloalkyl-, or alkylaryl-phosphine ligand, bearing an acidic or neutral hydrophylic moiety, having the

5,510,539

LIQUID PHOTOINITIATOR MIXTURES

Godwin Berner, Binningen; Franciszek Sitk, Therwil, and Rinaldo Hübler, Marly, all of, Switzerland, assignors to Ciba-Gelby Corporation, Tarrytown, N.Y.

Continuation of Ser. No. 162,733, Dec. 3, 1993, abandoned, which is a division of Ser. No. 732,986, Jul. 19, 1991, Pat. No. 5,288,917, which is a continuation of Ser. No. 593,601, Oct. 4, 1990, abandoned, which is a continuation of Ser. No. 401,576, Aug. 28, 1989, abandoned, which is a continuation of Ser. No. 34,518, Apr. 6, 1987, abandoned. This application Sep. 30, 1994, Ser. No. 315,991

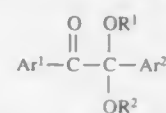
Claims priority, application Switzerland, Apr. 15, 1986, 1487/86

Int. Cl.⁶ C08F 2/50

U.S. Cl. 568—376

9 Claims

1. A compound of the formula I



in which Ar¹ and Ar² are independently of each other phenyl or C₁–C₄-alkyl- or halogen-substituted phenyl and R¹ and R² have the same meaning and each is a C₉–C₁₆-alkyl radical.

5,510,540

POLYFUNCTIONAL VINYL ETHER COMPOUND AND PHOTORESIST RESIN COMPOSITION CONTAINING THE SAME

Shigeo Hozumi; Shinichiro Kitayama, and Hiroya Nakagawa, all of Ibaraki, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Feb. 16, 1994, Ser. No. 197,306

Claims priority, application Japan, Feb. 16, 1993, 5-026570; Aug. 2, 1993, 5-191249; Aug. 6, 1993, 5-196036; Aug. 23, 1993, 5-207497

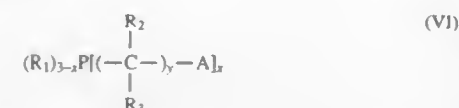
Int. Cl.⁶ C07C 43/00

U.S. Cl. 568—640

17 Claims

1. A polyfunctional vinyl ether compound represented by formula (I):

formula (VI):



wherein:

A represents a hydrophylic moiety of sulfate (—SO₃M), phosphate (—PO₃M₂), hydroxy (—OH) or alkoxy (—OR₄) character (in which M represents H, Li, Na, K and NH₄ and R₄ represents a C₁–C₅ alkyl moiety),

R₁ represents a hydrogen atom, a C₁–C₅ alkyl moiety, a C₅–C₆ cycloalkyl moiety, a C₁–C₅ alkoxy moiety, an aryl radical or an aryloxy moiety, with said aryl moieties being optionally substituted with one or more halogen atoms or C₁–C₅ alkyl moieties;

R₂ and R₃ represent, each independently, a hydrogen atom or a methyl radical,

x is a numeral comprised within the range of from 1 to 3, y is a numeral comprised within the range of from 1 to 6; and (c) an inorganic or organic base.

5,510,542

PROCESS AND APPARATUS FOR PRODUCING DIGLYCERIN

Gerald Jakobson, and Werner Siemansowski, both of Rheinberg, Germany, assignors to Solvay Fluor und Derivate GmbH, Hanover, Germany

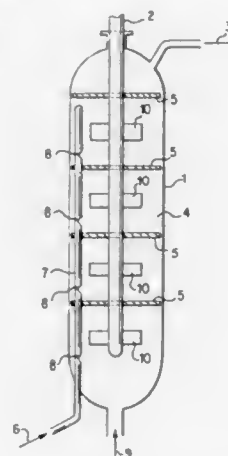
Filed Feb. 24, 1995, Ser. No. 387,949

Claims priority, application Germany, Aug. 25, 1992, 42 28 147.4

Int. Cl.⁶ C07C 41/02; 43/10; B01J 14/00

U.S. Cl. 568—680

24 Claims



1. A process for continuously producing diglycerin having a low content of cyclic constituents, said process comprising the steps of: reacting glycerin in at least one continuous flow reactor with epichlorohydrin introduced into said at least one flow reactor at a plurality of spatially separated reaction zones at an overall molar ratio of glycerin to epichlorohydrin of 20:1 to 1:1, a temperature of from 20° to 120° C. and in the presence of an acid catalyst to produce a diglycerin-containing reacted mixture;

subsequently removing excess glycerin from said mixture by evaporation in at least one evaporation device to obtain a chlorohydrin and ether mixture;

hydrolyzing the chlorohydrin and ether mixture in a first hydrolysis stage at a temperature of 60° to 120° C. and a pH of 6.5 to 9.5 with a 5 to 40 mole-% excess of an alkaline reacting alkali carbonate solution calculated with respect to organically bound chlorine in the chlorohydrin and ether mixture,

completing hydrolysis of said chlorohydrin and ether mixture in a second hydrolysis stage at a pH of above 10 with alkali hydroxide to obtain a hydrolyzed crude product solution; adjusting the hydrolyzed crude product solution to a pH of 5.5 to 8 by addition of a mineral acid; concentrating the resulting solution and separating precipitated salts to obtain a diglycerin solution containing less than 8% by weight of residual inorganic salts; and freeing the diglycerin solution of cyclic diglycerin and any residual glycerin by distillation in at least one flash evaporator.

5,510,543

REMOVAL AND NEUTRALIZATION OF ACID CATALYST FROM PRODUCTS OF CUMENE HYDROPEROXIDE CLEAVAGE

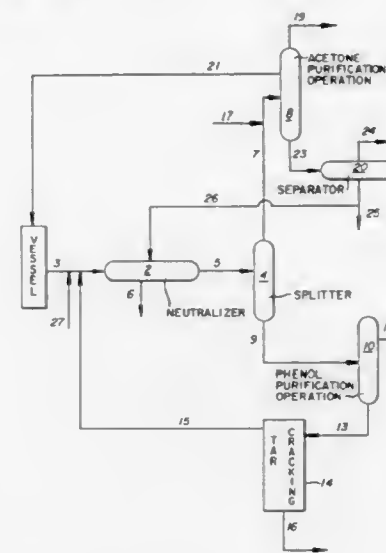
John W. Fulmer, Mt. Vernon, Ind.; Andrei K. Griaznov, St. Petersburg, Russian Federation; William D. Kight, Poseyville, and Vladimir M. Zakoshansky, Mt. Vernon, both of Ind., assignors to General Electric Company, Pittsfield, Mass.

Filed Dec. 9, 1994, Ser. No. 353,004

Int. Cl.⁶ C07C 37/68

U.S. Cl. 568—754

9 Claims



1. An improved method for the recovery of phenol from a cleavage mass resulting from the sulfuric acid cleavage of cumene hydroperoxide comprising neutralizing the cleavage mass, forming an aqueous phase and an organic phase, separating the organic phase into an acetone-rich stream and a phenol-rich stream removing phenol tars from the phenol-rich stream and cracking the phenol tars wherein the improvement comprises maintaining the pH of the cleavage mass during neutralization between 4.0 and about 4.9 whereby the sulfuric acid is converted to the bisulfate salt and substantially no free sulfuric acid remains in the cleavage mass and corrosion of process equipment is reduced.

5,510,544

FLUORINATED TERPENE COMPOUNDS

Gene E. Keyser, Jacksonville, Fla., assignor to Environmental Solvents Corporation, Jacksonville, Fla.

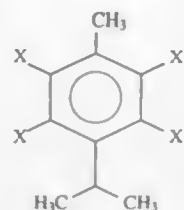
Filed Aug. 2, 1993, Ser. No. 101,361

Int. Cl.⁶ C07C 19/08; 25/13

U.S. Cl. 570—125

12 Claims

1. A cleaning composition comprising a fluorinated terpene compound of the formula:



wherein X is hydrogen or fluorine and at least two of X are fluorine.

5,510,545

PROCESS FOR THE PREPARATION OF HYDROFLUOROCARBONS

Rolf-Michael Jansen, Kelkheim, Germany, assignor to Hoechst Aktiengesellschaft, Germany

Continuation of Ser. No. 67,661, May 26, 1993, abandoned.

This application Oct. 7, 1994, Ser. No. 320,845

Claims priority, application Germany, May 26, 1992, 42 17 398.1

Int. Cl.⁶ C07C 17/26

U.S. Cl. 570—171

16 Claims

1. A process for the hydrogenating dimerisation of at least one fluorocarbon or hydrofluorocarbon selected from the group consisting of 1-chloro-2,2,2-trifluoroethane, 1,1-dichloro-2,2,2-trifluoroethane, 1,1,1-trichloro-2,2,2-trifluoroethane and 1,1-dichloro-2,2,3,3,3-pentafluoropropane, which comprises contacting said compound with hydrogen in the presence of at least one catalyst which contains an element from subgroups I to VIII of the Periodic Table, at an elevated temperature from 50° to 500° C.

5,510,546

PROCESS FOR REARRANGING ALLYLIC GEMINAL DIHALOGEN COMPOUNDS

Larry N. Ito, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

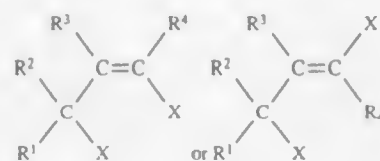
Filed Jul. 7, 1995, Ser. No. 499,692

Int. Cl.⁶ C07C 21/04

U.S. Cl. 570—236

14 Claims

1. In a process for preparing a dihaloalkene compound of the formula

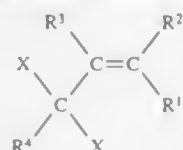


wherein

X represents chloro or bromo

R¹, R², R³, and R⁴ independently represent hydrogen or a C₁–C₃ alkyl group, with the proviso that when X represents bromo each of R¹, R², R³, and R⁴ represents hydrogen

or a mixture of such compounds, which process comprises contacting a dihaloalkene compound of the formula



wherein

X represents chloro or bromo and

R¹, R², R³, and R⁴ independently represent hydrogen or a C₁–C₃ alkyl group, with the proviso that when X represents bromo each of R¹, R², R³, and R⁴ represents hydrogen

in the liquid state with an effective catalyst selected from the group consisting of aluminas, silicas and zeolites under conditions effective to carry out the conversion, the improvement which comprises drying the dihaloalkene compound to be processed in said process or a stream or aggregation comprising the dihaloalkene compound to be so processed, prior to contacting the dihaloalkene compound with the alumina, silica or zeolite catalyst.

5,510,547

METHODS FOR INHIBITING VINYL AROMATIC MONOMER POLYMERIZATION

Graciela B. Arhancet, Katy, and Inge K. Henrici, Spring, both of Tex., assignors to Betz Laboratories, Inc., Trevose, Pa.

Continuation-in-part of Ser. No. 118,075, Sep. 8, 1993, Pat. No. 5,396,004, which is a continuation-in-part of Ser. No. 964,321, Oct. 21, 1992, abandoned. This application Feb. 3,

1995, Ser. No. 383,159

Int. Cl.⁶ C07C 7/20

U.S. Cl. 585—5

8 Claims

1. A method for inhibiting the polymerization of vinyl aromatic monomers in an oxygen-free vinyl aromatic monomer processing system comprising adding an effective polymerization inhibiting amount of a combination of a hydroxylamine compound and a phenylenediamine compound.

5,510,548

VULCANIZABLE LIQUID COMPOSITIONS

Thomas S. Coolbaugh, Morrisville; Frederick C. Loveless, Yardley, both of Pa.; Demetrios N. Matthews, Ewing, and Leslie R. Rudnick, Lawrenceville, both of N.J., assignors to Mobil Oil Corporation, Fairfax, Va.

Division of Ser. No. 382,814, Feb. 3, 1995. This application

May 18, 1995, Ser. No. 443,741

Int. Cl.⁶ C07C 2/40; C08F 297/04

U.S. Cl. 585—12

27 Claims

1. A liquid random copolymer comprising at least one polymerized conjugated diene of formula (1) and at least one polymerized conjugated diene of formula (3), wherein:



where

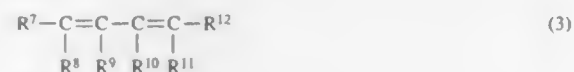
R¹–R⁶ are each hydrogen or a hydrocarbyl group, provided that at least one of R¹–R⁶ is a hydrocarbyl group and provided that the structure of the residual double bond in the polymerized diene of formula (1) has the following formula



wherein

R^I, R^{II}, R^{III} and R^{IV} are each hydrogen or a hydrocarbyl group, provided that either both R^I and R^{II} are hydrocarbyl groups or both R^{III} and R^{IV} are hydrocarbyl groups;

the diene of formula (3) is different from the diene of formula (1), it has at least four (4) carbon atoms and the following formula



wherein

R⁷–R¹² are each hydrogen or a hydrocarbyl group, provided that the structure of the residual double bond in the polymerized diene of formula (3) has the following formula



wherein

R^a, R^b, R^c and R^d are each hydrogen (H) or a hydrocarbyl group, provided that one of R^a or R^b is hydrogen, one of R^c or R^d is hydrogen, and at least one of R^a, R^b, R^c or R^d is a hydrocarbyl group; and

wherein the conjugated diene of formula (1) is present in the copolymer in the amount of about 1.0 to about 25% by mole, and the conjugated diene of formula (3) is present in the copolymer in the amount of about 75 to about 99% by mole, said copolymer being selectively hydrogenated, so that the polymerized conjugated diene of formula (3) is substantially completely hydrogenated and thereby contains substantially none of the original unsaturation and the polymerized conjugated diene of formula (1) retains a sufficient amount of its original unsaturation to vulcanize said copolymer.

5,510,549

FIBER OPTIC CABLE AND VISCOUS FILLER MATERIAL

Henry Ashjian, East Brunswick, N.J.; Dong-Ming Shen, Langhorne, Pa., and Margaret M. Wu, Skillman, N.J., assignors to Mobil Oil Corporation, Fairfax, Va.

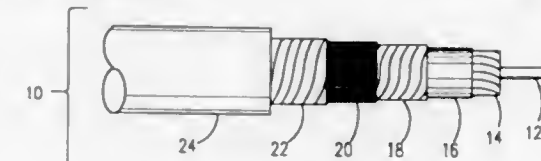
Division of Ser. No. 136,839, Oct. 18, 1993, Pat. No. 5,400,427.

This application Mar. 20, 1995, Ser. No. 406,603

Int. Cl.⁶ C10M 127/00; 125/26; C07C 13/615

U.S. Cl. 585—22

8 Claims



1. A fiber optic cable grease comprising a diamondoid component containing at least about 10 different diamondoid compounds selected from the group consisting of methyl-substituted and ethyl-substituted adamantane, diamantane, triamantane, and higher homologs, wherein each of said selected diamondoid compounds comprises no more than about 10 weight percent of said diamondoid component; and a second component comprising a thickener selected from the group consisting of colloidal silica, fatty acid soaps, clays, and bentonites which is substantially inert to a fiber optic cable sheath.

5,510,550

SELECTIVE ACETYLENE HYDROGENATION

Tin-Tack P. Cheung; Marvin M. Johnson; Scott H. Brown; Stan A. Zisman, and James B. Kimble, all of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 269,723, Jul. 1, 1994. This application

May 19, 1995, Ser. No. 445,441

Int. Cl.⁶ C07C 5/08; 7/67

U.S. Cl. 585—259

26 Claims

1. In a process for the selective hydrogenation of acetylene to ethylene which comprises mixing (a) a feed gas comprising acetylene and (b) hydrogen gas and contacting the mixture of (a) and (b) with (c) an effective catalyst composition, the improvement which comprises employing a catalyst composition which has been prepared by a method consisting essentially of the steps of:

- (1) contacting a solid composition comprising palladium, silver and an inorganic support material with a liquid reduction composition comprising (i) at least one reducing agent selected from the group consisting of alkali metal borohydrides, hydrazine, aldehydes containing 1–6 carbon atoms per molecule, ketones containing 1–6 carbon atoms per molecule, carboxylic acids containing 1–6 carbon atoms per molecule, aluminum metal and zinc metal, (ii) at least one non-reducing liquid component, and (iii) at least one dissolved alkali metal compound selected from the group consisting of alkali metal hydroxides and alkali metal fluorides, at a temperature of up to about 60° C. for a time period of at least about 1 second, so as to produce a wet-reduced solid composition;
- (2) substantially separating said wet-reduced solid composition produced in step (1) from said liquid reduction composition; and
- (3) drying the substantially separated, wet-reduced solid composition obtained in step (2).

5,510,551

EXTRACTION OF CAROTENOIDS FROM NATURAL SOURCES

Frederic A. Graves, Ham Lake, and Daniel D. Gallaher, Roseville, both of Minn., assignors to Humanetics Corporation, St. Louis Park, Minn.

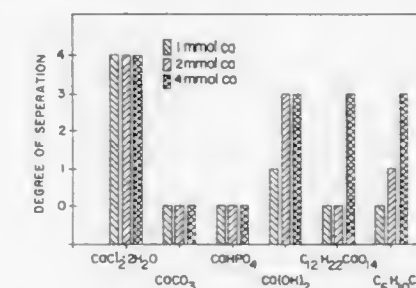
Continuation of Ser. No. 12,314, Feb. 2, 1993, which is a continuation of Ser. No. 684,590, Apr. 12, 1991, Pat. No.

5,245,095. This application Apr. 28, 1994, Ser. No. 208,985

Int. Cl.⁶ C07C 403/00; 7/00

U.S. Cl. 585—351

8 Claims



1. A process for extracting carotenoids from a carotenoid-containing natural source without the use of a hydrocarbon solvent, which comprises the steps of:

- (a) separating a natural source of a carotenoid into a carotenoid-containing liquid fraction and a pulp fraction,
- (b) contacting the liquid fraction with an effective fractionating amount of a hydrocarbon solvent free precipitating agent selected from the group consisting of potassium hydroxide and magnesium chloride so as to fractionate the liquid fraction into a carotenoid-enriched solid precipitate portion and a carotenoid-depleted liquid portion wherein both the solid and liquid portions are free or hydrocarbon solvent, and
- (c) separating the carotenoid-enriched solid portion from the carotenoid-depleted liquid portion without the use of a hydrocarbon solvent so as to form a carotenoid-enriched solid extract which has not been contacted with a hydrocarbon solvent during extraction.

5,510,552

PROCESS USING A CATALYST TO DEHYDROGENATE AN ALKYL AROMATIC COMPOUND

Phillip W. Dellinger; Rebecca G. Moore; Fred A. Sherrod, and Allen R. Smith, all of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 58,192, May 4, 1993, Pat. No. 5,376,613. This application Sep. 21, 1994, Ser. No. 310,137

Int. Cl.⁶ C07C 5/333

U.S. Cl. 585—444

9 Claims

1. A process comprising dehydrogenating an alkyl aromatic compound to form a vinyl aromatic compound by contacting the alkyl aromatic compound with steam in the presence of a calcined dehydrogenation catalyst which is a catalytically active product of calcining a mixture including

- at least one iron oxide,
- a carbonate, bicarbonate, oxide or hydroxide of potassium or cesium, or a mixture of at least two thereof,
- an oxide, carbonate, nitrate, or hydroxide of cerium, or a mixture of at least two thereof, and
- a hydraulic cement,
- a hydroxide, carbonate, bicarbonate, acetate, oxalate, nitrate, or sulfate of sodium, in an amount sufficient to provide from about 0.8 to about 10 percent sodium, calculated as sodium oxide, by weight of the calcined catalyst; and (f) a carbonate, sulfate, or hydroxide, of calcium or a mixture of at least two thereof, in an amount sufficient to provide from about 4 to 20 percent calcium calculated as calcium oxide, by weight of the calcined catalyst.

5,510,553

CATALYTIC DEHYDROGENATION OF ALKYLAROMATIC HYDROCARBONS

Luc F. L. Delorme, Waterloo; Francisco M. M. Cerejo, Ecaussines, and Jacques F. Grootjans, Leefdaal, all of Belgium, assignors to Fina Research, S.A., Feluy, Belgium

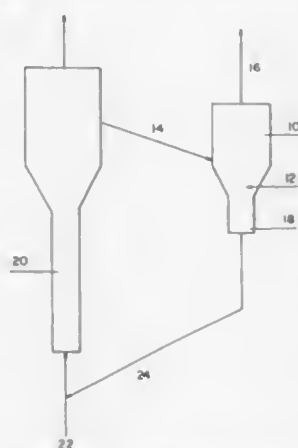
Continuation-in-part of Ser. No. 153,008, Nov. 12, 1992, abandoned, which is a continuation of Ser. No. 520,575, May 8, 1990, abandoned. This application Nov. 10, 1994, Ser. No. 336,953

Claims priority, application Belgium, May 12, 1989, 08900512

Int. Cl.⁶ C07C 2/64; 4/06

U.S. Cl. 585—444

10 Claims



1. A process for the catalytic dehydrogenation of alkylaromatic hydrocarbons into the corresponding alkenylaromatic hydrocarbons, characterized in that it comprises the steps of:

- contacting a hydrocarbon feedstock under dehydrogenation conditions, in the absence of any gas containing molecular oxygen, with a catalyst consisting of a reducible oxide of vanadium, supported on a material selected from the group consisting essentially of metallo silicate zeolite materials and metallo-alumino-phosphate zeolite materials and oxides of a

second metal selected from the group consisting essentially of Ti, Zr, Zn, Th, Mg, Ca, Ba, Si and Al; said catalyst having a dehydrogenation activity when said vanadium has a valency such that it is not in its most reduced state;

- recovering dehydrogenated hydrocarbons;
- regenerating the catalyst; and,
- repeating said steps a and b above.

5,510,554

PROCESS FOR PREPARING 1,1'-BINAPHTHYLS

Dieter Regnat, Frankfurt, and Hans-Jerg Kleiner, Kronberg, both of Germany, assignors to Hoechst Aktiengesellschaft, Germany

Filed Nov. 14, 1994, Ser. No. 337,983

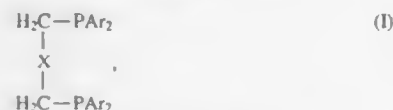
Claims priority, application Germany, Nov. 13, 1993, 43 38 826.4

Int. Cl.⁶ C07C 2/84

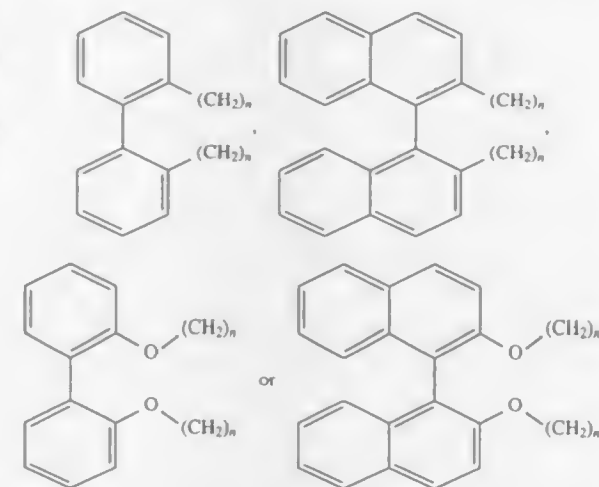
U.S. Cl. 585—466

21 Claims

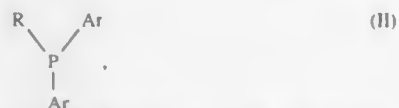
1. A process for preparing 1,1'-binaphthyls, which comprises reacting a 1-halonaphthalene substituted in the 2 position and, optionally, in one or more of positions 3 to 7 by an alkyl, alkoxy or dialkylamino group having 1 to 6 carbon atoms in the alkyl radical and a 1-naphthylmagnesiumhalide substituted in the 2 position and, optionally, in one or more of positions 3 to 7 by an alkyl, alkoxy or dialkylamino group having 1 to 6 carbon atoms in the alkyl radical in a nonpolar solvent at 30° to 150° C. in the presence of palladium and a phosphine of the formula



in which X is $(\text{CH}_2)_m$ and m is an integer from 1 to 4 or X is a radical



and n is an integer from 0 to 2, each Ar is, independently of the others, a phenyl, tolyl, xylyl, fluorophenyl or trifluoromethylphenyl radical, or in the presence of palladium and a phosphine of the formula



in which R is an alkyl radical having 1 to 6 carbon atoms, a cycloalkyl radical having 5 to 6 carbon atoms or Ar and each Ar has the abovementioned meaning.

5,510,555

CATALYST AND PROCESS FOR OLIGOMERIZING OLEFINS

Maurizio Brunelli, San Donato Milanese; Walter Castelvetro, San Giuliano Milanese; Giuseppe Bellussi, Piacenza, and Stefano Peratello, Nova Milanese, all of Italy, assignors to Eniicerche, S.p.A., Milan, Italy

PCT No. PCT/EP92/02286, § 371 Date Feb. 10, 1994, § 102(e) Date Feb. 10, 1994, PCT Pub. No. WO93/06926, PCT Pub. Date Apr. 15, 1993

PCT Filed Oct. 2, 1992, Ser. No. 193,168

Claims priority, application Italy, Oct. 4, 1991, MI91A2651

Int. Cl.⁶ C07C 2/02; 2/04; B01J 21/08; 21/12

U.S. Cl. 585—508

23 Claims

1. An X-ray-amorphous silica-alumina-nickel oxide gel having: (a) an $\text{SiO}_2/\text{Al}_2\text{O}_3$ molar ratio of from 30/1 to 500/1; (b) an NiO/SiO_2 molar ratio of from 0.001/1 to 0.05/1; (c) a surface area of from 500 m^2/g to 1000 m^2/g ; and (d) a porosity of from 0.3 ml/g to 0.6 ml/g, the mean pore diameter being 1 nm, and devoid of pores having a diameter over 3 nm, said gel having catalytic activity.

5,510,556

SATURATE REDUCTION IN NORMAL ALPHA OLEFINS USING A COBALT-CONTAINING TRANSALKYLATION CATALYST

Loren W. Hedrich, Kingwood; Alfred N. Kresge, Humble, and Roger C. Williamson, Kingwood, all of Tex., assignors to Chevron Chemical Company, San Ramon, Calif.

Continuation-in-part of Ser. No. 881,905, May 12, 1992, Pat. No. 5,345,022, which is a continuation-in-part of Ser. No. 870,536, Apr. 17, 1992, abandoned. This application Sep. 1, 1994, Ser. No. 299,989

Int. Cl.⁶ C07C 2/26

U.S. Cl. 585—522

20 Claims

1. A process for producing normal alpha olefins having less than 1.0% saturates content, said process comprising:

- contacting a trialkyl aluminum compound and ethylene under alpha-olefin formation conditions thereby producing a mixture comprising normal alpha olefins and tri(higher)alkyl aluminum compounds;
- contacting at least a portion of said mixture and sufficient ethylene, in the presence of a cobalt-containing transalkylation catalyst, thereby transalkylating substantially all of said tri(higher)alkyl aluminum compounds, said transalkylation catalyst being used in an amount and under conditions which cause transalkylation of said tri(higher)alkyl aluminum compounds, but not isomerization of said normal alpha olefins; and
- contacting the mixture produced by step (b) with a sufficient amount of aqueous acid or caustic, and water, to produce an organic phase and an aqueous phase, wherein said organic phase has essentially all of said transalkylation catalyst removed.

5,510,557

ENDOTHERMIC CATALYTIC DEHYDROGENATION PROCESS

Robert J. Gartside, Summit; Cemal Ercan, Bloomfield, and Kandasamy M. Sundaram, Old Bridge, all of N.J., assignors to ABB Lummus Crest Inc., Bloomfield, N.J.

Filed Feb. 28, 1994, Ser. No. 202,835

Int. Cl.⁶ C07C 5/333

U.S. Cl. 585—654

11 Claims

1. A catalytic endothermic dehydrogenation process, comprising: in a first cycle passing a dehydrogenation feed through a dehydrogenation catalyst bed from an inlet end of the bed to an outlet end of the bed to effect dehydrogenation of the feed; and

in a second cycle passing a heating gas through the dehydrogenation catalyst bed from the outlet end to the inlet end to provide heat to the catalyst bed for the endothermic dehydrogenation and to regenerate the catalyst by combusting carbonaceous deposits, wherein the catalyst bed is layered with the catalyst layer in the bed at the inlet end having an activity greater than the catalyst layer in the bed at the outlet end.

5,510,558

OXIDATIVE DEHYDROGENATION OF HYDROCARBONS WITH ACTIVE CARBON CATALYST

Benjamin S. Umansky, Wilmington, Del.; Kevin A. Boyer, Marcus Hook, and Chao-Yang Hsu, Media, both of Pa., assignors to Sun Company, Inc. (R&M), Philadelphia, Pa.

Filed Dec. 29, 1993, Ser. No. 174,731

Int. Cl.⁶ C07C 5/32

U.S. Cl. 585—658

10 Claims

1. Process for oxidative dehydrogenation of alkanes which comprises contacting an alkane and oxygen with active carbon at a pressure of at least about 100 psia.

5,510,559

SELECTIVITY IN HYDROCARBON CONVERSION

Paul T. Barger, Arlington Heights; Dorothy M. Richmond, La Grange Park; Patrick T. Darby, II, Naperville, and R. Joe Lawson, Arlington Heights, all of Ill., assignors to UOP, Des Plaines, Ill.

Filed May 17, 1994, Ser. No. 245,183

Int. Cl.⁶ C07C 5/22

U.S. Cl. 585—664

9 Claims

1. A process for the isomerization of olefins, comprising one or both of butenes and pentenes, which comprises contacting an olefin-containing feedstock in the presence of free hydrogen in a molar ratio to feedstock of about 0.01 to 5 at isomerization conditions with a catalyst containing at least one non-zeolitic molecular sieve (NZMS) and having the substantial absence of Group VIII metals to provide a product containing a greater concentration of one or more of the group consisting of isobutenes and isopentenes than in the feedstock, wherein the NZMS catalyst has been activity-moderated by controlled carbon deposition sequentially in the same equipment without an intervening step prior to its use for olefin isomerization by contacting the catalyst with the feedstock in the absence of free hydrogen for a time of from about 0.5 to 6 hours at activity-moderation conditions including a temperature of from about 200° to 600° C. to effect a catalyst carbon content of from about 0.1 to 20 mass %.

5,510,560

SKELETAL ISOMERIZATION OF N-OLEFINS TO ISO-OLEFINS ON BINDED FERRIERITE ZEOLITES

Chi-Lin O'Young, Poughkeepsie; Regis J. Pellet, Croton-On-Hudson; Alison E. Hadowanetz, Maybrook; John Hazen, Cragmoor, and James E. Browne, Beacon, all of N.Y., assignors to Texaco Inc., White Plains, N.Y.

Filed Aug. 30, 1993, Ser. No. 112,921

The portion of the term of this patent subsequent to Feb. 13, 2003, has been disclaimed.

Int. Cl.⁶ C07C 5/22; 5/27

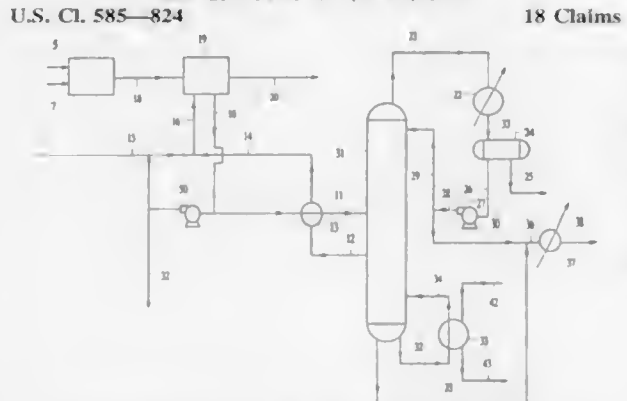
U.S. Cl. 585—671

7 Claims

1. A process for the skeletal isomerization of an n-olefin of from 4 to 12 carbon atoms to provide a branched olefin product which comprises contacting the n-olefin under skeletal isomerization conditions with, as skeletal isomerization catalyst, a zeolite present in a binder, said zeolite having a pore size of at least about 4.5 angstroms and a pore structure characterized by intersecting 10-member ring and 8-member ring channels.

(c) containing said fraction with an adsorbent in the form of active carbon having at least one of calcium and a calcium compound supported thereon, thereby removing mercury from said fraction.

5,510,566
REGENERANT RECYCLE PROCESS FOR OXYGENATE REMOVAL
 Vincent A. Muolo, 10 Concord La., and Richard Caruso, 53 Acadia Dr., both of Voorhees, N.J. 08043
 Filed Dec. 12, 1994, Ser. No. 354,365
 Int. Cl.⁶ C07C 7/12; 41/00; 43/00
 U.S. Cl. 585—824 18 Claims



I. A process for recycling regenerant contaminated with oxygenates during regeneration of an oxygen removal unit of an MTBE plant, comprising:

- providing said regenerant consisting essentially of *n*-butane in a regenerant stream independent of any MTBE process stream;
- directing said regenerant to a distilling unit;
- distilling said regenerant in said distilling unit to remove at least some of said oxygenates; and
- returning at least some of said regenerant to said oxygen removal unit.

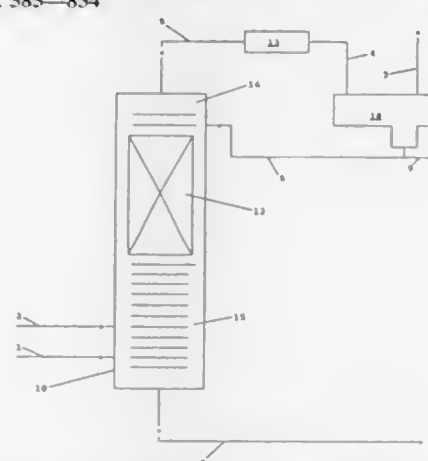
5,510,567
METHOD OF SEPARATING A MIXTURE OF GASES BY ABSORPTION
 Christophe Lermite, Paris; Joseph Larue, Chambourcy, and Alexandre Rojey, Ruell Malmaison, all of France, assignors to Institut Français Du Pétrole, Ruell Malmaison, France
 Continuation of Ser. No. 925,699, Aug. 7, 1992, abandoned.
 This application Feb. 28, 1994, Ser. No. 203,736
 Claims priority, application France, Aug. 8, 1991, 9110229
 Int. Cl.⁶ C07C 7/10
 U.S. Cl. 585—833 26 Claims

- I. A method of separating a mixture of gases which comprises:
- a) absorbing a gas fraction from the mixture of gases with a solvent in an absorption zone and obtaining a resultant charged solvent;
 - b) expanding the charged solvent from step a) in an expansion means to vaporize a portion of the absorbed gases and cool the solvent;
 - c) passing the cooled solvent and vaporized absorbed gases from step b) into a desorption column comprising a reboiling zone heated by an external heat source and a desorbing zone, extending from above the reboiling zone along substantially the whole height of the desorption column, incorporating an internal heat exchange zone, said internal heat exchange zone extending along substantially the whole height of the desorb-

ing zone and being above and distinct from the reboiling zone, countercurrently contacting in the desorption column the solvent from step b) with a gas fraction desorbed from the solvent and collecting a regenerated solvent from the reboiling zone;

- d) passing the regenerated solvent from the reboiling zone of the desorption column into and through the internal heat exchange zone of the desorption column and subjecting the solvent in the absorbing zone of step c) to indirect countercurrent heat exchange with the regenerated solvent; and
- e) recycling the regenerated solvent from the internal heat exchange zone to the absorption zone of step a).

5,510,568
PROCESS FOR THE REMOVAL OF MERCAPTANS AND HYDROGEN SULFIDE FROM HYDROCARBON STREAMS
 Dennis Hearn, Houston, Tex., assignor to Chemical Research & Licensing Company, Pasadena, Tex.
 Continuation-in-part of Ser. No. 262,033, Jun. 17, 1994, abandoned. This application Dec. 12, 1994, Ser. No. 353,724
 Int. Cl.⁶ C07C 7/10
 U.S. Cl. 585—834 14 Claims

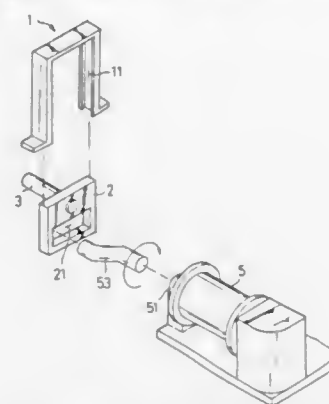


I. A process for removing mercaptans and/or hydrogen sulfide from a hydrocarbon stream, comprising the steps of:

- (a) feeding diolefins and a hydrocarbon stream containing mercaptans and/or hydrogen sulfide to a distillation column reactor into a feed zone;
- (b) feeding hydrogen to said distillation column reactor in an amount sufficient to maintain the catalyst in the active form but below that which would cause flooding of the column
- (c) concurrently in said distillation column reactor
 - (i) contacting the diolefins with said mercaptans, hydrogen sulfide or mixtures thereof contained within said hydrocarbon stream in the presence of hydrogen in a distillation reaction zone containing a supported Group VIII metal oxide catalyst prepared in a form to act as a catalytic distillation structure thereby reacting a portion of said mercaptans and/or hydrogen sulfide with a portion of the diolefins to form sulfide products and a distillate product, having a reduced mercaptan and/or hydrogen sulfide content and
 - (ii) separating said sulfides from said distillate product by fractional distillation;
- (d) withdrawing distillate product from said distillation column reactor at a point above said distillation reaction zone, said distillate product having a reduced mercaptan and/or hydrogen sulfide content; and
- (e) withdrawing sulfide products from said distillation column reactor at a point below said distillation reaction zone.

ELECTRICAL

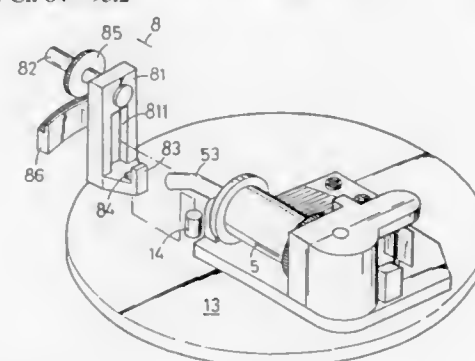
5,510,569
STRUCTURE OF CRYSTALLINE BALL WITH ROTARY TYPE
 Jian H. Liu, No. 2, Alley 202, Kao Fen Rd., Hsin-Chu City, Taiwan
 Continuation-in-part of Ser. No. 277,303, Jul. 22, 1994. This application Dec. 6, 1994, Ser. No. 353,978
 Int. Cl.⁶ G10F 1/06
 U.S. Cl. 84—95.1 5 Claims



I. A structure of crystalline ball with rotary type motion, comprising:

- an eccentric shaft;
- a groove frame having a frame shape with two internal sides is attached on the end portion of said eccentric shaft, and in the two internal sides thereof are longitudinally extending guide tracks having a proper height; and
- a sliding block mounted between the guiding tracks of a groove frame, said block can slide up and down freely along the guide track; and
- a swing stick located near the upper side of the said sliding block, and a wane groove is provided below said swing stick.

5,510,570
EXTERNAL STRUCTURE OF CRYSTAL BALL DRIVEN BY AN ECCENTRIC SHAFT
 Jian H. Liu, No. 2, Alley 202, Kao Fen Rd., Hsin-Chu City, Taiwan
 Filed Jul. 22, 1994, Ser. No. 277,303
 Int. Cl.⁶ G10F 1/06
 U.S. Cl. 84—95.2 13 Claims

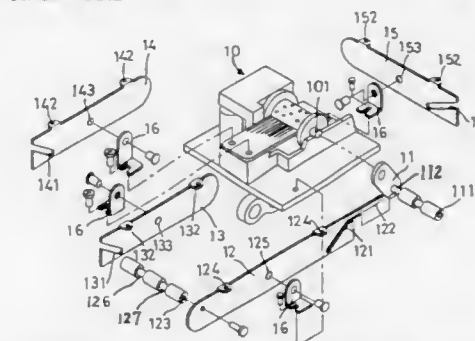


I. A drive for an external structure of a crystal ball that includes a base having a side and a bottom and a music box mounted on said base bottom that drives a revolving shaft, the drive comprising:

- an eccentric shaft rotated by said revolving shaft;
- a swinging pedestal comprised of a support member, an upstanding mounting member connected to said support member, and means for pivotally mounting said pedestal to said base, said mounting member having
- a groove located therein in alignment with respect to said eccentric shaft,

and said swinging pedestal being mounted so that it can swing around a positioning axis; and
 a swinging stick extended to the outside of the base and moved by said swinging pedestal.

5,510,571
DRIVING MECHANISM FOR A MUSIC BOX MOUNTED DOLL
 Ching-Fa Huang, 5th Fl., No. 7-1, Alley 56, Lane 166, Shio Pai Rd. Sec. 1, and Feng-Hsiang Hsu, 7th Fl., No. 9, Lane 100, Ho Chiang Street, both of Taipei, Taiwan
 Filed Dec. 29, 1994, Ser. No. 366,108
 Int. Cl.⁶ G10F 1/06; A63H 3/28; G09F 27/00
 U.S. Cl. 84—95.2 3 Claims

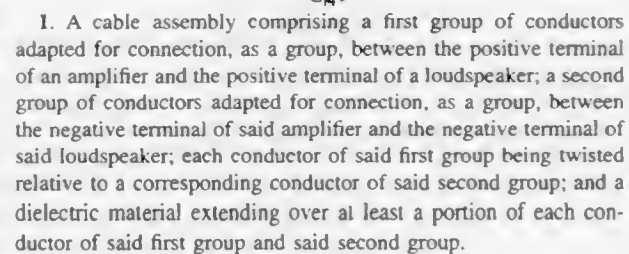


I. An improved doll driving mechanism for use with a music box having a music playing unit with a spring powered rotating driving shaft, comprising:

- a linking arm engaged with said rotating driving shaft of said music playing unit of said music box so as to rotate therewith;
- an eccentric shaft disposed on said linking arm and having a journaled section;
- a main linkage plate pivotally mounted on said music playing unit and having at least a pair of wire securing lugs, an open-ended slot and an extended rod at a first end thereof; said journaled section of said eccentric shaft being engaged with said open-ended slot of said main linkage plate;
- at least a pair of secondary linkage plates pivotally mounted on said music playing unit and being parallelly disposed with respect to said main linkage plate; each of said secondary linkage plates having an open-ended slot at one end thereof and at least a pair of wire securing lugs;
- a driving shaft having two journaled sections secured to a second end, opposite to the first end having the open-ended slot, of said main linkage plate such that the slot of one of the second linkage plates is engaged with one of said journaled sections of said driving shaft;
- a doll having a plurality of pivotal parts;
- a plurality of rigid wires each having one end connected to one of said wire securing lugs of said secondary linkage plates or said wire securing lugs of said main linkage plate, the other end of each of said rigid wires connected to one of the pivotal parts of said doll whereby said pivotal parts of said doll are moved in synchronism with said driving shaft of said music playing unit.

5,510,572
APPARATUS FOR ANALYZING AND HARMONIZING MELODY USING RESULTS OF MELODY ANALYSIS
 Tetsuya Hayashi, Fussa, and Kunihiko Matsubara, Tokyo, both of Japan, assignors to Casio Computer Co., Ltd., Tokyo, Japan
 Filed Oct. 8, 1993, Ser. No. 134,797
 Claims priority, application Japan, Oct. 12, 1992, 4-299267; Oct. 12, 1992, 4-299268; Oct. 12, 1992, 4-299269
 Int. Cl.⁶ G10H 7/00; 1/38
 U.S. Cl. 84—609 14 Claims

- I. A analyzer comprising:



5,510,579

WIRE RETAINER FOR CONNECTING WIRES IN LOW-VOLTAGE CIRCUITS OF ELECTRICAL APPARATUS

Dieter Hammer, Walblingen, and Bernhard Albeck, Lorch-Waldhausen, both of, Germany, assignors to Vossloh Schwabe GmbH, Urbach, Germany

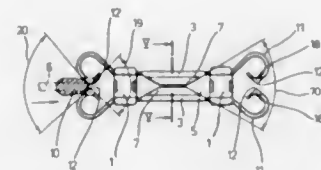
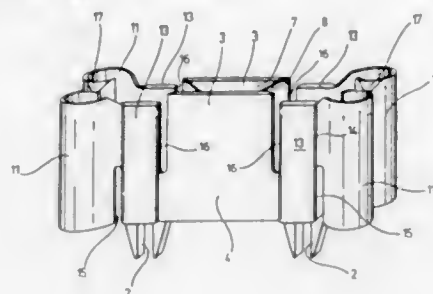
Filed Apr. 14, 1994, Ser. No. 227,617

Claims priority, application Germany, Apr. 20, 1993, 43 12 779.7

Int. Cl.⁶ H01B 17/16

U.S. Cl. 174—168

19 Claims



1. A wire retainer for connecting wires (6) of low-voltage circuits of electrical apparatus, to retain said wires (6) in ordered, predetermined position with respect to each other, comprising a base (1, 21);

fasteners (2) secured to the base (1);

at least two legs (3, 26) joined to the base, between which legs a continuous channel (5, 25) for receiving the wires (6) is defined,

said channel being open on one side over its length, and having a wire insertion opening (20); and wire holding means (11, 26, 36) for wires (6) received in the channel, which wires are normally located in the channel, elastic wire hold-back means (7, 27, 28, 270, 280) coupled to the legs (3, 26); and

means for assuring ordered arrangement of the wires in the retainer including wire clamping means (12, 34) coupled to the base (1, 21) and positioned for engagement with the wires (6) in the retainer, and

wherein the channel (5, 25) is dimensioned and arranged to receive a wire placement tool (10) protruding through the insertion opening moving in the longitudinal direction of the wires and passing through said channel over its length; and wherein at least one of the legs (3, 26) defining the channel, the wire holding means (11, 26, 36) and the hold-back means (7, 27, 28, 270, 280) are formed to yield spring-elastically to the tool.

5,510,580

PRINTED CIRCUIT BOARD WITH LANDLESS BLIND HOLE FOR CONNECTING AN UPPER WIRING PATTERN TO A LOWER WIRING PATTERN

Masaharu Shirai, Ohtsu, and Shuhei Tsuchita, Kusatsu, both of, Japan, assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 164,124, Dec. 7, 1993. This application

Mar. 30, 1995, Ser. No. 413,328

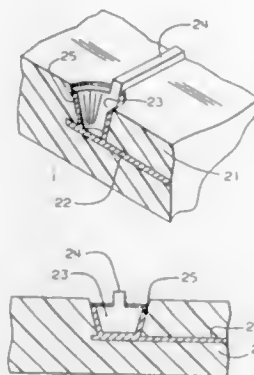
Int. Cl.⁶ H05K 1/11

U.S. Cl. 174—266

5 Claims

1. A printed circuit board comprising:

upper wiring on an upper surface of the printed circuit board;



lower wiring;

a landless blind hole extending from the upper surface to said lower wiring, the landless blind hole having an opening larger than the bottom thereof; and

a conductor pattern formed only on the bottom and the internal wall of said blind hole for connecting said upper wiring with said lower wiring.

5,510,581

MASS-PRODUCED FLAT MULTIPLE-BEAM LOAD CELL AND SCALES INCORPORATING IT

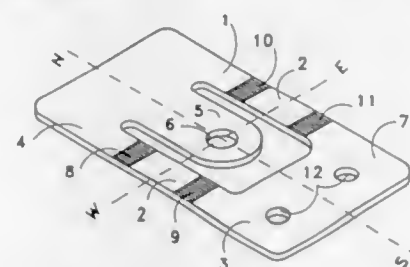
Shlomo Angel, 270 Lafayette St. Suite 807, New York, N.Y. 10012

Filed May 18, 1994, Ser. No. 245,358

Int. Cl.⁶ G01G 3/14;3/08

U.S. Cl. 177—211

13 Claims



1. A low-profile load cell which comprises:

a. a flat metal plate having a generally uniform horizontal cross-section comprising:

(1) a load-receiving member comprising a first transverse section integral with a load-receiving tongue, the load-receiving tongue arranged symmetrically about a north-south axis of the plate, extending across an east-west axis of the plate, and receiving the load to be measured over an area symmetrical about the north-south and east-west axes;

(2) a clamping member comprising a second transverse section opposed from the first transverse section across the east-west axis, the clamping member further comprising a pair of clamping tongues integral with the second transverse member and extending across the east-west axis, each clamping tongue being symmetrical to the other with respect to the north-south axis; and

(3) two flexure beams extending across the east-west axis and connecting the first and second transverse sections of the metal plate, a first half of each flexure beam symmetrical to a second half about the east-west axis, and the flexure beams symmetrical to each other about the north-south axis; and

b. a pair of strain transducers mounted on each flexure beam with each sensor equidistant from the east-west axis; wherein, when a load is applied to the load-receiving element the flexure beams each bend into a symmetrical double-cantilever S-shape, and each transducer in each transducer pair produces an electronic signal equal and opposite to the other transducer in the transducer pair.

5,510,582

ACOUSTIC ATTENUATOR, WELL LOGGING APPARATUS AND METHOD OF WELL LOGGING

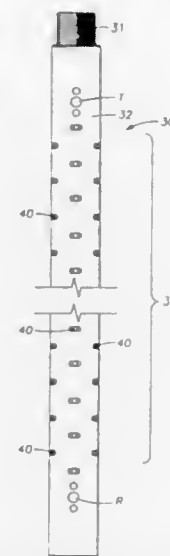
James R. Birchak, Spring, Tex.; Alexander Lifson, Manliys, N.Y.; Eugene J. Linyayev, Houston, Tex.; John W. Minear, Houston, Tex.; Dennis E. Roessler, Houston, Tex., and David J. Young, Houston, Tex., assignors to Halliburton Company, Houston, Tex.

Filed Mar. 6, 1995, Ser. No. 398,979

Int. Cl.⁶ G01V 1/40

U.S. Cl. 181—102

24 Claims



1. An apparatus for performing acoustic investigations of sub-surface geological formations penetrated by a borehole, comprising:

(a) a longitudinally extending body for positioning in said borehole;

(b) a transmitter supported by the body for transmitting acoustic energy;

(c) a receiver supported by the body for receiving acoustic energy;

(d) an acoustic attenuation section positioned on the body between the transmitter and the receiver comprising, at least one cavity defined by the body, an inertial mass member for each cavity, and an acoustical attenuation fluid, wherein the cavity is shaped to receive the inertial mass member such that a gap is formed between the inertial mass member and the tool body once the inertial mass member is positioned inside the cavity, and wherein the acoustical attenuation fluid is positioned within the gap.

5,510,583

ASSEMBLY FOR SEQUENTIAL SWITCHING

James R. Pescetto, Hanover Park, Ill., assignor to Eaton Corporation, Cleveland, Ohio

Filed Mar. 18, 1994, Ser. No. 210,868

Int. Cl.⁶ H01H 9/26;21/80

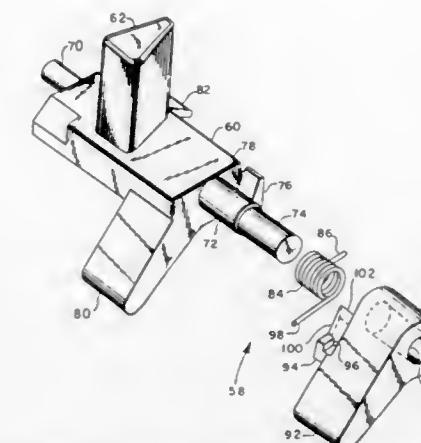
U.S. Cl. 200—1 B

9 Claims

1. A switch assembly comprising

(a) housing means having disposed therein a plurality of switches, each of said switches with a stationary and a moveable contact and an actuator member operable upon movement to effect opening and closing of the moveable contact against the stationary contact for each of the switches;

(b) a user moveable rocker member pivotally mounted on said housing means for rotation in opposite directions about an axis and including a first cam portion thereof operable upon user movement in a first direction to effect movement of said actuator of one of said plurality of switches for effecting closing of the contacts thereof;



(c) a second rocker member mounted for rotation about said axis on said housing means and including a second cam portion operable upon continued user movement of said first rocker member in said first direction to effect movement of said actuator of a second one of said plurality of switches and closing of the contacts thereof; and

(d) means for biasing said second rocker member in a direction opposite said first direction and operable to provide for lost-motion between said first and second rocker members during said continued movement.

5,510,584

SEQUENTIALLY OPERATED SNAP ACTION MEMBRANE SWITCHES

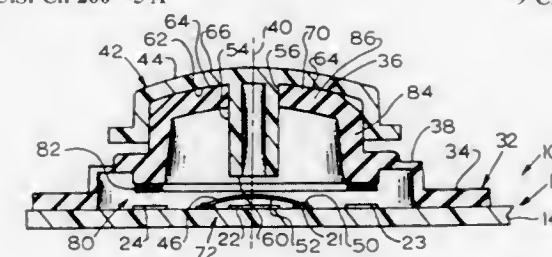
Jeffrey J. Norris, Bloomington, Minn., assignor to ITT Corporation, New York, N.Y.

Filed Mar. 7, 1995, Ser. No. 400,049

Int. Cl.⁶ H01H 13/70;1/02

U.S. Cl. 200—5 A

9 Claims



1. An elastomeric cap-dome type switch assembly comprising: a board device which includes a board and first and second electrical contacts mounted on said board;

an electrically conductive dome which has a vertical axis, a radially outer portion that engages said first contact, and a radially inner portion that lies over said second contact;

a keypad which includes an elastomeric cap having an axis and having a hole and being spaced above said snap dome, said elastomeric cap having an outer part, said keypad including a mount mounted on said board device and a deflectable coupling portion that supports said elastomeric cap outer part in vertical movement on said mount;

a keycap of rigid material which includes a cover lying on top of said elastomeric cap and having a stem that projects downwardly through said hole with said stem having a lower end

that lies above said snap dome to snap down said dome when said keycap moves down, whereby tactile feedback of snapping of said dome is transmitted through said stem directly to said cover.

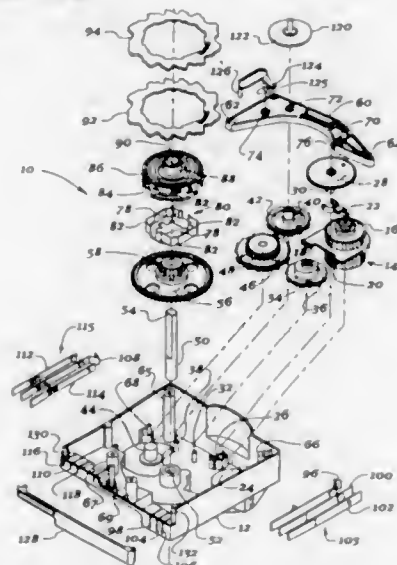
5,510,585

ELECTROMECHANICAL PROGRAMMER/TIMER

John P. Duve, Brookfield; Michael F. Misik, Norridge; George A. Soberski, Des Plaines, and Lawrence T. Olges, Geneva, all of Ill., assignors to Eaton Corporation, Cleveland, Ohio
Filed Sep. 30, 1993, Ser. No. 130,077
Int. Cl.⁶ H01H 43/00

U.S. Cl. 200—35 R

12 Claims



12. A programmer/timer for electrically operated appliances comprising:

- (a) housing means having a motorized drive means associated therewith, said motorized drive means including:
 - (i) a motor having a motor pinion on the motor shaft;
 - (ii) a first stage gear wheel having continuous peripheral teeth engaging said motor pinion and a first stage pinion having missing teeth thereon;
 - (iii) a second stage gear wheel peripherally engaging said first stage pinion for intermittent drive, said second stage wheel having a second stage pinion thereon with missing teeth;
 - (iv) a third stage gear wheel having the periphery thereof with missing teeth engaging said second stage pinions, for intermittent drive therebetween, said third stage wheel locked against rotation by the space between teeth engaging separate surfaces on said second stage pinion during the dwell periods of said intermittent drive, said third gear wheel having an output pinion with missing teeth;
 - (v) a fourth stage gear wheel having the periphery thereof engaging said third stage gear wheel pinion for intermittent drive therebetween, said fourth stage gear wheel locked against rotation by said space between teeth engaging separate surfaces on said third stage pinion during the dwell period of said intermittent drive, wherein said third stage gear wheel may be removed and replaced with the number of pinion teeth changed without requiring changing either of said second and fourth stage gear wheel; and,
- (b) cam means engaging and rotated by said fourth stage gear wheel; and,
- (c) at least one appliance program switch including cam follower means, operative to be actuated and deactivated by advancement of said cam means.

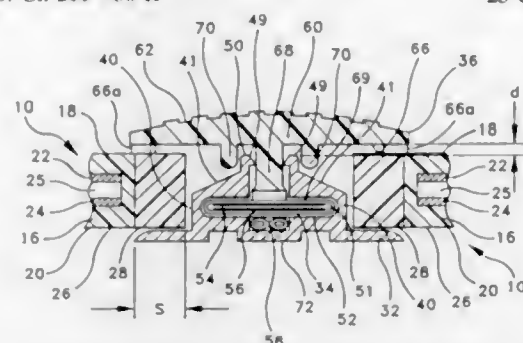
5,510,586

SWITCH JOINT FOR ELECTRICAL SWITCHING MATS

Duncan Hackling, Near Burnley, England, assignor to Tapeswitch Corporation of America, Farmingdale, N.Y.
Filed Jan. 11, 1995, Ser. No. 371,542
Int. Cl.⁶ H01H 3/02

U.S. Cl. 200—86 R

23 Claims



1. A pressure-sensitive electrical switch joint assembly for providing pressure-sensitive continuity between first and second electrical switch mats, each of said mats being generally planar and having a pressure-sensitive active area and an elongate inactive edge, said edge of said first mat being positioned adjacent said edge of said second mat, said switch joint assembly comprising:
 - an elongate switch joint housing positionable between said mats and having a generally flat base portion underlying said edges of said mats and an upstanding portion extending between said mat edges, said upstanding portion having an elongate upwardly opening channel;
 - an elongate activatable pressure-sensitive electrical ribbon switch positioned within said channel; and
 - an elongate activation member moveably supported by said housing, said activation member having a generally flat upper surface for overlying said edges of said mats and a depending element extending into said upwardly opening channel for activatable engagement with said pressure-sensitive ribbon switch upon depression thereof to activate said ribbon switch, said upper surface of said activation member having a lower face, said lower face and said generally flat base portion of said housing together defining first and second mat edge receiving regions on first and second sides of said upstanding portion of said housing for respective receipt of said edges of said first and second mats.

5,510,587

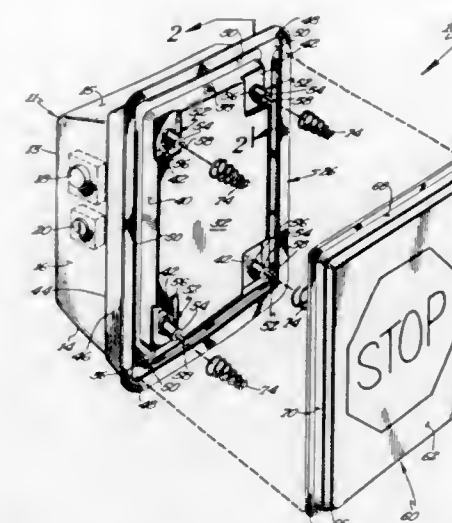
ELECTRIC CIRCUIT ACTUATING MECHANISM

John P. Reiter, Apple Valley, Minn., assignor to Reitech Corporation, Burnsville, Minn.
Filed Oct. 19, 1994, Ser. No. 325,795
Int. Cl.⁶ H01H 1/12

U.S. Cl. 200—341

22 Claims

1. Mechanisms for actuating an electric circuit comprising, in combination: a housing; a front wall having a broad surface; means for movably mounting the front wall relative to the housing enabling any point of the broad surface to move in an actuation direction from a normal position to an actuation position, with the front wall being biased from the actuation position to the normal position; and a multiplicity of de-energizing momentary switches mounted to the housing in a spaced arrangement, with the de-energizing momentary switches each including a slideable actuating pin biased in a direction opposite to the actuation direction from a first position to a second position, with movement of any point of the broad surface of the front wall in the actuation direction from the normal position sliding the actuating pin of at least one of the de-energizing momentary switches in the actuation direction, with the de-energizing momentary switches de-energizing the electric circuit when the actuating pin of at least one of the de-energizing momentary switches is slid in the actuation direction.



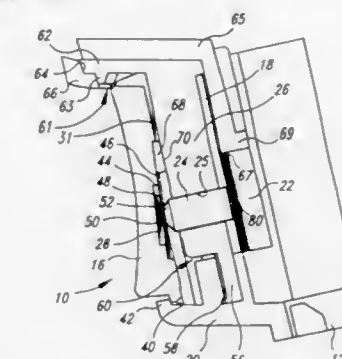
5,510,589

HIGH-LIFE SEALED SWITCH ASSEMBLY WITH TACTILE FEEDBACK

Kevin R. Arnal, Seattle, Wash., assignor to Intermec Corporation, Everett, Wash.
Filed Feb. 28, 1994, Ser. No. 204,079
Int. Cl.⁶ H01H 13/02

U.S. Cl. 200—522

16 Claims



tion direction from the second position, with the energizing of the electric circuit not occurring as the result of the movement of the front wall.

5,510,588

IMAGE INTENSIFIER APPARATUS

Hideki Suzuki, and Shoichi Uchiyama, both of Hamamatsu, Japan, assignors to Hamamatsu Photonics K.K., Hamamatsu, Japan

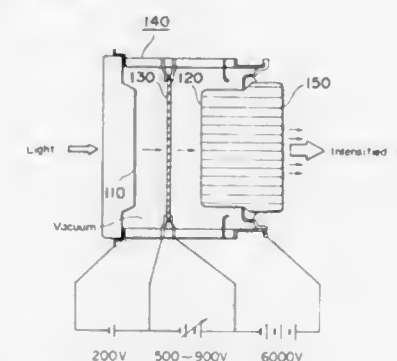
Filed Apr. 4, 1994, Ser. No. 222,308

Claims priority, application Japan, Apr. 6, 1993, 5-079601

Int. Cl.⁶ H01J 40/14

U.S. Cl. 250—207

8 Claims



1. An image intensifier apparatus comprising:
 - a photocathode for converting a first optical image to corresponding photoelectrons;
 - a microchannel plate for multiplying the photoelectrons, impressed with a voltage to both ends of the microchannel plate; and
 - a fluorescent screen for converting the photoelectrons multiplied in the microchannel plate to a second optical image, emitting the second optical image to an image pickup device;
- a resistance of the microchannel plate being set so that in a case of a luminance of the second optical image being smaller than or equal to saturation sensitivity of the image pickup device, the luminance of the second optical image is proportional to an illuminance of the first optical image, in a case of a luminance of the second optical image being larger than saturation sensitivity of the image pickup device, the luminance of the second optical image is suppressed against increment of the illuminance of the first optical image.

1. A switch assembly providing a tactile indication to a user of switch activation, the switch assembly being mountable in a housing having an aperture, comprising:
 - a non-tactile switch mounted within the housing, said switch being adapted to move between an open position and a closed position without providing a substantial tactile indication to the user of movement by said switch;
 - a trigger movably attached to the housing, said trigger being adapted to move between a first position and a second position, said trigger being coupled to said switch to move said switch from said open position to said closed position when said trigger is moved from said first position to said second position;
 - a trigger biasing member connected to the trigger, said trigger biasing member biasing said trigger toward said first position and providing resistance to said trigger when said trigger is moved toward said second position;
 - a seal positioned between said trigger and said switch and sealably engaging the housing to close the housing aperture, said seal having an aperture therethrough;
 - a switch actuator coupling said trigger to said switch, said switch actuator extending through said aperture in said seal and being movably disposed in said seal aperture, said switch actuator being positioned and adapted to move said switch from said open position to said closed position when said trigger is moved from said first position to said second position; and
 - a tactile member positioned outward of said seal, between said trigger and said switch with said seal being located between said tactile member and said switch, and adapted to be engaged by said trigger as said trigger is moved from said first position toward said second position, and to provide the user with a tactile indication that said switch has been moved from said open position to said closed position.

5,510,590

MULTIPOLE SWITCH WITH COMMON POLYPHASE OPERATING MECHANISM CHARACTERIZED BY STAGGERED CONNECTION OR DISCONNECTION

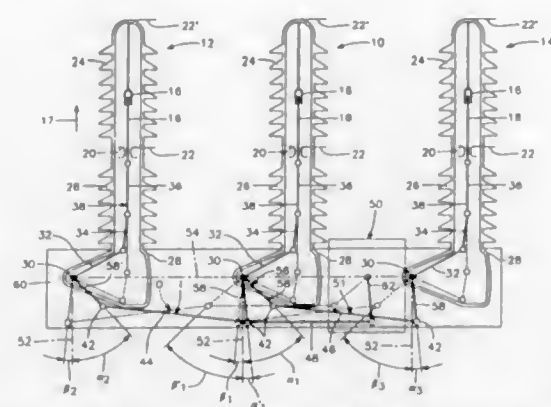
Guido Hux, Unterentfelden, Switzerland, assignor to GEC Alsthom T&D AG, Obereotfelden, Switzerland
Filed Dec. 1, 1994, Ser. No. 352,115

Claims priority, application European Pat. Off., Jan. 12, 1994, 94100349

Int. Cl.⁶ H01H 33/42

6 Claims

1. A multipole switch having one interrupter unit per pole, said interrupter units being of identical construction, each interrupter unit comprising an insulated switching chamber, a stationary



switch contact piece and a movable contact piece in said chamber, a transmission linkage conducted with said movable switch contact piece, said chamber including a housing at one end thereof, a drive shaft mounted in said housing, said transmission linkage being connected to said drive shaft to move said movable switch contact piece in response to rotational movement of said drive shaft, a drive lever affixed to and extending laterally from said drive shaft, the drive levers connected to the drive shafts being of the same length to form equal length lever arms extending from said drive shafts, a connecting rod assembly directly connected to each of said drive levers at an articulation point and a drive unit connected to said connecting rod assembly to simultaneously pivot all of said drive levers through an equal angle of pivotal movement, at least one of said drive levers being affixed to its associated drive shaft at a fixed angular relation different from the fixed angular relation between the other drive levers and their associated drive shafts whereby the movable switch contact piece connected to the drive shaft having the differently angled drive lever connected thereto will move in a pattern different from the other movable switch contact pieces during movement of the connecting rod assembly for connecting and disconnecting the switch contact pieces associated with the transmission linkage connected to the drive shaft having the differently angled drive lever at a different time than the other switch contact pieces.

5,510,591

HIGH TENSION CIRCUIT BREAKER CAPABLE OF INTERRUPTING FAULT CURRENTS HAVING A DELAYED ZERO CROSSING

Jocelyn Tremblay, Delson, Canada; René Doche, Villeurbanne, France, and André LeFrancis, Greenfield Park, Canada, assignors to GEC Alsthom T & D SA, Paris, France

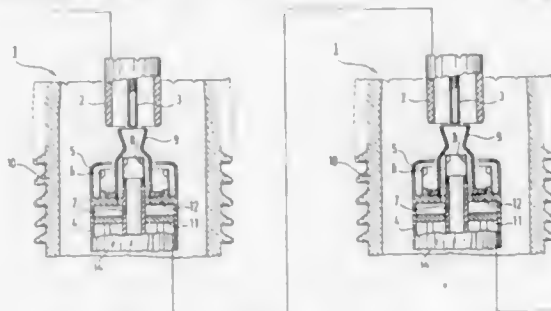
Filed Oct. 11, 1994, Ser. No. 320,743

Claims priority, application France, Oct. 12, 1993, 93 12118

Int. Cl.⁶ H01H 33/70; 33/88

U.S. Cl. 218—43

7 Claims



1. A high tension circuit breaker for interrupting alternating fault currents having a pseudo-period T , a fault instant at time t_0 and a delayed zero crossing occurring after a maximum time lapse $t_{\text{max}} - t_0$ after t_0 , said time lapse $t_{\text{max}} - t_0$ being determined by testing or simulation, said high tension circuit breaker comprising:

a plurality of interrupting chambers in series, each of said interrupting chambers having means for opening at an instant t_1 , where t_1 is subsequent to t_0 , each said interrupting chamber comprising a fixed main contact, a fixed arcing contact, moving equipment disposed adjacent to said fixed main contact and said fixed arcing contact and including a moving main contact, a moving arcing contact and arc blasting means disposed within said moving equipment for providing a blast to said contacts and designed to operate between instant t_1 and instant t_2 , where t_2 is earlier than $t_{\text{max}} - T$; and means for driving said moving equipment including arc blast flow rate reducing means for extending arc blasting to an instant t_2 , where $t_{\text{max}} - T \leq t_2 \leq t_{\text{max}} + T$.

4. A circuit breaker according to claim 1, wherein said arc blasting means comprises a blast piston co-operating with said moving equipment by displacement relative to said moving equipment, wherein said moving equipment is subjected to normal opening displacement at a normal opening speed defined by normal operating conditions; and wherein the blast flow rate reducing means are means for slowing down the moving equipment beyond a threshold displacement d .

5,510,592

VACUUM SWITCH

Dietmar Gentsch, Ratingen, Germany, and Joseph H. F. G. Lipperts, Venlo, Netherlands, assignors to ABB Patent GmbH, Mannheim, Germany

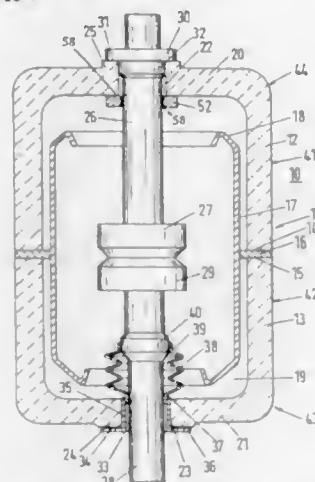
Filed Dec. 27, 1994, Ser. No. 364,537

Claims priority, application Germany, Dec. 24, 1993, 43 44 536.5; Sep. 1, 1994, 44 31 067.6

Int. Cl.⁶ H01H 33/66

U.S. Cl. 218—134

9 Claims



1. A vacuum switch with an internal switching chamber, comprising: an approximately cylindrical switching chamber housing formed of insulating material and having two axial end segments and a cylindrical section; a first rod engaging one of said axial end segments of said switching chamber housing and carrying a stationary contact piece; a second rod engaging the other of said axial end segments of said switching chamber housing and carrying a movable contact piece; said switching chamber housing with said contact pieces and said rods defining an electrical field with electrical field lines in the internal switching chamber; a bellows mounted on said switching chamber housing and having one end fastened to said switching chamber housing and another end fastened to and enclosing said second rod; and at least one radially inwardly drawn base at least at one of said end segments of said switching chamber housing, said at least one radially inwardly drawn base enclosing an opening

through which one of said rods passes inwardly and being connected to said cylindrical section in the shape of an arc, such that said inwardly drawn base extends essentially parallel to the electrical field lines defined inside the internal switching chamber when said contact pieces are not in mutual contact.

5,510,593

METHOD AND APPARATUS FOR SEPARATING A TEMPERATURE-ADHERED ELECTRODE TIP

Hirohisa Sakai, Higashiura, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

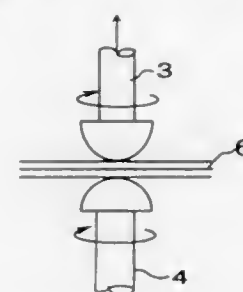
Filed Oct. 25, 1994, Ser. No. 328,529

Claims priority, application Japan, Oct. 27, 1993, 5-268650

Int. Cl.⁶ B23K 37/02; 11/22; B25J 11/00

U.S. Cl. 219—86.7

7 Claims



1. A method for separating a workpiece from a welding electrode tip adhered to the workpiece by the solidification of a softened portion of the workpiece onto the electrode tip following welding, wherein a welding gun is moved by a welding robot having six articulations driven by respective robot servo motors and the welding gun has a pair of electrode tips including the adhered electrode tip, at least one of which is driven by a welding gun servo motor, and wherein a condenser battery is connected electrically to the welding gun servo motor, said method comprising:

biasing the adhered electrode tip in a direction away from and perpendicular to the workpiece by discharging the condenser battery to the welding gun servo motor while all of the robot servo motors and the welding gun servo motor are powered off to bias the electrode tip in a direction away from the workpiece; and

imposing a separation force on the adhered electrode tip while the adhered electrode tip is being biased in the direction away from the workpiece, to separate the adhered electrode tip from the workpiece.

5,510,594

METHOD OF MANUFACTURING THICK-FILM CIRCUIT COMPONENT

Hiroaki Mori, and Masao Yonezawa, both of Kyoto, Japan, assignors to Murata Manufacturing Co., Ltd., Japan

Filed Sep. 29, 1994, Ser. No. 315,145

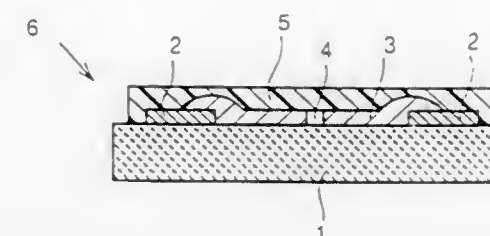
Claims priority, application Japan, Sep. 30, 1993, 5-244505

Int. Cl.⁶ B23K 26/00

U.S. Cl. 219—121.69

15 Claims

11. A method of manufacturing a thick-film circuit component, comprising the steps of: preparing an electrically insulating substrate; forming on said insulating substrate an electrode made of a conductive material containing silver, by applying paste containing said conductive material onto said insulating substrate by printing, and firing said electrode formed on said substrate; forming on said insulating substrate a thick-film resistor made of an electrically resistive material containing cermet, said thick-film resistor being electrically connected to said electrode;



irradiating said thick-film resistor directly with a laser beam to trim said thick-film resistor; forming a protective film made of an electrically insulating material containing resin on said insulating substrate after said irradiating step, said protective film being formed so as to cover said electrode and said thick-film resistor; and selecting said electrically insulating material such that said electrically insulating material prevents migration of silver from said electrode.

5,510,595

MACHINE FOR AUTOMATIC IN SITU WELDING ACCORDING TO A CURVILINEAR SECTION PROFILE AND HAVING PROGRAMMABLE EXTRAPOLATION CONTROL

Yves F. G. Gainand, Montigny le Bretonneux, France, assignor to Societe Nouvelle Technigaz, Montigny le Bretonneux, France

PCT No. PCT/FR94/00157, § 371 Date Oct. 11, 1994, § 102(e) Date Oct. 11, 1994, PCT Pub. No. WO94/17952, PCT Pub. Date Aug. 18, 1994

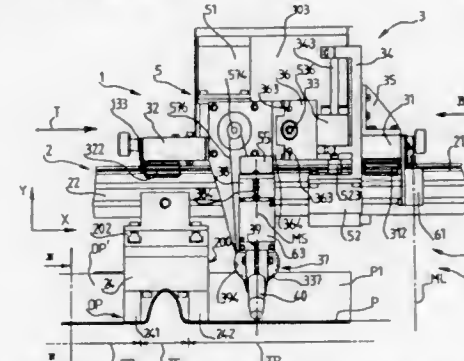
PCT Filed Feb. 10, 1994, Ser. No. 318,667

Claims priority, application France, Feb. 12, 1993, 93 01619

Int. Cl.⁶ B23K 9/12

U.S. Cl. 219—124.34

14 Claims

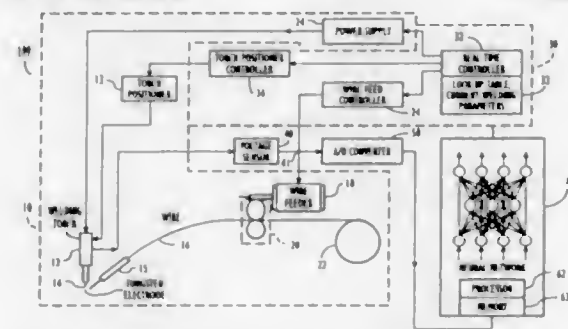


1. An automatic machine for the in situ assembly of at least two metallic parts by welding along a profile (P) common to the parts and comprising a support stationary with respect to the parts, a carriage movably mounted on the support and guided along a feed path of travel (T), welding equipment with a torch movably mounted and guided on the carriage, a displacement system for the displacement of the carriage and the torch with respect to the support, means for the detection of the position of the torch with respect to the parts, and a programmable control device connected to the detection means and operating the displacement system and the welding equipment such that welding is effected by the torch along the common profile (p), the detection means comprising a locating telemeter supported by the carriage independently of the torch for measuring a chosen distance between the machine and one of the parts, the profile having at least one curvilinear portion (TC) at the level of which the chosen distance is outside a given range, the control device being provided with a memory wherein are recorded the coordinates of points of passage on the profile as a function of the locating telemeter, the control device including means for defining through circular extrapolation between the

neighboring points of passage a series of curves connecting these points and coinciding substantially with the curvilinear portion (TC) in order that the displacement system makes one of the successive positions of the torch at the level of the curvilinear portion (TC) correspond to a given number of curves.

5,510,596
PENETRATION SENSOR/CONTROLLER ARC WELDER
Xiaoshu Xu, and Jerald E. Jones, both of Knoxville, Tenn., assignors to American Welding Institute, Knoxville, Tenn.
Filed Apr. 27, 1993, Ser. No. 52,739
Int. Cl. B23K 9/095

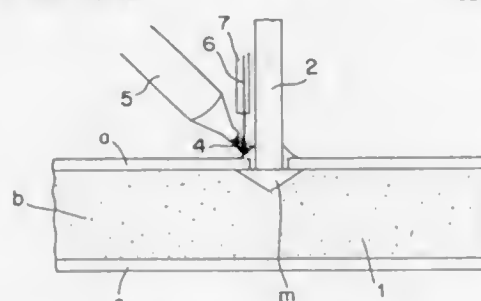
U.S. Cl. 219—130.01 27 Claims



1. An apparatus for performing an arc weld, comprising: an arc welder for generating an arc; a voltage sensor for sensing a voltage of the arc and for outputting a voltage signal representing the sensed voltage; a neural network, coupled to the voltage sensor, for analyzing a pattern represented by said voltage signal and outputting a value indicative of whether full penetration has occurred during the arc weld; and a controller, coupled to the neural network and the arc welder, for controlling the operation of the arc welder in accordance with the value output from the neural network to ensure full penetration.

5,510,597
WELDED COMPOSITE PANELS
Lutz Kampmann, Neunkirch, and Peter Gloor, Neuhausen am Rheinfall, Switzerland, assignors to Alusuisse-Lonza Services Ltd., Switzerland
Division of Ser. No. 295,219, Aug. 24, 1994. This application Mar. 23, 1995, Ser. No. 409,348
Claims priority, application Switzerland, Sep. 17, 1993, 02809/93

Int. Cl. B23K 9/00
U.S. Cl. 219—137 R 12 Claims

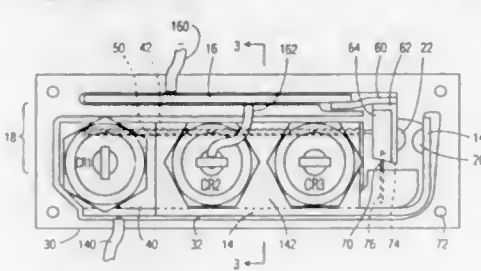


1. Process which comprises: joining two elements of aluminum or aluminum alloys, wherein at least one element is a composite material containing a thermally decomposable core and at least one outer layer; fusion welding a connection between said at least one outer layer of the composite material and the other element; and including the step of removing a portion of the thermally decom-

posable core in the region to be welded prior to welding to such an extent that a recess is formed between the outer layer and the core material at the region to be welded.

5,510,598
ELECTRO-THERMALLY ACTUATED SWITCH
Ellas A. Kawam, Lawrenceville, N.J., and Terri A. Cardellino, Newtown, Pa., assignors to Martin Marietta Corporation, East Windsor, N.J.
Continuation of Ser. No. 25,508, Mar. 3, 1993, abandoned.
This application Mar. 3, 1995, Ser. No. 397,739

Int. Cl. H05B 1/02
U.S. Cl. 219—505 17 Claims

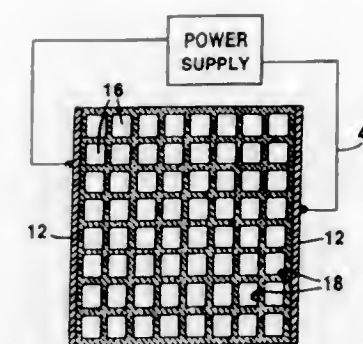


1. A switch comprising: a pair of electrical contacts moveable between open circuit and closed circuit positions; a thermally conductive base having a cavity therein; a shape memory metal alloy member disposed in said cavity and thermally coupled to said base, said alloy member having first and second locations thereon between which a change in dimension occurs upon said alloy member reaching a predetermined temperature, said first location engaging said base within said cavity and said second location engaging said pair of electrical contacts; an electrical heating means for producing heat in response to the flow of electrical current therethrough, said heating means being closely thermally coupled to said base for heating said base and said alloy member to said predetermined temperature; and means for coupling said electrical heating means in electrical circuit with at least one of the contacts of said pair of electrical contacts for altering the flow of electrical current in said heating means responsive to said pair of contacts changing between their open and closed circuit positions.

5,510,599
ELECTRICALLY HEATABLE ACTIVATED CARBON MONOLITH FOR ADSORPTION AND DESORPTION APPLICATIONS
Kishor P. Gadkaree, Big Flats, and Brian P. Tyndell, Addison, both of N.Y., assignors to Corning Incorporated, Corning, N.Y.

Filed May 26, 1994, Ser. No. 249,897
Int. Cl. H05B 3/10; B32B 3/12
U.S. Cl. 219—553 61 Claims

21. A method of making an electrically heatable activated carbon body, said method comprising: a) providing a non-metallic monolithic structure comprising activated carbon, and having means for passage of a work-stream therethrough; and b) providing electrically conducting means on the structure for conducting an electric current through the structure.

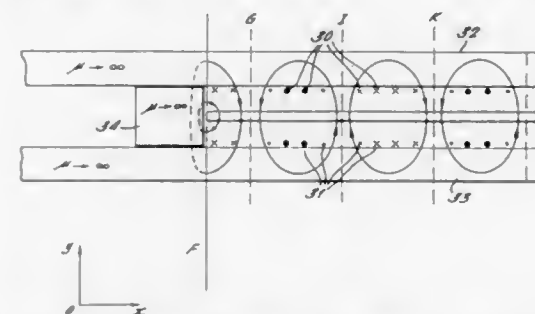


5,510,600
ELECTROMAGNETIC INDUCTION HEATING APPARATUS FOR HEATING ELONGATED METAL WORKPIECES

William B. Jackson, South Wirral, England, assignor to EA Technology Limited, United Kingdom
PCT No. PCT/GB92/02212, § 371 Date May 25, 1994, § 102(e)
Date May 25, 1994, PCT Pub. No. WO93/11650, PCT Pub. Date Jun. 10, 1993

PCT Filed Nov. 30, 1992, Ser. No. 244,419
Claims priority, application United Kingdom, Dec. 3, 1991, 9125650

Int. Cl. H05B 6/06
U.S. Cl. 219—645 34 Claims



1. Induction heating apparatus for heating an elongate metal workpiece of predetermined width w, comprising means to generate time varying magnetic fields having magnitudes with spatial profiles across the width w of the workpiece which respectively correspond to time averaged longitudinal eddy current distributions in the workpiece having distributions across the width of the workpiece which are substantially:

$$J(x) \cos \phi(x) \text{ and } \sqrt{\kappa} J(x) \sin \phi(x)$$

where

x is the distance across the width of the workpiece from the center line,

J(x) is proportional to the magnitude of induced current density in the workpiece at a distance x from the center line required to produce a desired profile P(x) across the width w of heat energy generated in the workpiece,

κ is the ratio of the time for which said field corresponding to said sine eddy current distribution is generated relative to the time for which said field corresponding to said cosine eddy current distribution is generated, and

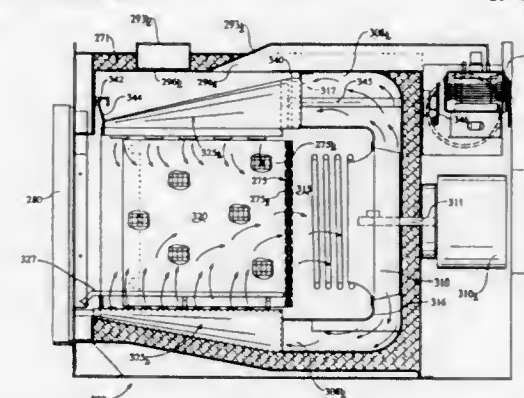
φ(x) is a function of x selected such that in substance

$$\int_{-w/2}^{w/2} J(x) e^{i\phi(x)} dx = 0;$$

and means for controlling said magnetic field generating means to generate said fields with said corresponding eddy current distributions for which J is non-uniform.

5,510,601
CONVECTION HEAT TRANSFER APPARATUS
Donald P. Smith, Dallas; Michael J. Dobie, Double Oak; Alden B. Sparman, Sr., and John R. Norris, both of Plano, all of Tex., assignors to Patentsmith Corporation, Dallas, Tex.
Division of Ser. No. 958,968, Oct. 9, 1992, Pat. No. 5,401,940, which is a continuation-in-part of Ser. No. 723,250, Jun. 28, 1991, Pat. No. 5,210,387, and Ser. No. 463,279, Jan. 10, 1990, Pat. No. 5,147,994. This application Dec. 16, 1994, Ser. No. 357,705

Int. Cl. H05B 6/64
U.S. Cl. 219—679 19 Claims

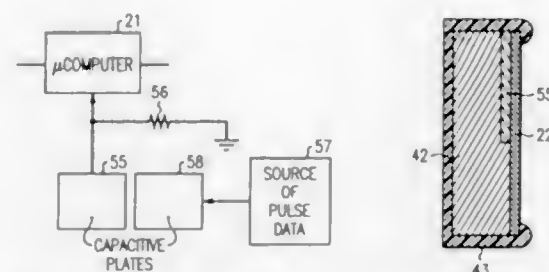


1. Apparatus for transferring heat between temperature controlled air and a food product comprising: a cabinet having an interior compartment; front, side and rear walls forming a periphery extending around said compartment; a plenum wall, said plenum wall forming a plenum in said compartment having an opening to provide an air return path; foraminous partition means having passages formed therein; means mounting said foraminous partition means spaced from said plenum wall and extending across said air return path for dividing the interior of the cabinet into a cooking chamber and an air conditioning chamber; air circulating means drawing air from said cooking chamber through said foraminous partition means and through said opening in said plenum wall to pressurize said plenum; temperature control means in said air conditioning chamber for controlling temperature of air in said air conditioning chamber; air dispenser means; and means mounting said air dispenser means to receive pressurized air from said plenum and to dispense a stream of air into said cooking chamber, said foraminous partition means having a surface area around said passages that is larger than the cross-sectional area of said return path, the sum of the areas of said passages being greater than one-half of the cross-sectional area of said opening into said plenum such that surfaces on said partition means form a foraminous wall across said air return path to collect splattered material.

5,510,602
ELECTRONIC SIGNAGE LABEL APPARATUS AND METHOD
James G. Evans, Colts Neck; R. Anthony Shober, Red Bank, and Stephen A. Wilkus, Lincroft, all of N.J., assignors to AT&T Corp., Murray Hill, N.J.
Filed Dec. 20, 1993, Ser. No. 170,563
Int. Cl. G06F 15/24

U.S. Cl. 235—385 24 Claims

1. An electronic label system for receiving and displaying data from a central controller comprising: a display device having a display for display of display data thereon; said display device having a controller including a memory having registers for storing said display data, said controller



being connected to said display to selectively switch said display data from a selected one of said registers to said display to control the display of said display data; said display device having first input means for receiving said display data from said central controller for storage in said registers, and a second input means for receiving signals and physically interfacing with said controller and means for controlling said controller via said second input means to selectively switch said selected display data in said selected one of said registers to said display for display thereon, said means for controlling being physically unconnected with and out of physical contact with said display device.

5,510,603

METHOD AND APPARATUS FOR DETECTING AND DECODING INFORMATION BEARING SYMBOLS ENCODED USING MULTIPLE OPTICAL CODES

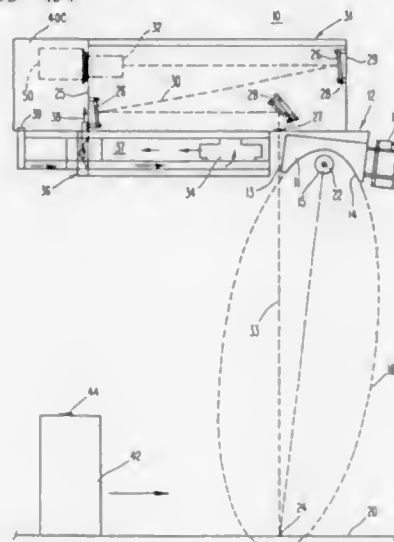
William D. Hess, Fishkill, N.Y., and Gregory P. Skinger, Southbury, Conn., assignors to United Parcel Service of America, Inc., Atlanta, Ga.

Continuation of Ser. No. 889,105, May 26, 1992, abandoned. This application Sep. 30, 1994, Ser. No. 316,716

Int. Cl.⁶ G06K 7/10

U.S. Cl. 235—454

26 Claims



1. A stationary optical scanning system for the decoding of a plurality of optically readable information bearing symbols encoded using at least first and second different optical codes, and for the detection of a plurality of optical targets having at least first and second different target configurations and target data signals representative of said differing target configurations, said first target configuration being associated with said first optical code and said second target configuration being associated with said second optical code, said optically readable information bearing symbols being affixed to a plurality of objects continuously passing within the field of view of said stationary scanning system, comprising:

single optical sensing means for optically sensing said first and second different target configurations and said first and second different optical codes as said plurality of objects continuously pass within said field of view and for generating said target data signals from said sensed field of view, said first and second differing target configurations and said first and second differing optical codes being omnidirectionally oriented within said sensed field of view;

first target processor means for receiving said target data signals and detecting said first target configuration in accordance with said target data signals to provide a first processor means detection signals;

second target processor means separate from said first target processor means for receiving said target data signals and detecting said second target configuration in accordance with said target data signals to provide a second processor means detection signal, wherein said first and second target processor means each receive and process identical target data signals from said single optical sensing means; and

decoding means for receiving said first and second target processor means detection signals and for selectively decoding said information bearing symbols in accordance with said received detection signals;

wherein said first and second target processor means and said decoding means are coupled to said single optical sensing means, and further comprising:

a plurality of template images representative of one of said plurality of target configurations; and means for selecting a template image of said plurality of template images in accordance with the distance between one of said objects and said single sensing means.

5,510,604

METHOD OF READING A BARCODE REPRESENTING ENCODED DATA AND DISPOSED ON AN ARTICLE AND AN APPARATUS THEREFOR

Gary A. England, Broughton, Scotland, assignor to AT&T Global Information Solutions Company, Dayton, Ohio

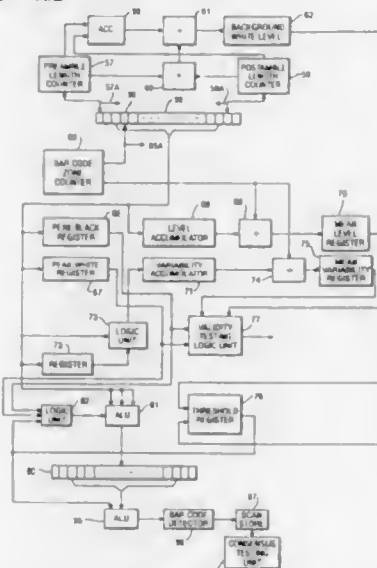
Filed Sep. 23, 1994, Ser. No. 311,250

Claims priority, application United Kingdom, Dec. 13, 1993, 9325439

Int. Cl.⁶ G06K 7/10

U.S. Cl. 235—462

10 Claims



1. A method of reading a barcode representing encoded data and disposed on an article, the method comprising the steps of:

- (a) optically scanning the barcode and storing an image thereof in memory;
- (b) performing a plurality of scans at interleaved positions across the stored image of the barcode;

- (c) storing each scan from step (b) in a storage unit;
- (d) testing two stored scans from step (c) for a consensus;
- (e) repeating step (d) until either (i) a consensus of two stored scans is reached which is indicative of a readable barcode or (ii) a predetermined number of stored scans of the barcode is tested which is indicative of an unreadable bar code; and
- (f) evaluating the encoded data of the barcode only when a consensus of two stored scans is reached in step (e).

5,510,605

BAR CODE READER HAVING MEANS FOR SWITCHING BETWEEN DRIVES OF A PLURALITY OF SEMICONDUCTOR LASER DIODES AT HIGH SPEED

Hiroyuki Miyazaki, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

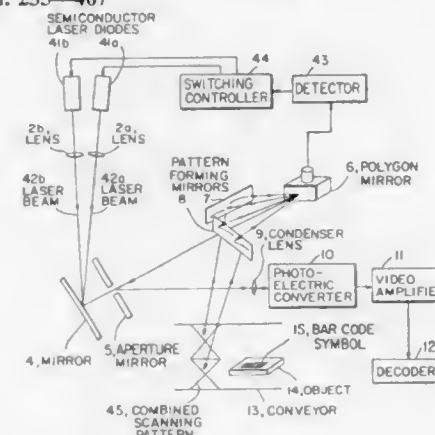
Filed Dec. 27, 1994, Ser. No. 364,268

Claims priority, application Japan, Dec. 28, 1993, 5-335681

Int. Cl.⁶ G06K 7/10

U.S. Cl. 235—467

19 Claims



1. A bar code reader comprising:

a plurality of semiconductor laser diodes for emitting respective laser beams having optical axes extending in different directions;

a first sending means for sending the laser beam emitted from said semiconductor laser diodes while converging it;

deflecting means for deflecting the laser beam sent from said first sending means;

pattern forming means for reflecting the laser beam deflected by the deflecting means, to thereby form a combined scanning pattern;

a second sending means for sending scattered light produced by scanning a bar code symbol by means of the combined scanning pattern while condensing the scattered light;

photoelectric converting means for subjecting the condensed scattered light to photoelectric conversion;

decoding means for decoding a signal produced by the photoelectric conversion;

detecting means for detecting a deflection angle of the laser beam deflected by the deflecting means; and

switching means for switching between drives of said plurality of semiconductor laser diodes based on a detection result of said detecting means.

5,510,606

DATA COLLECTION SYSTEM INCLUDING A PORTABLE DATA COLLECTION TERMINAL WITH VOICE PROMPTS

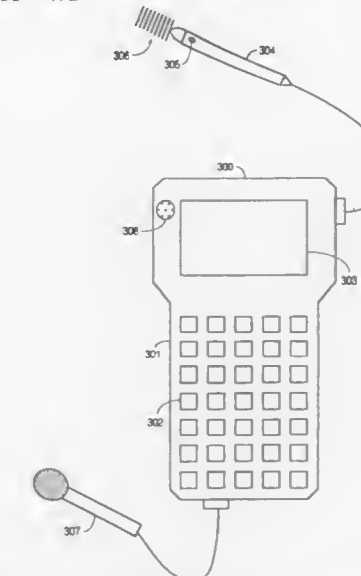
Hall V. Worthington; Montgomery W. Worthington, both of 222 Plateau Ave., Santa Cruz, Calif. 95060, and Steven A. Luzovich, 750 Eduardo Ave., Ben Lomond, Calif. 95005

Continuation-in-part of Ser. No. 32,039, Mar. 16, 1993, Pat. No. 5,365,050. This application Nov. 10, 1993, Ser. No. 149,881

Int. Cl.⁶ G06K 7/10

U.S. Cl. 235—472

21 Claims



1. A data collection system comprising:
a portable data collection terminal including:

- a data input means;
- a decoder computer connected to said data input means wherein in response to a signal from said data input means, said decoder computer generates a voice prompt signal; and
- a voice prompt circuit connected to said decoder computer so as to receive said voice prompt signal

wherein in response to said voice prompt signal, said voice prompt circuit generates an oral voice prompt for an operator of said data collection terminal; and further wherein said voice prompt circuit further comprises a recording circuit wherein in response to an audio frequency signal, said recording circuit processes said audio frequency signal for storing in said voice prompt circuit and

a host computer connected to said portable data collection terminal wherein said host computer analyzes information from said portable data collection unit as said information is entered in said portable data collection unit and transmits a confirmation code to said portable data collection unit.

5,510,607

OPTICAL CODE READER HAVING AN ILLUMINATION LIGHT SOURCE EMITTING LIGHT FOR AT LEAST A PRESET PERIOD RESPONSIVE TO OPERATION OF A TRIGGER SWITCH

Mamoru Ishikawa, Fuji, Japan, assignor to Kabushiki Kaisha TEC, Shizuoka, Japan

Filed Sep. 27, 1994, Ser. No. 313,449

Claims priority, application Japan, Sep. 28, 1993, 5-241570

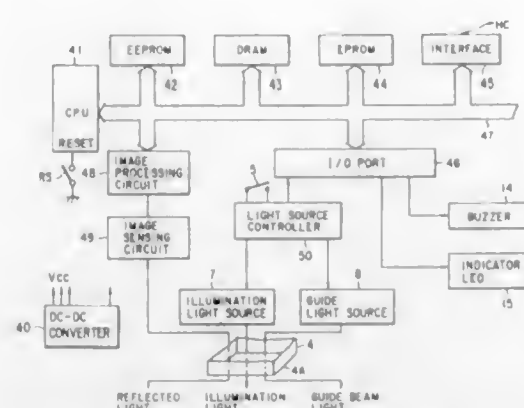
Int. Cl.⁶ G06K 7/10

U.S. Cl. 235—472

6 Claims

1. An optical code reader comprising:

- a reading window;
- a reading section for sensing an image of a 2-dimensional code via said reading window and for converting the sensed image into image data; and



a portable frame having an opening used as said reading window, for accommodating said reading section; wherein said reading section includes a trigger switch for issuing a reading instruction in a state where said reading window is set within a preset distance from the 2-dimensional code, an illumination light source for applying an illumination light via said reading window for a preset period after the reading instruction is issued by said trigger switch, image sensing means for sensing the image of the 2-dimensional code based on a reflected light obtained when the 2-dimensional code is illuminated by said illumination light source, and illumination light source controlling means for elongating the period of activation of said illumination light source when the reading instruction is continuously issued for a period longer than the preset period.

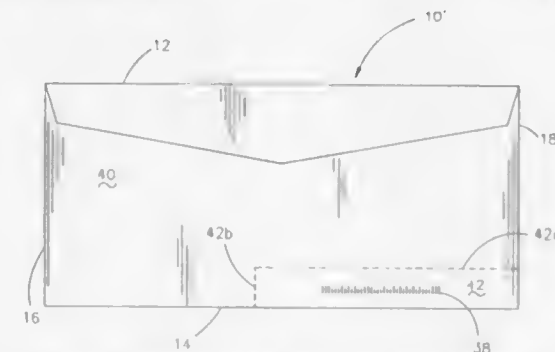
5,510,608

RETURN MAIL PIECE AND METHOD OF MARKING THE SAME

Robert L. Williams, Omaha, Nebr., assignor to Board of Regents-Univ. of Nebraska, Lincoln, Nebr.
Continuation-in-part of Ser. No. 2,195, Jan. 8, 1993, Pat. No. 5,324,927. This application May 27, 1994, Ser. No. 250,568
Int. Cl.⁶ G06K 19/04

U.S. Cl. 235—494

5 Claims



1. A return mail piece for a site location having a plurality of end locations, comprising:
a mail piece having a front surface and a rearward surface, said front and rearward surfaces having a common upper edge, lower edge, right end edge and left end edge;
said front surface having an address zone with site location indicia therein in an upright orientation relative to the lower edge, identifying the address of the site location;
said front surface having a bar code zone located in a predetermined position on the front surface relative to the lower edge and right end edge;
bar code indicia located within said bar code zone in a predetermined orientation relative to the lower edge on the front surface of the mail piece, said indicia representing site location indicia in machine readable code;

said rearward surface having a subclassification zone located in the same position on the mail piece rearward surface, relative to the mail piece common left end edge and lower edge, as the location of the bar code zone on the mail piece front surface, relative to the mail piece common right end edge and lower edge; and
subclassification indicia located within said subclassification zone, and in the same predetermined orientation relative to the lower edge as the bar code indicia, said subclassification indicia being in machine readable code.

5,510,609

ELECTRICALLY CONTROLLABLE OPTICAL FILTER ELEMENT

Emil Ackermann, Wattwil, Switzerland, assignor to Optrel AG, Wattwil, Switzerland

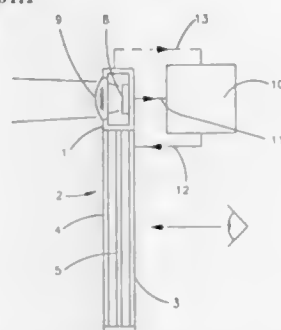
Filed Sep. 6, 1994, Ser. No. 301,357

Claims priority, application Germany, Sep. 13, 1993, 43 30 817.1

Int. Cl.⁶ G01J 1/20

U.S. Cl. 250—201.1

9 Claims



1. A method for controlling an anti-dazzle assembly comprising an optical filter element whose optical transmission is electrically controllable, and an electronic control means including a light sensitive sensor means operatively connected to said optical filter element, said electronic control means being adapted to vary the optical transmission of said filter element in response to the amount of light falling on said light sensitive sensor means, the method comprising the steps of:

projecting the light sources in the area covered by said light sensitive sensor means on the exposed surface of said light sensitive sensor means;
selectively measuring the intensity of said projected light sources and producing output signals indicative of the intensity of said projected light sources by means of a plurality of surface area elements of said exposed surface of said light sensitive sensor means;
selecting the output signal of a surface area element, said selected surface area element producing an output signal indicating that the portion of said projected light sources exposed to said selected surface area element is more intense than the portions of said projected light sources exposed to the other of said plurality of surface area elements; and
using exclusively said output signal of said selected surface area element for the control of the optical transmission of said optical filter element.

5,510,610 APPARATUS FOR DETECTING DEFECTS ON THE BOTTOM OF BOTTLES BY MANIPULATING AN IMAGE TO REMOVE KNURLS

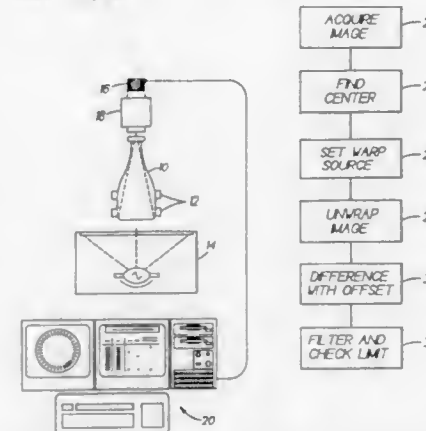
Leo B. Baldwin, Horseheads, N.Y., assignor to Embart Glass Machinery Investments Inc., Wilmington, Del.

Filed Oct. 7, 1994, Ser. No. 319,911

Int. Cl.⁶ G06M 7/00

U.S. Cl. 250—223 B

4 Claims



4. A machine for inspecting the annular knurled area on the bottom of a glass or plastic container for defects comprising means for supporting a container at an inspection location so that light can pass through the bottom of the container to the opening of the container, a diffuse light source for illuminating the container from below, an electronic area array camera having a lens for projecting an image of the container bottom viewed through the opening of the container on the array, means for digitizing the camera image signal for the annular knurled area so that it may be represented in digital memory, means for analyzing said digitized annular knurled area including means for subtracting selectively offset pixels of said digitized annular knurled area to define a difference image in which the knurling disappears, means for convolving the difference image to emphasize defects, and means for defining a threshold on said convolved difference image to indicate the presence of defects.

5,510,611

PARTICLE COMPONENT ANALYZING APPARATUS, AND EQUIVALENT PARTICLE DIAMETER MEASURING METHOD USING SAME

Hisao Takahara; Yukihiko Takamatsu, and Yasuhiro Tanibata, all of Tokyo, Japan, assignors to Yokogawa Electric Corporation, Tokyo, Japan

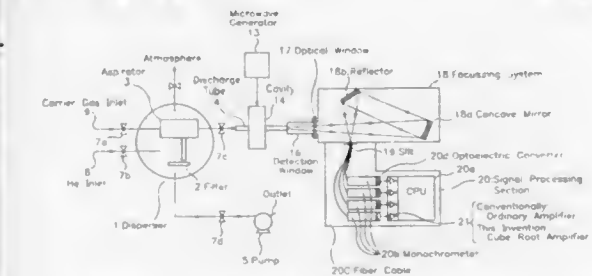
Filed Oct. 27, 1994, Ser. No. 329,895

Claims priority, application Japan, Feb. 25, 1994, 6-027740; May 11, 1994, 6-097309

Int. Cl.⁶ G01J 3/50

U.S. Cl. 250—226

4 Claims



1. In a particle component analyzing apparatus for determining particle size and composition and comprising a filter on which

particles are collected; an aspirator for drawing up the particles collected on said filter; a microwave source for applying microwaves to said particles to cause said particles to be excited to emit emission spectrum having a plurality of wavelengths; a plurality of monochrometers set to different wavelengths for measuring the wavelengths of said emission spectrum; and optoelectrical converter means for converting said emission spectrum to electrical signals for identifying a plurality of elements in said particles; the improvement comprising

means for obtaining cube roots of the electrical signals from said optoelectrical converter means, and for obtaining an equivalent particle diameter corrected for differences in sensitivity between the plurality of elements by obtaining a ratio of cube roots of the electrical signals from said optoelectrical converter means corresponding to diameters of particles preprocessed into spherical shape of a reference element serving as the denominator of the ratio and of an element to be measured serving as the numerator of the ratio; and by obtaining a cube root of the electrical signal from said optoelectrical converter means corresponding to a diameter of an element to be measured in a measurement sample and multiplying such obtained cube root by said ratio, thereby to produce said equivalent particle diameter of said element being measured.

5,510,612

WIRING BASE FOR PHOTOELECTRIC SCANNING UNIT

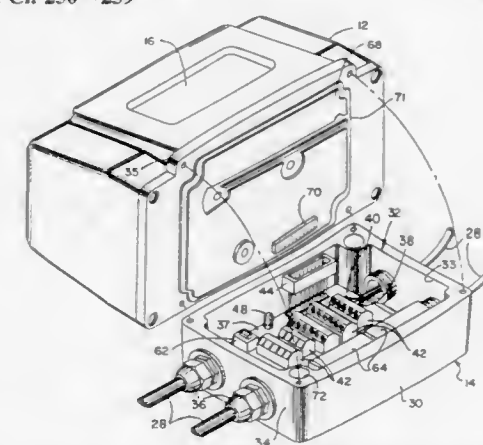
Robert E. Scofield, Pewaukee; Richard Molus, Greenfield, and Donald L. Ness, Brown Deer, all of Wis., assignors to Allen-Bradley Company, Inc., Milwaukee, Wis.

Filed Apr. 29, 1994, Ser. No. 235,618

Int. Cl.⁶ G06K 7/12

U.S. Cl. 250—239

9 Claims



1. A wiring base for use with an optical sensor receiving light along an axis of sensitivity with respect to a structure, the wiring base comprising:

a conductive housing having walls surrounding a volume, at least one wall having a hole sized to admit a cable having a shield and conductive wires;
a plurality of first wire terminals adapted to electrically connect to the wires, the first wire terminals mechanically affixed to the conductive housing within the volume but electrically insulated from the conductive housing;
at least one second wire terminal adapted to electrically connect to the shield and mechanically affixed to the conductive housing within the volume and electrically connected to the conductive housing;
an alignment guide affixed to the conductive housing and adapted to receive a housing of the optical sensor along an insertion axis and to hold the optical sensor in a predetermined orientation with respect to the conductive housing whereby the orientation of the optical sensor when affixed to the conductive housing is uniquely determined by the orientation of the conductive housing;

an electrical connector having conductors electrically communicating with the first wire terminals, the connector mechanically attached to the conductive housing to receive a mating connector of the optical sensor along the insertion axis when the optical sensor is affixed to the conductive housing; mounting means for mounting the conductive housing in a predetermined orientation with respect to the structure; and whereby the conductive housing forms at least a part of a Faraday cage around the first and second wire terminals when the housing of the optical sensor is in position on the conductive housing.

5,510,613

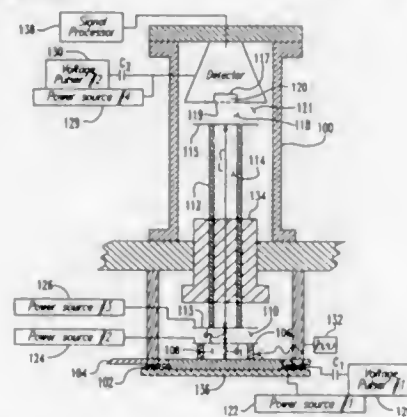
SPATIAL-VELOCITY CORRELATION FOCUSING IN TIME-OF-FLIGHT MASS SPECTROMETRY

James P. Reilly, Steven M. Colby, and Timothy B. King, all of Bloomington, Ind., assignors to Indiana University Foundation, Bloomington, Ind.

Division of Ser. No. 327,618, Oct. 24, 1994. This application Jun. 7, 1995, Ser. No. 477,198

Int. Cl.⁶ H01J 49/40

U.S. Cl. 250—287



13. A system for minimizing the effect of distributions in initial ion position and initial velocity on the mass resolution of a time-of-flight mass spectrometer (TOFMS), said system comprising:

a TOFMS having a sample source disposed within a sample region and an ion detector disposed a predetermined distance from said sample source;

means for generating ions of various mass to charge ratios from said sample source, wherein the generated ions have an initial position distribution and an initial velocity distribution within said sample region, and the initial position of each of the ions generated within said sample region is a function of the initial velocity of the respective ion;

means for establishing an electric field within said sample region of said TOFMS, said electric field accelerating the generated ions toward said ion detector; and

means responsive to said ion generating means for triggering said electric field establishing means to establish said electric field a predetermined time after generating said ions,

wherein the strength of said electric field and the predetermined time period are chosen so that the time spread in the time of flight of generated ions of any particular mass to charge ratio to the means for detecting is minimized, thereby simultaneously minimizing the effect on the TOFMS mass resolution of the distributions in initial position and initial velocity of the generated ions.

5,510,614

SOLID SURFACE OBSERVATION METHOD AND APPARATUS THEREFOR, AND ELECTRONIC APPARATUS FORMED OF THE SOLID SURFACE OBSERVATION APPARATUS AND METHOD OF FORMING THE ELECTRONIC APPARATUS

Munehisa Mitsuya, Sakado; Yasuo Wada, Tokyo; Seiji Heike, and Seichi Kondo, both of Hikl, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

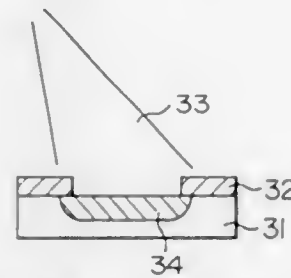
Filed Jan. 21, 1994, Ser. No. 184,068

Claims priority, application Japan, Jan. 21, 1993, 5-008152; Aug. 11, 1993, 5-217936

Int. Cl.⁶ H01J 37/00

U.S. Cl. 250—306

17 Claims



13. An electronic device produced by positioning atoms or molecules on a surface of an electrical conductive substrate capable of transitioning to an electrical insulator reversibly or non-reversibly, through a local electric field applied between the surface of said substrate and a probe in a condition in which said substrate is made conductive by irradiation with a beam selected from a group consisting of an electron beam and an ion beam.

5,510,615

SCANNING PROBE MICROSCOPE APPARATUS FOR USE IN A SCANNING ELECTRON MICROSCOPE

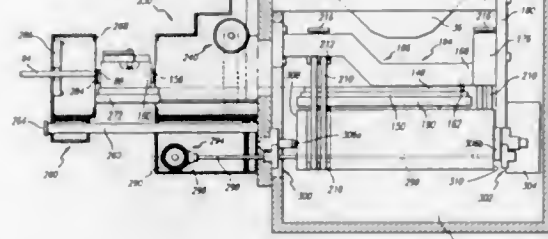
Huddee Ho, San Jose, and Paul E. West, Cupertino, both of Calif., assignors to Topometrix Corporation, Santa Clara, Calif.

Continuation of Ser. No. 273,740, Jul. 12, 1994, Pat. No. 5,455,420. This application Jun. 7, 1995, Ser. No. 478,479

Int. Cl.⁶ H01J 37/067

U.S. Cl. 250—306

24 Claims



1. A scanning probe microscope translation apparatus for use with a scanning probe microscope in combination with a scanning electron microscope, said scanning electron microscope having a specimen vacuum chamber with an access opening for said specimen vacuum chamber, said scanning probe microscope translation apparatus comprising:

a cover plate for sealing said access opening of said scanning electron microscope specimen vacuum chamber, said cover plate having an inside surface and an outside surface, and including a sealable opening therethrough;

a support frame mounted to said inside surface of said cover plate of said specimen vacuum chamber;

translating means for translating said scanning probe microscope relative to said scanning electron microscope;

a mounting assembly disposed on said translating means for mounting the scanning probe microscope at a selected angle with respect to the scanning electron microscope; and vacuum load lock means disposed on said outside surface of said cover plate for moving said mounting assembly and said scanning probe microscope through said sealable opening of said cover plate between a first position disposed within said support frame and a second position disposed in said vacuum load lock means without breaking a vacuum in said vacuum chamber.

5,510,616

CIGARETTE DENSITY PROFILE MEASUREMENT SYSTEM

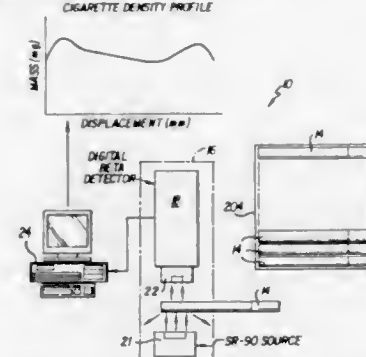
Sydney K. Seymour; Bain C. McConnell, both of Clemmons; Philip A. Deal, Winston-Salem; Wayne M. Furin, Clemmons; Calvin W. Henderson, Winston-Salem; William R. Jarvis, Winston-Salem, and Wallace R. Lassiter, Winston-Salem, all of N.C., assignors to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.

Filed Apr. 25, 1994, Ser. No. 233,157

Int. Cl.⁶ G01N 23/08

U.S. Cl. 250—308

17 Claims



1. A system for measuring the density profile of each of a plurality of cigarette rods, comprising:

a hopper system for storing a plurality of cigarette rods to be measured and for feeding said plurality of cigarette rods one at a time;

a cigarette receiving element located adjacent to said hopper system for receiving each one of said plurality of cigarette rods;

a digital beta gauge system for irradiating each one of said plurality of cigarette rods with beta particles and for producing an output signal for each beta particle which passes through each one of said plurality of cigarette rods; and

a digital data processor for receiving the output signals from said digital beta gauge system and for generating a density profile measurement for each one of said plurality of cigarette rods measured by said measuring system.

5,510,617

PARTICLE-OPTICAL INSTRUMENT COMPRISING A DEFLECTION UNIT FOR SECONDARY ELECTRONS

Kars Z. Troost, and Alexander Henstra, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 15, 1995, Ser. No. 404,706

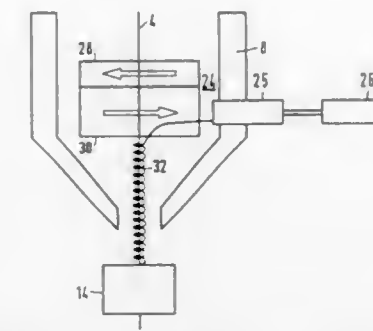
Claims priority, application European Pat. Off., Mar. 18, 1994, 94200713

Int. Cl.⁶ H01J 37/28; 37/244

U.S. Cl. 250—310

6 Claims

1. A particle-optical instrument which comprises a particle source for producing a beam (34) of electrically charged particles which propagate along an optical axis (4) of the instrument, is



arranged to scan a specimen (14) to be examined by means of the particle beam (34), and comprises a focusing lens (6) for forming a beam focus in the vicinity of the area in which the specimen is to be arranged, which instrument also comprises a detection device (24, 26) for detecting electrically charged particles (32) originating from the specimen, which detection device (24, 26) comprises an electric dipole (24) whose electric field intersects the optical axis and extends transversely thereof, thus defining a field integral of the electric field over the optical axis, characterized

in that the detection device (24, 26) comprises at least one further electric dipole (30) which has been shifted in the direction of the optical axis relative to the first dipole and whose electric field at the area of the optical axis opposes that of the first dipole and has a strength such that the algebraic sum of the field integrals along the optical axis of all dipoles of the detection device is substantially zero.

5,510,618

SECOND GENERATION FLIR COMMON MODULES

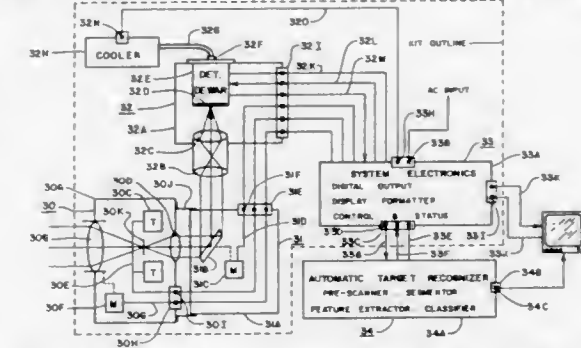
Bill A. Blecha, Springfield; Thomas Coty, Alexandria; John J. Curry, Alexandria; Howard T. Graves, Alexandria; Robert C. Guckian, Alexandria; John M. Hall, Alexandria; Samuel B. McDowell, Garrisonville; Steve H. Nguyen, Fairfax Station; Raemon N. Samuels, Fairfax City; Thomas E. Smith, Woodbridge; Joseph J. Wiedmann, Springfield, and Richard A. Wright, Stafford, all of Va., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jun. 23, 1994, Ser. No. 264,280

Int. Cl.⁶ H04N 5/33

U.S. Cl. 250—332

10 Claims



1. A second generation Forward Looking Infrared (FLIR) kit comprising

a series of four modules, said modules having housings proportioned to fit within one of three geometric envelopes defined by spaces in Army vehicles that have been allotted to GEN I FLIR systems,

the first two of said modules each having an optical axis with at least one variable far-infrared optical element along said axis, an optical input at one end of said axis for far-infrared radiation, at least one electrical input transducer coupled to

each of said variable optical elements and external electrical inputs for dc and ac signals to energize the electrical transducers therein;

the first and second of said modules having an optical output for said far-infrared radiation at the end of said axis opposite said one end;

the third of said modules including an optical axis, an optical input at one end of that axis for far-infrared radiation, and external electrical inputs for dc and ac signals, said third module further including a dewar containing an array of mercury-cadmium-telluride far-infrared detectors with pn junctions, an input for cooling fluid circulated in said dewar and an electronic signal output connected to said detectors;

the fourth of said modules having inputs and outputs for electronic signals only; and

the respective pairs of said inputs and outputs being serially interconnected.

5,510,619

METHOD FOR THE ROUTINE IDENTIFICATION OF PLASTICS

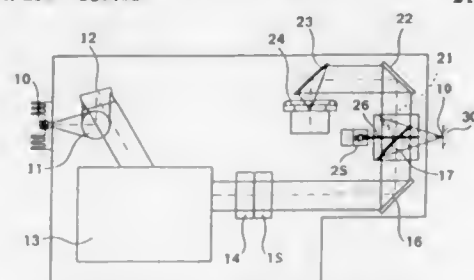
Günter Zachmann, Remchingen; Jürgen Gast, Rheinstetten; Arno Simon, and Reiner Schübel, both of Karlsruhe, all of Germany, assignors to Brunner Analytische Messtechnik GmbH, Silberstrelfen

Filed Nov. 18, 1994, Ser. No. 342,355

Claims priority, application Germany, Nov. 27, 1993, 43 40 505.3; Dec. 1, 1993, 43 40 914.8

Int. Cl.⁶ G01J 1/00; B07C 5/344

U.S. Cl. 250—339.08



1. An infrared spectroscopy method for the routine identification of a plastic component in refuse for the purpose of recycling, comprising the steps of:

- taking an IR reflection spectrum of the plastic component in the near infrared range (NIR) of wave numbers between 4,000 and 10,000 cm^{-1} ;
- comparing the spectrum of step a) to reference spectra;
- selecting the plastic component if steps a) and b) do not lead to a unique identification;
- guiding light from a mid-infrared range (MIR) source having a wave number range between 400 and 4000 cm^{-1} through a Fourier transform infrared (FTIR) spectrometer;
- focussing the light of step d) onto a surface region of the plastic component selected in step c);
- passing light reflected from the surface region through onto a mid-infrared detector;
- recording an MIR spectrum of the selected plastic component;
- comparing the MIR spectrum to a set of reference spectra having a plurality of member spectra, each member spectrum corresponding to a class of plastic materials; and
- correlating the selected plastic component to one member spectrum of one class of plastic materials.

5,510,620

DETECTION OF TURBID OR FOAMING CONTAMINANTS IN CONTAINERS

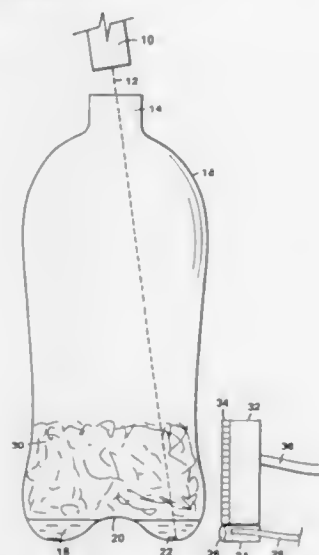
Eugene K. Achter; David Lieh, both of Lexington; John S. Beaty, Belmont; Helmut W. Klotzsch, Groton; Craig D. Thompson, Natick, and Jonathan Bosworth, Acton, all of Mass., assignors to Thermedics Detection, Inc., Waltham, Mass.

Continuation-in-part of Ser. No. 198,217, Feb. 17, 1994. This application Jun. 29, 1994, Ser. No. 268,198

Int. Cl.⁶ G01N 21/90

U.S. Cl. 250—339.12

27 Claims



1. A method of detecting a contaminant in a moving container, comprising:

- directing radiant energy into an open top of the moving container;
- electronically detecting a level of radiant energy scattered through a side of the moving container near a bottom of the moving container by contents of the moving container, and
- indicating the presence of a contaminant when the detected level of scattered radiant energy differs from a threshold level.

5,510,621

APPARATUS AND METHOD FOR MEASURING COMPONENTS IN A BAG

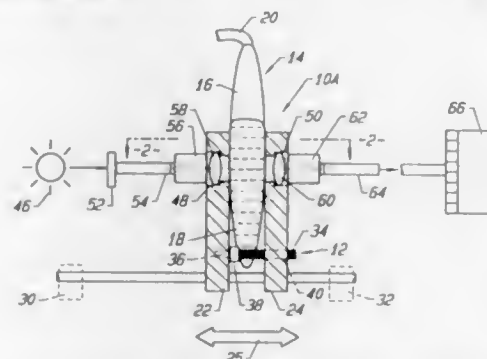
Don S. Goldman, Folsom, Calif., assignor to Optical Solutions, Inc., Folsom, Calif.

Filed Oct. 3, 1994, Ser. No. 317,114

Int. Cl.⁶ G01J 3/02

U.S. Cl. 250—343

21 Claims

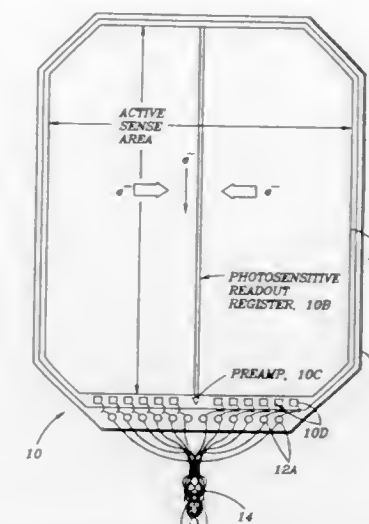


1. An apparatus for measuring a component in a liquid medium within the chamber of a flexible translucent container formed by a wall portion, comprising:

a. spacer means for sequentially determining a plurality of optical paths across the container wall portion and chamber, and the flexible translucent container wall portion alone, said spacer means including a passage for electromagnetic radiation; and

b. a source of electromagnetic radiation capable of directing electromagnetic radiation through said spacer means passage, through the wall portion of the container, and along any of said determined optical paths, said source of electromagnetic radiation being capable of interaction with a component in the bag chamber and the wall portion of the bag; and

c. detector means for analyzing said electromagnetic radiation after interaction with the components in the flexible translucent container chamber and the wall portion of the bag.



5,510,622

X-RAY DETECTOR ARRAY WITH REDUCED EFFECTIVE PITCH

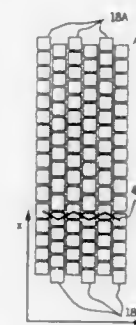
Hui Hu, Waukesha; Stanley Fox, Brookfield; Thomas L. Toth, Brookfield; Thaddeus Ulijasz, Brookfield, and Armin H. Pfoh, New Berlin, all of Wis., assignors to General Electric Company, Milwaukee, Wis.

Filed Jul. 21, 1994, Ser. No. 278,357

Int. Cl.⁶ G01T 1/161/120

U.S. Cl. 250—367

5 Claims



1. A detector array for an x-ray volumetric CT system which produces a cone beam of x-rays, which comprises:

- a plurality of quadrilateral-shaped detector elements arranged in a two-dimensional array to simultaneously sense the x-rays in the cone beam and produce corresponding electrical signals, with the centers of the detector elements aligned along a plurality of adjacent straight lines to form a corresponding plurality of columns, and with the detector elements in alternate columns being positioned such that their centers are staggered midway between the centers of detector elements in adjacent columns.

5,510,623

CENTER READOUT INTRA-ORAL IMAGE SENSOR

Michel Sayag, Mountain View, and Steven Onishi, San Jose, both of Calif., assignors to Loral Fairchild Corp., Syosset, N.Y.

Filed Feb. 24, 1995, Ser. No. 394,149

Int. Cl.⁶ H04M 5/32; G01T 1/20

U.S. Cl. 250—370.11

20 Claims

- A CCD image sensor, comprising:
- an array of first photo-responsive elements comprising a plurality of rows, the first photo-responsive elements being responsive to first multi-phase clock signals for shifting photo-induced charge packets along said rows;
- a centrally disposed read-out register comprised of second photo-responsive elements and disposed orthogonally to said rows for dividing said array into a first half and a second half each comprised of a plurality of half rows, said read-out register being coupled to individual ones of said half rows of said first and second halves of said array by first and second

SIMULTANEOUS SPECIMEN AND STAGE CLEANING DEVICE FOR ANALYTICAL ELECTRON MICROSCOPE

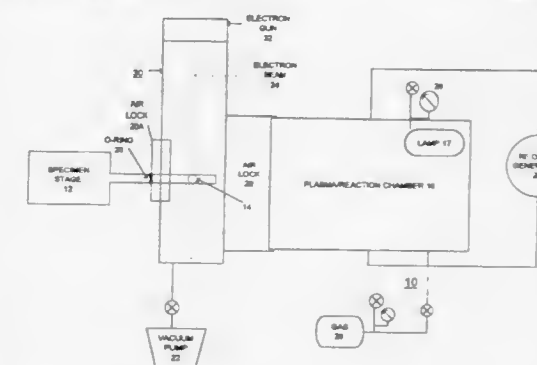
Nestor J. Zaluzec, Bolingbrook, Ill., assignor to The University of Chicago, Chicago, Ill.

Filed Sep. 1, 1995, Ser. No. 522,618

Int. Cl.⁶ H01J 37/067

U.S. Cl. 250—441.11

16 Claims



1. Apparatus for cleaning a specimen stage and specimen for viewing in an analytical electron microscope (AEM) comprising:

plasma chamber means for containing a gas plasma; and

air lock means coupled to said plasma chamber means for permitting passage of the specimen stage and specimen into the plasma chamber means and for maintaining an airtight chamber.

a bit line for writing information to storage when a potential is applied to the bit line;
means for storing charge; and
an accumulation mode MOSFET for connecting the charge storage means to the bit line, wherein the MOSFET is comprised of:

- (i) a semi-insulating silicon carbide substrate;
- (ii) at least one layer of p type silicon carbide provided upon the substrate;
- (iii) a channel layer of n type silicon carbide provided on the at least one layer of p type silicon carbide;
- (iv) two contact regions of n+ type silicon carbide, each contact region being spacedly provided upon the channel layer, such that the contact regions are separated a selected distance apart;
- (v) a layer of an oxide provided upon the channel region of the n type channel layer between the two contact regions; and
- (vi) a gate of conductive material provided upon the layer of the oxide.

5,510,631

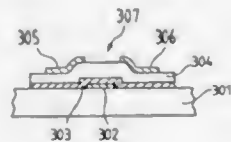
NON-MONOCRYSTALLINE SILICON CARBIDE SEMICONDUCTOR AND SEMICONDUCTOR DEVICE EMPLOYING THE SAME

Keshi Saito; Tatsuyuki Aoi; Toshimitsu Kariya, and Yuza Koda, all of Nagahama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 840,537, Feb. 25, 1992, Pat. No. 5,362,684. This application Aug. 11, 1994, Ser. No. 289,258
Claims priority, application Japan, Feb. 25, 1991, 3-50133
Int. Cl.⁶ H01L 31/0312; 29/76; 31/06; 21/205

U.S. Cl. 257-77

14 Claims



1. A non-monocrystalline silicon carbide semiconductor comprising carbon atoms, silicon atoms, and at least one of hydrogen atoms and halogen atoms, the non-monocrystalline silicon carbide semiconductor having therein microvoids with an average radius of not more than 3.5 Å at a microvoid density of not more than $1 \times 10^{19} \text{ cm}^{-3}$.

5,510,632

SILICON CARBIDE JUNCTION FIELD EFFECT TRANSISTOR DEVICE FOR HIGH TEMPERATURE APPLICATIONS

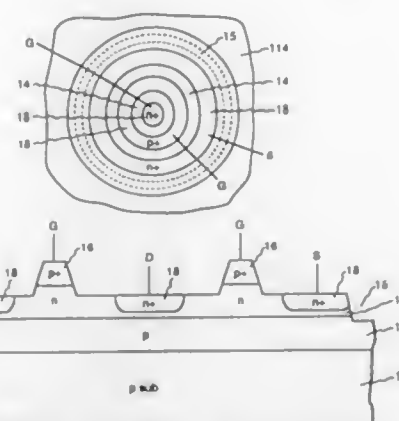
Dale M. Brown, Schenectady, and Mario Ghezzi, Ballston Lake, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 299,980, Sep. 2, 1994, abandoned, which is a division of Ser. No. 48,448, Apr. 19, 1993, Pat. No. 5,378,642. This application May 11, 1995, Ser. No. 439,328
Int. Cl.⁶ H01L 31/0312; 29/80; 31/112

U.S. Cl. 257-77

3 Claims

1. A JFET device comprising:
a first SiC semiconductor layer of a first conductivity type;



a second SiC semiconductor layer of a second conductivity type supported by said first layer, the contacting surfaces of said first and second layers forming a junction;

an ion-implanted gate area comprising SiC semiconductor material of said first conductivity type situated in said second layer; and

an ion-implanted source area and an ion-implanted drain area comprising material of said second conductivity type situated in said second layer, wherein said gate area is in the shape of an annulus and said source and drain areas are positioned such that one of said source and drain areas is located in an area surrounded by said gate area and the other one of said source and drain areas is in the shape of an annulus surrounding said gate area.

5,510,633

POROUS SILICON LIGHT EMITTING DIODE ARRAYS AND METHOD OF FABRICATION

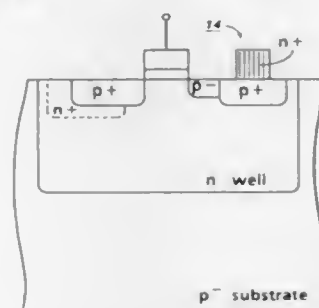
Thomas E. Orlowski, Fairport, and Sophie V. Vandebroek, Penfield, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Jun. 8, 1994, Ser. No. 257,247

Int. Cl.⁶ H01L 33/00

U.S. Cl. 257-93

8 Claims



1. A semiconductor Light Emitting Diode (LED) device comprising:
a silicon wafer having a substrate;

a switch diode formed on said silicon wafer; and
a porous silicon LED formed in said substrate, wherein said porous silicon LED being electrically connected to said diode switch and electrically isolated from said substrate.

5,510,634

INSULATED GATE BIPOLAR TRANSISTOR

Naoto Okabe, Chita, and Naohito Kato, Kariya, both of, Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

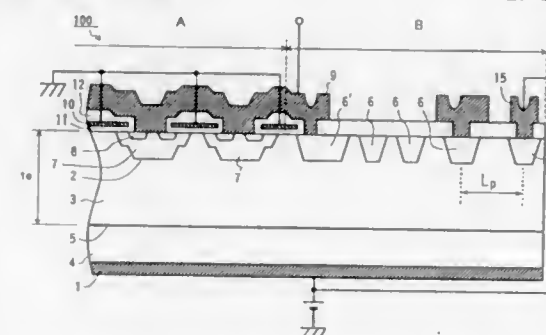
Filed Oct. 18, 1994, Ser. No. 324,508

Claims priority, application Japan, Oct. 18, 1993, 5-285922

Int. Cl.⁶ H01L 29/74; 23/58

U.S. Cl. 257-139

27 Claims



1. An insulated gate bipolar transistor, comprising:

a first semiconductor layer of a first conductivity type;
a second semiconductor layer of a second conductivity type disposed on said first semiconductor layer;
a third semiconductor layer of the first conductivity type selectively formed at a surface of said second semiconductor layer;
a fourth semiconductor layer of the second conductivity type selectively formed at a surface of said third semiconductor layer, said third semiconductor layer being between said second semiconductor layer and said fourth semiconductor layer and serving as a channel region;
a gate electrode disposed over said channel region with a gate insulating film interposed therebetween;
a source electrode in contact with both said third semiconductor layer and said fourth semiconductor layer;
a drain electrode for supplying a drain current through said first semiconductor layer, contacting to said first semiconductor layer;
a high withstand voltage structure for reducing the curvature of a depletion layer extending from a pn junction between said second semiconductor layer and said third semiconductor layer toward an inside of said second semiconductor layer when said pn junction is reverse biased;
a sixth semiconductor layer of the first conductivity type formed at the surface of said second semiconductor layer and located so as to make said high withstand voltage structure disposed between said third semiconductor layer and said sixth semiconductor layer, a distance between said high withstand voltage structure and said sixth semiconductor layer being such that said depletion layer extending from said pn junction via said high withstand voltage structure reaches said sixth semiconductor layer prior to a generation of avalanche breakdown in the vicinity of said high withstand voltage structure; and
a connecting member for electrically connecting said sixth semiconductor layer to said drain electrode.

5,510,635

INTEGRATED CIRCUIT HAVING COMPLEMENTARY HETEROJUNCTION FIELD EFFECT TRANSISTORS

Linh T. Nuyen, Paris, France, assignor to Picogiga Societe Anonyme, Les Ulis, France

PCT No. PCT/FR93/00376, § 371 Date Feb. 14, 1994, § 102(e)

Date Feb. 14, 1994, PCT Pub. No. WO93/21658, PCT Pub.

Date Oct. 28, 1993

PCT Filed Apr. 15, 1993, Ser. No. 162,175

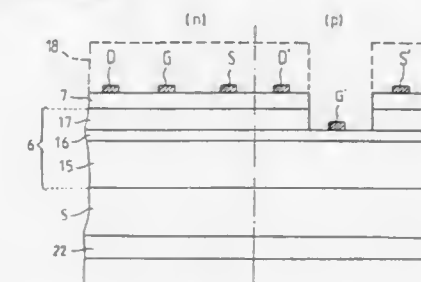
Claims priority, application France, Apr. 15, 1992, 92 04635;

Jan. 21, 1993, 93 00605

Int. Cl.⁶ H01L 29/778

U.S. Cl. 257-195

22 Claims



1. An integrated circuit having complementary components of the p-channel and n-channel field effect transistor type, with a heterojunction formed between a barrier layer comprising a III-V semiconductor material having a wide forbidden band and a thin layer comprising a III-V semiconductor material having a narrow forbidden band and whose crystal lattice mismatch with the remainder of the structure is such that the thin layer is under uniaxial compression strain in the plane of the layer, wherein the barrier-layer thickness for the p-channel transistor is less than the barrier-layer thickness for the n-channel transistor at a ratio that is proportional to tunneling probability for holes compared with that for electrons through the barrier layer, in a direction perpendicular to the plane of the barrier layer and thin layer interface.

5,510,636

MASTER-SLICE TYPE SEMICONDUCTOR DEVICE

Masaomi Murata, Ichikawa, Japan, assignor to Kawasaki Steel Corporation, Hyogo, Japan

Continuation of Ser. No. 172,915, Dec. 27, 1993, abandoned.

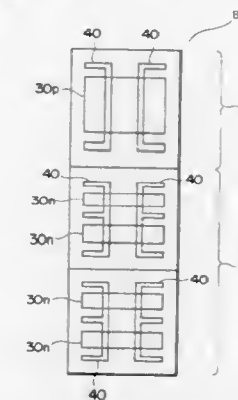
This application Dec. 19, 1994, Ser. No. 359,018

Claims priority, application Japan, Dec. 28, 1992, 4-349281

Int. Cl.⁶ H01L 27/10

U.S. Cl. 257-206

10 Claims



1. A master-slice-type semiconductor device comprising a cell array on a main surface of the semiconductor device, the cell array arranged in a matrix of basic cells adjoining each other, each of the basic cells comprising only one P-channel region and two N-channel regions, the two N-channel regions having a same size and shape, wherein only one P-type active layer is formed in the only one P-channel region and two separated N-type active layers are formed in each of the two N-channel regions.

5,510,637

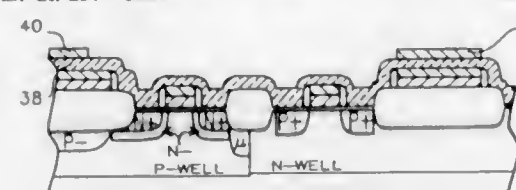
FABRICATION OF W-POLYCID-TO-POLY
CAPACITORS WITH HIGH LINEARITY

Shun-Liang Hsu, Taipei; Mou-Shiong Lin, and Ming-Dar Lei, both of Hsinchu, all of Taiwan, assignors to United Microelectronics Corporation, Hsinchu, Taiwan
Division of Ser. No. 102,977, Jul. 18, 1993, Pat. No. 5,393,691.
This application Feb. 13, 1995, Ser. No. 387,433

Int. Cl.⁶ H01L 27/108

U.S. Cl. 257—304

20 Claims



1. An integrated circuit in and on a silicon substrate having polycide-to-polysilicon capacitors and metal oxide silicon field effect devices with polycide gates, which are separated from each other by means of field oxide regions, comprising:

field oxide regions, n-well and p-well regions, and gate oxide regions located in and on said silicon substrate;

said polycide-to-polysilicon capacitors are located on the surface of said field oxide regions, wherein

said polycide-to-polysilicon capacitors comprise an ion-implanted polycide bottom plate having an upper layer of silicide over a lower doped layer of polysilicon;

an interpoly oxidation layer over said bottom plate, which acts as a dielectric for said polycide-to-polysilicon capacitor;

a second doped polysilicon layer located on said interpoly oxidation layer, which forms the top plate of said polycide-to-polysilicon capacitor; and remaining layers to complete said

integrated circuit, including dielectric layers, a metallization system connecting said metal oxide silicon field effect device and said polycide-to-polysilicon capacitor to other parts of said integrated circuit, and a passivation layer over said metallization system.

5,510,638

FIELD SHIELD ISOLATED EPROM

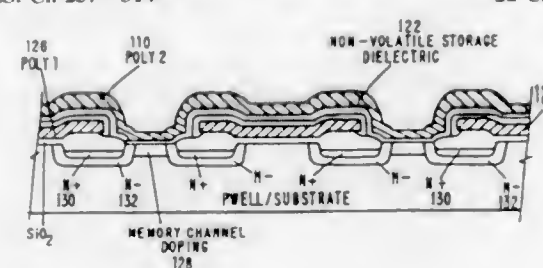
Loren T. Lancaster, and Ryan T. Hirose, both of Colorado Springs, Colo., assignors to NVX Corporation, Colorado Springs, Colo.

Continuation-in-part of Ser. No. 970,921, Nov. 2, 1992, abandoned. This application Apr. 28, 1994, Ser. No. 234,288

Int. Cl.⁶ H01L 27/115

U.S. Cl. 257—314

22 Claims



1. A non-volatile memory transistor structure in a semiconductor substrate of first conductivity type, comprising:

a first dielectric layer over said substrate;

a first conducting layer to provide a field shield layer on said first dielectric layer, said first conducting layer having a plurality of generally rectangular openings therein to define memory transistor channel regions at the openings, said first conducting layer completely surrounding each of said plurality of generally rectangular openings;

source and drain regions of second conductivity type in said substrate, said source and drain regions extending beneath

said first conducting layer between at least two adjacent generally rectangular openings, each of said source and drain regions having a portion extending into the area beneath one of said at least two generally rectangular openings, the portions of said source and drain regions being spaced from each other in said area to define a channel region in said area, said channel region being bounded by the facing sides of said portions of said source and drain regions and the boundaries of said one of said openings;

a second dielectric layer including a non-volatile material over at least said channel; and

a second conducting layer over said second dielectric layer, extending over said channel, and being patterned to provide a gate extending generally orthogonal to the direction of extent of said source and drain regions.

5,510,639

NON-VOLATILE SEMICONDUCTOR MEMORY HAVING
A RING-SHAPED FLOATING GATE

Yasushi Okuda, Takatsuki; Yoshinori Otake, Katano; Ichiro Nakao, Kadoma, and Youhei Ichikawa, Yokohama, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 189,970, Feb. 1, 1994, abandoned.

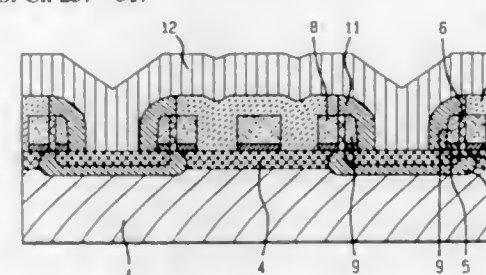
This application Feb. 9, 1995, Ser. No. 384,791

Claims priority, application Japan, Feb. 2, 1993, 5-015191

Int. Cl.⁶ H01L 29/788; 29/76

U.S. Cl. 257—317

13 Claims



1. A non-volatile semiconductor memory cell comprising:

a semiconductor substrate of a first conductivity type, the semiconductor substrate having a top surface;

a ring-shaped channel region of the first conductive type embedded in the top surface of the semiconductor substrate;

a drain region of a second conductive type formed in a zone surrounded by the ring-shaped channel region and embedded in the top surface of the semiconductor substrate;

a source region of the second conductive type formed outside the ring-shaped channel region and embedded in the top surface of the semiconductor substrate;

a first gate insulation layer formed on the top surface of the semiconductor substrate in such a manner as to cover the boundary between the ring-shaped channel region and the drain region;

a ring-shaped floating gate electrode formed from a conductive material on the first gate insulation layer;

a second gate insulation layer formed on the ring-shaped floating gate electrode; and

a control gate electrode which is capacitive-coupled with the ring-shaped floating gate electrode via the second gate insulation layer, and is electrically insulated from the semiconductor substrate.

5,510,640

SEMICONDUCTOR DEVICE AND PROCESS FOR
PREPARING THE SAME

Hitoshi Shindo, Atsugi, Japan, assignor to Cannon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 686,153, Apr. 16, 1991, abandoned.

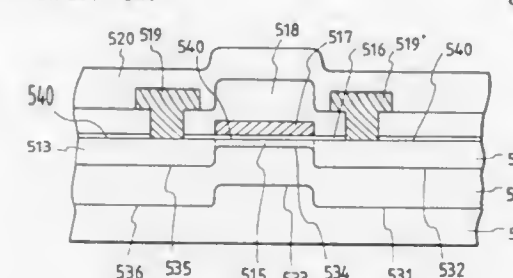
This application Feb. 17, 1993, Ser. No. 19,330

Claims priority, application Japan, Apr. 17, 1990, 2-099346; Apr. 12, 1991, 3-106543

Int. Cl.⁶ H01L 27/01

U.S. Cl. 257—347

8 Claims



1. A semiconductor device comprising:

a semiconductor layer including a source region, a drain region and a channel region provided on an insulating film;

a gate electrode having a multi-layer structure of polycrystalline silicon and one of a metal having a high melting point and an alloy having a high melting point; and

a gate insulating film separating said semiconductor layer and said gate electrode,

wherein a thickness of said channel region is smaller than a thickness of said source or drain region, wherein a level of an interface between said channel region and said insulating film is different from a level of an interface of said source or drain region and said insulating film and wherein all the surfaces of said channel region, source region and drain region which face said gate electrode are on the same level, and wherein a width of said gate electrode is substantially the same as a width of said channel region.

5,510,641

MAJORITY CARRIER POWER DIODE

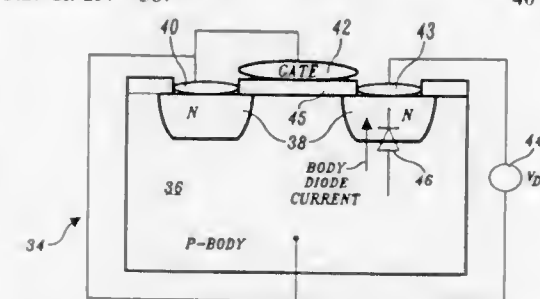
Hsian-Pei Yee; Peter O. Lauritzen, and Sinclair S. Yee, all of Seattle, Wash., assignors to University of Washington, Seattle, Wash.

Continuation-in-part of Ser. No. 891,581, Jun. 1, 1992, abandoned. This application Mar. 31, 1993, Ser. No. 40,920

Int. Cl.⁶ H01L 29/76

U.S. Cl. 257—367

40 Claims



1. A majority carrier semiconductor diode comprising:

(a) an N-type region having a conductive contact, forming a drain;

(b) a P-type material having a conductive contact, forming a body;

(c) an N-type material applied to the P-type material forming the body and having a conductive contact, forming a source;

(d) a dielectric material disposed adjacent the source and the drain and having a conductive contact that is not connected to the source or the drain, the conductive contact forming a gate; and

(e) biasing means for biasing the gate to provide a conducting N-channel for electrical current flow between the source and the drain for a negative drain-source voltage, while blocking electrical current flow between the source and the drain for a positive drain-source voltage.

5,510,642

SEMICONDUCTOR DEVICE

Chihiro Ogawa, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

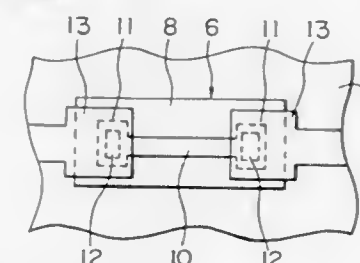
Filed Dec. 16, 1994, Ser. No. 357,321

Claims priority, application Japan, Dec. 16, 1993, 5-317004

Int. Cl.⁶ H01L 29/76

U.S. Cl. 257—380

4 Claims



1. A semiconductor device comprising:

a semiconductor substrate;

an insulation layer formed on the main surface of said substrate;

a polycrystalline silicon layer formed with its entire lower surface overlapping an upper surface of said insulation layer, said polycrystalline layer having a composition at least half of which includes crystals having a grain size at least one of equal to and greater than 2 μm;

a resistance element formed by ion implantation with a predetermined impurity and by a subsequent heat treatment at a central part of said polycrystalline silicon layer; and

a polycrystalline silicon region formed substantially un-doped with impurity, said polycrystalline silicon region being formed on all sides of said resistance element, and positioned on a peripheral region of said polycrystalline silicon layer, except for said central part thereof.

5,510,643

HIGH VOLTAGE MOS TRANSISTOR

Masaru Kariyama, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

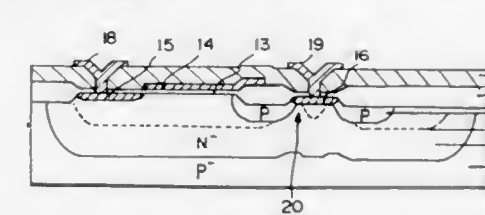
Filed Nov. 9, 1993, Ser. No. 149,109

Claims priority, application Japan, Jan. 6, 1993, 5-000452

Int. Cl.⁶ H01L 27/092

U.S. Cl. 257—409

9 Claims



1. A semiconductor device including a high voltage MOS transistor comprising:

a first conductivity type semiconductor substrate having an upper surface;

a second conductivity type tub formed in the first conductivity type semiconductor substrate, said tub extending to said upper

surface, said tub including a portion at an upper surface of said tub, said portion having a second conductivity impurity concentration;

at least one predetermined slit region formed within and surrounded laterally by said portion, said at least one predetermined slit region having a lower second conductivity type impurity concentration than the second conductivity type impurity concentration of said portion;

first conductivity type source/drain regions within and surrounded by said portion formed in said tub and extending from said upper surface; and

at least one of said first conductivity type source/drain regions having a first conductivity type drift layer connected thereto, said first conductivity type drift layer extending toward the other of said first conductivity type source/drain regions;

wherein said at least one predetermined slit region contacts at least said drift layer from said portion to thereby increase the reverse breakdown voltage of said transistor.

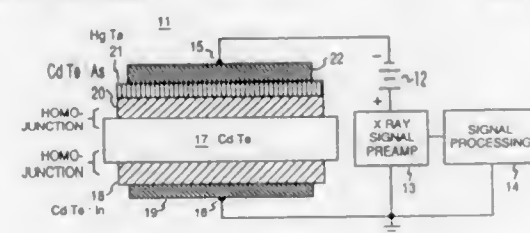
5,510,644

CDTE X-RAY DETECTOR FOR USE AT ROOM TEMPERATURE

Karl A. Harris, Liverpool, N.Y.; Thomas H. Myers, II, Westover, W. Va., and Robert W. Yanka, Liverpool, N.Y., assignors to Martin Marietta Corporation, Syracuse, N.Y.
Continuation of Ser. No. 142,545, Oct. 22, 1993, abandoned, which is a continuation of Ser. No. 856,410, Mar. 23, 1992, abandoned. This application Sep. 23, 1994, Ser. No. 311,828
Int. Cl.⁶ H01L 31/075; 31/105; 31/117

U.S. Cl. 257—458

19 Claims



1. A CdTe x-ray detector for use at room temperature comprising in combination

A) a high resistivity, intrinsic CdTe layer dimensioned for x-ray absorption, having two parallel faces,

B) a photo-assisted molecular beam epitaxially (PAMBE) grown CdTe layer using a group III element as an n type dopant to form an n type layer and forming on one of said faces an n-i interface, said n type layer having a first metal contact, and

C) a PAMBE grown CdTe layer using arsenic as a p-type dopant to form a p type layer and forming on the other of said faces an i-p interface, said p type layer having a second metal contact,

said combination forming a CdTe p-i-n homojunction.

5,510,645

SEMICONDUCTOR STRUCTURE HAVING AN AIR REGION AND METHOD OF FORMING THE SEMICONDUCTOR STRUCTURE

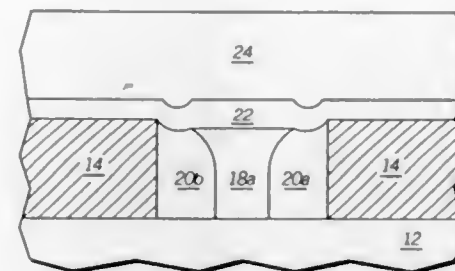
Jon T. Fitch; Papu Maniar; Keith E. Witek; Jerry Gelatos; Reza Moazzami, and Sergio A. Ajuria, all of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 179,285, Jan. 7, 1994, abandoned, which is a division of Ser. No. 70,613, Jun. 2, 1993, Pat. No. 5,324,683. This application Jan. 17, 1995, Ser. No. 383,908
Int. Cl.⁶ H01L 29/00

U.S. Cl. 257—522

11 Claims

1. A semiconductor structure comprising:
a first enclosed cavity;
a second enclosed cavity;



a substrate having a top-most surface and an overlying first dielectric layer;

an interconnect conductive layer overlying the first dielectric layer;

a second dielectric layer overlying the first dielectric layer;

a first conductive region overlying the second dielectric layer and having a sidewall, the first enclosed cavity being adjacent the sidewall of the first conductive region;

a second conductive region overlying the second dielectric layer, having a sidewall, and being separated from the first conductive region, the second enclosed cavity being adjacent the sidewall of the second conductive region; and

a dielectric region overlying the second dielectric layer and being between the first enclosed cavity and the second enclosed cavity, wherein the first enclosed cavity and the second enclosed cavity are completely overlying a top-most surface of the substrate.

5,510,646

METAL-TO-METAL ANTIFUSE WITH IMPROVED DIFFUSION BARRIER LAYER

Abdul R. Forouhi, and Iton Wang, both of San Jose, Calif., assignors to Actel Corporation, Sunnyvale, Calif.

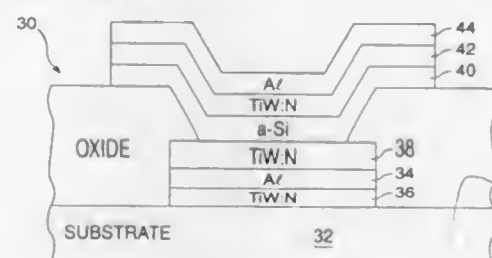
Continuation of Ser. No. 842,872, Feb. 26, 1992, abandoned.

This application Jun. 10, 1993, Ser. No. 247,243

Int. Cl.⁶ H01L 29/04; 29/00

U.S. Cl. 257—530

2 Claims



1. A metal-to-metal antifuse comprising:

a lower electrode comprising a portion of a first metal interconnect layer in an integrated circuit;

a first barrier layer disposed over said lower electrode, said first barrier layer formed from a layer of TiW/N;

a layer of antifuse material disposed over said first barrier layer, said layer of antifuse material formed from amorphous silicon;

a second barrier layer disposed over said layer of antifuse material, said second barrier layer formed from a layer of TiW/N;

said first and second barrier layers acting to limit a leakage current in said antifuse to a value less than about 1×10^{-8} A/ μm^2 at 5 volts; and
an upper electrode disposed over said second barrier layer, said upper electrode comprising a portion of a second metal layer in said integrated circuit.

5,510,647

SEMICONDUCTOR DEVICE AND METHOD OF MANUFACTURING THE SAME

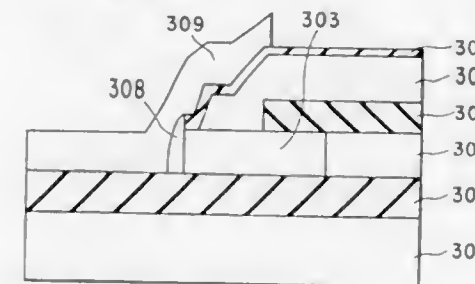
Hiroomi Nakajima, Urayasu; Yasuhiro Katsumata, Chigasaki; Hiroshi Iwai, Kawasaki; Toshihiko Iinuma, Kawasaki; Kazumi Inou, Yokohama; Mitsuhiko Kitagawa, Tokyo; Kouhei Morizuka, Yokohama; Akio Nakagawa, Hiratsuka, and Ichiro Omura, Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 15, 1994, Ser. No. 213,027

Claims priority, application Japan, Mar. 15, 1993, 5-078628
Int. Cl.⁶ H01L 29/72; 21/82

U.S. Cl. 257—559

6 Claims



1. A bipolar transistor comprising:

a substrate having an insulating main surface;

a semiconductor layer arranged on said main surface and having an end face which forms an angle with respect to said main surface;

a side contact layer arranged on said end face;

a first region of a first conductivity type which is formed in said semiconductor layer;

a second region of a second conductivity type which is formed by diffusing a first impurity into said semiconductor layer through said end face from said side contact layer used as a solid-phase diffusion source of said first impurity, said second region contacting said first region, being unexposed to said end face, and having an impurity concentration which is substantially uniform in a direction parallel to said end face;

a third region of the first conductivity type which is formed by diffusing second impurity into said semiconductor layer through said end face from said side contact layer used as a solid phase diffusion source of said second impurity, said third region being in contact with said second region, being exposed to said end face, and having an impurity concentration which is substantially uniform in a direction parallel to said end face; and

first, second, and third electrodes respectively connected to said first and second regions, and to said third region through said side contact layer.

5,510,648

INSULATED GATE SEMICONDUCTOR DEVICE AND METHOD OF FABRICATING

Robert B. Davies, Tempe; Peter J. Zebel, Mesa, and Julian Buxo, Tempe, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Division of Ser. No. 177,034, Jan. 4, 1994, Pat. No. 5,372,960.

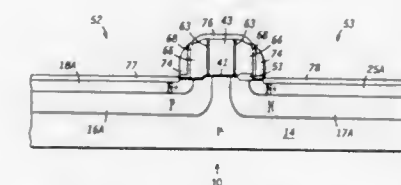
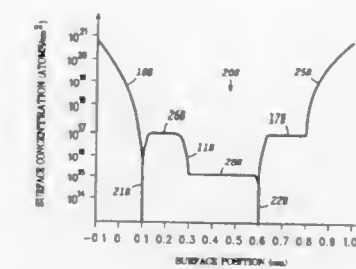
This application Sep. 7, 1994, Ser. No. 301,999

Int. Cl.⁶ H01L 29/36; 29/167

U.S. Cl. 257—657

16 Claims

1. An insulated gate semiconductor device, comprising:



a semiconductor substrate of a first conductivity type and having a major surface;

a first dopant well of the first conductivity type extending a first distance into the semiconductor substrate from the major surface;

a second dopant well of a second conductivity type inside and extending a second distance into the first dopant well from the major surface, wherein an interface between the first and second dopant wells forms a P-N junction, and a portion of the first dopant well adjacent a first portion of the major surface and laterally bounded by a portion of the P-N junction and a portion of a boundary between the first dopant well and the semiconductor substrate serves as a first channel portion of the insulated gate semiconductor device, the first channel portion having a constant surface doping concentration of a first value, and wherein the first and second conductivity types are different, and the second distance is less than the first distance;

a third dopant well of the second conductivity type extending a third distance into the semiconductor substrate from the major surface, the third dopant well laterally spaced apart from the first dopant well by a portion of the semiconductor substrate adjacent a second portion of the major surface and laterally bounded by the third dopant well and the portion of the boundary between the first dopant well and the semiconductor substrate, wherein the portion of the semiconductor substrate adjacent the second portion of the major surface and laterally bounded by the third dopant well and the portion of the boundary between the first dopant well and the semiconductor substrate serves as a second channel portion of the insulated gate semiconductor device, the second channel portion having a constant surface doping concentration of a second value, wherein the second value is less than the first value;

a gate oxide on at least a portion of the major surface between the second dopant well and the third dopant well;

a first portion of a gate electrode structure on the gate oxide, the first portion of the gate electrode structure being of the second conductivity type;

a second portion of the gate electrode structure on the gate oxide and adjacent to and spaced apart from the first portion of the gate electrode structure by a dielectric material, the second portion of the gate electrode structure being of the second conductivity type;

a third portion of the gate electrode structure on the gate oxide and adjacent to and spaced apart from another side of the first portion of the gate electrode structure by the dielectric material, the third portion of the gate electrode structure being of the second conductivity type;

a conductive strap coupling the first, second, and third portions of the gate electrode structure, the conductive strap serving as a gate electrode;

a first electrode contacting a portion of the second dopant well; and

a second electrode contacting the third dopant well.

5,510,656

WAVE ENERGY CONVERTER

Alan A. Wells, Grove House, Bridge Road, Mepal, Ely Cambridgeshire CB6 2AR, England

PCT No. PCT/GB92/00711, § 371 Date Nov. 2, 1993, § 102(e) Date Nov. 2, 1993, PCT Pub. No. WO92/18704, PCT Pub. Date Oct. 29, 1992

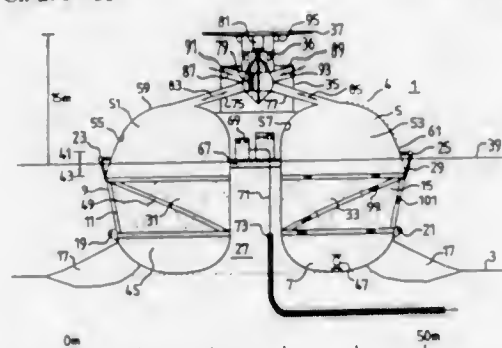
PCT Filed Apr. 16, 1992, Ser. No. 137,018

Claims priority, application United Kingdom, Apr. 17, 1991, 9108152

Int. Cl.⁶ F03B 13/10; 13/00; 13/12; H02P 9/04

U.S. Cl. 290—53

9 Claims



1. A wave collector comprising a generally hollow canopy having at least one opening for ingress of waves, said canopy having an internal datum level defining a median water level when in use, said at least one opening defining a water inlet area, wherein the ratio of the water inlet area to the internal cross-sectional area of the canopy at the internal datum level is less than 0.7.

5,510,657

HEADLIGHT CONTROL CIRCUIT OF SNOWMOBILE

Masahisa Morita, Hamamatsu, Japan, assignor to Suzuki Motor Corporation, Tokyo, Japan

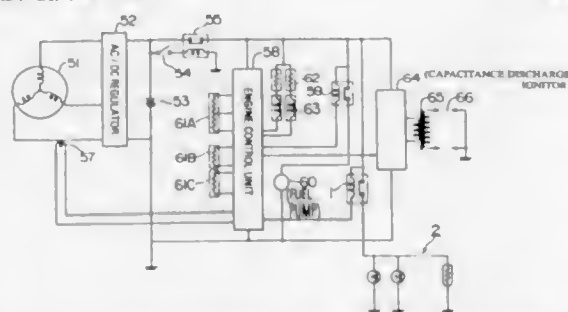
Filed Nov. 23, 1994, Ser. No. 344,084

Claims priority, application Japan, Nov. 30, 1993, 5-326338

Int. Cl.⁶ B60Q 1/26

U.S. Cl. 307—9.1

2 Claims



1. In a power supply circuit of a snowmobile including an EFT system in which an AC voltage of a magneto is converted into a DC voltage to charge a battery and electric power is supplied to an engine control unit through a power relay in response to turning on of a main switch to inject fuel to an engine,

a headlight control circuit of the snowmobile comprising:
a light relay for supplying electric power from the battery to electric loads such as headlights;
said engine control unit judging a frequency of the AC voltage generated by the magneto to control to turn on or off said light relay in accordance with whether or not said frequency exceeds a predetermined value.

5,510,658

CIRCUIT BREAKER DEVICE FOR ELECTRIC VEHICLE

Hitoshi Nakayama, Kawaguchi, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

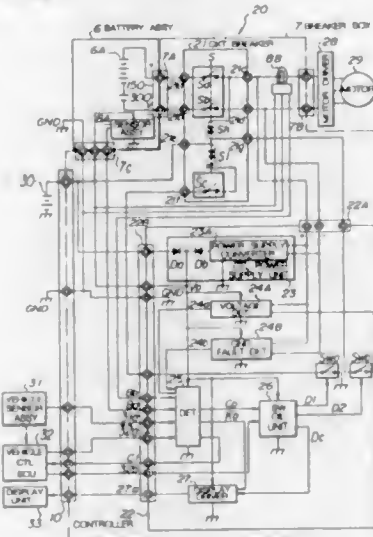
Filed May 12, 1994, Ser. No. 241,849

Claims priority, application Japan, May 12, 1993, 5-110288; Dec. 10, 1993, 5-310193

Int. Cl.⁶ H02H 3/087; 3/10

U.S. Cl. 307—10.1

18 Claims



1. A circuit breaker device for use on an electric vehicle, comprising:
a high-voltage drive power supply for supplying an electric energy to a load to drive the electric vehicle;
a circuit breaker for cutting off the electric energy supplied from said drive power supply to said load;
sensor means for detecting conditions of the electric vehicle;
control means for controlling operation of said circuit breaker in response to a detected signal from said sensor means;
a low-voltage accessory power supply for energizing accessories on the electric vehicle; and
power supply converting means for converting the electric energy supplied from said drive power supply;
said control means being connected to said accessory power supply and also connected to said drive power supply through said power supply converting means, whereby said control means can be energized at all times by at least one of said accessory power supply and said drive power supply.

5,510,659

ELECTROLYSIS INHIBITING MARINE ENERGY MANAGEMENT SYSTEM

David C. Lewis, 840 First St., Hermosa Beach, Calif. 90255, and Jonathan M. Lewis, 115 S. Guadalupe #B, Redondo Beach, Calif. 90277

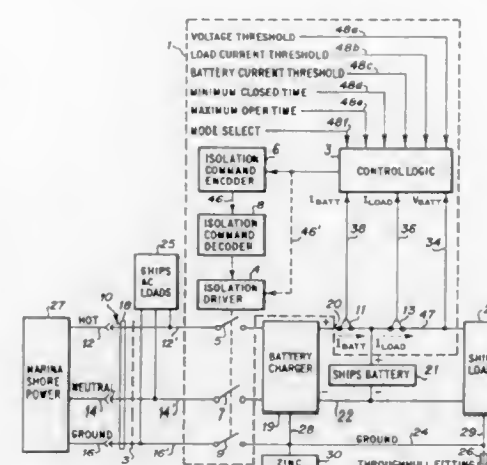
Filed Jan. 13, 1994, Ser. No. 181,185

Int. Cl.⁶ H02J 3/14

U.S. Cl. 307—11

13 Claims

1. In a marine electrical power system for boats docked in water at a boat marina, said boat marina comprising:
an on-shore power distribution system associated with said boat marina for distributing a.c. electrical power from an on-shore source to a plurality of boat dock positions, said distribution being via a plurality of electrical leads extending dockside, said on-shore power distribution system comprising at least first and second a.c. power leads and a third ground lead; and
at least one of said docked boats, including:
rechargeable D.C. battery means for storing charge of electricity and producing a predetermined voltage when fully charged, said battery including a first polarity terminal and a second polarity terminal;



an on-board a.c. electrical distribution system, said on-board a.c. electrical distribution system, including a first lead, second lead and a third ground lead;
means for connecting said on-board a.c. electrical distribution system in circuit with said on-shore a.c. electrical distribution system;

battery charger means, said battery charger means having an input for connection to said on-board a.c. electrical distribution system and an output connected to said battery means for providing D.C. current to said D.C. battery means, responsive to a.c. power supplied at said input, said battery charger means output including a first positive polarity terminal for connection to a positive polarity terminal of said D.C. battery means and a negative polarity terminal of said battery means and a ground lead for connection to said third ground lead;

D.C. electrical distribution system connected to said battery means, said D.C. electrical distribution system including at least a first lead connected to a first polarity terminal of said battery and a second lead connected to the second polarity terminal of said battery, whereby said output of said battery charger means also supplies D.C. current to other electrical loads connected to said D.C. electrical distribution system; stand-by electrical load device means coupled to said D.C. distribution system, said load device means being normally in a non-current consuming standby condition, and producing a demand for current only in response to a predetermined condition on said boat requiring said load device means to produce a predetermined action, wherein said load device means draws D.C. current from said D.C. distribution system; and

a ground system, said ground system including at least some metallic fittings on said boat that extend to an external surface of the boat for contact with said dockside water; said ground system being connected to respective ground leads associated with each of said battery charger means and said electrical load device means;

the improvement therein of an electrolysis inhibiting power management system which comprises in combination therewith:
isolation switch means associated with said docked boat connected in electrical series circuit between said on-board a.c. electrical distribution system and said battery charger means input and on-board ground system, said isolation switch means having a plurality of inputs connected to said respective electrical leads of said on-board a.c. distribution system and a plurality of outputs connected to the respective corresponding electrical leads of said D.C. battery charger means and said on-board ground system, said switch means having a first state for interrupting a current conducting path between the respective switch inputs and outputs and an alternate second state for completing a current conducting path between those respective inputs and outputs; and
control means associated with said docked boat for controlling operation of said isolation switch means, said control means for placing said isolation switch means in its second state,

responsive to the occurrence of any of (a) a current demand by said stand-by electrical device means or (b) said battery voltage being below a predetermined minimum voltage level, whereby two of said a.c. electrical leads of said on-board a.c. distribution system are connected in operative relationship to said input of said battery charger means and said on-shore ground lead is connected to said ground system of said on-board D.C. distribution system and said battery charger means produces a D.C. current output, and for restoring said isolation switch means to its first state to thereby interrupt said connections to the on-board a.c. distribution system and ground, responsive to at least (a) an absence of demand for current by said stand-by electrical device and said D.C. output current supplied by said battery charger means being below a predetermined minimum level for a predetermined period of time and (b) said battery voltage being at or above said predetermined level; whereby said ground from said on-shore a.c. distribution system is connected to said boat ground system only for limited intervals during the period of time in which the boat is docked at the marina to thereby limit the duration of any corrosion causing ground currents transverse a path from the boat ground system, through the dockside water to or through other docked boats, and said on-shore ground system.

5,510,660

MAGNETOSTRICTIVE VIBRATION GENERATION SYSTEM

Alison Flatow, and David Hall, both of Ames, Iowa, assignors to Iowa State University Research Foundation, Inc., Ames, Iowa

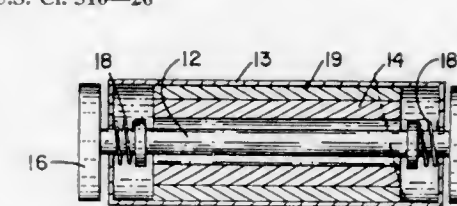
Continuation of Ser. No. 901,534, Jun. 19, 1992, Pat. No.

5,406,153. This application Jul. 1, 1994, Ser. No. 269,678

Int. Cl.⁶ H01L 41/12

U.S. Cl. 310—26

18 Claims



1. A method for generating vibrations, comprising the steps of:
a) providing a magnetostriuctive rod actuator having first and second ends;
b) spring biasing a first base member having high magnetic permeability against the first end of the actuator, the first base member being in contact with the actuator and having a mass substantially equal to or less than the mass of the actuator; and
c) rapidly varying a magnetic field through the actuator and first base member to cause the actuator to expand and contract, thereby vibrating the first base member along a longitudinal axis of the actuator.

5,510,661

MOTOR

Noriyuki Yoshimura, and Yutaka Daikuhara, both of Nagano, Japan, assignors to Minebea Kabushiki-Kaisha, Nagano, Japan

Filed Apr. 11, 1994, Ser. No. 226,275

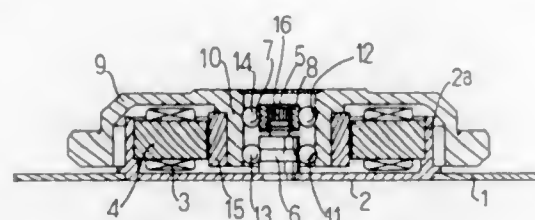
Claims priority, application Japan, Apr. 13, 1993, 5-109875

Int. Cl.⁶ H02K 5/16

U.S. Cl. 310—90

8 Claims

1. In a motor provided with a spindle to which an inner race of a ball bearing is fitted, the improvement wherein:
said spindle has an outer peripheral knurled surface portion at an outer end portion thereof, said knurled surface portion having



outermost surface portions and spaces defined between said outermost surface portions;
 said inner race of said ball bearing is mounted on said knurled surface portion of said spindle with inner surface portions of said inner race in contact with said outermost surface portions of said knurled surface portion;
 clearances are defined between inner surface portions of said inner race and said spaces of said knurled surface portion of said spindle;
 an adhesive is filled in said clearances and is cured, and through which said inner race of said ball bearing is fixed to said spindle of said motor;
 said spindle has an annular groove in an area adjacent to said knurled portion and remote from an outer end of said spindle;
 said inner race of said ball bearing is mounted on said spindle so as to cover said knurled portion and said annular groove of said spindle with a space defined between said groove and said inner surface of said inner race; and
 said adhesive is filled in said space between the inner surface of said inner race and said annular groove of said spindle, to improve fixing of said inner race to said spindle.

5,510,662

PERMANENT MAGNET MOTOR

Shigeya Tanimoto, Aichi, and Mayumi So, Kakamigahara, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kanagawa, Japan

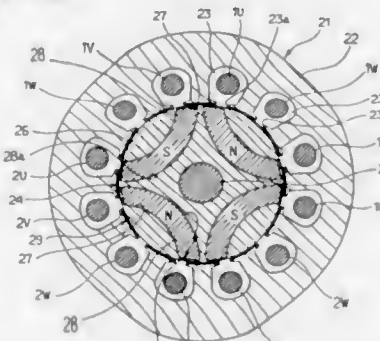
Filed May 25, 1994, Ser. No. 249,026

Claims priority, application Japan, May 26, 1993, 5-124129; May 26, 1993, 5-124130; May 26, 1993, 5-124134

Int. Cl.⁶ H02K 21/12

U.S. Cl. 310—156

2 Claims



1. A permanent magnet motor comprising:
 a) a stator including an annular stator core and a plurality of stator windings wound on the stator core so that a plurality of phases are composed; and
 b) a rotor rotatably mounted with a predetermined air gap between the same and an inner peripheral face of the stator core, the rotor including a rotor core having a plurality of slots and a plurality of permanent magnets embedded in the slots respectively, the rotor being rotated when the stator windings are sequentially energized;
 wherein each permanent magnet has a generally arc-shaped cross section and is embedded in the slot so that a convex portion thereof is directed toward a rotor axis;
 each permanent magnet is magnetized so that directions of easy magnetization thereof are concentrated on a point C at a side of center of curvature thereof;

the relation between a distance L between the point C and a center line passing the center of each permanent magnet in the direction of the thickness thereof and a mean radius of curvature R of the permanent magnets is shown by the following expression:

$$1.8 \times R \leq L \leq 5 \times R$$

5,510,663

ELECTRODYNAMIC DEVICE

Evert J. Van Loenen, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 223,472, Apr. 5, 1994, abandoned.

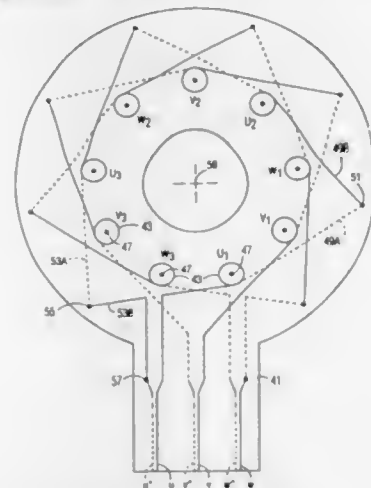
This application Feb. 22, 1995, Ser. No. 394,540

Claims priority, application Belgium, May 13, 1993, 09300495

Int. Cl.⁶ H02K 3/00

U.S. Cl. 310—179

6 Claims



1. An electrodynamic device comprising:
 a movable permanent-magnet rotor (14) and
 an electromagnetic stator (16) comprising:
 a substrate (41) having a first side and an opposite second side, a plurality of windings (U_1-U_3 , V_1-V_3 , W_1-W_3), each one of said plurality of windings comprising a spiral first coil (43) which is situated on the first side of the substrate and a spiral second coil (45) which is situated on the opposite second side of the substrate, said first and second coils being electrically connected in series with one another via an interconnection through said substrate, and
 a plurality of phases (U, V, W) each comprising at least one said winding and having ends, characterized in that the substrate carries all the phases (U, V, W).

5,510,664

BRUSHLESS MOTOR

Mitsuo Suzuki, Tokyo; Yukio Itami, Yokohama; Yoshio Hashimoto; Mutsumi Yamamoto, both of Tokyo, and Yoshihiro Takahashi, Shibata, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, and Tohoku Ricoh Co., Ltd., Miyagi, both of Japan

Filed Sep. 7, 1993, Ser. No. 116,959

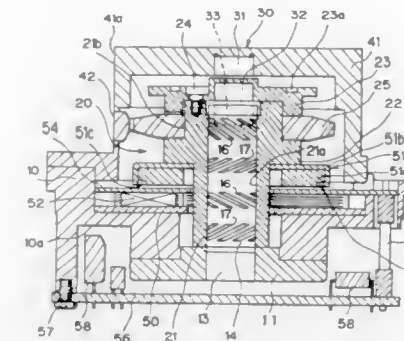
Claims priority, application Japan, Sep. 10, 1992, 4-241477

Int. Cl.⁶ H02K 1/22

U.S. Cl. 310—268

12 Claims

1. A brushless motor, comprising:
 a magnet for a magnetic field having a plurality of magnetic poles N and S alternately magnetized at an equal opening angle; and



a plurality of coreless armature coils opposed to the magnet within a magnetic path of the magnet and spaced from each other at an equal distance such that no armature coils overlap each other; and
 a number of said coreless armature coils being set to $3n$ when a number of magnetic poles of said magnet for a magnetic field is set to $2n$, where n is a positive integer.

5,510,665

OPTOELECTRONIC ACTIVE CIRCUIT ELEMENT

Jerry J. Conley, Waseca, Minn., assignor to E. F. Johnson Company, Waseca, Minn.

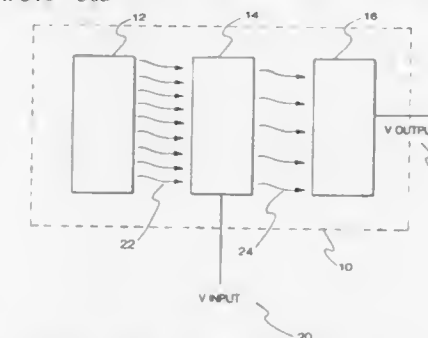
Division of Ser. No. 578,000, Sep. 4, 1990, Pat. No. 5,237,233, which is a continuation-in-part of Ser. No. 318,743, Mar. 3, 1989, Pat. No. 5,008,579. This application Jun. 28, 1993, Ser. No. 40,897

The portion of the term of this patent subsequent to Jun. 23, 2009, has been disclaimed.

Int. Cl.⁶ G21H 1/12; H01L 31/06; G03H 1/02

U.S. Cl. 310—303

15 Claims



1. An optoelectronic device comprising:
 a light source means having at least one light emitting surface for emitting light energy in a specified frequency bandwidth;
 a photocell means having a light collecting surface for absorbing light energy and converting the light energy into an electrical output signal; and
 optical control means comprising a generally planar sheet of photorefractive material that is a liquid crystal display material having at least a first and second surface, the first surface being in intimate contact with the light emitting surface of the light source means and the second surface being in intimate contact with the light collecting surface of the photocell means for transmitting and directly modulating the amount of emitted light energy that may be absorbed by the photocell means in response to an input signal by receiving the emitted light incident upon the first surface, modulating the emitted light within the photorefractive material in response to the input signal and emitting a modulated light energy from the second surface to be absorbed by the photocell means,
 such that the optoelectronic device behaves as an active circuit element where the electrical output signal is a function of the input signal.

5,510,666
METHOD OF DETECTING SHOCK AND SHOCK SENSOR

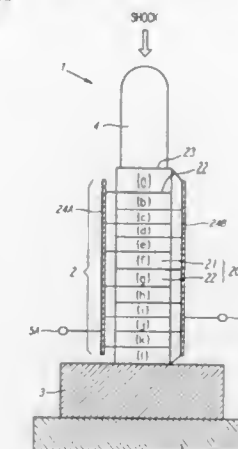
Naoya Watanabe, and Masahiro Ota, both of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 16, 1994, Ser. No. 307,949

Int. Cl.⁶ H01L 41/08

U.S. Cl. 310—328

15 Claims



1. A method of detecting a shock, comprising the steps of:
 applying an electric field equal to or greater than a coercive electric field to a field-excited phase transition material thereby to bring about a phase transition from an antiferroelectric phase to a ferroelectric phase;
 maintaining a ferroelectric phase without supplying an electric field to the field-excited phase transition material; and
 thereafter applying a shock to the field-excited phase transition material to cause the field-excited phase transition material to produce an electric signal representative of said shock.

5,510,667

SPARK PLUG WITH AN ELECTRODE HAVING A PLATINUM-NICKEL FIBER COMPOSITE MATERIAL

Otto Löffler, Stuttgart; Werner Niessner, Steinheim; Heinz Ambacher, Benningen, and Friedrich E. Schneider, Pforzheim, all of Germany, assignors to Beru Ruprecht GmbH & Co., and G. Rau GmbH & Co., Germany

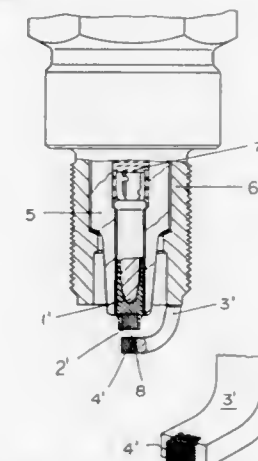
Filed Feb. 5, 1993, Ser. No. 15,024

Claims priority, application Germany, Feb. 5, 1992, 42 03 251.2

Int. Cl.⁶ H01T 13/02

U.S. Cl. 313—141

10 Claims



1. A spark plug with an insulator, a center electrode placed in the insulator, a casing located on the outside of the insulator and a casing electrode attached to the casing, wherein at least one of the

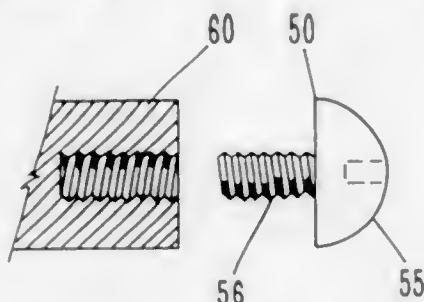
center electrode and the casing electrode comprises a platinum-nickel fiber composite material from the group consisting of a platinum metal matrix in which nickel fibers are embedded and a nickel matrix in which platinum fibers are embedded.

5,510,668
SPARK GAP WITH LOW BREAKDOWN VOLTAGE JITTER

Gerald J. Rohwein, and Lars D. Roose, both of Albuquerque, N.M., assignors to Sandia Corporation, Albuquerque, N.M.
Filed Apr. 18, 1994, Ser. No. 228,987
Int. Cl.⁶ H01T 13/20

U.S. Cl. 313—141

11 Claims



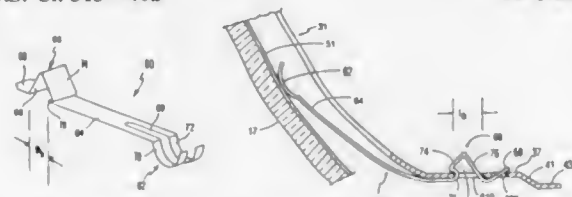
1. A spark gap with low breakdown voltage jitter, comprising: a gap comprising the volume of space wherein sparks are generated;
- a first electrode formed of a conducting material having a removable insert comprising a first end adjacent to said spark gap, said removable insert having a ridge formed therein so that all other portions of the first electrode are farther from said spark gap than said ridge;
- a second electrode formed of a conducting material and located across said spark gap in such a spaced relationship with the first end of said first electrode that the largest density of electric field equipotentials, which are generated between the first and second electrodes when a difference in electrical potential exists between said electrodes, occurs adjacent to said ridge; and
- means for holding the first and second electrodes in said spaced relationship.

5,510,669
SHIELD-ANODE COATING CONTACTOR AND CRT INCORPORATING SAME

Gerald E. Van Buren, Brighton, Mich., assignor to Philips Electronics North America Corporation, New York, N.Y.
Continuation of Ser. No. 86,810, Jul. 2, 1993, abandoned. This application May 15, 1995, Ser. No. 442,250
Int. Cl.⁶ H01J 29/02

U.S. Cl. 313—402

16 Claims



1. An IMS for a cathode ray tube comprising a bowl-shaped side wall, a rectangular bottom wall comprising two long sides and two short sides having inner edges defining a large central aperture for the passage of electron beams and means located in the bottom wall for receiving and retaining at least one IMS-anode coating spring contactor having a base portion with an opening and a tail portion, CHARACTERIZED IN THAT the means comprises for each contactor a set of first and second small apertures, these

apertures adjacent one another along a line transverse to the inner edge of the side in which these apertures are located, the first aperture located adjacent the side wall of the IMS and adapted for receiving and retaining the base portion, and the second aperture located adjacent the large aperture and adapted for receiving and retaining the tail portion of the spring contactor.

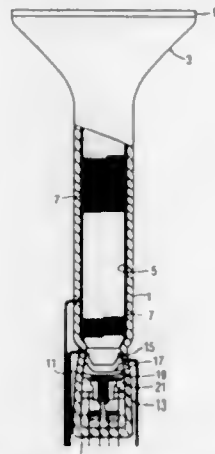
5,510,670
ELECTRON BEAM DEVICE HAVING A GLASS ENVELOPE AND A FOCUSING LENS PROVIDED THEREON

William N. Osborne, Ringwood, N.J.; Petrus J. M. Prinsen, and Edwin A. Montle, both of Eindhoven, Netherlands, assignors to Philips Electronics North American Corporation, New York, N.Y.

Filed Jul. 19, 1994, Ser. No. 277,446
Int. Cl.⁶ H01J 29/46

U.S. Cl. 313—450

9 Claims



1. A cathode ray tube comprising a glass envelope consisting of a display window, a cone and a neck and an electron gun situated inside said envelope opposite said window and having at least one focussing lens provided on an inside surface of said neck, the improvement wherein said at least one focussing lens is a helically coiled resistance layer formed of a suspension, by weight, of about 33%–50% of a conductive material comprising about 40%–60% of a lead ruthenate, about 25%–38% of a lead titanate and about 2%–15% of a ruthenium oxide in about 50%–67% of a glass comprising about 30%–40% of SiO₂, about 3%–7.5% of Al₂O₃ and about 53%–67% of PbO provided on said surface.

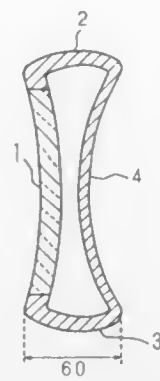
5,510,671
INWARDLY CONVEX VACUUM ENVELOPE
Koji Nakamura, Nagaokakyo; Keitaro Tsukul, and Kenichi Umino, both of Amagasaki, all of Japan, assignors to Mitsubishi Denki Kahushiki Kaisha, Tokyo, Japan

Filed Jan. 28, 1994, Ser. No. 187,478
Claims priority, application Japan, Mar. 9, 1993, 5-048008
Int. Cl.⁶ H01J 31/00; 61/30

U.S. Cl. 313—477 R

18 Claims

1. A display device for displaying picture images, comprising: an electron gun for generating electron beams that irradiate a fluorescent screen; and a vacuum envelope with a glass screen having a substantially evacuated inside and said electron gun installed therein said vacuum envelope including: a front section having a curved surface provided with said fluorescent screen and having an inwardly convex shape which curves toward the inside of said vacuum envelope, and a rear section having an inwardly convex shape which curves toward the inside of said vacuum envelope.

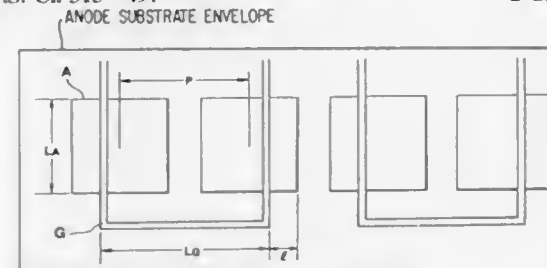


5,510,672
FLUORESCENT DISPLAY DEVICE
Yoshiaki Washio, and Hiroshi Yamaguchi, both of Mobara, Japan, assignors to Futaba Denshi Kogyo K.K., Mobara, Japan

Filed Jan. 18, 1994, Ser. No. 183,348
Int. Cl.⁶ H01J 31/15

U.S. Cl. 313—497

2 Claims



1. A fluorescent display device comprising: an anode substrate which constitutes part of an envelope; a plurality of anode segments arranged in a matrix on an inner surface of said anode substrate, each of said anode segments having a phosphor deposited thereon; a plurality of mesh grids formed on said anode segments such that each mesh grid partially covers two adjacent rows of anode segments, one edge of each of said anode segments protruding beyond said mesh grids and not being covered thereby; and a plurality of wiring conductors, each of which is connected to anode segments in a row at predetermined intervals.

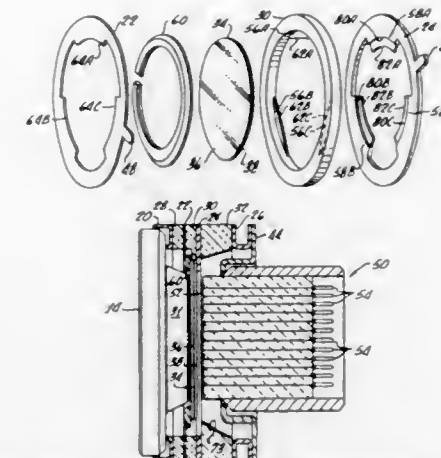
5,510,673
SHOCK RESISTANT CASCADED MICROCHANNEL PLATE ASSEMBLIES AND METHODS OF USE
Norman D. Wodecki; Charles B. Johnson, both of Phoenix, and Kevin D. Wheeler, Scottsdale, all of Ariz., assignors to Litton Systems, Inc., Woodland Hills, Calif.

Filed Jul. 29, 1994, Ser. No. 282,813
Int. Cl.⁶ H01J 31/50

U.S. Cl. 313—524

31 Claims

1. A shock resistant cascaded microchannel plate assembly comprising: a stacked pair of microchannel plates in facial contact with one another, said stacked pair of microchannel plates defining an outer diameter; and an annular, electrically conductive retaining ring and an annular electrically conductive support ring axially spaced apart by an insulating ring, said electrically conductive retaining ring defining an inner diameter sufficient to pass the outer diameter of the microchannel plates, and said electrically conductive support ring defining an inner diameter less than the outer diameter of the microchannel plates to cooperatively define a shoulder upon which the microchannel plates are seated, said



insulating ring defining an inner diameter surface confronting each one of said stacked pair of microchannel plates to constrain radial dislocation thereof.

5,510,674
PHOTOMULTIPLIER

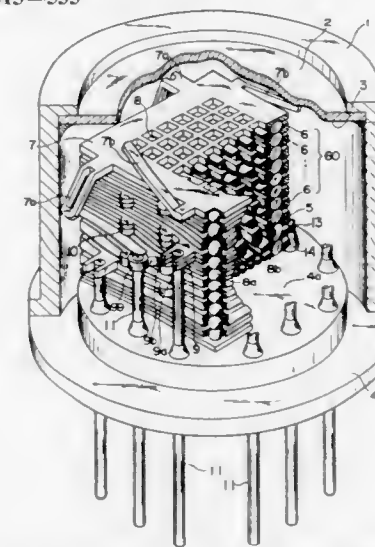
Hiroyuki Kyushima; Koji Nagura; Yutaka Hasegawa; Eiichiro Kawano; Tomihiko Kuroyanagi; Akira Atsumi, and Masuya Mizuide, all of Hamamatsu, Japan, assignors to Hamamatsu Photonics K.K., Hamamatsu, Japan

Filed Apr. 28, 1994, Ser. No. 234,157

Claims priority, application Japan, Apr. 28, 1993, 5-102898; Apr. 28, 1993, 5-102902; Apr. 28, 1993, 5-102910; Apr. 30, 1993, 5-104667; Apr. 30, 1993, 5-104668; Apr. 30, 1993, 5-104673
Int. Cl.⁶ H01J 43/18

U.S. Cl. 313—533

41 Claims



1. An electron multiplier comprising a dynode unit for cascade-multiplying incident electrons, said dynode unit comprising: a plurality of stacked stages of dynode plates; and insulating members separating said dynode plates, said dynode plate having a depression in which one of said insulating members is disposed, formed on a first main surface of said dynode plate, wherein an interval from a connect portion between said depression and said insulating member to a second main surface of said dynode plate opposing said first main surface is smaller than that from said second surface to said first surface; and wherein said insulating members are in contact at contact points on a surface of said members, wherein said contact points define a substantially straight line.

5,510,675

FLICKER-SUPPRESSED, LOW-POWER, HIGH-PRESSURE DISCHARGE LAMP

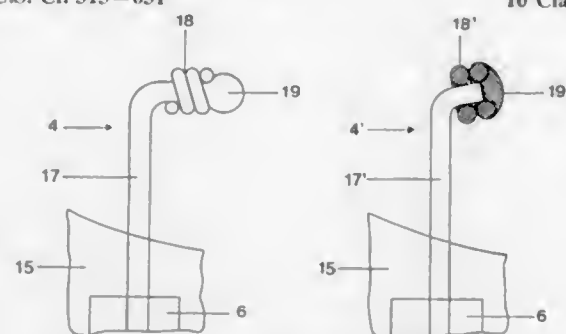
Axel Hunk, München, and Jürgen Vom Scheidt, Berlin, both of Germany, assignors to Patent-Treuhand-Gesellschaft fuer Elektrische Gluehlampen mbH, Munich, Germany

Filed Jan. 21, 1993, Ser. No. 6,728

Claims priority, application Germany, Feb. 11, 1992, 42 03 976.2

Int. Cl.⁶ H01J 17/04; 61/04
U.S. Cl. 313—631

10 Claims



1. Flicker-reduced, low-power, high-pressure discharge lamp (1, 20) having a power rating of up to about 400 W, comprising a discharge vessel (2, 21); two electrodes (4, 5; 23, 24) and connecting foils (6, 7; 25, 26) pinch-sealed into the discharge vessel; wherein each electrode includes

a straight shaft (17, 17') having an end portion forming an electrode head facing the opposite electrode and hence the discharge to be formed between the electrodes;
a wrap winding (18, 18', 38) with more than one adjacent winding or turn on the respective end portion;
wherein the diameter of the wrap winding wire is between about half to the entire shaft diameter of the electrode shaft (17); and

means for stabilizing, in operation of the lamp, attachment of the arc between the electrodes at the end portion of the respective electrode by providing a balance between heat retention and heat radiation from the head, and hence heat balance for flicker-reduced operation,

said stabilizing means comprising the combination of a solid, massive end head element (19, 19', 39) which, at least in a portion thereof facing the opposite electrode, is of essentially at least part-spherical shape, melt-connected to at least one of: a terminal region of the end portion of the electrode shaft; the last turn or winding of said wrap winding adjacent said terminal region,

with

a fill including mercury, a metal halide, and a noble gas located within the discharge vessel (2, 21).

5,510,676

HIGH-PRESSURE SODIUM LAMP

Eduardus J. E. Cottaar, Santa Rosa, Calif., and Peter J. Vrugt, Turnhout, Belgium, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 7,216, Jan. 22, 1993, abandoned.

This application Apr. 3, 1995, Ser. No. 415,781

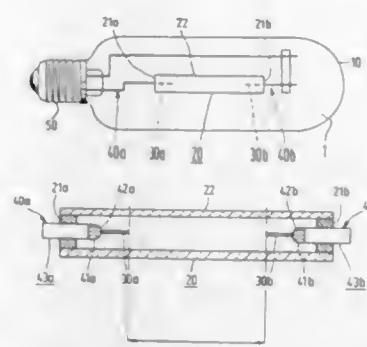
Claims priority, application European Pat. Off., Mar. 16, 1992, 92200739

Int. Cl.⁶ H01J 61/20

U.S. Cl. 313—639

4 Claims

1. A saturated high-pressure sodium lamp comprising a ceramic discharge vessel which is enclosed with intervening space by an outer bulb, which space is provided with a gas filling, a pair of electrodes arranged in the discharge vessel, a respective current supply conductor connected to each electrode and issuing from the discharge vessel at a respective end, between which electrodes a central portion of the discharge vessel extends with a volume V



and a length L, the discharge vessel being provided with a filling of an amalgam with a quantity m_{Na} of sodium by weight and a quantity m_{Hg} of mercury by weight, characterized in that; the gas in the space in the outer bulb comprises at least 70 mol.% nitrogen, and in that m_{Hg} , V and L satisfy the relation

$$0.8 \leq \frac{m_{Hg}}{V \times L} \leq 1.7$$

and in that the weight ratio between sodium and mercury in the amalgam satisfies the relation that

$$0.05 \leq \frac{m_{Na}}{m_{Hg}} \leq 0.25$$

in which m_g and m_{Na} are expressed in mg L in cm and V in cm^3 , and in that the mercury and sodium are present in a sufficient quantity such that mercury and sodium remain present in the liquid phase during lamp operation throughout lamp life.

5,510,677

METHOD FOR CORRECTING THE EFFECT OF TERRESTRIAL MAGNETISM ON ELECTRON BEAM TRACKING

Masaru Nagashima, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

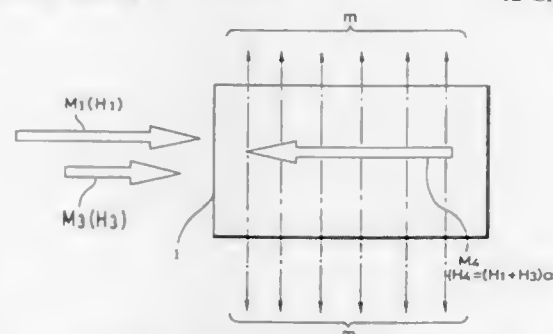
Filed Jul. 11, 1994, Ser. No. 273,074

Claims priority, application Japan, Jul. 9, 1993, 5-170342

Int. Cl.⁶ H05B 37/02; H01J 29/06

U.S. Cl. 315—8

12 Claims



1. A method for correcting the tracking of an electron beam comprising the steps of:

generating a supplemental magnetic field having a direction which is substantially the same as the direction of a terrestrial magnetism;

generating a reverse magnetic field, which has a magnitude and direction which is sufficient to substantially offset said terrestrial magnetism;

removing said supplemental magnetic field; and
generating an electron beam for illuminating a desired target on a CRT display.

5,510,678

DC TYPE GAS-DISCHARGE DISPLAY PANEL AND GAS-DISCHARGE DISPLAY APPARATUS WITH EMPLOYMENT OF THE SAME

Tetsuo Sakai, Yasushi Motoyama, and Mizumoto Ushirozawa, all of Tokyo, Japan, assignors to Nippon Hoso Kyokai, Tokyo, Japan

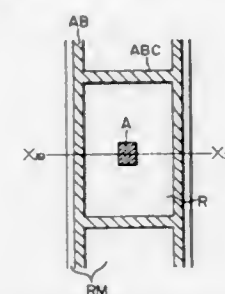
Division of Ser. No. 913,903, Jul. 16, 1992. This application Jan. 27, 1995, Ser. No. 379,969

Claims priority, application Japan, Jul. 18, 1991, 3-202135; Nov. 18, 1991, 3-301832; Nov. 21, 1991, 3-306247

Int. Cl.⁶ H01J 7/44

U.S. Cl. 315—58

14 Claims



1. A DC (direct current) type gas-discharge display panel comprising:

a plurality of discharge cells;

discharge current limiting means provided for each of the discharge cells, for limiting a discharge current of each of said discharge cells; and

a filling gas filled into each of said discharge cells, and having an inert gas mixture,

wherein a partial pressure ratio of said inert gas mixture to total pressure of said filling gas is at least 0.95;

said inert gas mixture is selected from the group consisting of (1) a first gas mixture consisting of a He gas and a Xe gas, (2), a second gas mixture consisting of a He gas, a Xe gas, and a Kr gas, (3) a third gas mixture consisting of a Ne gas and a Xe gas, and (4) a fourth gas mixture consisting of a Ne gas, a Xe gas and a Kr gas;

wherein assuming that the total pressure of said filling gas is "p" Torr, a partial pressure ratio of said Xe gas to the total pressure of said filling gas is "x" and also a partial pressure ratio of said Kr gas to the total pressure of said filling gas is "k";

when said inert gas mixture corresponds to said first gas mixture, a condition of $0.01 \leq x \leq 0.5$, a condition of $p \leq 600$, and another condition of $xp^2 \geq 1.4 \cdot 10^{11}$ are satisfied;

when said inert gas mixture corresponds to said second gas mixture, a condition of $0.01 \leq x \leq 0.5$, a condition of $0 < k \leq 0.5$, a condition of $p \leq 600$, and also another condition of $\{1 + 700xk^2 / (p/200)^4\} xp^2 \geq 1.4 \cdot 10^{11}$ are satisfied;

when said inert gas mixture corresponds to said third gas mixture, a condition of $0.01 \leq x \leq 0.5$, a condition of $p \leq 500$, and another condition of $xp^2 \geq 8.0 \cdot 10^9$; and also

when said inert gas mixture corresponds to said fourth gas mixture, a condition of $0.01 \leq x \leq 0.5$, a condition of $0 < k \leq 0.5$, a condition of $p \leq 500$, and a condition of $\max\{80xk(1-3.3x), 1\}xp^2 \geq 8.0 \cdot 10^9$ are satisfied wherein

said discharge current limiting means is a resistor;

said plurality of discharge cells are arranged in a matrix form along a line direction and a column direction;

said DC type gas-discharge display panel further comprises:

a plurality of first conductive lines elongated along the line direction, to which one of a desirable discharge controlling potential is applied, each of said first conductive line being commonly arranged in each of said discharge cells in the respective lines to constitute a first discharge electrode;

a plurality of second conductive lines elongated along said column direction, to which the other desirable discharge controlling potential is applied, two adjoining lines of said second conductive lines being commonly arranged with the respective discharge cells;

a plurality of second discharge electrodes provided at a substantially central position between said two adjoining lines of said second conductive lines, which corresponds to each of said discharge cells, for producing a discharge between said first discharge electrodes corresponding to said discharge cells; and

a plurality of resistive materials elongated along said column direction, each of said resistive materials being arranged in such a manner that said discharge cells at said column are bridged by each of said resistive materials, and being in contact with both of said two adjoining lines of said second conductive lines and said second electrode corresponding to said discharge cells at each column; and,

each of said resistors is formed by being terminated by said two adjoining lines of said second conductive lines and said second electrodes corresponding to said respective discharge cells.

5,510,679

REVERSE PHASE-CONTROLLED DIMMER WITH INTEGRAL POWER ADJUSTMENT MEANS

Nicholas F. Maiale, Jr., and Donald F. Hausman, both of Emmaus, Pa., assignors to Nutron Electronics Co., Inc., Coopersburg, Pa.

Division of Ser. No. 133,712, Dec. 16, 1987, Pat. No.

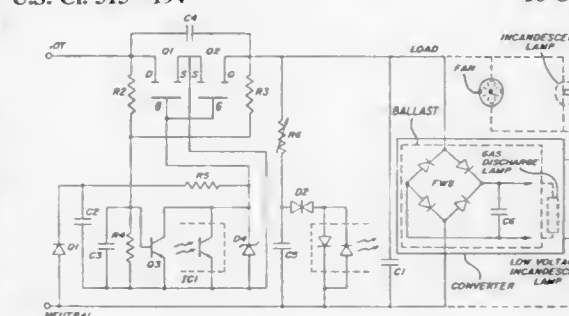
5,038,081. This application Apr. 25, 1991, Ser. No. 691,207

The portion of the term of this patent subsequent to Aug. 6, 2008, has been disclaimed.

Int. Cl.⁶ H05B 37/02

U.S. Cl. 315—194

16 Claims



1. A circuit for controlling power from an a.c. line to a load, wherein

said circuit comprises, in combination,

(a) switch means to turn power to said load on and off, and

(b) control means including integral means for adjusting the power delivered to said load so as to

(i) cause said switch means to turn on when line voltage is substantially equal to load voltage and

(ii) cause said switch means to turn off at a selected time later during each half cycle, said later time being selectively determined by the integral means for adjusting the power delivered to said load, and said load comprises:

(c) a rectifier to convert said a.c. power to d.c. and

(d) a filter capacitor in closed series relationship with the d.c. side of said rectifier.

5,510,680

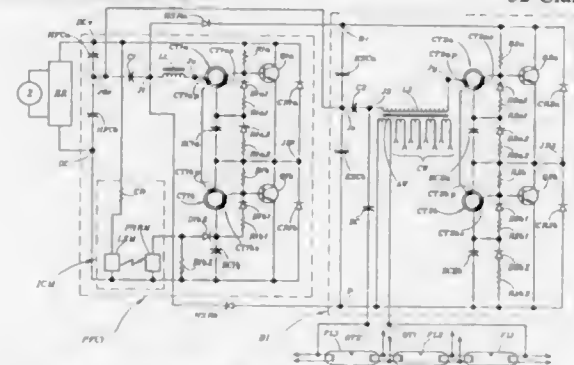
**ELECTRONIC BALLAST WITH SPECIAL VOLTAGE
WAVEFORMS**

Ole K. Nilssen, 408 Caesar Dr., Barrington, Ill. 60010

Continuation of Ser. No. 751,587, Aug. 22, 1991, which is a continuation of Ser. No. 546,267, Jun. 29, 1990, which is a continuation-in-part of Ser. No. 787,962, Oct. 16, 1985, Pat. No. 4,700,625, which is a continuation of Ser. No. 644,155, Aug. 27, 1984, abandoned, which is a continuation of Ser. No. 555,426, Nov. 23, 1983, abandoned, which is a continuation of Ser. No. 178,107, Aug. 14, 1980, abandoned, said Ser. No. 751,587 is a continuation-in-part of Ser. No. 717,860, Jun. 19, 1991, Pat. No. 5,166,578, which is a continuation of Ser. No. 636,246, Dec. 31, 1990, abandoned, which is a continuation of Ser. No. 787,692, Oct. 15, 1985, abandoned, which is a continuation of Ser. No. 644,155, Oct. 15, 0, which is a continuation of Ser. No. 555,426, Oct. 15, 0, which is a continuation of Ser. No. 178,107, Oct. 15, 0, said Ser. No. 555,426 is a continuation-in-part of Ser. No. 330,599, Dec. 14, 1981, Pat. No. 4,441,087, which is a continuation of Ser. No. 973,741, Dec. 28, 1978, abandoned, which is a continuation-in-part of Ser. No. 890,586, Mar. 20, 1978, Pat. No. 4,184,128, said Ser. No. 178,107 is a continuation-in-part of Ser. No. 23,849, Mar. 26, 1979, Pat. No. 4,279,911. This application Dec. 21, 1992, Ser. No. 993,628

U.S. Cl. 315—209 R

32 Claims



1. An arrangement comprising:
a rectifier device connected with a source of power line voltage and operative to provide a DC voltage at a set of DC terminals;
a power conditioner connected with the DC terminals and operative to provide a high-frequency output voltage at a high-frequency output; the high-frequency output voltage having a fundamental frequency substantially higher than that of the power line voltage; the power conditioner including an inverter circuit connected between the DC terminals and the high-frequency output; the inverter circuit being characterized by (i) including a pair of alternately switching transistors series-connected between the DC terminals, and (ii) producing an alternating inverter voltage of non-symmetrical waveshape across a pair of inverter terminals; the non-symmetrical waveshape having a complete cycle period including: (i) a positive part during which the magnitude of the inverter voltage remains at an approximately constant positive level; (ii) a negative part during which the magnitude of the inverter voltage remains at an approximately constant negative level; (iii) a negative-going part during which the magnitude of the inverter voltage changes rapidly from the positive level to the negative level; and (iv) a positive-going part during which the inverter voltage changes rapidly from the negative level to the positive level; the duration of the positive part being, at least at certain times, distinctly different from the duration of the negative part; the alternating inverter voltage having, irrespective of the duration of the negative part as a fraction of the duration of the positive part, an average magnitude equal to zero when averaged over the complete cycle period; and
a gas discharge lamp assembly operative to connect with the high-frequency output and to be powered by the high-frequency output voltage provided thereat.

5,510,681

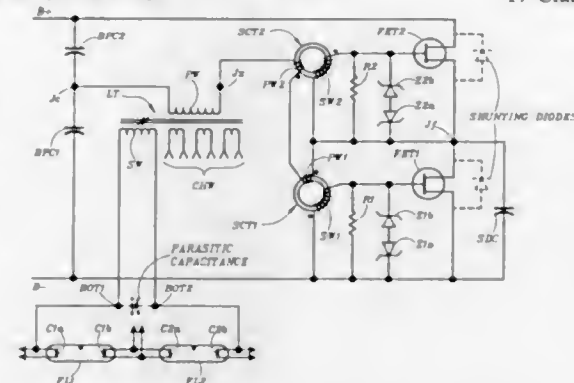
OPERATING CIRCUIT FOR GAS DISCHARGE LAMPS
Ole K. Nilssen, 408 Caesar Dr., Barrington, Ill. 60010

Continuation of Ser. No. 770,414, Oct. 3, 1991, which is a continuation-in-part of Ser. No. 663,566, Mar. 4, 1991, Pat. No. 5,185,560, and Ser. No. 768,105, Sep. 30, 1991, abandoned, said Ser. No. 768,105 is a continuation of Ser. No. 787,692, Oct. 15, 1985, abandoned, which is a continuation of Ser. No. 644,155, Aug. 27, 1984, which is a continuation of Ser. No. 555,426, Nov. 23, 1983, which is a continuation of Ser. No. 178,107, Aug. 14, 1980, abandoned, which is a continuation-in-part of Ser. No. 973,741, Dec. 28, 1978, abandoned, which is a continuation-in-part of Ser. No. 890,586, Mar. 20, 1978, Pat. No. 4,184,128. This application Apr. 15, 1994, Ser. No. 227,999

Int. Cl.⁶ H05B 37/02

U.S. Cl. 315-219

17 Claims



1. An arrangement comprising:
a source functional to provide an AC voltage between a first and a second source terminal; there being substantially no galvanic connection between the first source terminal and earth ground; there being substantial galvanic connection between the second source terminal and earth ground; the term galvanic connection being defined as a connection by way of which a unidirectional current can flow;
a capacitor having a first and a second capacitor terminal; the first capacitor terminal being connected with the second source terminal; and
gas discharge lamp having a first and a second lamp terminal disconnectably connected with the first source terminal and the second capacitor terminal, respectively;
whereby neither the first source terminal nor the second capacitor terminal exhibits galvanic connection with earth ground.

5,510,682
MAGNETISM-ERASING CIRCUIT FOR USE IN
CATHODE RAY TUBES USING A D-C POWER SUPPLY
Tae-Jung Park, Seoul, Rep. of Korea, assignor to Hyundai
Electronics Industries Co., Ltd., Kyonggi-Do, Rep. of Korea
Filed Dec. 22, 1994, Ser. No. 361,740

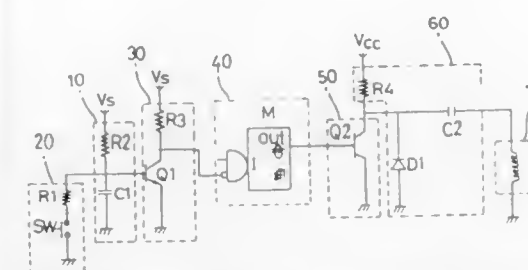
Claims priority, application Rep. of Korea, Dec. 27, 1993,
93-29758

Int. Cl.⁶ H01J 29/56

U.S. Cl. 315—370

8 Claims

1. A magnetism-erasing circuit for a cathode ray tube, the cathode ray tube comprising a magnetism-erasing coil, the magnetism-erasing circuit being powered by a D-C power source, the magnetism-erasing circuit comprising:
- a) trigger means for automatically generating a trigger signal when the D-C power source is applied to the magnetism-erasing circuit;
 - b) trigger detecting means for detecting the trigger signal from the automatic trigger means and for generating a first trigger output signal responsive thereto;
 - c) delay and second trigger means for generating a second trigger output signal that is time delayed by a predetermined time interval from the trigger signal;



- d) switch means which operates responsive to the second trigger output signal from the delay and second trigger means; and
e) means for controlling the driving of the magnetism-erasing coil, the magnetism-erasing coil driving control means being controlled by the switching means for causing current to flow through the magnetism-erasing coil for generating a magnetism-erasing magnetic field;
- wherein the trigger means, the trigger detecting means, the delay and second trigger means, the switch means, and the means for controlling the driving of the magnetism-erasing coil are each powered by the D-C power source.

5,510,683

MOTOR SPEED CONTROL DEVICE

Junichi Omi, Kawasaki; Hidenori Miyamoto, Urayasu; Tatsuo Amanuma, Ageo, and Toshiyuki Nakamura, Tokyo, all of, Japan, assignors to Nikon Corporation, Tokyo, Japan

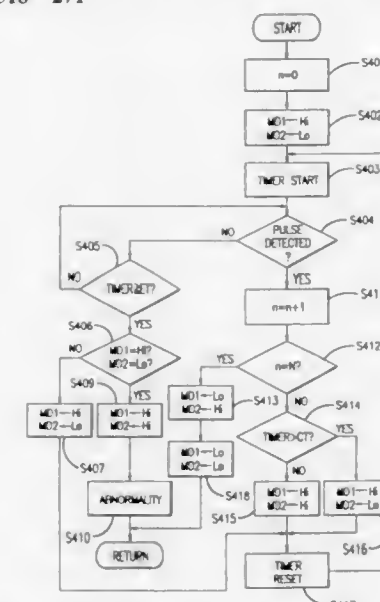
Filed Nov. 21, 1994, Ser. No. 345,421

Claims priority, application Japan, Nov. 29, 1993, 5-323186

Int. Cl.⁶ H02P 5/40; G03B 17/00

U.S. Cl. 318—271

20 Claims



1. A motor speed control device, comprising:
- a motor speed detector coupled with a motor to detect motor speed and generate a pulsed signal having pulse intervals that vary in accordance with motor speed; and
 - a controller coupled with the motor speed detector to receive the pulsed signal from the motor speed detector, the controller comprising:
 - a timing mechanism for measuring pulse intervals of the pulsed signal;
 - a comparator coupled with the timing mechanism to compare pulse intervals of the pulsed signal to a target value corresponding to a target motor speed, and to compare time elapsed since a most recent pulse to a maximum value corresponding to an abnormally low motor speed; and

a command generator coupled with the comparator to generate a drive command in accordance with the pulse-intervals-to-target-value comparison to drive the motor at the target speed, the command generator further generating an accelerate command in accordance with the elapsed-time-to-maximum-value comparison to accelerate the motor when the elapsed time is greater than or equal to the maximum value.

5,510,684

DRIVE CONTROL CIRCUIT FOR MOTOR

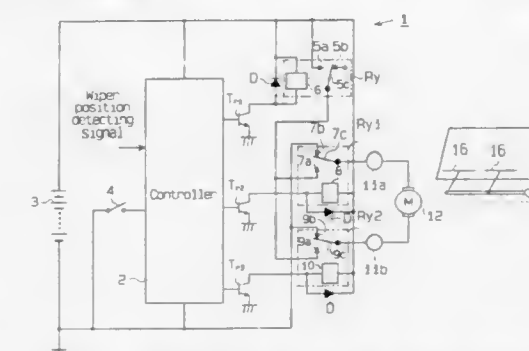
Hidehiro Moroi, Iwata, and Kazutomo Kakegawa, Shizuoka,
both of, Japan, assignors to Asmo Co., Ltd., Kosai, Japan
Continuation of Ser. No. 52,488, Apr. 23, 1993, abandoned.

This application Dec. 2, 1994, Ser. No. 349,492

Int. Cl.⁶ H02P 3/00

ay U.S. Cl. 318—282

5 Claims



1. A control circuit for driving a motor, said motor having a pair of terminals, said control circuit comprising:
- a power supply having a positive electrode and a negative electrode;
 - first and second relays each having a positive contact, a negative contact and a movable contact, said negative contact being connected to the negative electrode, said movable contact being connected to one of said terminals, wherein said first and second relays perform at least one of switching of the rotational direction of said motor and making the rotation of said motor stop according to switching the connecting arrangement of the movable contact to the positive contact and the negative contact;
 - power connecting means having a first contact, a second contact, and a movable contact, said first contact being connected to the positive electrode of the power supply, said second contact being located apart from the first contact and said movable contact being connected to the positive contacts of the relays and being selectively connected to the first contact and the second contact; and
 - control means for controlling the first relay, the second relay and the power connecting means to drive the motor, wherein said control means:
 - a) connects the movable contact of the power connecting means with the positive contact, connects the movable contact of the first relay with the positive contact, and connects the movable contact of the second relay with the negative contact in order to rotate the motor normally;
 - b) switches the movable contact of the power connecting means to connect with the second contact thereof;
 - c) then switches the movable contact of the first relay to connect the negative contact thereof in order to generate electromotive force by means of inertia of the motor to make the motor stop;
 - d) switches the movable contact of the second relay to connect with the positive contact thereof in order to change the rotational direction of the motor from the normal direction to the reverse direction; and

determined third harmonic component λ_3 using a predetermined function f_{λ} such that

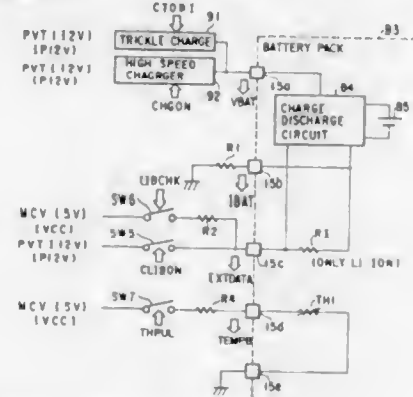
$$D_{\text{min}} = f_{\lambda}(D_{\lambda})$$

said function f_{λ} being in a form suitable for use with said multi-phase alternating current machine.

5,510,690
BATTERY PACK, BATTERY DISCRIMINATION CONTROL APPARATUS AND METHOD THEREFOR
Yoichiro Tanaka, and Hiroyuki Tsuji, both of Tokyo, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Aug. 31, 1993, Ser. No. 113,908
Claims priority, application Japan, Aug. 31, 1992, 4-257319; Nov. 30, 1992, 4-320736

U.S. Cl. 320—2 Int. Cl. H02J 7/00

29 Claims

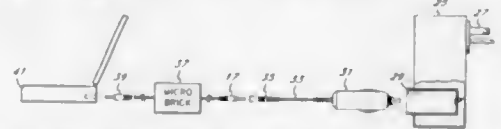


1. A computer-system, comprising:
 - a data processing apparatus main body;
 - a battery pack housing which is mounted in said data processing apparatus main body using a first type of battery as a standard battery pack and has the same shape, mounting mechanism, and connection terminals as those of said standard battery pack;
 - a battery main body mounted in said battery pack housing and comprising a second type of battery having charge/discharge characteristics different from those of said first type of battery; and
 - a charge/discharge circuit, arranged in only said battery pack housing of said second type of battery, for controlling the charge/discharge of said battery main body of said second type.

5,510,691
MODULAR POWER SUPPLY AND MODULAR INTERCONNECT SYSTEM FOR PORTABLE ELECTRONIC EQUIPMENT
Dennis Palatov, Lake Forest, Calif., assignor to Xtend Micro Products, Inc., Irvine, Calif.
Filed Apr. 13, 1994, Ser. No. 227,120
Int. Cl. H01M 10/46

U.S. Cl. 320—2

4 Claims



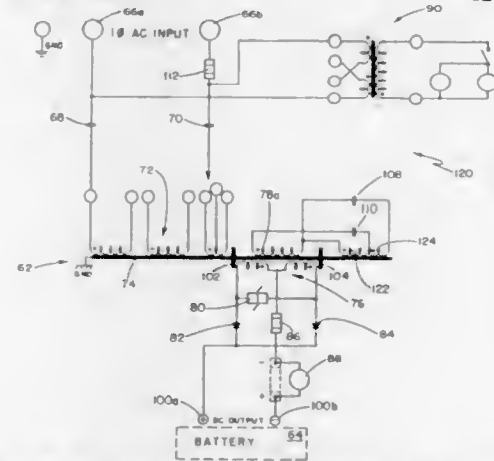
1. A modular power supply system comprising:
 - a personal computer having a power input for accepting power at a pre-specified voltage;
 - a DC-DC converter having a 12 volt nominal input and an output at said pre-specified voltage and having a first connector

for associated with said output connectable to said personal computer and a second connector associated with said 12 volt nominal input;
an interconnect cord set further comprising:
a cigarette lighter-type plug;
a third connector connected to said cigarette lighter-type plug and connectable to said second connector of said DC-DC converter.

5,510,692
FERRORESONANT BATTERY CHARGER WITH CONSTANT CURRENT FINISH RATE
George Kasper, Schaumburg, Ill., assignor to LaMarche Manufacturing Company, Des Plaines, Ill.
Filed Oct. 22, 1993, Ser. No. 141,135
Int. Cl. H01M 10/46; G05F 3/06

U.S. Cl. 320—23

12 Claims



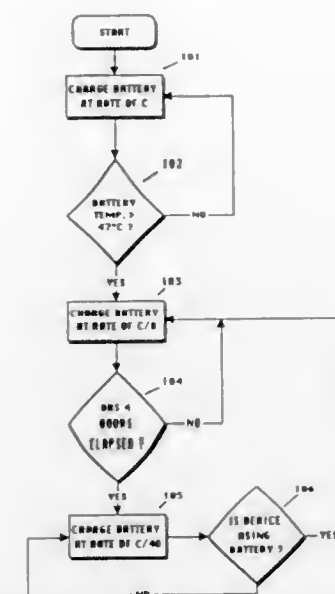
6. A charger for converting an AC input to a DC output for charging a storage battery, wherein said DC output goes from a high initial current to a low final current as said battery approaches full charge, said charger comprising:
 - a primary winding in a transformer for receiving an AC input;
 - a secondary winding in said transformer magnetically coupled to said primary winding and responsive to a current therein for providing an AC output;
 - a resonating winding in said transformer magnetically coupled to said primary and secondary windings for changing the voltage of said DC output in regulating the current of said output between said high initial current and said low final current;
 - tuned circuit means including a regulating winding magnetically coupled to said secondary winding and a tuned reactor, wherein said regulating winding and said tuned reactor are in circuit with said resonating winding, for regulating the current of said output at said low final current; and
 - rectifying means coupled to said secondary winding for converting said AC output to a DC output for charging a storage battery.

5,510,693
METHOD FOR BATTERY CHARGING
David J. Theohald, Algonquin, Ill., assignor to Motorola, Inc., Schaumburg, Ill.
Continuation of Ser. No. 909,883, Jul. 7, 1992, abandoned.
This application Aug. 18, 1994, Ser. No. 292,553
Int. Cl. H01M 10/44

U.S. Cl. 320—24

2 Claims

1. A method for charging a battery in a battery charger having at least three charging rates, the method comprising the steps of:
 - charging the battery at a charge rate having a value of C until the battery temperature reaches a predetermined temperature;

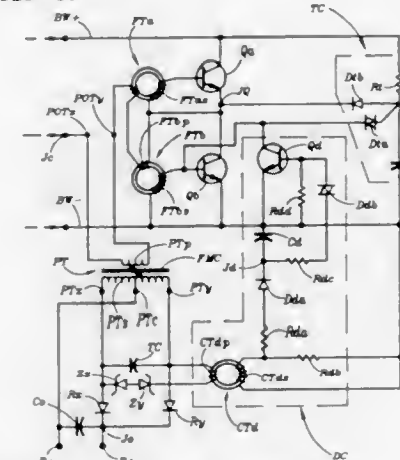


if the predetermined temperature has been reached, charging the battery at a charge rate having a value of C/8 for a predetermined time;
after the predetermined time, charging the battery at a charge rate having a value of C/40;
monitoring a battery voltage signal of the battery;
determining a slope of the battery voltage signal; and
if the drop in slope of the battery voltage signal is greater than a predetermined value, charging the battery at the charge rate having a value of C/8 for the predetermined time.

5,510,694
STORAGE BATTERY WITH BUILT-IN CHARGER AND CONTROLS
Ole K. Nilssen, Caesar Dr., Rte. 5, Barrington, Ill. 60010
Continuation of Ser. No. 802,237, Nov. 27, 1985, abandoned.
This application Dec. 23, 1991, Ser. No. 811,922
Int. Cl. H02J 7/10

U.S. Cl. 320—39

30 Claims



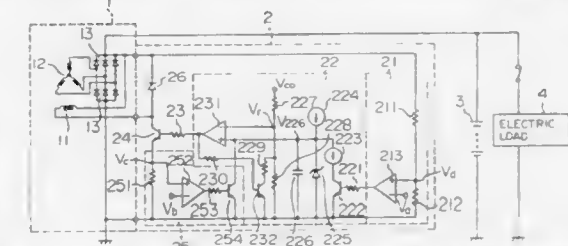
1. A storage battery product comprising:
 - a storage battery having a pair of battery electrodes;
 - a pair of output terminals;
 - first means connected between the battery electrodes and the output terminals and operative controllably and alternatively to permit and to prevent extraction of charge from the storage battery by way of the output terminals;
 - a pair of input terminals;
 - second means connected in circuit between the input terminals and the battery electrodes, this second means being operative

to permit the charging of the storage battery from the input electrodes but to prevent the extraction of charge therefrom; and
housing means operative to hold together the storage battery, the output terminals, the first means, the input terminals, and the second means, thereby to render the storage battery product a mechanically integral and substantially rigid entity.

5,510,695
POWER GENERATION CONTROL SYSTEM FOR GENERATOR
Kouji Tanaka, Anjo, and Tooru Aoyama, Okazaki, both of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan
Filed Dec. 22, 1993, Ser. No. 171,456
Claims priority, application Japan, Dec. 24, 1992, 4-344284
Int. Cl. H02P 9/10

U.S. Cl. 322—25

10 Claims



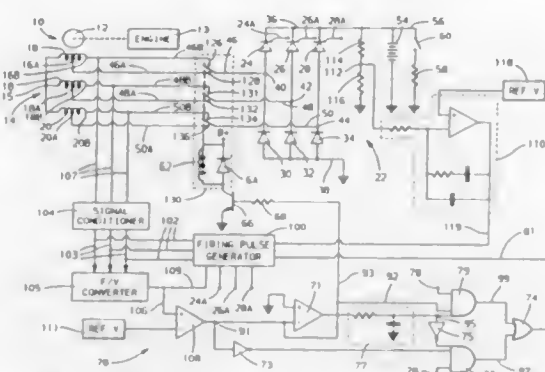
6. A power generation control system for a generator comprising:
 - switching means connected to an exciting coil of a generator provided with said exciting coil and an armature coil, said switching means one of a supply and a cut-off of an exciting current to said exciting coil;
 - voltage control means comprising:
 - means for detecting a generation voltage generated at said armature coil,
 - a smoothing capacitor to smooth said detected generation voltage by charging and discharging said smoothing capacitor in accordance with said detected generation voltage, and
 - a first comparator to compare a terminal voltage of said smoothing capacitor and a first predetermined voltage, said switching means being opened and closed in accordance with an output of said first comparator, to thereby control said generation voltage to become a target value; and
 - exciting current control means for detecting said exciting current by a current detecting element, for performing one of charging and discharging said smoothing capacitor when said detected exciting current exceeds a predetermined current value to thereby cause said switching means to cut-off said exciting current to said exciting coil, said exciting current control means having preferential control of said switching means over said voltage control means.

5,510,696
ZERO CURRENT SWITCHING BETWEEN WINDING SETS IN A PERMANENT MAGNET ALTERNATOR HAVING A SPLIT WINDING STATOR
Malakondaiah Naidu, Troy, and James C. Erskine, Jr., Birmingham, both of Mich., assignors to General Motors Corporation, Detroit, Mich.
Filed Nov. 3, 1994, Ser. No. 333,662
Int. Cl. H02P 9/00

U.S. Cl. 322—29

8 Claims

1. In a vehicle electrical system having a permanent magnet alternating current generator, said generator having a rotor and a polyphase output winding comprised of first and second winding sets, said first winding set having a larger number of turns per phase than said second winding set, each of said winding sets having AC output voltage terminals, an apparatus for selectively



rectifying the AC output voltage from one of said first and second winding sets comprising:

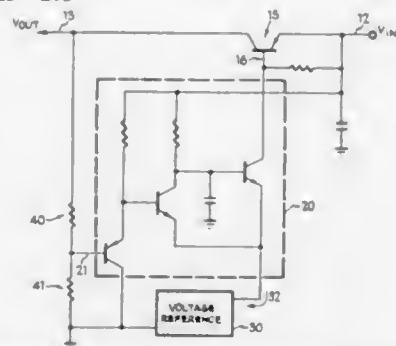
a full-wave rectifier bridge having a DC output voltage and a plurality of AC input terminals corresponding to the number of phases of said generator;

steering means operative in a first mode to couple said plurality of AC input terminals to the first winding set and decouple said plurality of AC input terminals from the second winding set and a second mode to couple said plurality of AC input terminals to the second winding set and decouple said plurality of AC input terminals from the first winding set;

selection means for selecting said first mode when said rotor speed is below a predetermined threshold speed and said second mode when said rotor speed is above said threshold speed.

5,510,697
LOW DROP-OUT VOLTAGE REGULATOR APPARATUS
Michael W. Dormer, Basingstoke, Great Britain, assignor to VTECH Communications, Inc., Hong Kong
Filed Jun. 1, 1994, Ser. No. 252,344
Claims priority, application United Kingdom, Jun. 2, 1993, 9311300

Int. Cl.⁶ G05F 1/40; 1/44
U.S. Cl. 323—273 11 Claims



1. A voltage regulator apparatus for regulating an unregulated voltage supply to in turn provide a regulated voltage, said voltage regulator apparatus comprising:

a pass device for passing a portion of said unregulated voltage supply through to said regulated voltage, said pass device having a control port;

DC amplification means for providing a large closed loop gain operably connected between said regulated voltage output and said control port, said portion of said unregulated voltage supply being passed to said regulated voltage output being a function of the output of said DC amplification means, as applied to said control port; and

voltage reference means operably connected to said DC amplification means for providing a reference voltage to said DC amplification means;

said DC amplification means, voltage reference means, and control port being driven by the same operating current from

the unregulated voltage supply whereby when the unregulated voltage falls below the desired regulated voltage said voltage reference means sharply shuts off, in turn, shutting off said DC amplification means and said pass device.

5,510,698
MARKOV CHAIN CONTROLLED RANDOM MODULATION OF SWITCHING SIGNALS IN POWER CONVERTERS

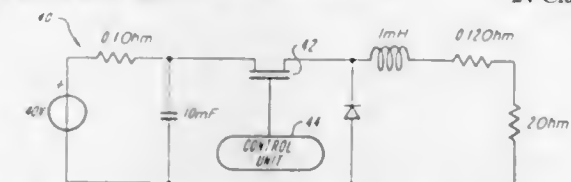
Aleksandar M. Stankovic, Cambridge; George C. Verghese, Newton, and David J. Perreault, Brookline, all of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Aug. 5, 1993, Ser. No. 102,629

Int. Cl.⁶ G05F 1/44

U.S. Cl. 323—282

24 Claims



1. In a power converter having an energy storage device which receives an input power from a source and provides an output power to a load, said converter including switching means for coupling said input power source to said energy storage device or coupling said storage device to said load in response to receiving a sequence of control signals generated from a control signal generator, said control signal generator comprising:

switching signal means for providing a nominal switching signal sequence which achieves steady state between said input power to said converter and said output power supplied to said load;

modulating means for modulating said nominal switching signal sequence with a source of non-deterministic signals to produce a time modulated switching signal sequence; and

control means for controlling said modulation means in response to determining the previous modifications performed to said nominal switching signal sequence to maintain a predetermined range of deviation between said time modulated switching signal sequence and said nominal switching signal sequence.

5,510,699
VOLTAGE REGULATOR
Ulrich Theus, Gundelfingen, and Mario Motz, Endingen, both of Germany, assignors to Deutsche ITT Industries GmbH, Germany

Filed May 24, 1995, Ser. No. 449,494

Claims priority, application Germany, May 31, 1994, 44 18 988.5; Sep. 3, 1994, 44 31 466.3

Int. Cl.⁶ C05F 3/04; 3/16

U.S. Cl. 323—312

21 Claims

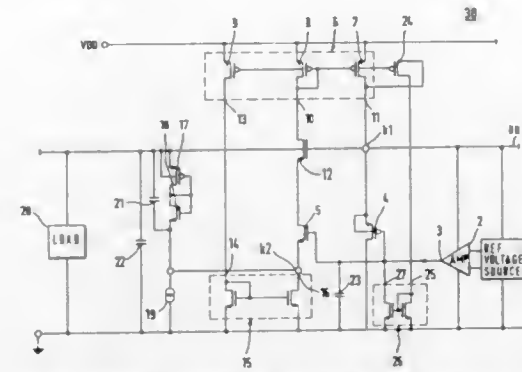
1. A voltage regulator comprising:

a first transistor of a first conductivity type, having a first electrode, a second electrode and a control electrode, said second electrode coupled to a first supply potential;

a second transistor of a second conductivity type, having a first electrode, a second electrode and a control electrode, said first electrode coupled to a fixed potential;

an output line coupled to said first electrode of said first transistor;

an amplifying means for providing a control output signal in response to a potential of said output line and a voltage reference, said control electrode of said first transistor and said control electrode of said second transistor adapted to receive said control output signal;



a current difference means for obtaining a difference of current through said first transistor and current through said second transistor, said means coupled to said second electrode of said second transistor and to said first electrode of said first transistor.

5,510,700
APPARATUS AND METHOD FOR IDENTIFYING THE PHASE OF A THREE PHASE POWER LINE AT A REMOTE LOCATION

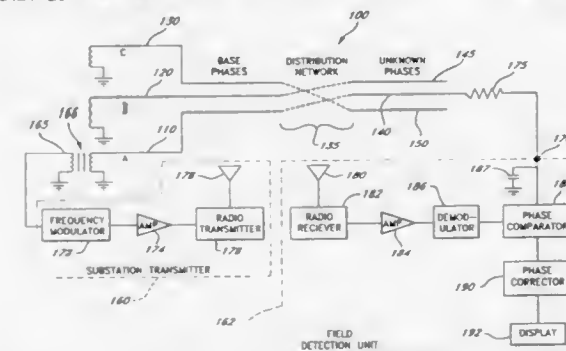
Lawrence A. Pomatto, Santa Ana, Calif., assignor to Systems Analysis and Integration, Inc., Orange, Calif.

Filed Oct. 14, 1993, Ser. No. 136,453

Int. Cl.⁶ G01R 19/00; 13/02; H04M 1/24; 3/08

U.S. Cl. 324—66

8 Claims



1. A phase identification system for determining the phase of a power signal in an unidentified remote conductor coupled to, but remote from a plurality of power station conductors at a source power station, the plurality of power station conductors carrying a plurality of alternating current voltage signals having known phase relationships, said system comprising:

a power station transmitter coupled to a first conductor of said plurality of power station conductors, such that said transmitter receives one of said alternating signals carried on said first conductor and transmits said alternating signal as known phase reference signal; and

a field detector coupled at a remote location to an unidentified one of said plurality of power station conductors, said field detector comprising:

a receiver which receives and decodes the known phase reference signal;

a phase comparator coupled at a remote location to an unidentified one of said plurality of power station conductors and coupled to said receiver, wherein said comparator compares said reference signal to an unknown signal on said unidentified one of said plurality of power station conductors to obtain a phase difference between said reference signal and said unknown signal;

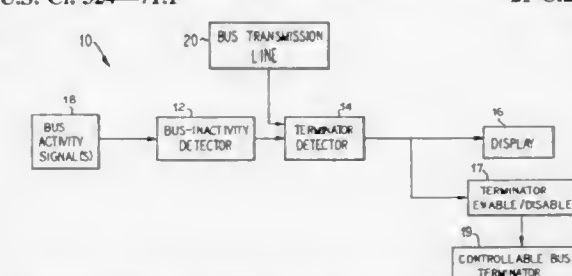
a phase corrector coupled to said phase comparator, said phase corrector responsive to a calibration request to ascertain a phase correction value to compensate for phase shift

introduced by the power station transmitter and the field detector; and an indicator which identifies said unknown signal.

5,510,701
INACTIVE STATE TERMINATION TESTER
Francis M. Samela, Lombard, and Joseph R. Llorens, Winfield, both of Ill., assignors to Methode Electronics, Inc., Chicago, Ill.
Continuation-in-part of Ser. No. 285,970, Aug. 4, 1994. This application Nov. 3, 1994, Ser. No. 333,777

Int. Cl.⁶ G01R 27/00
U.S. Cl. 324—71.1

21 Claims



19. A method for determining the number of terminators connected to a bus, said method comprising the steps of:

- a) detecting bus inactivity;
- b) determining the number of terminators connected to said bus during bus inactivity; and
- c) providing a signal for controllable bus terminator enablement or disablement, respectively, depending on if there are not enough or too many terminators determined to be connected to said bus.

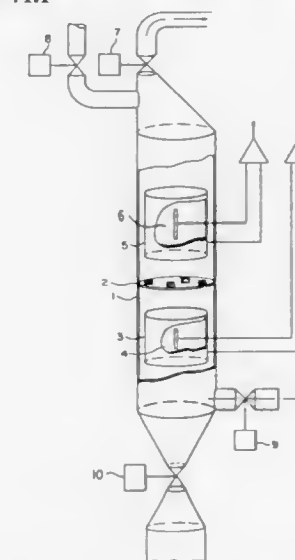
5,510,702
METHOD AND APPARATUS FOR SIMULTANEOUS MEASURING THE STREAMING POTENTIAL OF A FIBER SUSPENSION AND A FILTRATE THEREOF
Rune Eriksson, Mariestad, Sweden, assignor to AB Innomatic, Mariestad, Sweden

Filed Nov. 30, 1994, Ser. No. 352,027

Claims priority, application Sweden, Dec. 2, 1993, 9304006
Int. Cl.⁶ G01N 27/00; 11/02

U.S. Cl. 324—71.1

5 Claims



1. An apparatus for simultaneously measuring the streaming potential of a fiber suspension and a filtrate thereof, comprising a

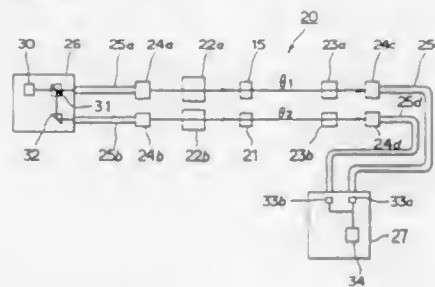
container having an inlet and an outlet for flow of fiber suspension therethrough, a filter screen dividing the container into an upstream compartment and a downstream compartment, a first electrode pair disposed in the upstream compartment comprising a first generally cylindrical outer electrode configured for flow of fiber suspension therethrough and a first inner electrode centrally disposed within the first outer electrode, a second electrode pair disposed in the downstream compartment comprising a second generally cylindrical outer electrode configured for flow of fiber suspension therethrough and a second inner electrode centrally disposed within the second outer electrode, a first differential amplifier connected to the first outer electrode and the first inner electrode for measuring potential difference therebetween, a second differential amplifier connected to the second outer electrode and the second inner electrode for measuring potential difference therebetween, a micro-processor connected to outputs from the first and second differential amplifiers, a valve disposed at the outlet for venting to the atmosphere and means for opening and closing the valve.

5,510,703 OPTICAL SENSOR

Masayuki Nakamoto, Yokohama, Japan, assignor to Kahushiki Kaisha Toshiba, Kawasaki, Japan
Division of Ser. No. 993,064, Dec. 18, 1992, Pat. No. 5,451,864. This application Jun. 6, 1995, Ser. No. 473,778
Claims priority, application Japan, Dec. 19, 1991, 3-337109
Int. Cl.⁶ G01R 33/06

U.S. Cl. 324-96

3 Claims



1. An optical sensor for measuring a magnetic field intensity and current intensity in a magnetic field ranging from a low-magnetic field to a high-magnetic field, the optical sensor comprising:
a light irradiation means for irradiating a linearly polarized light having a wavelength of 740 to 890 nm;
a first magneto-optical element for low-magnetic field use which has a composition of $Y_{3-x}Tb_xFe_5O_{12}$ ($0.3 \leq x \leq 0.8$) for Faraday rotating the linearly polarized light to output a first rotated polarized light;
a second magneto-optical element for high-magnetic field use which has a higher magnetic field for saturation than that of the first magneto-optical element for Faraday rotating the linearly polarized light to output a second rotated polarized light, which is arranged in parallel to the first magneto-optical element; and
detecting means for modulating in intensities of the first and second rotated polarized lights which have been respectively Faraday rotated by the first and second magneto-optical elements and for detecting each of the light outputs of the rotated polarized lights from the first and second magneto-optical elements.

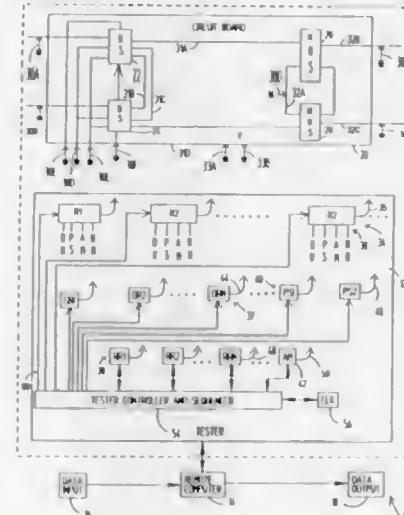
5,510,704 POWERED TESTING OF MIXED CONVENTIONAL/ BOUNDARY-SCAN LOGIC

Kenneth P. Parker, and Kenneth E. Posse, both of Fort Collins, Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Division of Ser. No. 156,204, Nov. 22, 1993, Pat. No. 5,448,166, which is a continuation-in-part of Ser. No. 88,279, Jul. 6, 1993, Pat. No. 5,387,862, which is a continuation of Ser. No. 817,014, Jan. 3, 1992, Pat. No. 5,260,649. This application May 19, 1995, Ser. No. 444,473
Int. Cl.⁶ G01R 31/28

U.S. Cl. 324-158.1

10 Claims



1. A method of testing a circuit board having
(i) a plurality of non-boundary-scan (NBS) devices, each of the NBS devices having a number of device pins for electrically coupling to the circuit board;
(ii) a plurality of boundary-scan (BS) devices, each BS device having a number device pins for electrically coupling to the circuit board, a number of receiver circuits coupled to at least some of the device pins, and a number of driver circuits coupled to at least some of the device pins, wherein the receiver and driver circuits are provided on the plurality of BS devices, wherein each of the receiver circuits and driver circuits are coupled to provide a serial data stream to a data processor;
(iii) a number of BS nodes wherein each BS node is coupled to both a receiver circuit and a driver circuit, and
(iv) a number of NBS nodes that are nodes that are not BS nodes, the method comprising the steps of:
providing position data for each of the device pins of the BS and NBS devices on the circuit board to the tester;
grouping the NBS nodes into sets of nodes, each set of nodes comprising all of the NBS nodes that are within a predetermined distance of one of the BS nodes;
applying a first voltage to the circuit using the BS driver circuits;
applying a second voltage to at least one NBS node;
causing the receiver circuits to capture voltages on the device pins that the receiver circuits are coupled to;
analyzing the captured voltages using the data processor to determine faulty pins and nodes; and
generating a message including returning the position data for device pins and nodes that are determined to be faulty during the analyzing step.

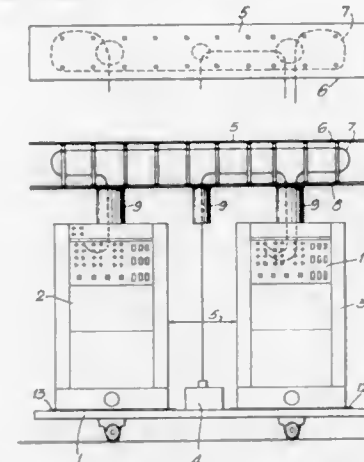
5,510,705 ELECTRICAL TEST ARRANGEMENT AND APPARATUS

Michael D. Langrish, Coventry, England, assignor to GPT Limited, United Kingdom
Continuation of Ser. No. 119,287, Sep. 9, 1993, abandoned.
This application Jun. 28, 1995, Ser. No. 495,870
Claims priority, application United Kingdom, Sep. 28, 1992, 9220415; Feb. 17, 1993, 9303139

Int. Cl.⁶ G01R 33/00

U.S. Cl. 324-158.1

7 Claims



1. Apparatus for use in testing the electromagnetic compatibility (EMC) of an electrical unit which is connected, during normal operation, to electrical equipment by equipment cabling arranged in a predetermined cabling configuration, said apparatus comprising: a cable tray for positioning, during testing, adjacent said electrical unit, said cable tray having test cabling arranged in said predetermined cabling configuration thereupon, said test cabling being connected to said electrical unit during testing to reproduce the electromagnetic characteristics of the equipment cabling.

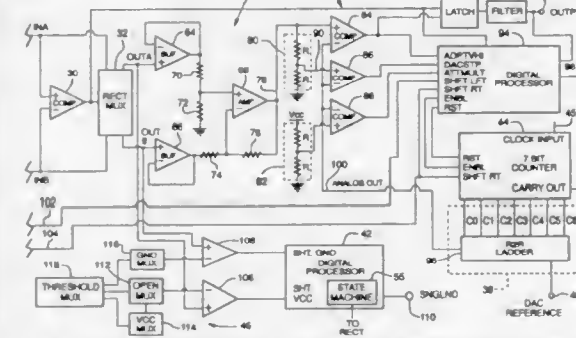
5,510,706 DIFFERENTIAL TO SINGLE-ENDED CONVERSION CIRCUIT FOR A MAGNETIC WHEEL SPEED SENSOR

Brian K. Good, Greentown, Ind., assignor to Delco Electronics Corporation, Kokomo, Ind.

Filed Feb. 22, 1994, Ser. No. 200,027
Int. Cl.⁶ G01F 3/48; H03F 3/66

U.S. Cl. 324-166

13 Claims



1. A conversion circuit for converting a differential voltage that is produced by a magnetic sensor in response to rotation of a wheel to a single-ended voltage which provides rotational speed information about the wheel, comprising:
an input circuit including first and second input lines for receiving said differential voltage;
rectification means coupled to said first and second input lines and having first and second rectified outputs, said rectification means providing full wave rectification of said differential voltage on said first and second input lines respectively as said first and second rectified outputs;

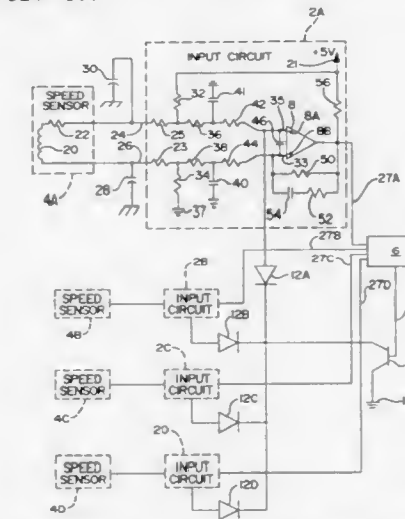
first buffer means coupled to the first first rectified output and providing a first buffered output;
second buffer means coupled to the second rectified output and providing a second buffered output;
a difference amplifier having a positive input coupled to the first buffered output of said first buffer means and a negative input coupled to the second buffered output of said second buffer means and having an output for providing a voltage difference between said positive and negative inputs as a single-ended voltage output; and
an output circuit for converting said single-ended voltage to a series of voltage pulses which provide rotational speed information about said wheel.

5,510,707 WHEEL SPEED SENSOR INPUT CIRCUIT WITH SENSOR STATUS DETECTION EMPLOYING A RESISTOR BIASED COMPENSATOR

LaVerne A. Caron, Kalamazoo, Mich., assignor to Eaton Corporation, Cleveland, Ohio
Continuation-in-part of Ser. No. 942,905, Sep. 10, 1992, abandoned. This application Aug. 1, 1994, Ser. No. 283,967
Int. Cl.⁶ G01P 3/48; G01B 7/14; G01R 31/06

U.S. Cl. 324-166

3 Claims



1. A vehicle wheel speed detection circuit comprising: speed sensing means for generating an electrical speed signal indicative of a speed of rotation, said speed sensing means having a first output connector and a second output connector; comparator means having a first input electrically connected to said first output connector and a second input electrically connected to said second output connector for receiving said speed signal, said comparator means amplifying a difference between said signal first and second inputs and generating a comparator output signal on a comparator output line based thereon;
a nonswitchable resistor electrically connected between said comparator output line and said first input where a resistance value of said resistor is substantially greater than a resistance value of said speed sensing means as measured between said first and second output connectors; and
switching means for electrically connecting said second input to an electrical ground when in a test mode where said comparator means drives said comparator output signal to a high state when said speed sensing means is operational and said comparator means drives said comparator output signal to a low state when said speed sensing means is non-operational.

5,510,708

VARIABLE RELUCTANCE ROTATION SENSOR WITH
LEAKAGE MAGNETIC FLUX SENSING

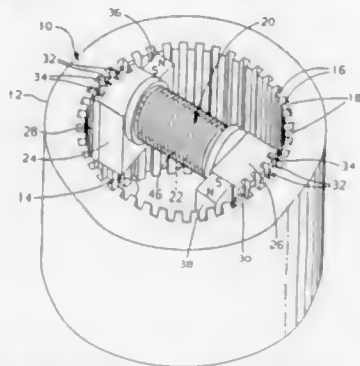
Takeshi Shirai, Pendleton, Ind.; Andrzej M. Pawlak, Troy, Mich., and Alan H. Green, Anderson, Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Oct. 20, 1994, Ser. No. 326,616

Int. Cl. G01P 3/488; B60T 8/32

U.S. Cl. 324-174

4 Claims



4. The variable reluctance rotation sensor according to claim 3, further comprising an additional pair of permanent magnets, each one of the additional permanent magnets having a pair of poles with a similar one of its pair of poles as the first pair of permanent magnets adjacent different ones of the first and second end portions, wherein each one of the additional permanent magnets are oriented to have an opposing polarity with the remaining one of the additional permanent magnets, the additional pair of permanent magnets generating similar main and leakage magnetic flux loops additive to the respective main and leakage flux loops of the first pair of permanent magnets for amplifying the output voltage signal.

5,510,709

EDDY CURRENT SURFACE INSPECTION PROBE FOR
AIRCRAFT FASTENER INSPECTION, AND INSPECTION
METHOD

Donna C. Hurley, Albany; Robert S. Gilmore, Burnt Hills, and John D. Young, Rexford, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

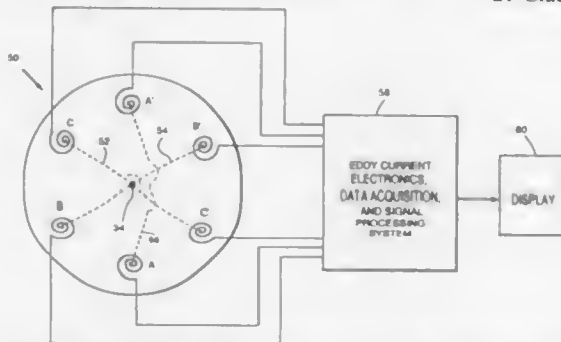
Continuation of Ser. No. 127,269, Sep. 27, 1993, abandoned.

This application Apr. 19, 1995, Ser. No. 423,489

Int. Cl. G01N 27/82

U.S. Cl. 324-242

21 Claims



1. An eddy current surface inspection probe for detecting flaws in a structure having a feature which is nominally circularly symmetrical about a feature axis, said probe comprising:

- a drive coil centered on a probe axis arranged to coincide with the feature axis during inspection for inducing an eddy current in the structure;
- an even plurality of eddy current sense elements for producing signals in response to the eddy current, said sense elements being arranged in at least one circle centered on said probe

axis and organized as a plurality of associated pairs of sense elements located at diametrically opposed positions on said at least one circle; and

- a plurality of interconnecting means, each associated with one of said pairs, the interconnecting means associated with a given pair comprising means for electrically interconnecting the sense elements of the given pair such that the output signal of one sense element of the given pair is subtracted from the output signal of the other sense element thereof to produce a data signal, said interconnecting means being electrically isolated from one another to cause each of said pairs to produce a separate data signal.

5,510,710

MAGNETIC RESONANCE IMAGING WITH COMBINED
SINGLE POINT AND BACK PROJECTION DATA
TAKING METHOD

Arno Nauert, Erlenbach, Germany, assignor to Bruker Medizintechnik GmbH, Germany

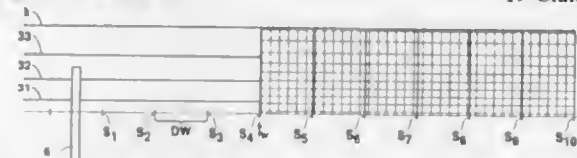
Filed Dec. 8, 1994, Ser. No. 351,661

Claims priority, application Germany, Dec. 16, 1993, 43 43 022.8

Int. Cl. G01V 3/00:3/14

U.S. Cl. 324-307

19 Claims



1. A magnetic resonance method for imaging an object comprising the steps of:

- a) locating the object in a homogeneous base magnetic field;
- b) acquiring, using a back projection method $n \gg 1$ different projections with different directions $\phi(i)$ by carrying out the following steps ba) to bd) n times with $i=1$ to n :
 - ba) applying a gradient magnetic field $G\phi(i)$ having a predetermined direction $\phi(i)$, different for every i , and a strength $G(i)$ for acquiring a projection $p(i)$;
 - bb) irradiating a high frequency excitation pulse into the object;
 - bc) waiting a time t_w ;
 - bd) measuring, at a predetermined sampling rate, $(j-m) \gg 1$ measuring points $S_{m+1}(i)$ to $S_j(i)$, which are sequential in time, of a nuclear resonance signal from the object, the signal dephasing under the influence of the gradient magnetic field $G\phi(i)$, the measuring points $S_{m+1}(i)$ to $S_j(i)$ corresponding to $j-m$ points in k -space lying along a vector extending from a k -space origin in the direction $\phi(i)$ of the gradient magnetic field $G\phi(i)$, whereby the separation of each of the $j-m$ points $S_{m+1}(i)$ to $S_j(i)$ in k -space from the k -space origin is given by a product of the strength $G(i)$ of the gradient magnetic field $G\phi(i)$ and a time interval between the high frequency excitation pulse and the sampling time of the corresponding measuring points $S_{m+1}(i)$ to $S_j(i)$;
- c) acquiring, using a single point imaging method (S by PI), $n' \leq n*m$ additional measuring points $S(i')$ by carrying out the following steps ca) to cd) n' times with $i'=1$ to n' :
 - ca) applying a gradient magnetic field $G\phi(i')$ having a predetermined direction $\phi(i')$ and a strength $G(i')$ for acquiring only one measuring point $S(i')$;
 - cb) irradiating the high frequency excitation pulse into the object;
 - cc) waiting time t_w ;
 - cd) measuring only one measuring point $S(i')$ of a nuclear resonance signal from the object, the signal dephasing under the influence of the gradient magnetic field $G\phi(i')$, the measuring point $S(i')$ corresponding to a point in k -space lying along a vector extending from a k -space origin in the direction $\phi(i')$ of the gradient magnetic field $G\phi(i')$, whereby the separation of the point $S(i')$ in k -space

- d) reconstructing an image of the object from a total number of $n*(j-m)$ measuring points $S_{m+1}(i)$ to $S_j(i)$ plus n' measuring points $S(i')$ in k -space.

5,510,711

DIGITAL COMBINATION AND CORRECTION OF
QUADRATURE MAGNETIC RESONANCE RECEIVER
COILS

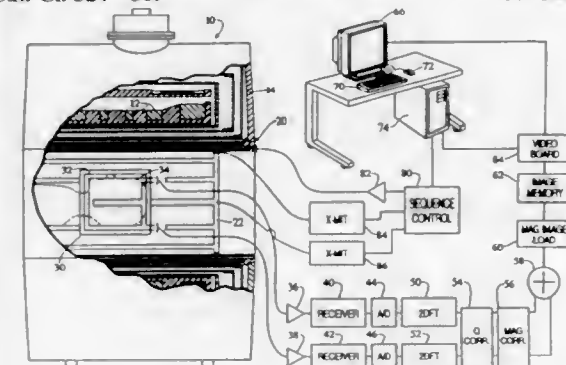
David A. Molyneux, Willowick, and Haiying Llu, Euclid, both of Ohio, assignors to Picker International, Inc., Highland Hts., Ohio

Filed Aug. 5, 1994, Ser. No. 286,758

Int. Cl. G01R 33/48

U.S. Cl. 324-309

17 Claims



1. In a magnetic resonance method in which a subject is disposed in a temporally constant magnetic field and magnetic resonance signals from the subject are received by a receive coil assembly which has a first coil and an orthogonal coil which lack a true quadrature relationship over a field of view of the receive coil assembly, the improvement comprising:

- separately receiving resonance signals from the first coil and the orthogonal coil of the receive coil assembly;
- transforming the resonance signals from the first coil to generate a first complex domain image including an array of vector data values each having a magnitude and a phase angle and the resonance signal from the orthogonal coil to generate a second complex domain image including an array of vector data values each having a magnitude and a phase angle;
- normalizing at least one of phase angle and magnitude of corresponding data values of the first and second complex domain images;
- combining the normalized first and second complex domain images; and
- producing a magnitude domain image from the combined complex domain images.

5,510,712

METHOD AND APPARATUS FOR MEASURING
FORMATION RESISTIVITY IN CAGED HOLES

Abdurrahman Sezginer, Brookfield, and Vladimir L. Druskin, Ridgefield, both of Conn., assignors to Schlumberger Technology Corporation, Ridgefield, Conn.

Filed May 2, 1994, Ser. No. 236,932

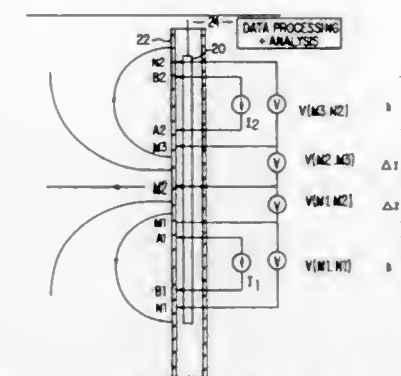
Int. Cl. G01V 3/20

U.S. Cl. 324-368

21 Claims

11. Apparatus for use in determining the resistivity of an underground formation surrounding a borehole which is lined with a casing, the apparatus comprising a body including first and second parts separated by an intermediate region, wherein:

- a) the first body part comprises first current source means including spaced electrodes arranged so as to enable a current



to flow in a corresponding first part of the casing and first voltage monitoring means including spaced electrodes for sensing a voltage across said first part of the casing;

b) the second body part comprises second current source means including spaced electrodes arranged so as to enable a current to flow in a corresponding second part of the casing and second voltage monitoring means including spaced electrodes for sensing a voltage across said second part of the casing;

c) the intermediate region comprises first intermediate voltage monitoring means including electrodes for sensing a first voltage between a point in the first part of the casing and a point in a corresponding intermediate region of the casing, and second intermediate voltage monitoring means including electrodes for sensing a second voltage between a point in the second part of the casing and the point in the intermediate region of the casing.

5,510,713

TECHNIQUE FOR SELECTIVE FAT SATURATION IN
MR IMAGING

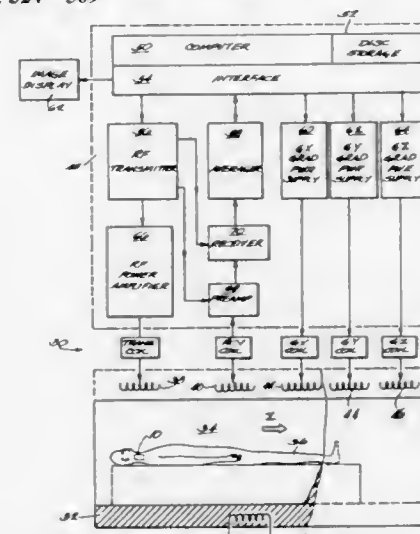
Matthew A. Bernstein, Waukesha, Wis., assignor to General Electric Company, Milwaukee, Wis.

Filed Jun. 30, 1995, Ser. No. 497,132

Int. Cl. G01R 33/20

U.S. Cl. 324-309

16 Claims



1. In a system for MR imaging which includes a gradient means for establishing a gradient magnetic field and excitation means for generating RF excitation pulses, and wherein a volume within an imaging subject positioned with respect to said system contains water molecules and fat tissue proximate to one another, a method for selectively saturating water molecules and fat tissue in said volume comprising the steps of:

- determining whether application of a first RF excitation pulse of a first RF frequency to said volume, in association with a gradient magnetic field having a selected polarity with respect

to an axis, which saturates water molecules lying within a first band positioned at a specified location with respect to said axis, would saturate fat tissue lying within a second band which is spatially displaced along the axis from said specified location in a pre-specified direction, rather than in a direction opposite to said pre-specified direction, said first RF frequency comprising the sum of a center frequency and a first offset frequency having a magnitude and polarity determined by said gradient magnetic field; and

if said first RF pulse would displace said second band in said direction opposite to said pre-specified direction, reversing the polarity of said gradient magnetic field from said selected polarity, and operating said excitation means to apply a second RF pulse of a second RF frequency to said volume to saturate water molecules lying within said first band, and also to saturate fat tissue lying within a third band which is spatially displaced along said axis from said specified location in said pre-specified direction, said second RF frequency comprising the sum of said center frequency and a second offset frequency having a magnitude equal to the magnitude of said first offset frequency and a polarity opposite to the polarity thereof.

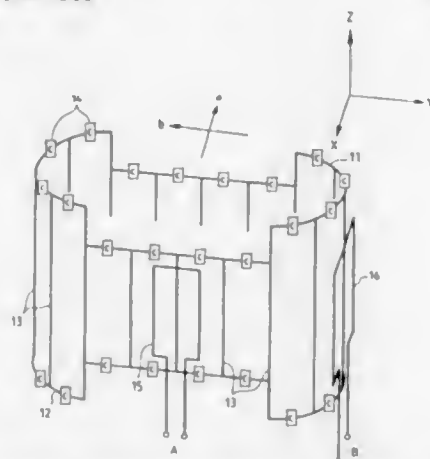
5,510,714 MAGNETIC RESONANCE IMAGING APPARATUS AND RF COIL EMPLOYED THEREIN

Tetsuhiko Takahashi, Souka; Etsuji Yamamoto, Akishima; Yoshiaki Murakami, Nerima, and Yoshikuni Matsunaga, Hachioji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 10, 1992, Ser. No. 926,517
Claims priority, application Japan, Aug. 9, 1991, 3-200253; Aug. 9, 1991, 3-200254

Int. Cl.⁶ G01V 3/00
U.S. Cl. 324—318

15 Claims



1. A magnetic resonance imaging apparatus for irradiating a rotating high-frequency magnetic field on the xy plane which is created by combining linear high-frequency magnetic fields in the x and y directions to an object to be inspected which is placed in a space defined by the x, y, and z coordinate axes crossing at right angles with each other wherein a static magnetic field exists in the z direction, said apparatus comprising:

means for generating magnetic resonance signals in the x direction and in the y direction, in combination with a magnetic field generation coil, from said object to be inspected; and means for detecting said magnetic resonance signals in the x and y directions;

said magnetic field generation coil generating a magnetic field for generation of said magnetic resonance signals and comprising a pair of electrically conductive loop elements connected through a plurality of axial electrically conductive segments;

each of the x and y direction magnetic resonance signals generating means generating respectively a magnetic field strength

in the x and y directions in a z direction distribution range, wherein the z direction distribution range of the x direction field strength differs from the z direction distribution of the y direction field strength.

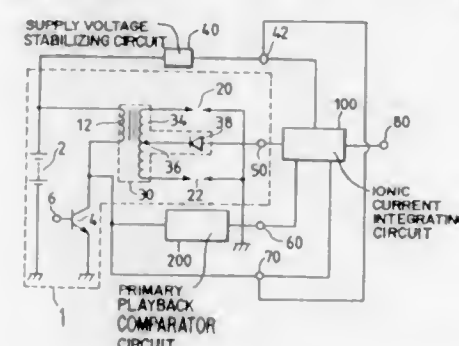
5,510,715 APPARATUS FOR DETERMINING THE IGNITION CHARACTERISTIC OF AN INTERNAL COMBUSTION ENGINE

Manabu Takeuchi, Osaka, Japan, assignor to Diamond Electric Mfg. Co., Ltd., Osaka, Japan

Filed Feb. 2, 1993, Ser. No. 12,389
Int. Cl.⁶ F02P 17/00; G01M 15/00

U.S. Cl. 324—391

4 Claims



1. An apparatus for determining the state of combustion in an internal combustion engine, said apparatus comprising:

an ignition coil having a primary winding and a secondary winding;

a power supply providing a primary current flow through said primary winding, and an ignition timing control means for interrupting said primary current flow upon receipt of a firing signal from a firing signal input port, connected to said primary winding;

two spark plug gaps in an engine combustion chamber connected to said secondary winding;

an ionic current sensing, and computing circuit connected to said secondary winding, through a current limiting element, for measuring the flow of ionic current in said combustion chamber when a voltage potential has been applied to said two spark plug gaps, wherein said ionic current computing circuit is connected at an intermediate point along said secondary winding;

a reference voltage input port connected to a reference voltage and an output port, said output port adapted to provide an indication of the state of the combustion and connected to said ionic current computing circuit; and

circuit means for producing a signal indicating a voltage potential at said two spark plug gaps, said circuit means being connected to said ionic current computing circuit; wherein

said ionic current computing circuit computes a measured value of said ionic current after each spark over time and provides an output signal indicative of said measured value of said ionic current, wherein said output signal is delivered to said output port.

5,510,716 DIFFERENTIAL CONDUCTIVITY RECIRCULATION MONITOR

George W. Buffaloe, IV, Arvada; Francis T. Ogawa, Lakewood, and James M. Brugger, Boulder, all of Colo., assignors to COBE Laboratories, Inc., Lakewood, Colo.

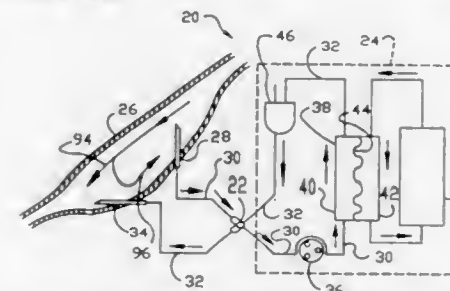
Continuation of Ser. No. 954,584, Sep. 30, 1992, abandoned.

This application Nov. 1, 1994, Ser. No. 332,647

Int. Cl.⁶ B01D 61/32

U.S. Cl. 324—445

44 Claims



1. A method for quantitatively determining a degree of recirculation flow within a zone of a vessel into which a first fluid having a first electrical conductivity is being inserted and from which a second fluid having a second electrical conductivity is simultaneously being withdrawn, comprising:

altering the electrical conductivity of the first fluid; measuring the electrical conductivity of the first fluid after the conductivity is altered and before the first fluid is inserted into the zone of the vessel; measuring the electrical conductivity of the second fluid after it is withdrawn from the zone of the vessel; and comparing the conductivity of the first fluid with the conductivity of the second fluid to quantitatively determine the degree of recirculation flow in the zone of the vessel.

5,510,717 DIFFERENTIAL CONDUCTIVITY RECIRCULATION MONITOR

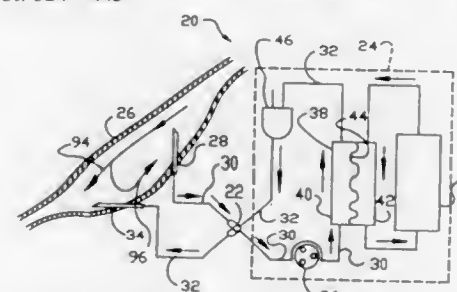
George W. Buffaloe, IV, Arvada; Francis T. Ogawa, Lakewood, and James M. Brugger, Boulder, all of Colo., assignors to COBE Laboratories, Inc., Lakewood, Colo.

Division of Ser. No. 332,647, Nov. 1, 1994, which is a continuation of Ser. No. 954,584, Sep. 30, 1992, abandoned. This application May 31, 1995, Ser. No. 454,685

Int. Cl.⁶ G01N 27/02; B01D 61/32

U.S. Cl. 324—445

12 Claims



1. A method for determining a difference in electrical conductivity of at least two fluids comprising:

placing a first fluid into a first conductivity cell having a tubular ring configuration, said fluid forming a continuous electrical path;

placing a second fluid into a second conductivity cell having a tubular ring configuration, said fluid forming a continuous electrical path;

inducing a first electrical current in the first fluid in the first conductivity cell and a second electrical current in the second fluid in the second conductivity cell;

sensing the first electrical current in the first fluid in the first conductivity cell and the second electrical current in the second fluid in the second conductivity cell; and subtracting the second electrical current from the first electrical current to produce a signal representative of the difference in the conductivity between the first and the second fluids.

5,510,718 CONTAINER LEAK TESTING

George R. Enderby, Orchard Way, Teddington Gloucestershire GL20 8JA, England

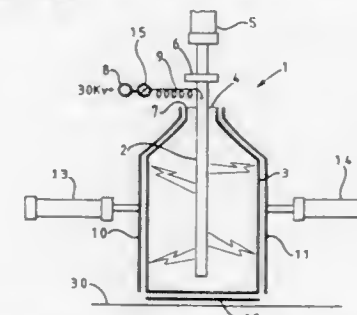
PCT No. PCT/GB93/00257, § 371 Date Jul. 15, 1994, § 102(e) Date Jul. 15, 1994, PCT Pub. No. WO93/19353, PCT Pub. Date Sep. 30, 1993

PCT Filed Feb. 8, 1993, Ser. No. 256,554
Claims priority, application United Kingdom, Mar. 24, 1992, 9206387

Int. Cl.⁶ G01M 3/40

U.S. Cl. 324—536

11 Claims



1. Apparatus for leak testing a container comprising an electrically conductive probe (2) for communicating with an interior of the container (3) by way of an opening (4) of the container, electrically conductive shield means (10, 11, 12; 16, 17, 18, 19; 23) closely surrounding the container and movable between open and closed positions, electrical connection means (9) for application of a high voltage relative to the shield means, and sensor means (15) for detecting current flow between the probe and the shield means indicating the presence of at least one of a hole and a weakness in an intervening wall of the container, and moving means (13, 14) for moving the shield means between the open position permitting introduction or removal of the container into or from the shield means and the closed position in which at least a major portion of the container is closely surrounded by the shield means.

5,510,719 METHOD FOR SCREENING EARLY FAILURE OF CERAMIC CAPACITOR

Shigekatsu Yamamoto, Nagaokakyo, Japan, assignor to Murata Manufacturing Co., Ltd., Japan

Filed Aug. 16, 1994, Ser. No. 291,158
Claims priority, application Japan, Aug. 20, 1993, 5-206531
Int. Cl.⁶ G01R 31/12

U.S. Cl. 324—548

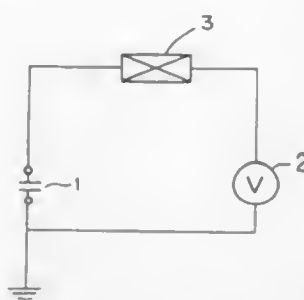
6 Claims

1. A method of screening early failure of ceramic capacitors comprising the steps of:

charging each ceramic capacitor by applying a d.c. voltage which is larger than a rated voltage of the ceramic capacitor and smaller than a breakdown voltage of the ceramic capacitor;

opening both terminals of each of the charged ceramic capacitors electrically, and leaving the capacitors for a predetermined period of time at a temperature around a predetermined maximum working temperature;

measuring residual voltage values of the ceramic capacitors after said predetermined period of time, identifying capacitors



whose residual voltage values are smaller than a predetermined voltage value as being defective, and eliminating such defective capacitors.

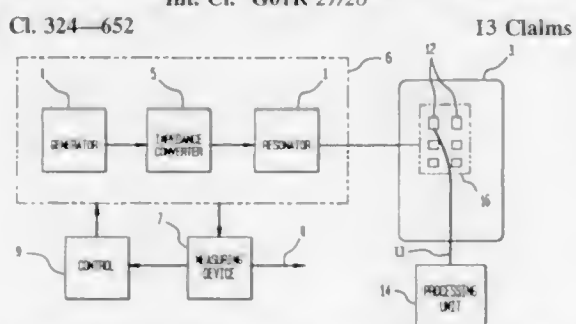
5,510,720

DEVICE FOR DETECTING ATTEMPTS AT FRAUD ON AN APPARATUS FOR READING AND WRITING ON A CHIP CARD

Philippe Vautin, Viuz en Salaz, France, assignor to Landis & Gyr Business Support AG, Zug, Switzerland
Division of Ser. No. 9,874, Jan. 27, 1993, Pat. No. 5,412,318, which is a continuation-in-part of Ser. No. 967,620, Oct. 28, 1992, abandoned. This application Oct. 27, 1994, Ser. No. 331,791

Claims priority, application Switzerland, Mar. 17, 1992, 00854/92; May 25, 1992, 01 679/921; Nov. 16, 1992, 03 519/92
Int. Cl.⁶ G01R 27/26

U.S. Cl. 324—652



1. A detector-device for detecting attempts at fraud by varying the electrical properties of a connecting point (12) of a chip card (3) in an apparatus for reading and writing in a memory on said chip card (3) via an electric feed line (13) connected to said connecting point (12), said detector-device comprising:

a resonance unit (6) and a measuring unit (7) connected to said resonance unit (6) wherein said resonance unit (6) has a resonator (1) that is coupled to said connecting point (12), said resonance unit (6) having electrical properties that are varied by said feed line (13) and detected by said measuring device (7).

5,510,721

METHOD AND ADJUSTMENT FOR KNOWN GOOD DIE TESTING USING RESILIENT CONDUCTIVE STRAPS

Bethany J. Wallis, Birmingham; Cuong V. Pham, Northville; Lawrence L. Kneisel, Novi, and Brian J. Hayden, Royal Oak, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

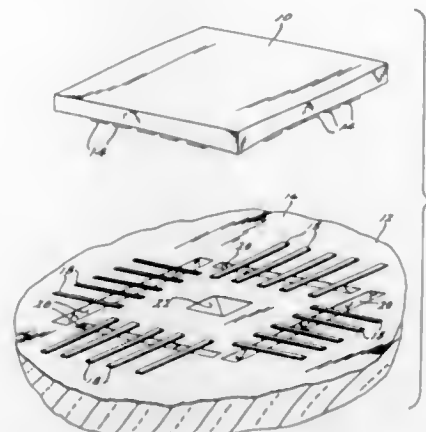
Filed Dec. 19, 1994, Ser. No. 358,297

Int. Cl.⁶ G01R 1/073

U.S. Cl. 324—754

19 Claims

18. A test apparatus for an integrated circuit die having a plurality of electrical contacts having a bottom surface extending therefrom, comprising:



a substrate having a plurality of trenches larger than said electrical contacts, each of said trenches having a width and a length;

a plurality of shape memory alloy straps extending continuously across said width of said trenches;

securing means for holding said die against said straps in a first direction; and

heating means for heating said substrate to deflect said straps in a direction opposite said first direction so that said bare integrated circuit is secured against said bottom surface of said straps.

5,510,722

TEST FIXTURE FOR PRINTED CIRCUIT BOARDS

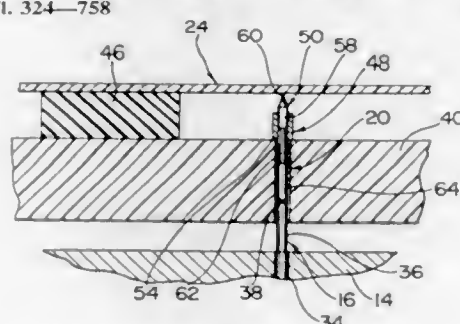
Bruce A. Seavey, North Attleboro, Mass., assignor to TTI Testtron, Inc., Woonsocket, R.I.

Filed Dec. 18, 1992, Ser. No. 992,578

Int. Cl.⁶ G01R 31/02; H01R 4/64

U.S. Cl. 324—758

4 Claims



1. A test fixture for testing a printed circuit board on a test computer comprising:

(a) a base;

(b) a probe plate mounted on said base;

(c) a plurality of spring loaded primary electrical contact probes mounted in said probe plate, said primary contact probes being disposed in a predetermined array and being adapted to be electrically connected to said test computer;

(d) a top plate mounted on said base in substantially parallel relation above said probe plate, said top plate having means for receiving and positioning said printed circuit board thereon so that predetermined portions of said printed circuit board are aligned with predetermined primary contact probes in said array of primary contact probes, said top plate being movable between a first position of predetermined spaced relation to said probe plate and a second position of more closely spaced relation thereto; and

(e) a plurality of secondary electrical contact probes which are slidably mounted in said top plate, said secondary contact probes also being disposed in said predetermined array and being aligned with said primary contact probes, said secondary contact probes including sleeve portions mounted in said top plate and contact portions which are slidably movable

within the sleeve portion between first positions of closely spaced disengagement from said predetermined portions of said printed circuit board and second positions of engagement therewith, said contact portions being freely slidable in said sleeve portions but being gravitationally biased toward said first positions thereof;

(f) said primary contact probes being in spaced relation to said secondary contact probes when said top plate is in the first position thereof and engaging said secondary contact probes to both electrically connect said primary contact probes to said secondary contact probes and move the contact portions of said secondary contact probes from the first positions thereof to the second positions thereof when said top plate is moved from the first position thereof to the second position thereof.

5,510,723

DICED SEMICONDUCTOR DEVICE HANDLER

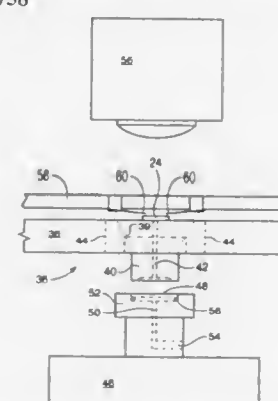
Robert L. Canella, Meridian, and Warren M. Farnworth, Nampa, both of Id., assignors to Micron Custom Manufacturing, Inc. USA, Boise, Id.

Filed Mar. 1, 1994, Ser. No. 205,678

Int. Cl.⁶ B07C 5/344

U.S. Cl. 324—758

23 Claims



1. An apparatus for testing an unencapsulated semiconductor device, said apparatus having a test head, said test head comprising:

a) a carousel table having a top and a bottom;

b) a carousel table chamfered portion;

c) a chamfered pedestal which contacts said chamfered portion of said carousel table, said pedestal having a bottom portion extending below said carousel table bottom, said pedestal receiving the semiconductor device;

d) a chuck for receiving said bottom portion of said pedestal, said chuck being moveable in X, Y, Z and theta (rotational) directions;

e) a probe positioned above said pedestal for the passage of an electric signal to the semiconductor device;

f) a camera for detecting at least one of X, Y, and Theta positions of said probe relative to a position of the semiconductor device,

wherein said chuck, in operation, receives said bottom portion of said pedestal and urges said pedestal from said carousel table toward said probe, said chuck capable of movement in said X and Y directions responsive to a signal from said camera to align the semiconductor device with said probe, said probe making contact with the semiconductor device on said pedestal.

5,510,724

PROBE APPARATUS AND BURN-IN APPARATUS Takatoshi Itoyama, Tokorozawa; Yuichi Abe, and Masao Yamaguchi, both of Tokyo, all of Japan, assignors to Tokyo Electron Limited, Tokyo, Japan

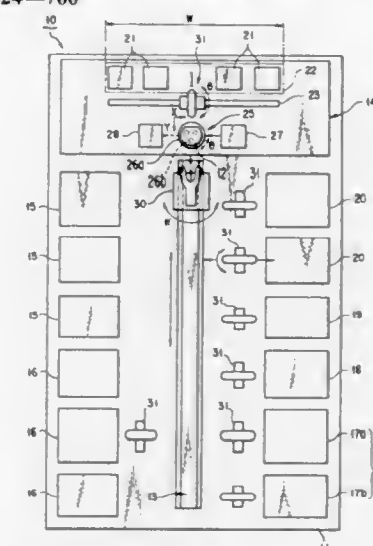
Filed May 31, 1994, Ser. No. 251,365

Claims priority, application Japan, May 31, 1993, 5-154435; May 31, 1993, 5-154436

Int. Cl.⁶ G01R 31/02

U.S. Cl. 324—760

9 Claims



1. A probe apparatus comprising:

at least one burn-in test section for performing burn-in tests on semiconductor chips formed on a semiconductor wafer to be tested;

at least one probe test section for performing probe tests on the semiconductor chips;

a repair section for repairing the semiconductor chips whose defective portions are discovered by said burn-in test section and said probe test section;

a convey path extending along said burn-in test section, said probe test section, and said repair section;

a pre-alignment means for pre-aligning the semiconductor wafer;

convey means, movably arranged on said convey path, for conveying the semiconductor wafer among said burn-in test section, said probe test section, said repair section, and said pre-alignment means; and

a control section for controlling conveyance of the semiconductor wafer among said burn-in test section, said probe test section, said repair section, and said pre-alignment means, wherein said semiconductor wafer is pre-aligned by said pre-alignment means, and the pre-aligned semiconductor wafer is then conveyed to said burn-in test section and said probe test section by said convey means.

5,510,725

METHOD AND APPARATUS FOR TESTING A POWER BRIDGE FOR AN ELECTRIC VEHICLE PROPULSION SYSTEM

David L. Schantz, Jr., Ellicott City; William B. Hall, Annapolis; William B. Winkel, Bowie, all of Md., and Geoffrey B. Lansberry, Cambridge, Mass., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

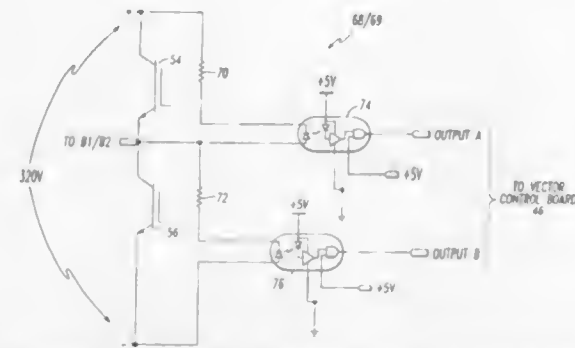
Filed Jun. 10, 1994, Ser. No. 258,178

Int. Cl.⁶ G01R 31/26

U.S. Cl. 324—768

8 Claims

1. A method for testing a power bridge for an electric vehicle propulsion system, the power bridge including a switching circuit having first and second switching elements operable between "on" and "off" states, the method comprising the steps of:



selectively switching the first and second switching elements between the "on" and "off" states;
independently monitoring the first and second switching elements to determine whether the first and second switching elements operate in the "on" and "off" states when selectively switched;
simultaneously producing an output for each of the first and the second switching elements; and
indicating a failure of the switching circuit when at least one of the first and second switching elements does not operate between the "on" and "off" states when selectively switched.

5,510,726

ARMATURE TESTER

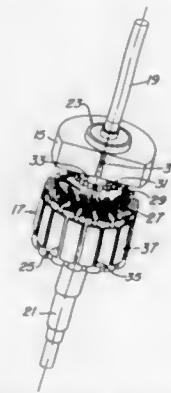
Robert H. Brady, Ardmore, Okla., assignor to R. E. Phelon Co., Inc., Alker, S.C.

Filed Nov. 17, 1993, Ser. No. 153,312

Int. Cl.⁶ G01R 31/06; 31/34

U.S. Cl. 324—772

22 Claims



1. An apparatus for determining angular alignment between two components located on a shaft of an armature, the components of the armature including a commutator having commutator slots, a lamination stack having lamination slots, and a plurality of coil windings which are disposed about the lamination stack, the apparatus comprising:

- a positioning member body having an aperture for closely receiving a portion of the armature;
- means including an extending member mounted to the positioning member body which inserts into one of the slots of a first one of the components when the portion of the armature is closely received within the body for angularly locating the apparatus relative to the first one of the components; and
- an indicator gap on the positioning member body angularly spaced from the extending member for exposing a selected one of the slots on a second one of the components for visually determining the angular alignment between the first and second ones of the components.

5,510,727

OPTIMIZED ACTIVE SCSI TERMINATION TECHNIQUE

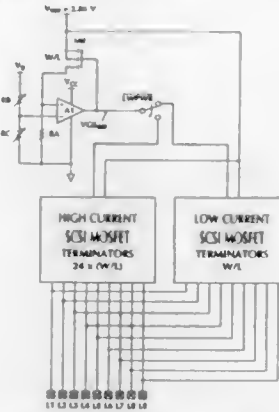
Daniel D. Culmer, San Jose, and Mark R. Vituric, Santa Clara, both of Calif., assignors to Micro Linear Corporation, San Jose, Calif.

Filed Jun. 27, 1994, Ser. No. 267,119

Int. Cl.⁶ H03K 17/16; 3/01

U.S. Cl. 326—30

8 Claims



Block Diagram of the Preferred Embodiment of the Active SCSI Termination Circuit

1. An active SCSI termination circuit comprising:
 - a first means for terminating a signal line on a SCSI bus, comprising a first p-channel MOSFET, having a source, a gate, a drain, and an aspect ratio approximately twenty-four times larger than an aspect ratio of a reference MOSFET having a gate, a source and a drain and the drain of the p-channel MOSFET coupled to the signal line;
 - a second means for terminating the signal line, comprising a second p-channel MOSFET, having a source, a gate, a drain, and an aspect ratio approximately equal to the aspect ratio of the reference MOSFET and the drain of the second p-channel MOSFET coupled to the signal line; and
 - means for selecting between the first p-channel MOSFET and the second p-channel MOSFET.

5,510,728

MULTI-FINGER INPUT BUFFER WITH TRANSISTOR GATES CAPACITIVELY COUPLED TO GROUND

Tiao-Yuan Huang, Cupertino, Calif., assignor to VLSI Technology, Inc., San Jose, Calif.

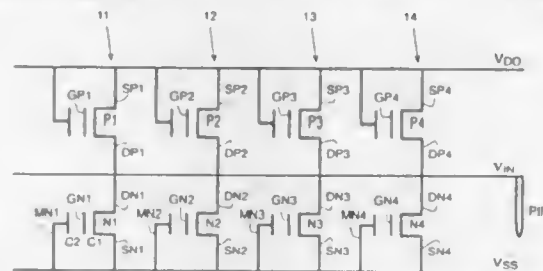
Continuation of Ser. No. 275,185, Jul. 14, 1994, abandoned.

This application Jul. 13, 1995, Ser. No. 502,464

Int. Cl.⁶ H03K 19/0948; H02H 9/04

U.S. Cl. 326—30

3 Claims



1. A multi-finger input buffer for an integrated circuit comprising parallel buffer elements, each buffer element including:
 - a pull-up device having a first node coupled to a logic high voltage and a second node coupled to an input voltage; and
 - an NMOS pull-down transistor, the source of which is coupled to a logic low voltage, the drain of which is coupled to said input voltage, the gate of which is floating and capacitively coupled to a metal structure coupled to said logic low voltage;

5,510,730

RECONFIGURABLE PROGRAMMABLE INTERCONNECT ARCHITECTURE

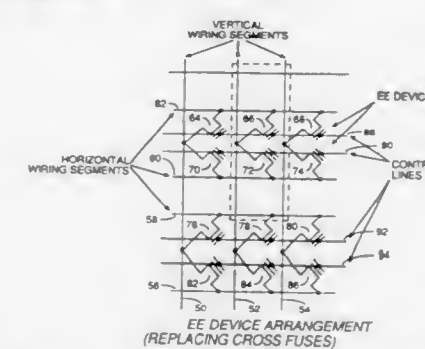
Abbas El Gamal, Palo Alto, and Steve S. S. Chlang, Saratoga, both of Calif., assignors to Actel Corporation, Sunnyvale, Calif.

Continuation of Ser. No. 342,710, Nov. 21, 1994, abandoned, which is a continuation of Ser. No. 2,873, Jan. 13, 1993, Pat. No. 5,367,208, which is a continuation of Ser. No. 869,488, Apr. 15, 1992, Pat. No. 5,187,393, which is a continuation of Ser. No. 621,452, Jan. 15, 1991, Pat. No. 5,172,014, which is a division of Ser. No. 309,306, Feb. 10, 1989, Pat. No. 5,015,885, which is a continuation-in-part of Ser. No. 195,728, May 18, 1988, Pat. No. 4,873,459, which is a continuation-in-part of Ser. No. 909,261, Sep. 19, 1986, Pat. No. 4,758,745. This application Jun. 21, 1995, Ser. No. 493,137

Int. Cl.⁶ H03K 19/177

U.S. Cl. 326—41

14 Claims



1. In an integrated circuit, an electrically programmable interconnect architecture, comprising:
 - a plurality of logic modules placed in an array on a substrate, the modules having at least one RAM cell and having connection nodes;
 - a plurality of sets of wiring channels, at least some of said sets of wiring channels having at least one wiring channel comprising at least two wire segments and wherein at least one of said wire segments is connected to at least one of said connection nodes;
 - a plurality of reconfigurable elements, each of said reconfigurable elements having two main terminals, said main terminals connected between selected ones of said wiring segments comprising one of said channels, each of said reconfigurable elements further including a control terminal;
 - series-pass transistors connected between selected adjacent ones of said segments, each of said series-pass transistors having a control element, and
 - selection circuitry connected to the control element of each of said series-pass transistors capable of selectively biasing each one of said series-pass transistors to cause it to conduct or not to conduct.

5,510,731

LEVEL TRANSLATOR WITH A VOLTAGE SHIFTING ELEMENT

Andrew G. F. Dingwall, Princeton, N.J., assignor to Thomson Consumer Electronics, S.A., France

Filed Dec. 16, 1994, Ser. No. 357,896

Int. Cl.⁶ H03K 19/0948

U.S. Cl. 326—63

21 Claims

1. An apparatus for driving an unterminated data bus having a plurality of threads, comprising:
 - a current source of substantially known and stable current;
 - a representative MOS transistor having a drain coupled to said current source, a source coupled to a first voltage rail, and a gate, said representative MOS transistor being of a known relative first size;
 - a plurality of output devices, each output device having a bus driver, and each bus driver having a first MOS transistor having a source coupled to said first voltage rail, a drain coupled to a respective one of the plurality of threads of said data bus, and a gate coupled to said gate of said representative MOS transistor such that each first MOS transistor, when ON, mirrors a characteristic of said representative MOS transistor, each first MOS transistor being of a substantially identical known relative second size, wherein said representative MOS transistor conducts said known and stable current from said current source, and each of said plurality of bus drivers, when ON, scalingly mirrors the characteristic of said representative MOS transistor as a function of said relative second size and said relative first size, and said representative MOS transistor and said plurality of output devices are located on a single chip.

1. A level translator, comprising:
 - a source of a switching, first input voltage;
 - a first transistor responsive to said first switching input voltage for performing a switching operation;
 - a pair of second and third transistors cross-coupled to each other to form a latch;
 - a first level shifter for level shifting in a first direction a voltage developed in said first transistor and for applying the level shifted voltage to a terminal of said latch to establish said

and in that the other output of the voltage/current converter is coupled to the other output of the sampler circuit via the second input multiplexer module, via two track-and-hold modules and via the second output multiplexer module which are configured correspondingly and controlled by the same clock signals.

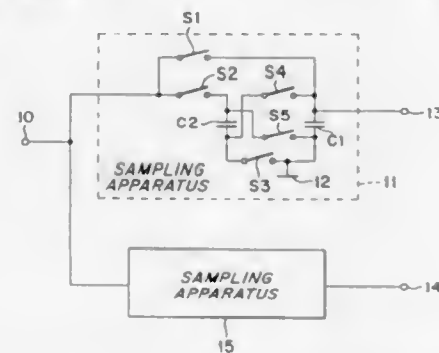
5,510,737 METHOD AND APPARATUS FOR SAMPLING OF ELECTRICAL SIGNALS

Erik R. Arvidsson, Västra Frölunda, Sweden, assignor to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden
Filed Aug. 12, 1994, Ser. No. 289,539

Claims priority, application Sweden, Aug. 13, 1993, 9302627
Int. Cl.⁶ G11C 27/02

U.S. Cl. 327—91

16 Claims



9. An apparatus for sampling an electrical signal and generating a combined signal from at least two samples of the electrical signal, comprising:

a plurality of capacitors, and means, connected to the capacitors, for switchably connecting the capacitors,

wherein, at a first stage, the switching means connects the capacitors in parallel to the electrical signal;

at a second stage, the switching means disconnects, at each of a plurality of sampling times, a respective one of the plurality of capacitors from the electrical signal, thereby forming the samples; and

at a third stage, after the sampling times, the switching means reconnects the disconnected capacitors together to form the combined signal in dependence on the charges of the capacitors when they were disconnected from the electrical signal and on the capacitances of the capacitors.

5,510,738 CMOS PROGRAMMABLE RESISTOR-BASED TRANSDUCUCTOR

James L. Gorecki, and Yaohua Yang, both of Hillsboro, Oreg., assignors to Lattice Semiconductor Corp., Hillsboro, Oreg.

Continuation-in-part of Ser. No. 396,994, Mar. 1, 1995. This application Mar. 14, 1995, Ser. No. 403,359

Int. Cl.⁶ H03F 3/45

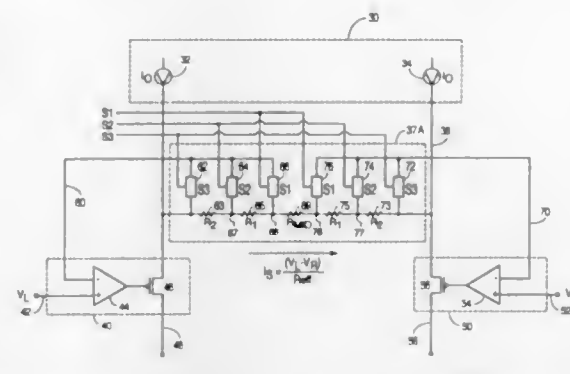
U.S. Cl. 327—103

23 Claims

22. A variable transconductor for generating a differential current between first and second current output terminals responsive to a differential voltage operably impressed between first and second voltage input terminals, comprising:

current source means configured to deliver a predetermined amount of current into both a first summing node and into a second summing node;

programmable resistor means including a string of individual resistors, the string having a first and second plurality of intermediate nodes, coupled between the first and second summing nodes for providing a current path therebetween in accordance with a differential voltage therebetween, and



resulting in a net current into the first summing node equal to the predetermined amount of current delivered thereto plus any current flowing through the resistor means into the first node from the second node, and resulting in a net current into the second summing node equal to the predetermined amount of current delivered thereto plus any current flowing through the resistor means into the second node from the first node;

a first transistor configured to operably receive the net current into the first summing node, and for providing this net current to the first current output terminal;

a second transistor configured to operably receive the net current into the second summing node, and for providing this net current to the second current output terminal;

a first gain block having a first input coupled to the first voltage input terminal; having a second input coupled to one of the first and second plurality of intermediate nodes, and having an output coupled to the control terminal of the first transistor; and

a second gain block having a first input coupled to the second voltage input terminal; having a second input coupled to another of the first and second plurality of intermediate nodes, and having an output coupled to the control terminal of the second transistor.

5,510,739 CIRCUIT AND METHOD FOR ENHANCING LOGIC TRANSITIONS APPEARING ON A LINE

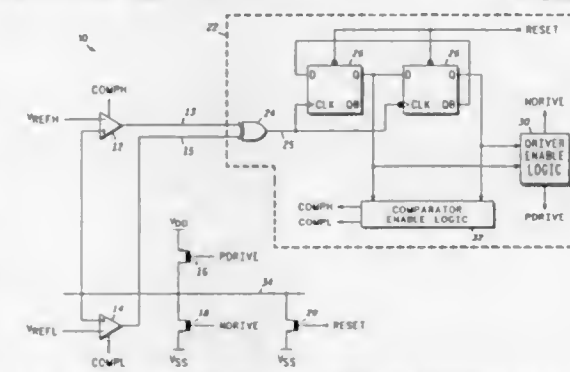
James S. Caravella, and Ben Gilsdorf, both of Phoenix, Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 28, 1994, Ser. No. 218,283

Int. Cl.⁶ H03K 17/12

U.S. Cl. 327—112

8 Claims



1. A circuit for enhancing logic transitions appearing on a line, comprising:

a first comparator having first and second inputs, an enable input, and an output, said first input of said first comparator coupled to the line, said second input of said first comparator coupled to receive a first reference voltage;

a second comparator having first and second inputs, an enable input, and an output, said first input of said second comparator

coupled to the line, said second input of said second comparator coupled to receive a second reference voltage;

a first transistor having first and second current carrying electrodes and a control electrode, said first current carrying electrode of said first transistor coupled to the line, said second current carrying electrode of said first transistor coupled to a first supply voltage terminal;

a second transistor having first and second current carrying electrodes and a control electrode, said first current carrying electrode of said second transistor coupled to the line, said second current carrying electrode of said second transistor coupled to a second supply voltage terminal; and

control means having inputs coupled to said outputs of said first and second comparators for alternately enabling said first and second transistors, said control means having outputs coupled to said enable inputs of said first and second comparators and to said control electrodes of said first and second transistors.

5,510,740 METHOD FOR SYNCHRONIZING CLOCKS UPON RESET

Robert Farrell, Hillsborough, N.J., and Sharad Mehrotra, Tempe, Ariz., assignors to Intel Corporation, Santa Clara, Calif.

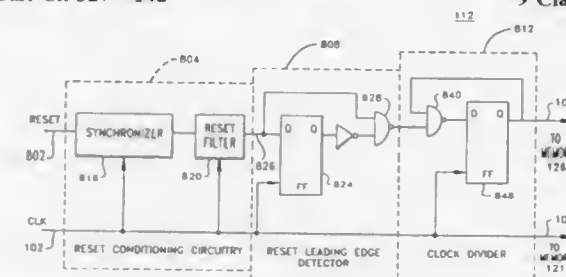
Continuation of Ser. No. 50,700, Apr. 21, 1993, abandoned.

This application Jul. 11, 1994, Ser. No. 272,879

Int. Cl.⁶ H03K 5/13

U.S. Cl. 327—142

9 Claims



8. A circuit for establishing a phase relationship between clock signals, comprising:

(a) a reset conditioning circuit;

(b) a reset pulse generator; and

(c) a clock generator, wherein:

the clock generator receives an input clock signal and generates a pre-reset output clock signal, wherein the phase relationship between the input clock signal and the pre-reset output clock signal is one of a plurality of possible phase relationships;

the reset conditioning circuit receives a reset signal and generates a conditioned reset signal, wherein the reset signal is asynchronous with respect to the input clock signal and the conditioned reset signal is synchronized with respect to the input clock signal;

the reset pulse generator receives the conditioned reset signal and generates a reset pulse signal; and

the clock generator receives the reset pulse signal and generates a post-reset output clock signal, wherein the post-reset output clock signal has a predetermined phase relationship with respect to the input clock signal wherein:

the reset pulse generator generates the reset pulse signal in accordance with the leading edge of the conditioned reset signal and wherein:

the reset pulse generator comprises a flip-flop and a NAND gate connected generate a one-cycle reset pulse signal.

5,510,741 RESET AND CLOCK CIRCUIT FOR PROVIDING VALID POWER UP RESET SIGNAL PRIOR TO DISTRIBUTION OF CLOCK SIGNAL

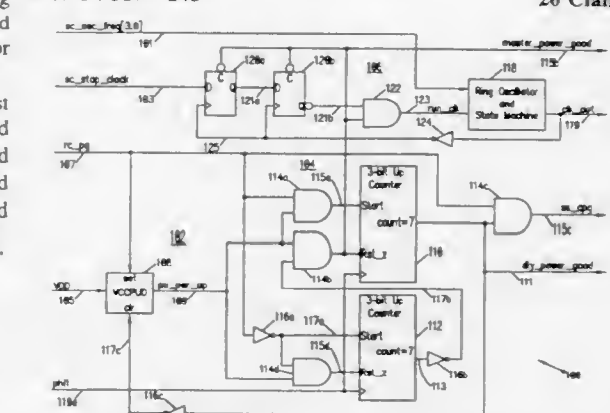
Matthew H. Childs, Arlington, Tex., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Aug. 30, 1995, Ser. No. 521,213

Int. Cl.⁶ H03K 3/02

U.S. Cl. 327—143

20 Claims



1. An apparatus including a reset and clock circuit for providing a valid power-up reset signal prior to distribution of a clock signal, said reset and clock circuit comprising:

a power detector for receiving a power supply voltage and providing a first power-up signal which is asserted when said power supply voltage exceeds a first predetermined value;

a power status indicator, coupled to said power detector, for receiving said first power-up signal and a clock signal and in accordance therewith providing a plurality of power status signals, wherein said clock signal includes a plurality of clock pulses, a first one of said plurality of power status signals is asserted in response to said assertion of said first power-up signal and a second one of said plurality of power status signals is asserted in response to a reception of a first portion of said plurality of clock pulses;

a clock signal generator, coupled to said power status indicator, for receiving said first one of said plurality of power status signals and in response to said assertion thereof providing said clock signal; and

a reset signal generator, coupled to said power status indicator and said clock signal generator, for receiving said plurality of power status signals and said clock signal and in accordance therewith providing a plurality of reset signals, wherein each one of said plurality of reset signals is initially asserted prior to said providing of said clock signal by said clock signal generator, a first one of said plurality of reset signals is de-asserted in response to a reception of a second portion of said plurality of clock pulses and a second one of said plurality of reset signals is de-asserted in response to a reception of a third portion of said plurality of clock pulses.

2. The apparatus of claim 1, wherein the reset signal generator receives a reset signal and generates a conditioned reset signal, wherein the reset signal is asynchronous with respect to the input clock signal and the conditioned reset signal is synchronized with respect to the input clock signal.

3. The apparatus of claim 1, wherein the reset pulse generator receives the conditioned reset signal and generates a reset pulse signal; and the clock generator receives the reset pulse signal and generates a post-reset output clock signal, wherein the post-reset output clock signal has a predetermined phase relationship with respect to the input clock signal wherein:

the reset pulse generator generates the reset pulse signal in accordance with the leading edge of the conditioned reset signal and wherein:

the reset pulse generator comprises a flip-flop and a NAND gate connected generate a one-cycle reset pulse signal.

4. The apparatus of claim 1, wherein the reset pulse generator generates the reset pulse signal in accordance with the leading edge of the conditioned reset signal and wherein:

the reset pulse generator comprises a flip-flop and a NAND gate connected generate a one-cycle reset pulse signal.

5. The apparatus of claim 1, wherein the reset pulse generator generates the reset pulse signal in accordance with the leading edge of the conditioned reset signal and wherein:

the reset pulse generator comprises a flip-flop and a NAND gate connected generate a one-cycle reset pulse signal.

6. The apparatus of claim 1, wherein the reset pulse generator generates the reset pulse signal in accordance with the leading edge of the conditioned reset signal and wherein:

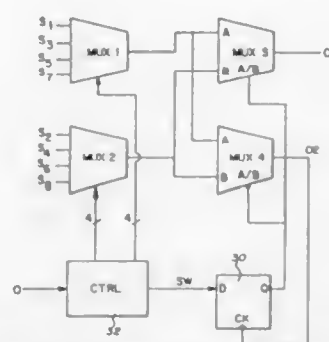
the reset pulse generator comprises a flip-flop and a NAND gate connected generate a one-cycle reset pulse signal.

7. The apparatus of claim 1, wherein the reset pulse generator generates the reset pulse signal in accordance with the leading edge of the conditioned reset signal and wherein:

the reset pulse generator comprises a flip-flop and a NAND gate connected generate a one-cycle reset pulse signal.

8. The apparatus of claim 1, wherein the reset pulse generator generates the reset pulse signal in accordance with the leading edge of the conditioned reset signal and wherein:

the reset pulse generator comprises a flip-flop and a NAND gate connected generate a one-cycle reset pulse signal.



a second multiplexer, coupled to the first multiplexer, receiving 2^m input signals of even rank and providing an output signal, the first multiplexer and the second multiplexer having a total of 2^{m+1} input terminals receiving periodic input signals, each input signal being out of phase with respect to the other input signals;

a third multiplexer, coupled to the first and second multiplexers, receiving at first and second multiplexers, respectively, and providing an output signal of the multiplexer system;

a fourth multiplexer, coupled to the first and second multiplexers, receiving at first and second inputs the output signals of the first and second multiplexers, respectively, and providing an output signal;

means, coupled to the multiplexer system, for switching the output signal from a present input signal to a next provided input signal in response to a switching signal, the next provided input signal having a phase lag with respect to the present input signal of $360/2^{m+1}$; and

means, coupled to the means for switching, for synchronizing the switching signal with an edge of the next provided input signal.

5,510,743

APPARATUS AND A METHOD FOR RESTORING AN A-LEVEL CLIPPED SIGNAL

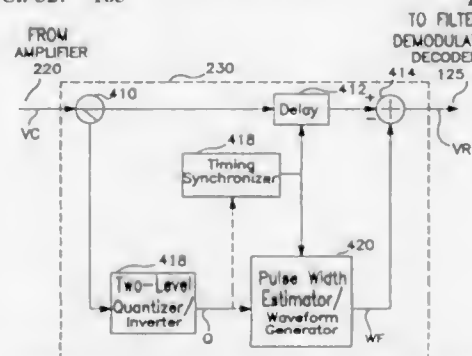
Qun Shi, Teaneck, N.J., assignor to Panasonic Technologies, Inc., Princeton, N.J.

Filed Jul. 14, 1994, Ser. No. 274,821

Int. Cl. H03F 1/32

U.S. Cl. 327—165

10 Claims



1. Apparatus which corrects clipping distortion in a received signal, whereby portions of a transmitted signal are lost in the received signal, the apparatus comprising:

an input terminal for receiving the received signals;

a quantizer circuit, coupled to the input terminal, which detects the clipping distortion in the received signal and which generates a pulse signal, wherein each pulse of the pulse signal corresponds to a respectively different portion of the received signal which portion has been subject to the clipping distortion;

waveform generating means, coupled to the quantizer circuit and responsive to the pulse signal, including means for generating

wave segments which approximate the portions of the received signal that were lost as a result of the clipping distortion;

means for combining the generated wave segments and the received signal to produce an output signal, at an output terminal, which output signal approximates the transmitted signal.

5,510,744

CONTROL CIRCUIT FOR REDUCING GROUND AND POWER BOUNCE FROM AN OUTPUT DRIVER CIRCUIT

Chuen-Der Lien, Mountain View, Calif., assignor to Integrated Device Technology, Inc., Santa Clara, Calif.

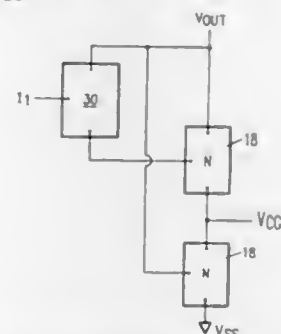
Continuation of Ser. No. 66,906, May 24, 1993, abandoned.

This application Apr. 20, 1995, Ser. No. 426,488

Int. Cl. H03K 5/00; 17/16

U.S. Cl. 327—310

4 Claims



1. A control circuit for controlling an output driver circuit, said output driver circuit for receiving a control signal and for generating an output signal having a first voltage level, said control circuit comprising:

a first transistor means having a first input node for receiving an input signal, a second node for receiving said output signal from said output driver circuit, and a third node for providing a third signal;

a first N-type transistor circuit means having a first input node for receiving said third signal from said first transistor means, a second node for receiving said output signal from said output driver circuit, and a third node for providing said control signal supplied to said control terminal; and

a second N-type transistor circuit means having a first input node for receiving said output signal from said output driver circuit, a second input node connected to said third node of said first N-type transistor circuit means, and a third node for receiving a first voltage source.

5,510,745

HIGH-SPEED ELECTRONIC CIRCUIT HAVING A CASCODE CONFIGURATION

Hiroshi Hamano, Kawasaki; Izumi Amemiya, Yokohama; Takuji Yamamoto, Kawasaki; Hiroo Kitagami, Kawasaki, and Takeshi Ihara, Kawasaki, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 80,136, Jun. 23, 1993, abandoned, which is a continuation of Ser. No. 874,212, Apr. 27, 1992, abandoned, which is a continuation of Ser. No. 339,384, Mar. 28, 1989, abandoned. This application Dec. 21, 1993, Ser. No. 170,997

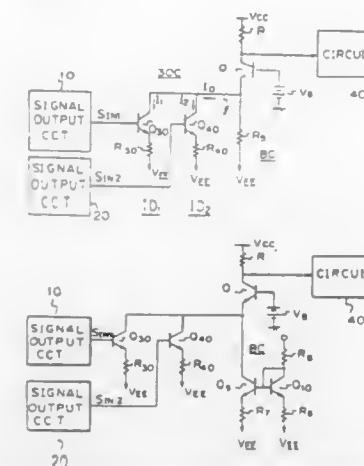
Claims priority, application Japan, Jul. 29, 1987, 62-189848; Jul. 29, 1987, 62-189849; Jul. 29, 1987, 62-189850; Jul. 29, 1987, 62-189851; Jul. 30, 1987, 62-191040; Sep. 16, 1987, 62-231818

Int. Cl. H03K 19/002

U.S. Cl. 327—333

3 Claims

1. A level shift circuit comprising:



a current drive circuit including at least one input transistor, each having an emitter connected to a first reference potential, having a collector and having a base receiving at least one input signal, said current drive circuit includes first and second input transistors connected in parallel to differentially operate in response to first and second input signals connected to the bases of the first and second input transistors and a current source connected between the emitters of said first and second input transistors and said first reference potential;

a load transistor circuit including at least one load transistor, each having a base connected to a reference potential, and an emitter connected to the collector of a corresponding one of said at least one input transistor, said load transistor circuit includes first and second load transistors, wherein the emitter of said first load transistor is connected to the collector of said first input transistor, the emitter of said second load transistor is connected to the collector of said second input transistor and the bases of said first and second load transistors are commonly connected and connected to a reference potential;

a bias current source connected between said emitter of said at least one load transistor and said first reference potential, a respective current generated by said bias current source being supplied to each of said at least one load transistor to maintain a forward base emitter voltage for each said at least one load transistor;

a load resistor circuit including at least one load resistor connected between the collector of a respective one of said at least one load transistor and a power supply voltage;

said bias current source further including a current mirror circuit connected to a control voltage source to shift the level of an output signal by a value defined by the control voltage source; and

a plurality of said current drive circuits connected in parallel, wherein each of said current drive circuits receives said input signal to be synthesized, wherein said bias current source and said emitter of said load transistor in said load transistor circuit are connected to a common connection point of said parallel current drive circuits.

5,510,746

LOAD CIRCUIT TOLERATING LARGE CURRENT AND VOLTAGE SWINGS

Satoru Tanol, Tokyo, Japan, assignor to Oki Electric Industry Co., Ltd., Tokyo, Japan

Division of Ser. No. 170,070, Dec. 20, 1993. This application Jun. 1, 1995, Ser. No. 457,879

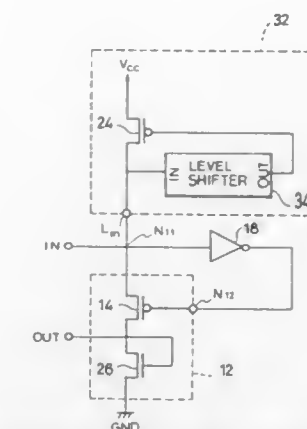
Claims priority, application Japan, Dec. 28, 1992, 4-349645; Dec. 28, 1992, 4-349646; Dec. 28, 1992, 4-359742

Int. Cl. H03K 17/687; H03L 5/00

U.S. Cl. 327—427

3 Claims

1. A load circuit, comprising:
an input terminal;



a field-effect transistor with a source coupled to receive a fixed potential, a gate, and a drain coupled to said input terminal; and

a level shifter coupled between said input terminal and the gate of said field-effect transistor, for shifting a potential of said input terminal, thereby controlling said field-effect transistor.

5,510,747

GATE DRIVE TECHNIQUE FOR A BIDIRECTIONAL BLOCKING LATERAL MOSFET

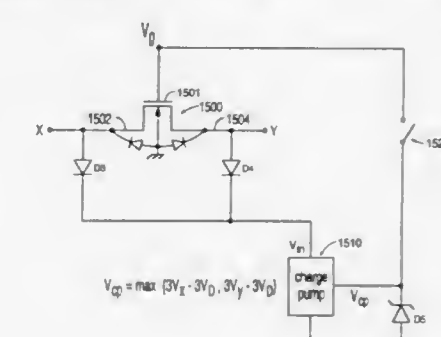
Richard K. Williams, Cupertino, Calif., assignor to Siliconix Incorporated, Santa Clara, Calif.

Filed Nov. 30, 1993, Ser. No. 160,560

Int. Cl. H03K 17/687

U.S. Cl. 327—434

22 Claims



1. A gate drive circuit for generating a gate drive voltage on a gate of a bidirectional MOSFET, the bidirectional MOSFET including a body, first and second regions of a first conductivity type formed in the body and separated by a channel region of a second conductivity type also formed in the body, the gate being located over the channel and separated from the body by a gate oxide layer, wherein the first and second regions of the bidirectional MOSFET are electrically isolated from the body and the body is maintained at a voltage level which is either higher or lower than voltage levels of both the first and second regions, the gate drive circuit comprising:

a voltage generating circuit comprising a charge pump having an input terminal connected to the first region through a first rectifying device, the input terminal also being connected to the second region through a second rectifying device, the voltage generating circuit also having an output terminal connected to the gate of the bidirectional MOSFET for producing the gate drive voltage at a level less than or equal to a maximum voltage determined by a thickness of the gate oxide layer.

said amplifier means being connected in a bridge configuration, said first and second amplifier means each having their first power terminals coupled together and to a first power input terminal, said third and fourth amplifier means each having their first power terminals coupled together and to a second power input terminal;

- (c) the second power terminals of said first and third amplifier means being coupled together and to a first output terminal, the second power terminals of said second and fourth amplifier means being coupled together and to a second output terminal, said first and second output terminals being adapted to being connected to a load;
- (d) an input terminal for said input signal, and a control circuit coupled between said input terminal and said control terminals of said first to fourth amplifier means to operate alternately said first and third amplifier means and then said second and fourth amplifier means, to direct current from said first power input terminal through said first amplifier means, said first output terminal, said load, said second output terminal, said fourth amplifier means and said second power input terminal, and then to direct current from said first power input terminal through said second amplifier means, said second output terminal, said load, said first output terminal, said third amplifier means and said second power input terminal;
- (e) modulating means coupled to said input terminal for producing a modulated signal having modulation dependent on said input signal;
- (f) power supply means, and filter means for said power supply means;
- (g) switch means having a control input, said switch means coupling said power supply means to said filter means, said filter means being coupled to said first and second power input terminals;
- (h) said modulating means being coupled to said control input of said switch means for controlling said switch means to produce at said power input terminals a power signal dependent on said input signal; and
- (i) said modulating means including means for producing a power control signal for controlling said switch means and phase shifter means for phase shifting said power control signal so that said power signal is shifted for alignment with said input signal.

5,510,754

FAST SLEWING AMPLIFIER USING DYNAMIC CURRENT MIRRORS

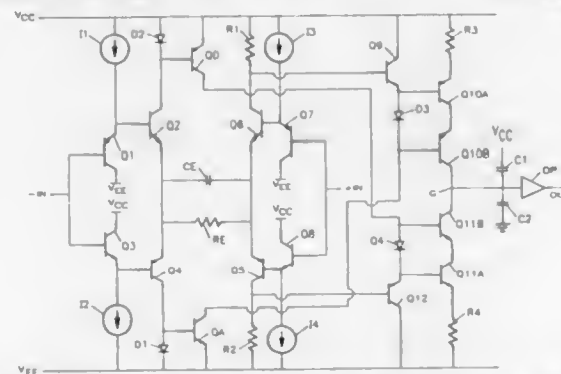
Farhood Moraveji, San Jose, and Mahmud F. Musbah, Santa Clara, both of Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Filed Nov. 18, 1994, Ser. No. 341,818

Int. Cl.⁶ H03F 3/30

U.S. Cl. 330—267

11 Claims



11. A method of operating an amplifier having an input buffer, a first gain stage driven by the input buffer, and a second gain stage driven by the first gain stage, comprising the steps of: providing a current to drive each of the gain stages; dynamically adjusting an amount of the provided current; and

operating the second gain stage as a cascode current mirror to provide increased output impedance at an output node of the second gain stage and to mirror a current output of the first gain stage.

5,510,755

TEMPERATURE STABLE VOLTAGE-CONTROLLED ELECTRONIC CAPACITANCE FOR AN OSCILLATOR

Marc Kodrnja, and Vincent Dufosse, both of Grenoble, France, assignors to SGS-Thomson Microelectronics, S.A., Saint-Genis Pouilly, France

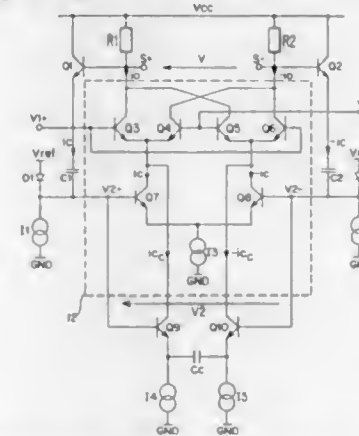
Filed Dec. 28, 1994, Ser. No. 365,465

Claims priority, application France, Dec. 30, 1993, 93 16032

Int. Cl.⁶ H03B 5/00; H03H 1/48

U.S. Cl. 331—177 R

21 Claims



- I. A voltage-controlled capacitor including: two parallel differential pairs of transistors cross-controlled by a first differential signal, respective output branches of said two differential pairs constituting terminals of the voltage controlled capacitor;
- two biasing transistors that determine respective bias currents of the two differential pairs of transistors as a function of a second differential signal;
- two reference capacitors;
- means for applying a voltage present at each of the controlled capacitor terminals to a respective one of the two reference capacitors;
- means for providing, as said second differential signal, a current in each one of the two reference capacitors;
- a compensation capacitor; and
- two compensation transistors having first main electrodes connected together by the compensation capacitor and being connected in parallel between their first main electrode, their second main electrodes and their control electrodes, the two compensation transistors being coupled to the differential pairs of transistors and to the biasing transistors.

5,510,756

STRIP TRANSMISSION LINE HAVING A TUNABLE ELECTRIC LENGTH

Wolfgang Arnold, Aspach; Erich Pivt, Allmersbach; Wolfgang Weiser, Aspach, and Seibert Martin, Oppenweiler, all of, Germany, assignors to AFT Advanced Ferrite Technology, Backnang, Germany

Filed Oct. 12, 1994, Ser. No. 321,522

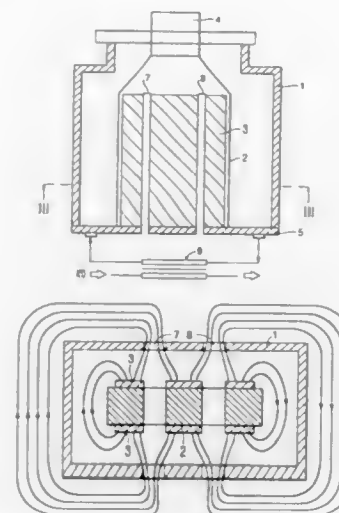
Claims priority, application Germany, Oct. 14, 1993, 43 34 977.3

Int. Cl.⁶ H01P 7/06; H03J 3/16

U.S. Cl. 333—223

5 Claims

- I. A strip transmission line for guiding a wave therein, comprising
- (a) a strip-shaped inner conductor;



- (b) an outer conductor surrounding said inner conductor;
- (c) a ferrite coating carried on at least one of the conductors; and
- (d) at least one throughgoing slot in said inner and outer conductors for dividing said inner and outer conductors into at least two inner conductor sections and at least two outer conductor sections; said slots extending in a direction of wave propagation, whereby a variable current applied to said inner and outer conductors flows in one direction in one of the inner and outer conductor sections and returns in an opposite direction in another of said inner and outer conductor sections for generating a variable premagnetizing field within the strip transmission line between said inner and outer conductors to vary an electric length of the strip transmission line.

5,510,757

BROADBAND MINIATURE TRANSFER SWITCH MATRIX

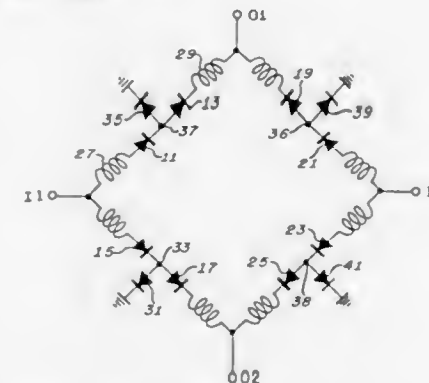
Mahesh Kumar, Hauppauge, and Michael E. Knox, Bayside, both of N.Y., assignors to Loral Corporation, New York, N.Y.

Filed Sep. 23, 1994, Ser. No. 311,074

Int. Cl.⁶ H01P 1/15

U.S. Cl. 333—104

13 Claims



- I. A transfer switch comprising: a plurality of input terminals;
- a plurality of output terminals interspersed between said input terminals so that input and output terminals alternate, providing respective path segments between input and output terminals;
- unidirectional current conductive devices positioned in each of said path segments and coupled between said input and said output terminals of said segments, said devices having inherent parasitic capacitance; and
- inductors positioned in said path segments coupled between said input terminal of said path segment and said unidirectional current conductive devices and between said output terminal of said segment and said unidirectional current conductive

devices, said inductor tuning out said parasitic capacitance of said unidirectional current conductive devices to maintain phase balance.

5,510,758

MULTILAYER MICROSTRIP WIRING BOARD WITH A SEMICONDUCTOR DEVICE MOUNTED THEREON VIA BUMPS

Suguru Fujita, Tokyo; Kazuaki Takahashi, Kawasaki; Morikazu Sagawa, Tama; Hiroyuki Sakai, Katano; Yorito Ota, Kobe, and Kaoru Inoue, Kadoma, all of, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan

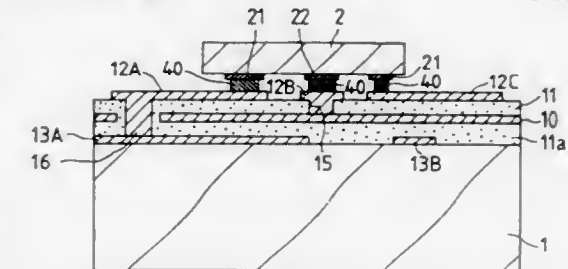
Filed Apr. 6, 1994, Ser. No. 223,979

Claims priority, application Japan, Apr. 7, 1993, 5-080504; Aug. 3, 1993, 5-192166; Dec. 24, 1993, 5-328236

Int. Cl.⁶ H01P 3/08; H01L 21/58

U.S. Cl. 333—247

1 Claim



- I. A semiconductor device comprising: a microstrip wiring board including a substrate having a main surface, a metal wiring line extending on the main surface of the substrate, a dielectric film extending on the metal wiring line, and a ground conductor extending on the dielectric film, the metal wiring line being fixed to the main surface of the substrate without using adhesive, the dielectric film being fixed to the metal wiring line without using adhesive, the ground conductor being fixed to the dielectric film without using adhesive, the substrate comprising one of silicon and glass, wherein the metal wiring line, the dielectric film, and the ground conductor comprise a microstrip transmission line; a bumps and a semiconductor chip connected to the microstrip wiring board via the bump.

5,510,759

MINIATURE CIRCUIT BREAKER WITH GROUND FAULT ELECTRONICS SUPPORTED BY STIFF CONDUCTORS FOR EASY ASSEMBLY

Lance Gula, Clinton, and Michael J. Whipple, Oakdale, both of Pa., assignors to Eaton Corporation, Cleveland, Ohio

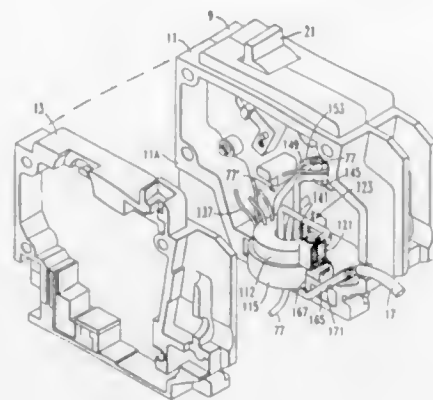
Filed Jun. 23, 1994, Ser. No. 264,559

Int. Cl.⁶ H01H 73/00

U.S. Cl. 335—18

8 Claims

- I. A circuit breaker comprising: a molded housing having compartments including an electronic compartment and assembled from a plurality of molded housing sections;
- circuit interrupting means including electronic trip means received in said electronic compartment; and
- stiff conductor means secured at one end to one molded housing section forming at least part of said electronics compartment and engaging and holding said electronic trip means in a fixed position with respect to said one molded housing section while said plurality of molded housing sections are assembled to form said molded housing.



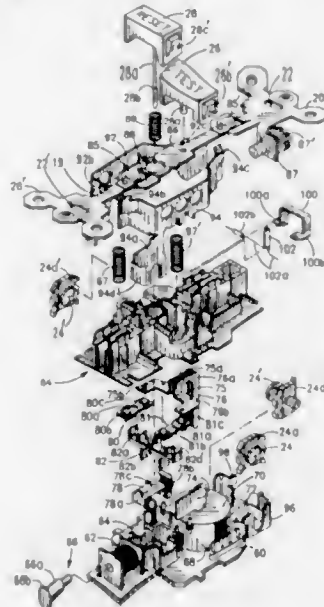
5,510,760
GROUND FAULT INTERRUPTER WIRING DEVICE
WITH IMPROVED LATCHING AND ACTUATING
COMPONENTS

Jean-Claude Marcou, DeWitt; Thomas N. Packard, Syracuse;
David A. Finlay, Marietta, and Patrick J. Murphy, Marcel-
lus, all of N.Y., assignors to Pass & Seymour, Inc., Syracuse,
N.Y.

Filed Oct. 24, 1994, Ser. No. 327,610
Int. Cl.⁶ H01H 73/00

U.S. Cl. 335—18

41 Claims



1. A unitary latch member for releasably maintaining a moveable contact of a ground fault interrupter wiring device in a predetermined position with respect to a fixed contact, said latch member having opposite end portions and comprising:

- an abutment portion at one of said ends;
- a spring portion at the other of said ends compressible to urge said latch member toward movement in the direction of said one end; and
- an engagement portion intermediate of said ends for releasable engagement with another portion of said device to temporarily maintain said latch member in a predetermined position.

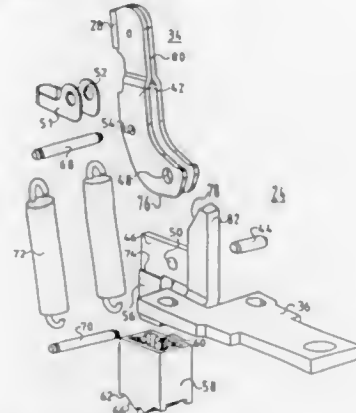
5,510,761
CONTACT SYSTEM FOR A CURRENT LIMITING UNIT
Franz Böder, Ahrbrück, and Bernd Howald, Bonn, both of,
Germany, assignors to Klöckner Moeller GmbH, Bonn, Ger-
many

Filed Oct. 11, 1994, Ser. No. 322,018
Claims priority, application Germany, Oct. 11, 1993, 43 34
577.8

U.S. Cl. 335—172

Int. Cl.⁶ H01H 9/00

20 Claims



1. A current limiting unit comprising:

housing means;
a contact system disposed at least partly within said housing means;

said contact system comprising:
first lead means and second lead means;
said first lead means having means for connecting to first means for conveying electrical current;
said second lead means having means for connecting to second means for conveying electrical current;

means for providing electrical communication between said first lead means and said second lead means;
said means for providing electrical communication compris-
ing:

wiper means, said wiper means having means for convey-
ing electrical current;
first connecting means for electrically connecting said first lead means with said wiper means;
second connecting means for electrically connecting said wiper means with said second lead means;

means for displaceably mounting said wiper means to per-
mit displacement of said wiper means away from said second lead means, to disengage said first contact portion from said second contact portion, to disrupt the electrical connection between said wiper means and said second lead means;

said second connecting means comprising:
a first contact portion disposed on said wiper means; and
a second contact portion disposed on said second lead means;

said first contact portion and said second contact portion being engageable with one another to electrically connect said wiper means with said second lead means;

means for biasing said wiper means towards said second lead means, to maintain said first contact portion and said second contact portion in engagement with one another, to maintain the electrical connection between said wiper means and said second lead means;

means for displacing said wiper means away from said second lead means, to disengage said first contact portion from said second contact portion, to disrupt the electrical connection between said wiper means and said second lead means; and

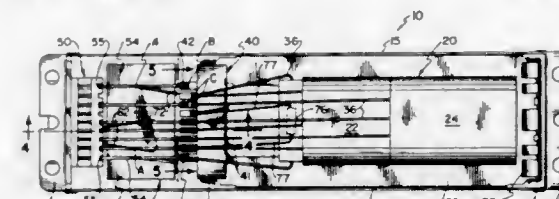
said wiper means, said first lead means, said biasing means, said first connecting means and said first contact portion forming a single, integral, pre-assembled unit.

5,510,762
SIMPLIFIED BALLAST TRANSFORMER ASSEMBLY
Steve M. Carey, Brandon; James H. Ball, Magee, both of Miss.,
and Raymond H. VanWagoner, Darien, Conn., assignors to
Magnetek, Inc., Los Angeles, Calif.

Filed Apr. 12, 1994, Ser. No. 226,714
Int. Cl.⁶ H01F 15/10

U.S. Cl. 336—192

11 Claims



1. Mounting arrangement for an inductive device comprising:

at least one coil of wire having first and second ends,
a terminal board with a plurality of individual conductive lugs all lying in substantially the same plane attached to said coil, at least one of said first and second coil wire ends engaging a terminal board lug;
a connector having a plurality of terminals to connect the device to external means;
a plurality of originally uninsulated connecting wires, each connecting wire extending from a respective connector terminal toward said terminal board and having a substantially straight portion lying in a plane substantially parallel to the plane of the terminal board lugs, the end of each connecting wire engaging a terminal board lug and all of said ends of said connecting wires and said at least one coil wire end welded or soldered to said terminal board lugs for permanent connection.

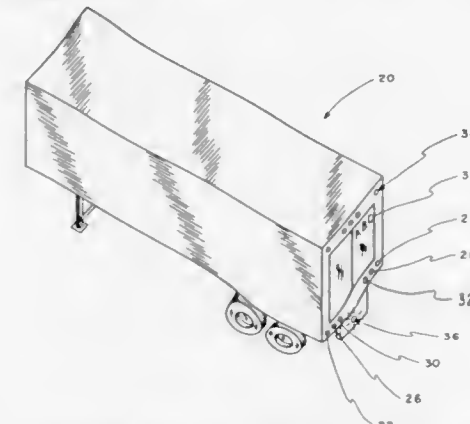
5,510,763
REAR TRUCK STROBE LIGHT CONTROLLER FOR
BACKING OR PARKING

Norman Deckard, Cooper City, Fla., and Thomas Schupbach, Arvada, Colo., assignors to Ryder Truck Rental, Inc., Miami, Fla.

Filed Jun. 2, 1993, Ser. No. 71,080
Int. Cl.⁶ B60Q 1/26

U.S. Cl. 340—431

12 Claims



1. A strobe light device for a rear end of a truck, said truck having head lights, tail lights, clearance lights, hazard lights, said strobe light device, and a transmission, said strobe light device comprising: a strobe light, means responsive to a driver operating the truck in a normal safe driving manner for automatically enabling said strobe light, means responsive to an operation of said transmission of said truck into park, neutral, or reverse positions while said strobe light is enabled or flashing said strobe light, means for manually overriding said strobe light in order to prevent

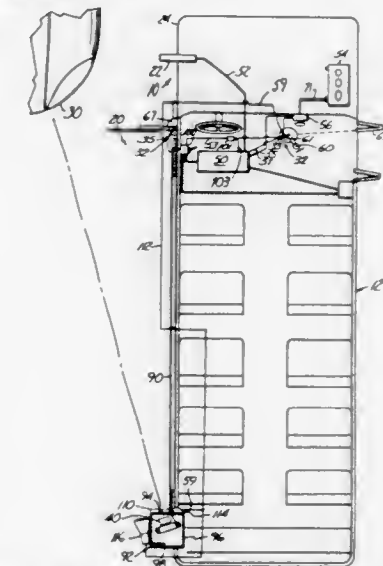
said flashing of said strobe light, and means responsive to a change in truck operation for automatically canceling said manual override.

5,510,764
DEVICE FOR DETECTING SCHOOL BUS STOP ARM
VIOLATIONS

Wayne L. Hauptli, 4519 110th St., Glencoe, Minn. 55336
Continuation of Ser. No. 227,508, Apr. 14, 1994, Pat. No.
5,382,953. This application Dec. 16, 1994, Ser. No. 358,205
Int. Cl.⁶ B60Q 1/26

U.S. Cl. 340—433

20 Claims



1. A device for identifying school bus stop arm violations wherein a moving vehicle enters a violation zone adjacent the school bus when a school bus stop arm is extended, the device comprising:

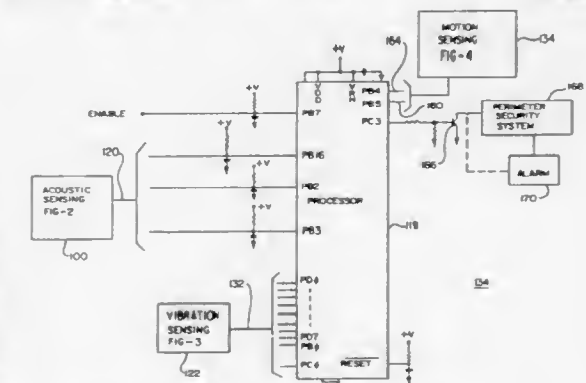
a control unit positionable on the school bus for providing a control signal when the stop arm is extended; and
a camera positionable on the school bus and responsive to the control signal for photographing the moving vehicle in the violation zone and the extended school bus stop arm.

5,510,765
MOTOR VEHICLE SECURITY SENSOR SYSTEM
Adrian Madau, Wesseling Keldenich, Germany, assignor to
Ford Motor Company, Dearborn, Mich.

Filed Jan. 7, 1993, Ser. No. 1,598
Int. Cl.⁶ G08B 13/00

U.S. Cl. 340—541

15 Claims



1. A security sensor for a motor vehicle comprising:

accelerometer means for monitoring vibrations within said vehicle and for generating force signals in response to said vibrations;

microphone means for monitoring acoustic energy within an interior passenger compartment of said vehicle and generating acoustic signals representative of said acoustic energy;

first acoustic circuit means coupled to said microphone means for sensing acoustic signals representative of acoustic energy within a first narrow low frequency band and generating low frequency acoustic energy present signals in response thereto;

second acoustic circuit means coupled to said microphone means for sensing acoustic signals representative of acoustic energy within a second high frequency band and generating high frequency acoustic energy present signals in response thereto; and

processor means coupled to said accelerometer means, said microphone means, said first acoustic circuit means and said second acoustic circuit means for receiving and processing said force signals, said acoustic signals, said low frequency acoustic energy present signals and said high frequency acoustic energy present signals being sampled in response to force signals exceeding a defined noise level or acoustic signals exceeding a defined sound level.

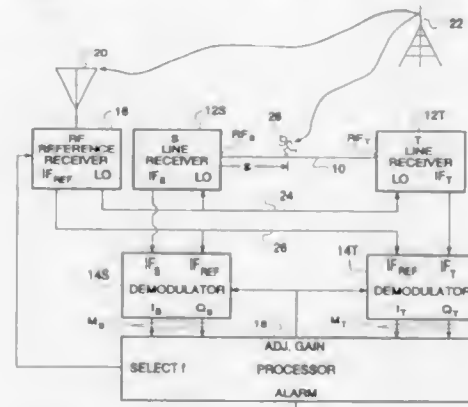
5,510,766

INTRUSION DETECTION SYSTEM

Robert K. Harman, Kanata, and André Gagnon, Hull, both of Canada, assignors to Auratek Security Inc., Hull, Canada
Continuation-in-part of Ser. No. 944,190, Sep. 11, 1992, abandoned. This application Mar. 16, 1994, Ser. No. 214,007
Int. Cl.⁶ G08B 13/18

U.S. Cl. 340—552

25 Claims



1. An intrusion detection system comprising:

an open transmission line; receiver means connected to both ends of the transmission line; means for providing at the receiver means a reference local oscillator signal and a reference intermediate frequency signal 4, the receiver means being responsive to the reference local oscillator signal and the reference intermediate frequency signal to extract from a first radio frequency signal received at one end of the line a first baseband signal comprising a first perturbation signal and to extract from a second radio frequency signal received at the other end of the line a second baseband signal comprising a second perturbation signal, the first and second perturbation signals being produced contemporaneously by an intruder in proximity to the line, and processor means for processing first baseband signal and the second baseband signal to provide a combined response signal in dependence upon both the first perturbation signal and the second perturbation signal and in inverse proportion to attenuation of the radio frequency sig-

nals by the line, determining presence of the intruder in dependence upon the combined response signal.

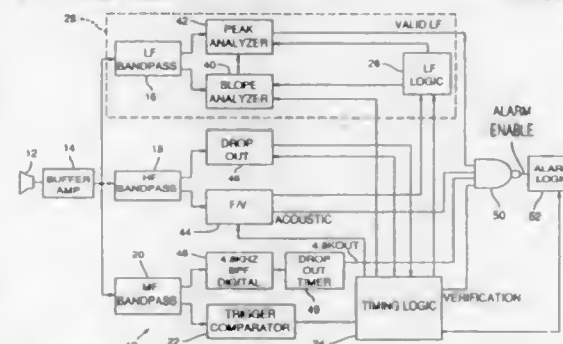
5,510,767

GLASS BREAK DETECTOR HAVING REDUCED SUSCEPTIBILITY TO FALSE ALARMS

Richard A. Smith, Portland, Oreg., assignor to Sentrol, Inc., Tualatin, Oreg.
Continuation of Ser. No. 85,634, Jun. 30, 1993, abandoned.
This application Feb. 1, 1995, Ser. No. 384,343
Int. Cl.⁶ G08B 13/00

U.S. Cl. 340—566

18 Claims



1. A detector system for detecting penetration of a contact-sensitive surface, comprising:

a transducer for detecting a low frequency wave of changing amplitude resulting from a contact force applied to the surface;

a low frequency detector for generating a low frequency signal derived from the low frequency wave, the low frequency signal having at least first and second consecutive amplitude peaks that are of opposite polarity relative to a reference level and the first amplitude peak of the low frequency signal reaching a predetermined threshold, the low frequency detector including low frequency circuitry characterized by a low frequency saturation amplitude, the low frequency circuitry operating such that the detector system produces an enable signal when any one of the following conditions occurs: the absolute value of the first amplitude peak is greater than the absolute value of the second amplitude peak, an intervening amplitude peak of the same polarity as that of the first amplitude peak appears between the first and second amplitude peaks and thereby produces a change in polarity of the slope of the low frequency signal after the first amplitude peak but before the second amplitude peak, or the value of an amplitude peak occurring after the first amplitude peak reaches the negative value of the low frequency saturation amplitude; and

an alarm responsive to the enable signal.

5,510,768

ALARM STRAP FOR LUGGAGE

Glenn E. Mann, 122 Sherlake Rd., Knoxville, Tenn. 37922
Filed Oct. 11, 1994, Ser. No. 321,322
Int. Cl.⁶ G08B 13/14; A45C 13/10

U.S. Cl. 340—571

13 Claims

1. An alarm strap for luggage which secures around a piece of luggage and emits an audible alarm when unauthorized entrance to the luggage is attempted through breakage of said alarm strap for luggage, said alarm strap for luggage comprising:

a strap defining a first end and a second end;

alarm circuitry, including continuity detection circuitry, for sensing the breakage of any said strap, said alarm circuitry emitting the audible alarm upon sensing the breakage of said strap; an electrically conductive element carried on said strap, said electrically conductive element having a first free end and a second free end, said first and second free ends connected into

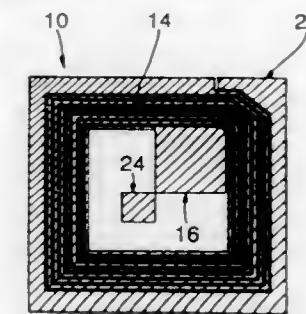
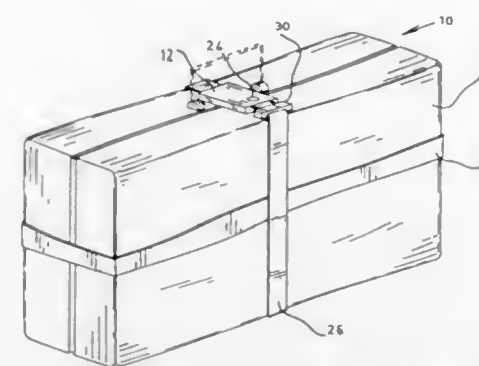
5,510,770

SURFACE DEACTIVATEABLE TAG

Kevin G. Rhoads, Andover, Mass., assignor to Checkpoint Systems, Inc., Thorofare, N.J.
Filed Mar. 30, 1994, Ser. No. 220,089
Int. Cl.⁶ G08B 13/18

U.S. Cl. 340—572

9 Claims



said continuity detection circuitry of said alarm circuitry, said electrically conductive element extending substantially the length of said strap and being broken by breakage of said strap;

an alarm housing defining a cavity for carrying said alarm circuitry, said alarm housing having a first side, a second side oppositely disposed to said first side, and a top side joining said first side to said second side, said first side provided with an opening dimensioned to accept said first free end of said strap into said alarm housing for attachment of at least one free end of said electrically conductive element to said continuity detection circuitry; and

a mechanism attached to an exterior surface of said second side of said alarm housing for engagement with said second end of said strap for taking up any slack in said strap after said alarm strap for luggage has been placed around the piece of luggage.

5,510,769

MULTIPLE FREQUENCY TAG

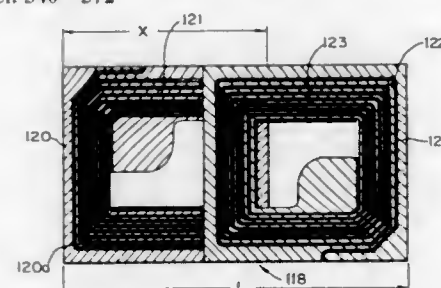
Darko Kajfez, University, Miss.; John H. Bowers, Clarksburg, N.J., and Guangun Zhou, University, Miss., assignors to Checkpoint Systems, Inc., Thorofare, N.J.

Filed Aug. 18, 1993, Ser. No. 108,866

Int. Cl.⁶ G08B 13/14

U.S. Cl. 340—572

4 Claims



1. A multiple frequency security tag, the tag comprising:

a generally flat dielectric substrate having first and second opposite principal surfaces;

a first resonant circuit including a first inductor coil located on the first surface of the substrate, the first resonant circuit having a first predetermined resonant frequency; and

a second resonant circuit including a second inductor coil located on the second surface of the substrate, the second resonant circuit having a second predetermined resonant frequency, wherein the first inductor coil is positioned on the substrate to partially overlie the second inductor coil in a manner which minimizes magnetic coupling between the first and second coils.

5,510,771

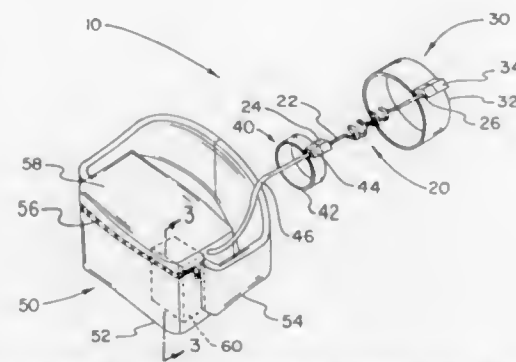
ALARM SYSTEM FOR PRECLUDING A CHILD FROM STRAYING

Burpee W. Marshall, 1201-87th St., Niagara Falls, N.Y. 14304
Filed Jan. 10, 1994, Ser. No. 179,318
Int. Cl.⁶ G08B 23/00

U.S. Cl. 340—573

4 Claims

1. An alarm system for precluding a child from straying that automatically monitors the presence of a small child within a radius defined by the length of a cable connected between a child



and a guardian of the child whereby an audible alarm is activated upon disconnecting or cutting of the cable, the alarm system comprising:

a multiconductor retractable coiled cable having a first end and a second end and with each end having a separate mechanically locking multiple-contact electrical connector means fixedly operationally connected thereto, the cable further having a predetermined length whereby a circular control zone having a radius determined by the fully extended length of the cable is defined;

an adult wrist strap for securing the first end of the cable to a guardian of the child, the adult wrist strap including a circular band of pliable elastic material, the circular band comfortably snugly securable around the guardian's wrist, the circular band also including a mechanically locking multiple-contact electrical connector means fixedly connected thereto, the connector means of the adult wrist strap additionally having electrically short-circuited contacts therein, the connector means of the adult wrist strap being operationally mated with the connector means of the first end of the cable;

a child wrist strap for securing the second end of the cable to the child, the child wrist strap including a circular band of pliable elastic material, the circular band comfortably snugly securable about the child's wrist, the circular band also including a mechanically locking multiple-contact electrical connector means fixedly connected thereto, the connector means of the child wrist strap being operationally mated with the connector means of the second end of the cable;

radio frequency transmitter means having a self-contained power source, the transmitter means also having small dimensions and a shape for allowing it to be secured to a key ring or worn as a neck pendant, the transmitter means further having an actuator means for manually initiating a radio frequency signal transmission at a characteristic transmission frequency;

radio frequency receiver means having a reception frequency identical to the characteristic transmission frequency of the transmitter means, the receiver means also having power supply input terminals, the receiver means additionally having normally-closed switch contact output terminals which become open-circuited when a radio frequency signal from the transmitter means is received;

alarm means for detecting an open-circuited condition whereby an audible alarm is activated, the alarm means further comprising processor means circuitry having power supply input terminals, the processor means circuitry also having audible signal loudspeaker output terminals, the processor means circuitry additionally having normally-closed input terminals operationally connected to the normally-closed switch contact output terminals of the radio frequency receiver means, the processor means circuitry further having reset switch input terminals;

a loudspeaker operationally connected to the loudspeaker output terminals of the processor means circuitry for allowing an audible alarm signal to be sounded;

a self-contained power source, the power source being operationally connected to the processor means circuitry power supply input terminals, the power source also being operationally connected to the radio frequency receiver means power supply input terminals;

on/off means for manually disconnecting and reconnecting the power source to the radio frequency receiver means and the processor means circuitry, the on/off means including electrical switch means being operationally connected in series with the power source;

alarm reset means for allowing the alarm means to be reset and for silencing the audible alarm signal, the alarm reset means including electrical switch means being operationally connected to the reset switch input terminals of the processor means circuitry;

container means for enclosing and shock-protecting the radio frequency receiver means, the processor means circuitry, the power source, and the loudspeaker, the container means also having a user-accessible mounting surface for holding the on/off means and the reset means, the container means including a hard-shell case formed of lightweight impact-resistant rigid material, the case having integral sides and bottom, the case also having a removable top, the case additionally having a plurality of holes formed thereon for allowing passage of electrical cables therethrough and mounting of electrical switch means therein;

carry pouch means for allowing the container means to be conveniently operationally transported by the child, the carry pouch means further comprising a sack enclosure formed of soft flexible resilient tear-resistant material having integral sides and a bottom with the sides and bottom bounding a hollow interior, the sack enclosure having opposing ends, the sack enclosure also having a top flap for covering the interior, the sack enclosure additionally having a closure means to releasably seal the flap;

belt means for securably comfortably releasably attaching the sack enclosure to a child's waist, the belt means including an elongated resilient band of elastic material fixedly connected at each end to opposing ends of the sack enclosure; and

a multiconductor electrical interconnect cable fixedly operationally extending from the electrical connector means of the child wrist strap to the normally closed terminals of the radio frequency receiver means and processor means circuitry thereby completing the closed-loop required by the alarm means for proper operation.

5,510,772

FLAME DETECTION METHOD AND APPARATUS
Joan Lasenby, Hardwick, United Kingdom, assignor to Kidde-Graviner Limited, Derby, United Kingdom

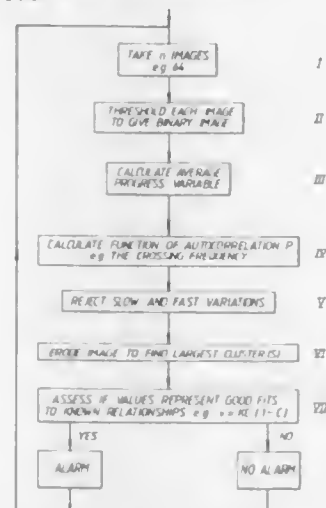
Filed Aug. 5, 1993, Ser. No. 102,388

Claims priority, application United Kingdom, Aug. 7, 1992, 9216811

Int. Cl.⁶ G08B 17/12

U.S. Cl. 340—578

42 Claims



1. A method of detecting flames within a monitored space, comprising the steps of:

viewing the space so as to produce a sequence of successive two-dimensional images of it in terms of the electromagnetic radiation received from it;

measuring the intensity of the radiation in each of a plurality of predetermined parts of each image, the parts of each image forming a two-dimensional array;

for each said part of all the images, comparing the measured intensity for that part with a predetermined threshold to produce a respective binary value for the intensity of that part, the binary value depending on whether the measured intensity is greater or less than the threshold, thereby producing a plurality of sets of binary values, each set comprising the binary values of a respective one of the parts in one image and of the correspondingly positioned part in each of the other images;

for each said set, calculating the average of its said binary values so as to produce a plurality of values for an average value parameter, each average value being the average of the binary values in a respective one of the sets;

each said set of binary values having an autocorrelation function;

for each said set, determining a value for a second parameter which is calculated in a predetermined manner from the autocorrelation function of the binary values in that set; and testing the said values of the average value parameter against those of the second parameter by determining whether a predetermined relationship exists between said values of respective parameters which occurs when the values of the respective parameters correspond to those values produced in the presence of a flame in the monitored space, thereby determining whether or not the said values indicate the presence of a flame.

5,510,773

LOW BURDEN VISUAL POWER-ON INDICATOR FOR A SELF-POWERED CIRCUIT PROTECTION DEVICE

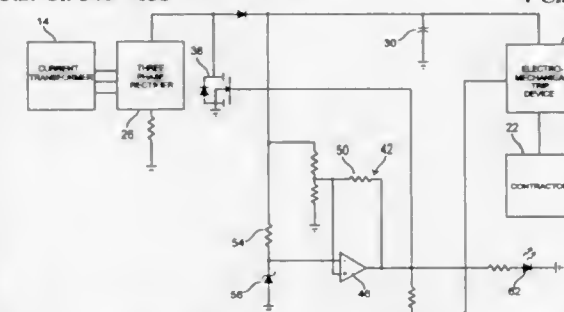
Barry Rodgers, Raleigh, N.C., assignor to Square D Company, Palatine, Ill.

Filed Oct. 14, 1994, Ser. No. 323,469

Int. Cl.⁶ G08B 21/00

U.S. Cl. 340—638

4 Claims



1. A low burden visual POWER ON indicator for a self-powered electrical circuit protection device, said low burden visual POWER ON indicator comprising in combination:

a current transformer coupled to a protected electrical device for producing an induced current directly proportional to a current supplied to said protected electrical device;

means for rectifying said induced current;

an energy accumulator for storing an accumulated voltage supplied by said rectifying means;

means for providing a stable reference voltage;

an operational amplifier electrically connected to said energy accumulator and biased by said stable reference voltage such that when said accumulated voltage is equal to said stable reference voltage said operational amplifier produces a HIGH output signal and when said accumulated voltage is less than said stable reference voltage said operational amplifier produces a LOW output signal;

5,510,774

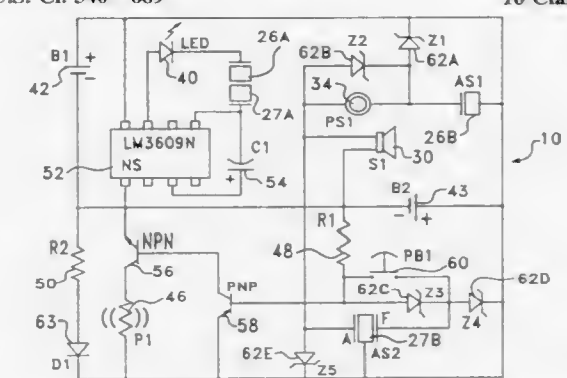
ENERGY EFFICIENT INDEPENDENT ALARM SYSTEM
Kurt R. Phillips, 855 W. Dillon Rd., #1305, Louisville, Colo. 80027

Filed May 27, 1993, Ser. No. 68,407

Int. Cl.⁶ G08B 13/08; 13/14

U.S. Cl. 340—689

16 Claims



5. An electrically powered independent alarm system, including in combination:

a housing member;

circuit means for the alarm system for consuming electric power at a reduced rate, said circuit means carried by said housing member and including a battery as the electrical power source, said circuit means being pulsed to conserve energy;

agitation sensor means carried by said housing member and connected to said circuit means, which agitation sensor means is activated by movement or agitation of said housing member;

tilt sensor means carried by said housing member and connected to said circuit means, which tilt sensor means is activated by tilting of said housing member;

first signal means carried by said housing member and connected to said circuit means, which first signal means is activated when either said agitation sensor means or said tilt sensor means are activated;

indicator means connected to said circuit means to indicate whether the system is operating, and also to indicate whether the battery has stored energy, or no energy;

second signal means carried by said housing member and connected to said circuit means; and

a tampering sensor which, when triggered, causes said second signal means to be activated.

(f) an activation switching means for selectively controlling a switch connected to said electrical device, said controller including means for selectively controlling said activation switching means to close said switch during a first of said predetermined time periods, but to open said switch after said

second predetermined number of the legal states, wherein said first and second values represent the sample of NRZ data in CMI format.

5,510,787

SYSTEM COMPRISING AT LEAST ONE ENCODER FOR CODING A DIGITAL SIGNAL AND AT LEAST ONE DECODER FOR DECODING A DIGITAL SIGNAL, AND ENCODER AND DECODER FOR USE IN THE SYSTEM ACCORDING TO THE INVENTION

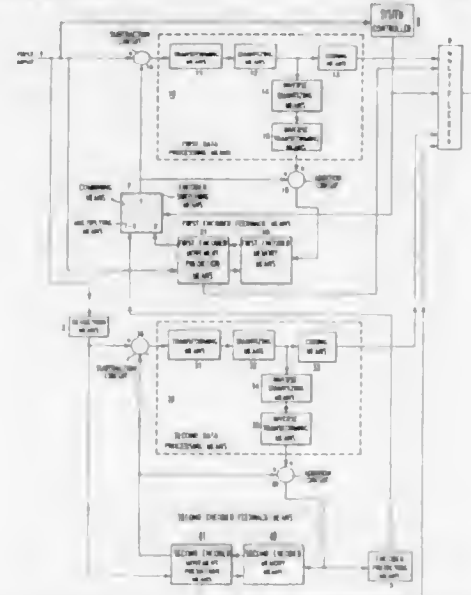
Arian Koster, Mydrecht, Netherlands, assignor to Koninklijke PTT Nederland N.V., Groningen, Netherlands
Filed Sep. 10, 1993, Ser. No. 119,740

Claims priority, application Netherlands, Sep. 22, 1992, 9201640

Int. Cl.⁶ H04N 11/02

U.S. Cl. 341—76

10 Claims



5. A coding/decoding system comprising at least one encoder for coding a digital signal and at least one decoder for decoding a coded digital signal wherein said encoder comprises:

- an encoder-input for receiving the digital signal;
 - first data processing means for generating a first coded digital signal at a first output of the first data processing means data and having an input coupled to the encoder-input;
 - first encoder feedback means, having a first encoder memory means, for feeding back at least a portion of the first coded digital signal such that an output of the first encoder memory means is coupled to the input of the first data processing means and an input to the first encoder memory means is coupled to a second output of the first data processing means;
 - reduction means for filtering and subsampling the received digital signal having an input coupled to the encoder input;
 - second data processing means for generating a second coded digital signal at a first output of the second data processing means having an input coupled to an output of the reduction means;
 - second encoder feedback means, having a second encoder memory means, for feeding-back at least a portion of the second coded digital signal such that an output of the second encoder memory means is coupled to the input of the second data processing means and an input to the second encoder memory means is coupled to a second output of the second data processing means; and
 - encoder coupling means for coupling the second data processing means to the first data processing means;
- wherein said decoder further comprises:
- first data reprocessing means for reprocessing a first coded digital signal;

first decoder memory means coupled to the first data reprocessing means;

- second data reprocessing means for reprocessing a second coded digital signal;
- second decoder memory means coupled to the second data reprocessing means; and
- decoder coupling means for coupling the second data reprocessing means to the first data reprocessing means having a decoder prediction means for generating a decoder prediction signal;

wherein the encoder further comprises:

- means for deriving a position code from the digital signal, comparing the position code with at least one adjustable code, and transmitting a control signal to the encoder coupling means thereby decoupling, operative as a result of a comparison, the second data processing means and the first data processing means, wherein said deriving, comparing and transmitting means has an input coupled to the encoder input and an output coupled to a control input of the encoder coupling means.

5,510,788

DATA CONVERSION APPARATUS

Hochang Jeong, and Jong-Chul Park, both of Seoul, Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suwon-city, Rep. of Korea

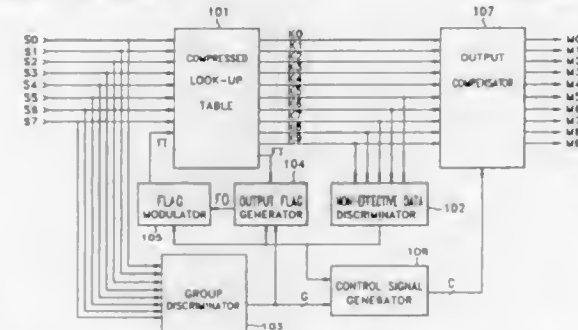
Filed Feb. 9, 1994, Ser. No. 194,448

Claims priority, application Rep. of Korea, Feb. 9, 1993, 171793

Int. Cl.⁶ H03M 7/42

U.S. Cl. 341—106

12 Claims



1. A data conversion apparatus for converting source data into modulation data, comprising:

- a compressed look-up table for sequentially converting i) a first address including said source data and an original input flag into first tentative data and a first tentative flag, and ii) a second address including said source data and a modulated input flag into second tentative data and a second tentative flag;
- a group discriminator for discriminating said source data in accordance with a bit pattern thereof so as to produce a group discrimination signal;
- a non-effective data discriminator for producing a non-effective data detection signal when said first tentative data produced by said compressed look-up table is non-effective data;
- an output flag generator for generating an output flag as a function of one of said tentative flags and said non-effective data detection signal;
- a flag modulator for providing said original input flag and said modulated input flag sequentially to said compressed lookup table based on said non-effective data detection signal produced by the non-effective data discriminator and the output flag generated by the output flag generator;
- a control signal generator for producing a control signal based on said non-effective data detection signal and said group discrimination signal; and
- an output compensator for producing said modulation data by modulating said second tentative data as a function of said control signal.

5,510,789 ALGORITHMIC A/D CONVERTER WITH DIGITALLY CALIBRATED OUTPUT

Hae-Seung Lee, Arlington, Mass., assignor to Analog Devices, Incorporated, Norwood, Mass.

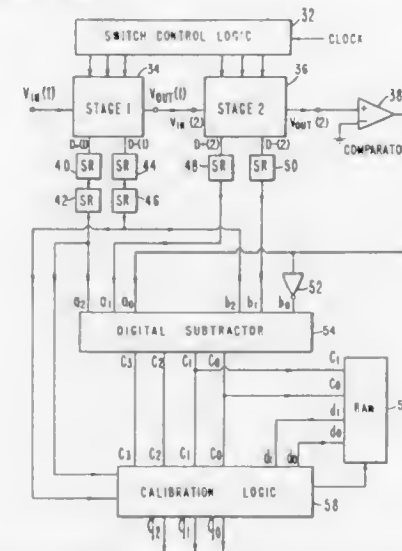
Continuation of Ser. No. 60,754, May 12, 1993, abandoned.

This application Mar. 28, 1995, Ser. No. 412,269

Int. Cl.⁶ H03M 1/10

U.S. Cl. 341—120

18 Claims



1. In an algorithmic A/D converter of the type wherein at least one stage employs a circuit having two capacitors with means for switching said two capacitors successively into different circuit-connection configurations wherein the switching between two such configurations effects a mathematical function, and wherein errors in the converter output will occur if there is mismatch of said two capacitors:

the method of calibrating said converter to avoid such errors comprising the steps of:

- exercising said one stage by connecting said two capacitors in said circuit successively between a first set of different circuit-connection configurations;
- developing a digital measure of mismatch of said two capacitors from a circuit effect produced by said exercising of said one stage between said first set of circuit-connection configurations;
- storing said digital measure of mismatch in a memory device; and
- utilizing said digital measure of mismatch with the digital output of said converter to effect calibration thereof whenever a conversion is performed.

5,510,790

DIGITAL CIRCUIT FOR THE INTRODUCTION OF DITHER INTO AN ANALOG SIGNAL

Gary S. Borgen, Camarillo, and Christian L. Houlberg, Ventura, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 25, 1994, Ser. No. 233,283

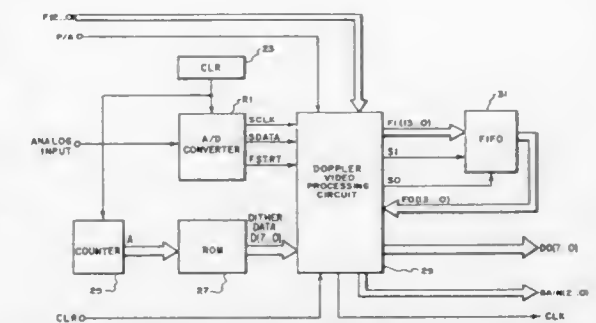
Int. Cl.⁶ H03M 1/18

U.S. Cl. 341—131

10 Claims

1. A dithered analog-to-digital conversion circuit with gain control, comprising:

- an analog to digital converter having an input for receiving an analog video signal, said analog to digital converter converting said analog video signal to an equivalent digital signal having a plurality of digital data samples, each of said digital data samples having thirteen data bits and a sign bit;



serial to parallel conversion means for receiving said digital equivalent signal and converting said digital equivalent signal from a serial form to a parallel form;

decoder means for receiving a first logic signal and decoding said first logic signal to provide a second logic signal;

clock signal generating means for receiving a system clock signal and a frame start signal, said clock signal generating means, responsive to said system clock signal and said frame start signal, generating a strobe data in signal and an internal clock signal;

a down counter coupled to said decoder means and said clock signal generating means for receiving said internal clock signal and said second logic signal, said down counter, responsive to said internal clock signal, counting down from a first binary number set within said down counter when said down counter receives and decodes said second logic signal; said down counter providing a latch pulse when said binary counter counts down a second binary number;

a Flip-Flop having a data input for receiving a logic one signal, a clock input connected to said down counter for receiving said logic pulse and an output, said Flip-Flop, responsive to said latch pulse, latching to the output of said Flip-Flop said logic one signal;

gating means having a first input for receiving said logic one signal, a second input for receiving said data strobe in signal, and an output, said logic one signal enabling said AND gate allowing said data strobe in signal to pass through said gating means to provide at the output of said gating means a data strobe out signal;

a first-in, first-out memory coupled to said serial to parallel conversion means, said clock signal generating means and the output of said gating means, said first-in, first-out memory, responsive to said data strobe in signal, temporarily storing the digital data samples of said digital equivalent signal, said data strobe out signal effecting a retrieval of the digital data samples of said digital equivalent signal stored in said first-in, first-out memory;

gain control circuit means for receiving a first most significant data bit, a second most significant data bit, a third most significant data bit and a fourth most significant data bit of said digital data samples and said sign bit for each digital data sample;

said gain control circuit means calculating an average value of said first, second, third and fourth most significant bits for a predetermined number of digital data samples, said gain control circuit means generating a four bit logic signal indicative of said average value, said gain control circuit means allowing for the sign bit of each digital data sample when calculating the average value for said predetermined number of digital data samples

said gain control circuit means receiving said latch pulse and being reset by said latch pulse to allow for subsequent average value calculations of said predetermined number of digital data samples;

a data selector circuit coupled to an output of said first-in, first-out memory for receiving the thirteen data bits of said digital data samples from said first-in, first-out memory;

said data selector circuit coupled to an output of said gain control circuit means for receiving said four bit logic signal from said gain control circuit means, said data circuit means, responsive to said four bit signal selecting nine data bits of the

thirteen data bits of each digital data sample and providing said nine data bits of each digital data sample selected by data selector circuit to an output of said data selector circuit; dither generating means for digitally generating a sequence of eight bit dither components; and binary adder means for combining one of said sequence of eight bit dither components, said nine data bits of each digital data sample and said sign bit for said digital data sample to produce an eight bit digital output signal.

5,510,791 REMOTE CONTROL UNIT FOR INSTALLATION IN VEHICLE

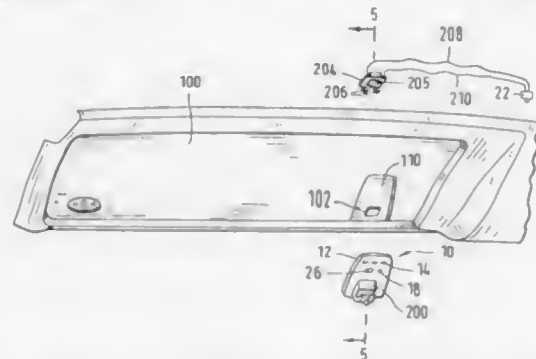
Lothar Viertel, Altforweiler; Karl-Helz Pompino, Wuppertal, both of, Germany; Patrick Welter, LaChambre, and Didier Canchois, Guerting, both of, France, assignors to Gehr. Hap-pich GmbH, Germany

Filed Jun. 28, 1994, Ser. No. 267,817

Int. Cl.⁶ G08C 17/00

U.S. Cl. 341—173

18 Claims



1. A remote control unit for use in a vehicle for controlling an automatic device outside the vehicle, the vehicle having a ceiling and having a visor located at the ceiling, the remote control unit being mounted at the ceiling of the vehicle and near the visor, the remote control unit comprising:

- a) an electric circuit;
- a) a transmitter connected to the circuit;
- a) an antenna connected to the transmitter;
- a) at least one switch means located on the ceiling of the vehicle and connected to the circuit for activating the circuit and the transmitter to transmit a signal via the antenna to the automatic device;
- a) housing at the vehicle ceiling, the at least one switch means being located at the housing, wherein
- a) a visor support bracket is mounted on the ceiling and the housing has an opening for receiving the visor support bracket.

5,510,792 ANECHOIC CHAMBER AND WAVE ABSORBER

Nobuyuki Ono; Yoshihisa Hayashi; Atsushi Kisuki, and Yasushi Ikeda, all of Tokyo, Japan, assignors to TDK Corporation, Tokyo, Japan

Filed Dec. 27, 1994, Ser. No. 363,918

Claims priority, application Japan, Dec. 27, 1993, 5-073707 U; Jun. 23, 1994, 6-163331

Int. Cl.⁶ H01Q 17/00

U.S. Cl. 342—4

12 Claims

1. An anechoic chamber having a conductively closed structure with a floor, a ceiling and a wall, with at least the inner surface of said ceiling and said wall covered with a wave absorbers which is arranged by interposing a dielectric plate between a metal plate provided on an interior surface of the chamber and a wave absorbing member such that the wave absorbing member is located on an interior-side surface of the chamber,



wherein metal fittings are fixed onto said metal plate by one of welding and brazing, and said dielectric plate is attached to said metal plate by means of said metal fittings.

5,510,793 COMBINED RADAR DETECTOR, SPEED MEASURING DEVICE AND PRINTER FOR VERIFYING VEHICLE SPEED

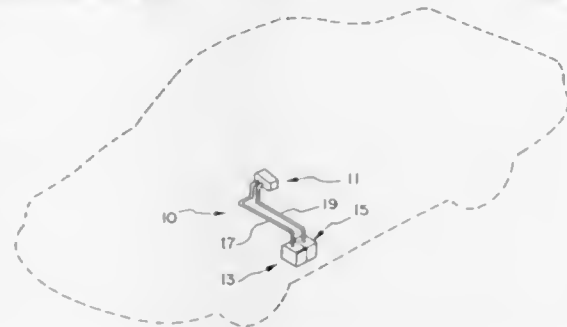
Eugene S. Gregg, III, 20 Sally Port Rd., Hilton Head Island, S.C. 29928, and James A. Mittler, P.O. Box 132, Bluffton, S.C. 29910

Filed Mar. 30, 1995, Ser. No. 413,834

Int. Cl.⁶ G01S 7/40; 13/87; 13/92

U.S. Cl. 342—20

7 Claims



1. A system mountable in a vehicle for verifying vehicle speed, comprising:

- a) detector means for detecting signals indicative of nearby use of a speed measuring device, said detector means including alarm means for notifying a user of detection of said signals;
- b) transmitter means activated responsive to sensing of said signals by said detector means, for transmitting further signals away from said vehicle toward a stationary surface;
- c) receiver means for receiving reflected signals from reflection of said further signals off said stationary surface, said reflected signals being transmitted to a computer with memory;
- d) said computer with memory receiving said reflected signals and calculating and storing vehicle speed.

5,510,794 VEHICULAR RADAR WAYSIDE TRANSPONDER SYSTEM

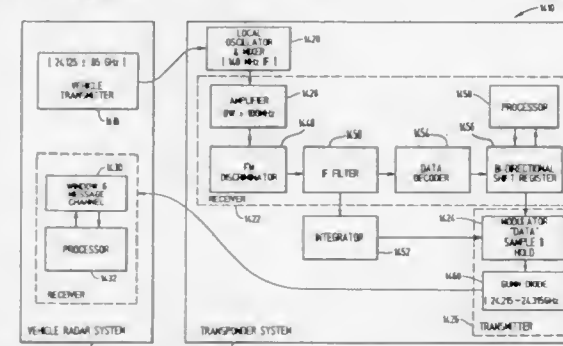
Jimmie R. Asbury, P.O. Box 221057, San Diego, Calif. 92192, and John W. Davis, 1512 Calle Narcisos, Encinitas, Calif. 92024

Continuation-in-part of Ser. No. 20,600, Feb. 22, 1993, Pat. No. 5,285,207, which is a continuation of Ser. No. 756,176, Sep. 6, 1991, Pat. No. 5,189,426, which is a continuation-in-part of Ser. No. 695,951, May 6, 1991, abandoned, which is a continuation-in-part of Ser. No. 376,812, Jul. 7, 1989, abandoned. This application Jan. 21, 1994, Ser. No. 185,135

Int. Cl.⁶ G01S 13/74

U.S. Cl. 342—42

14 Claims



1. A radar system comprising the combination of:

- a) a vehicle borne radar system for transmitting radar signals and receiving the transmitted radar signals reflected back to the radar system by a target, during a first selected portion of each of a succession of time interval frames; and
- b) a transponder for communicating with the vehicle borne radar system by transmitting signals to be received by the vehicle borne radar system during a second selected portion of a time interval frame, the second portion of the time interval frame being different from the first selected portion within each of the succession of time interval frames.

5,510,795 SINGLE ANTENNA LOCATION AND DIRECTION FINDING SYSTEM

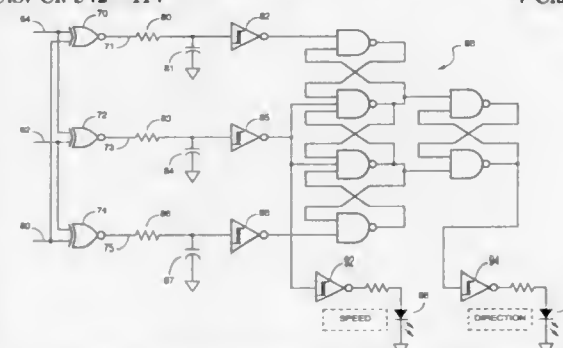
Alfred R. Koelle, Santa Fe, N.M., assignor to Amtech Corporation, Albuquerque, N.M.

Filed Nov. 10, 1994, Ser. No. 338,008

Int. Cl.⁶ G01S 13/58

U.S. Cl. 342—114

4 Claims



1. A circuit for determining speed and direction of movement for use in a single-antenna reader in a system including a reader and a transponder displaced from the reader, comprising:

- means for generating first, second and third signals responsive to a signal received from a transponder, said first, second and third signals being differentially phased;
- means for detecting and reporting the pattern of signal state changes in said first, second and third signals;
- means for storing the pattern of signal state changes reported by said detecting and reporting means; and

means for comparing the present pattern of signal state changes reported by said detecting and reporting means with the previous pattern recorded in said storage means and for determining speed and direction of movement therefrom.

5,510,796 APPARATUS FOR WIND SHEAR COMPENSATION IN AN MTI RADAR SYSTEM

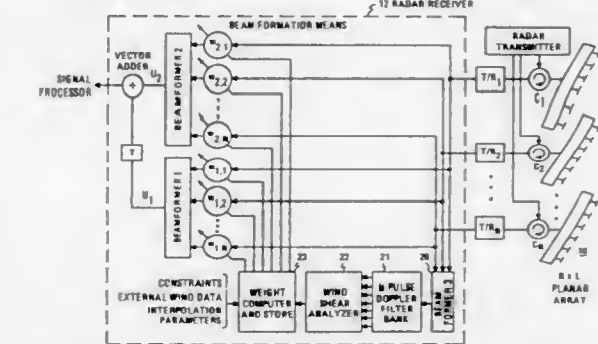
Sidney P. Applebaum, Liverpool, N.Y., assignor to Martin Marietta Corporation, Syracuse, N.Y.

Filed Dec. 31, 1984, Ser. No. 687,922

Int. Cl.⁶ G01S 13/534

U.S. Cl. 342—162

7 Claims



6. A moving target indicating radar system in which the adverse affect of wind shear driven clutter is reduced with a minimum reduction of the usable doppler frequency spectrum, the combination comprising:

- A. a radar antenna array comprising a plurality of radiating elements disposed in a common plane and arranged in horizontal rows and vertical columns;
- B. means for phase shifting, weighting and summing elements of each row;
- C. means for obtaining the undelayed sum output of each row as well as the sum output of each row, delayed in time by a predetermined amount;
- D. means for obtaining the sample covariance matrix of the outputs, delayed and undelayed of all rows, said sample covariance matrix consisting of elements which are the arithmetic average of the products of the row outputs by pairs; and
- E. means for inverting the sample covariance matrix, and multiplying the conjugate of a steering vector S by the inverse to obtain a weight vector W; and
- F. means for forming a beam from the delayed and undelayed row outputs by weighting these outputs by the components of W, and summing.

5,510,797 PROVISION OF SPS TIMING SIGNALS

Charles Abraham, Cupertino, and James M. Janky, Los Altos, both of Calif., assignors to Trimble Navigation Limited, Sunnyvale, Calif.

Filed Apr. 15, 1993, Ser. No. 47,859

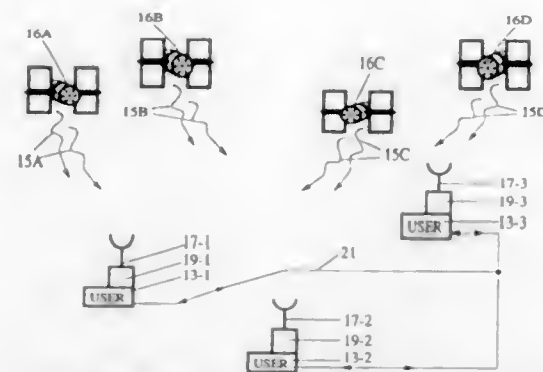
Int. Cl.⁶ H04L 7/185; G04C 11/02; H04J 3/06; H04C 7/00

U.S. Cl. 342—352

8 Claims

1. A method for providing a sequence of timing signals for a network of M microprocessors or other timing-controlled electronic instruments, numbered m=1, 2, . . . , M, (M≥2), the method comprising the steps of:

- providing a network containing a plurality of M timing-controlled electronic instruments, numbered m=1, 2, . . . , M (M≥2);
- providing each of the M electronic instruments with an internal clock that generates and issues internal timing signals for use in operations by that instrument;
- providing a GPS signal antenna and GPS signal receiver/processor, to receive and process GPS signals from two or



more GPS satellites, to use these GPS signals to determine the times of receipt of these signals at the GPS antenna, to continually compute and transmit a sequence of time measurement signals, which have associated timing errors of at most about one microsecond and which are transmitted at least once in every time interval of length at most about one second; and causing each of the M instruments to receive this sequence of time measurement signals from the GPS receiver/processor and to adjust its internal timing signals to be synchronized with this sequence of time measurement signals, whereby the timing of operations performed by each of the M instruments is synchronized with the sequence of timing signals.

5,510,798

MULTIPLE-ACCURACY GPS SYSTEM

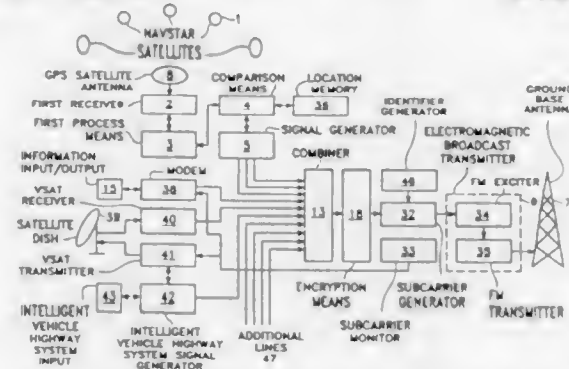
William D. Bauer, 2055 16th St., Gering, Nebr. 69341

Filed Apr. 2, 1993, Ser. No. 42,471

Int. Cl.⁶ H04B 7/185; G01S 5/02

U.S. Cl. 342—357

28 Claims



1. A method of accurately determining position using Navstar Global Position System (GPS) signals comprising the steps of:
 - a. receiving said GPS signals at a known location;
 - b. calculating a GPS signal-indicated location from said signals;
 - c. comparing said GPS signal-indicated location with said known location;
 - d. creating a first composite differential correction set indicative of a first correction with respect to said GPS signals in response to said step of comparing;
 - e. creating at least a second composite differential correction set in response to said step of comparing wherein said second composite differential correction set is independent from said first composite differential correction set, wherein said second differential correction set is indicative of a second correction with respect to said GPS signals, and wherein said second correction is different from said first correction;
 - f. disseminating said independent differential correction sets by transmission through electromagnetic broadcast;
 - g. receiving at least one of said differential correction sets at an unknown location;
 - h. receiving said GPS signals at said unknown location; and

- i. utilizing said differential correction set and said GPS signals to determine the location of said unknown location.

5,510,799

METHOD AND APPARATUS FOR DIGITAL SIGNAL PROCESSING

Alexander W. Wishart, Stevenage, Great Britain, assignor to MMS Space Systems Limited, Stevenage, England

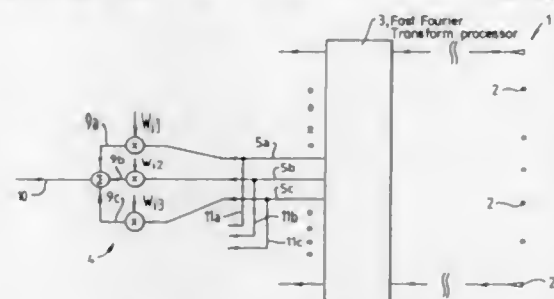
Filed Jun. 8, 1993, Ser. No. 73,144

Claims priority, application United Kingdom, Jun. 9, 1992, 9212152; May 19, 1993, 9310268

Int. Cl.⁶ H01Q 3/22

U.S. Cl. 342—373

16 Claims



1. A method for beam forming N orthogonal beams and in addition at least one agile beam, using N-point Fourier Transform processors and an N-element phased array antenna, and for beam detecting said N orthogonal beams and said at least one agile beam, said method comprising steps of:
 - transmit side beam forming said at least one agile beam using a first set of at least three of N orthogonal beam signals corresponding to three adjacent ones of said N orthogonal beam signals, comprising steps of:
 - generating a first set of at least three copies of complex envelope samples of an agile beam signal;
 - separately weighting, in amplitude and phase, each of said first set of at least three copies of said agile beam signal;
 - feeding said separately weighted copies of said agile beam signal into an N-point Fast Fourier Transform processor via at least three of N input ports thereof corresponding to said first set of at least three of said N orthogonal beam signals;
 - performing a Fast Fourier Transform process on said N orthogonal beam signals in said N-point Fast Fourier Transform processor so that said N orthogonal beam signals include said at least one agile beam as a weighted combination of said first set of at least three of said N orthogonal beam signals; and

outputting said Fast Fourier transform processed N orthogonal beam signals including said at least one agile beam at N output ports of said first Fast Fourier Transform processor for driving said N-elements of said N-element phased array antenna;

whereby N orthogonal beams and at least one agile beam are formed using N input ports and N output ports of said N-point Fast Fourier Transform processor; and receive said beam detecting said first agile beam signal, comprising steps of:

- inputting N baseband complex envelope samples of signals received respectively on said N-elements of said N-element phased array antenna to an N-point Discrete Fourier Transform processor;
- discrete Fourier transforming said N baseband complex envelope samples into said N-orthogonal beam signals;
- outputting said N-orthogonal beam signals at corresponding N output ports of said N-point Discrete Fourier Transform processor;
- weighting separately, in amplitude and phase, a copy of each of at least three of said N orthogonal beam signals output from said N-point Discrete Fourier Transform processor for each of said at least one agile beam signal received by said N-element phased array antenna; and

combining said at least three separately weighted N-orthogonal beam signals to form said at least one agile beam signal.

5,510,800

TIME-OF-FLIGHT RADIO LOCATION SYSTEM

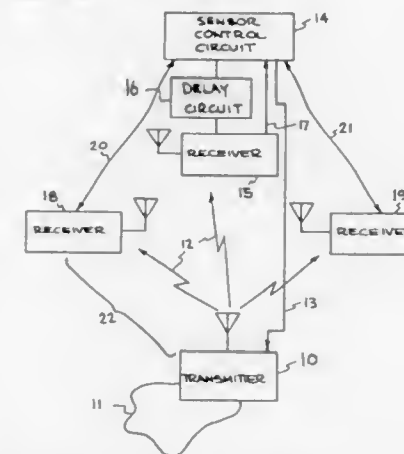
Thomas E. McEwan, Livermore, Calif., assignor to The Regents of the University of California, Oakland, Calif.

Continuation-in-part of Ser. No. 58,398, May 7, 1993, which is a continuation-in-part of Ser. No. 44,745, Apr. 12, 1993, Pat. No. 5,345,471. This application Sep. 6, 1994, Ser. No. 300,909

Int. Cl.⁶ G01S 1/24

U.S. Cl. 342—387

31 Claims



28. A method for detecting position of an object at a range of less than 10 feet, comprising:
 - mounting a transmitter on the object;
 - transmitting from the transmitter a sequence of electromagnetic pulses;
 - detecting time-of-flight of the electromagnetic pulses from the transmitter to a receiver by sampling the sequence of pulses with controlled timing to produce an equivalent time representation of a transmitted pulse at the receiver and processing the equivalent time signal to indicate the time-of-flight; and processing the time-of-flight to indicate position of the object.

5,510,801

LOCATION DETERMINATION SYSTEM AND METHOD USING TELEVISION BROADCAST SIGNALS

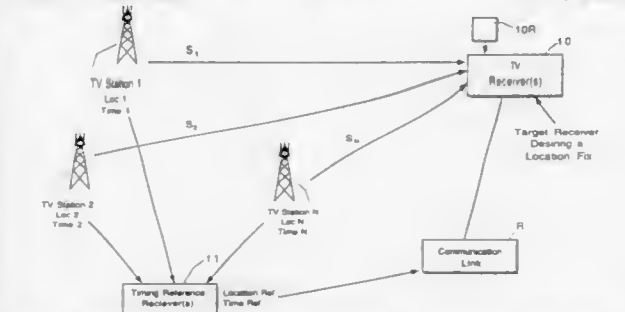
Lloyd Engelbrecht, Reston, Va., and Aaron Weinberg, Potomac, Md., assignors to Stanford Telecommunications, Inc., Reston, Va.

Filed Mar. 1, 1994, Ser. No. 203,257

Int. Cl.⁶ G01S 3/02

U.S. Cl. 342—457

11 Claims



5,510,803

DUAL-POLARIZATION PLANAR ANTENNA

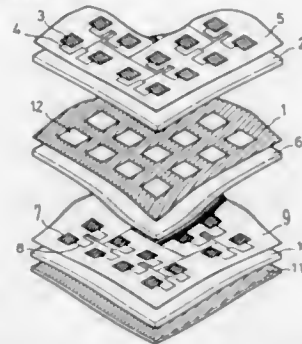
Hironori Ishizaka; Shigetoo Wakushima; Hisayoshi Mizugaki, and Masahiko Ohta, all of Ibaragi, Japan, assignors to Hitachi Chemical Company, Ltd., Tokyo, Japan

Continuation of Ser. No. 977,792, Nov. 17, 1992, abandoned. This application Nov. 21, 1994, Ser. No. 347,211

Claims priority, application Japan, Nov. 26, 1991, 3-309533; Nov. 29, 1991, 3-316250; Dec. 10, 1991, 3-325672; Mar. 17, 1992, 4-060176

Int. Cl.⁶ H01Q 1/38; 21/24
U.S. Cl. 343—700 MS

48 Claims



1. A dual-polarization planar antenna comprising:
 - a first feeding substrate having a plurality of first radiation patch elements and a first feeding line, wherein each of said first radiation patch elements comprises a width dimension which is substantially greater than a width dimension of said first feeding line;
 - a first dielectric member;
 - a first ground conductor having a plurality of slots which correspond in position to said plurality of first radiation patch elements;
 - a second dielectric member;
 - a second feeding substrate having a plurality of second radiation patch elements which correspond in position to said plurality of first radiation patch elements and said plurality of slots, and a second feeding line, wherein each of said second radiation patch elements comprises a width dimension which is substantially greater than a width dimension of said second feeding line;
 - a third dielectric member; and
 - a second ground conductor;
- wherein said first feeding substrate, said first dielectric member, said first ground conductor, said second dielectric member, said second feeding substrate, said third dielectric member, and said second ground conductor are successively superposed in a direction from a top to a bottom of said dual-polarization planar antenna;
- wherein said first feeding substrate, said first ground conductor, and said second feeding substrate are arranged so that said first radiation patch elements, said slots which correspond and said second radiation patch elements which correspond overlap with one another;
- wherein respective pairs of said first and said second radiation patch elements are electromagnetically coupled to one another through said slots which correspond, respectively, each of said respective pairs being defined by one of said first radiation patch elements and one of said second radiation patch elements;
- wherein said first and said second feeding substrates are arranged so that said first radiation patch elements are excited by said first feeding line in a first excitation direction while said second radiation patch elements are excited by said second feeding line in a second excitation direction perpendicular to said first excitation direction, whereby both vertical and horizontal polarizations are radiated; and
- wherein dimensions of each of said first radiation patch elements are substantially equal to one another, dimensions of each of said second radiation patch elements are substantially equal to one another, and said dimensions of each of said first radiation

patch elements are different from said dimensions of each of said second radiation patch elements.

5,510,804

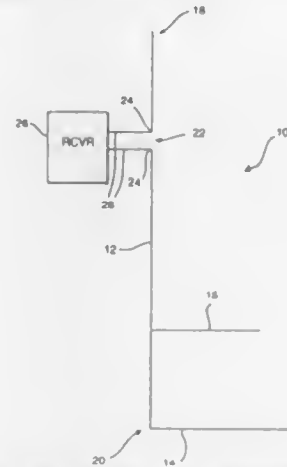
F-SHAPED THREE ELEMENT DIPOLE ANTENNA FOR MOTOR VEHICLES

Timothy J. Talty, Trenton, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Oct. 3, 1994, Ser. No. 316,755
Int. Cl.⁶ H01Q 1/32

U.S. Cl. 343—713

20 Claims



1. An F-shaped three element dipole antenna for incorporation into a portion of a motor vehicle, said dipole antenna comprising:
 - a primary linear element having a proximal end and a distal end, said primary linear element being separated intermediate its proximal and distal ends at a breakpoint to define two feeding connections to said dipole antenna;
 - a secondary linear element connected to the distal end of said primary linear element and extending generally perpendicular to said primary linear element; and
 - a tertiary linear element connected to said primary linear element intermediate the distal end of said primary linear element and said breakpoint, said tertiary linear element extending generally perpendicular to said primary linear element.

5,510,805

SCANNING CIRCUIT

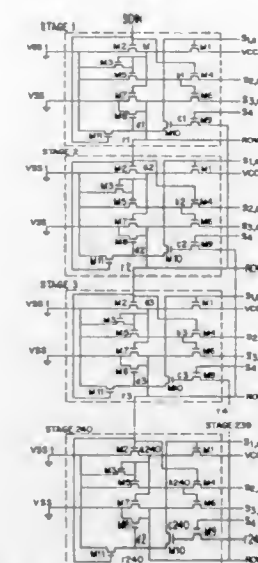
Sywe N. Lee, Taipei, Taiwan, assignor to Prime View International Co., Hsinchu, Taiwan
Continuation-in-part of Ser. No. 287,499, Aug. 8, 1994, abandoned. This application May 30, 1995, Ser. No. 453,495

Int. Cl.⁶ G09G 3/36

U.S. Cl. 345—58

11 Claims

1. A circuit for use with a liquid crystal display (LCD) wherein said LCD display contains a matrix of picture elements (pixel) arranged in a first number of pixel columns and second number of rows on a substrate, said circuit comprising:
 - a plurality of row select driver circuits corresponding to said number of pixel rows for electrically energizing said pixel rows, said row select driver circuits being deposited on the LCD display substrate, wherein an output of each of said row select driver circuits is electrically connected to a corresponding pixel row and to a succeeding row select driver circuit as an activating input; and
 - switching means external to the LCD display and having leads electrically connected to said row select driver circuits for providing:
 - first set of three clock signals S1.o, S2.o, S3.o to all odd-numbered rows having a period twice as long as the horizontal scanning time of the display,



second set of three clock signals S1.e, S2.e, S3.e to all even-numbered rows lagging said first set of three clock signals respectively by said horizontal scanning time, a seventh clock signal S4 having a period equal to the horizontal scanning time of the display, a shift-in clock signal SDIN coupled to only the input terminal of first row select driver circuit, said first set of three clock signals, second set of three clock signals, said seventh clock signal and said shift-in clock signals causing an output signal from each row select driver circuit such that each pixel row is sequentially energized.

5,510,806

PORTABLE COMPUTER HAVING AN LCD PROJECTION DISPLAY SYSTEM

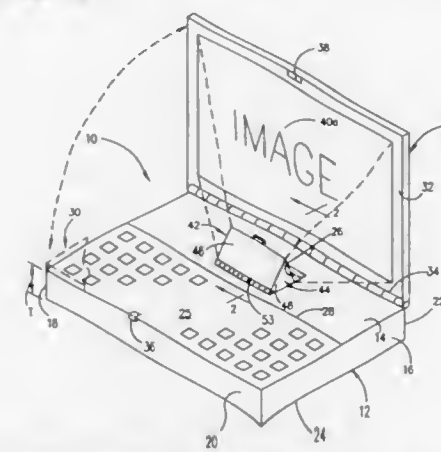
John P. Busch, Austin, Tex., assignor to Dell USA, L.P., Austin, Tex.

Continuation of Ser. No. 144,081, Oct. 28, 1993, abandoned. This application Jun. 19, 1995, Ser. No. 492,142

Int. Cl.⁶ G09G 3/36

U.S. Cl. 345—87

3 Claims



1. A portable computer comprising:
 - a base housing having a top side, opposite front and rear side edge portions, and an opening extending through said top side and positioned forwardly apart from said rear side edge portion;
 - a solid, relatively thin screen panel member having a non-mirrored front side surface and being secured to said rear side edge portion of said base housing for pivotal movement relative thereto between an open use orientation in which said screen panel member projects upwardly from said rear side portion of said base housing, with said non-mirrored front side surface of said screen panel member facing forwardly,

and a closed storage and transport orientation in which said screen panel member extends across and covers said top side of said base housing with said non-mirrored front side surface of said screen panel member facing said top side of said base housing; and

projection means for projecting a selectively variable image substantially exclusively onto said non-mirrored front side surface of said screen panel member when said screen panel member is in said open use orientation thereof, said projection means including:

a lens structure supported at said opening in said top side of said base housing for movement, relative to said base housing and said screen structure, through said opening between a use orientation in which said lens structure projects above said opening and a storage and transport orientation in which said lens structure is recessed in said opening, said lens structure having a rear side surface positioned to face said non-mirrored front side surface of said screen panel member when said screen panel member and said lens structure are in said use orientations thereof, and a bottom side surface extending at an angle to said rear side surface of said lens structure,

an LCD projection panel extending across and against said bottom side surface of said lens structure, said LCD projection panel being operable to create a selectively variable panel image thereon,

an illumination structure operative to transmit light directly through said LCD projection panel and into said lens structure, wherein said lens structure directs said light substantially exclusively onto said screen panel member forming said selectively variable panel image thereon.

5,510,807

DATA DRIVER CIRCUIT AND ASSOCIATED METHOD FOR USE WITH SCANNED LCD VIDEO DISPLAY

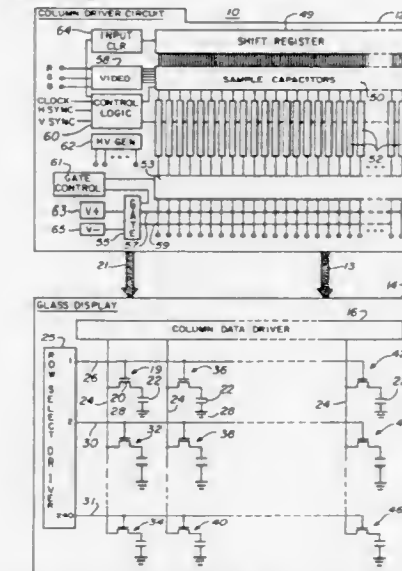
Sywe N. Lee, Taiwan, and Dora Plus, Shichu, both of Taiwan, assignors to Yuen Foong Yu H.K. Co., Ltd., Kowloon, Hong Kong

Filed Jan. 5, 1993, Ser. No. 1,127

Int. Cl.⁶ G09G 3/36

U.S. Cl. 345—103

12 Claims



1. A circuit for providing signal data to a display wherein the display has first and second substrates, at least the first of which is glass, separated by a layer of electro-optic material, the circuit comprising:
 - Y data input lines deposited on one of the substrates;
 - X groups of Y demultiplexer elements deposited on said one of the substrates wherein each demultiplexing element is connected to one of the Y data input lines;

- a demultiplexing circuit external to the first substrate having X enabling signal lines respectively connected to the X groups of Y demultiplexing elements for enabling each of the X groups of Y demultiplexing elements;
- a control circuit external to the substrates and providing a precharging voltage to the Y data input lines for a first time period and providing the signal data to the same Y data input lines for X successive second time periods; and
- the demultiplexing circuit simultaneously enabling all of the Y data input lines to the X groups during said first time period and sequentially enabling the Y data input lines to a corresponding one of the X groups of Y demultiplexing elements during said X successive second time periods.

5,510,808

SCROLLBAR HAVING SYSTEM OF USER SUPPLIED INFORMATION

Vincent J. Cina, Jr., Chestnut Ridge, and Donald P. Pazel, Croton-on-Hudson, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 531,213, May 31, 1990, abandoned.

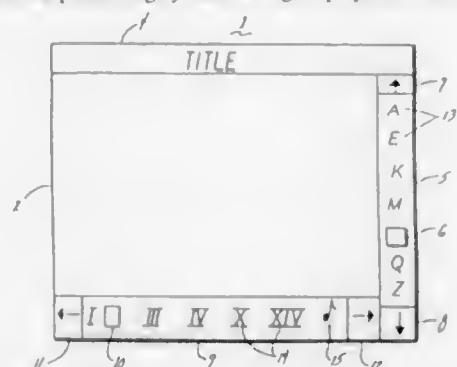
This application Jan. 31, 1995, Ser. No. 381,295

Int. Cl.⁶ G09G 5/34

U.S. Cl. 345—123

7 Claims

1. In a data processing system having display means for display-



ing information to a user, a method for enabling a user to access predetermined information that is stored within a memory means of the data processing system, the predetermined information being associated with a location within a presentation space, comprising the steps of:

- displaying a view window for providing a view into a localized region of the presentation space;
- displaying at least one scrollbar having an indicator for indicating a position of the view window within the presentation space, the at least one scrollbar being displayed so as to occupy a linear region that is bounded by first and second ends that represent an extent of the presentation space along an axis of the presentation space;
- displaying at least one indicia that is predeterminedly positioned at a point along the linear region, relative to the first and second ends, that corresponds to a position, within the presentation space, of the location of the predetermined information, the indicia being selected from a group consisting essentially of alphanumeric characters, symbols, colors, graphical images, audio information and combinations thereof and is selected by one of an application program running on the data processing system and a user of the data processing system; and
- responsive to a user positioning the indicator to a location at or near the location of the at least one indicia, positioning the view window to provide a view of a localized region of the presentation space that includes the location associated with the predetermined information, whereby the user is enabled to gain access to the predetermined information that is stored in the memory means.

5,510,809

CONTROLLER INCLUDING MULTIFUNCTIONS

Yoshikatsu Sakai, Kenji Yamaguchi, Masayuki Nakagawa, Masao Yokomori, Katsuhisa Tsuda, and Yoshlyuki Kamata, all of Tokyo, Japan, assignors to Yokogawa Electric Corporation, Tokyo, Japan

Continuation of Ser. No. 932,977, Aug. 20, 1992, abandoned.

This application Mar. 22, 1994, Ser. No. 210,766

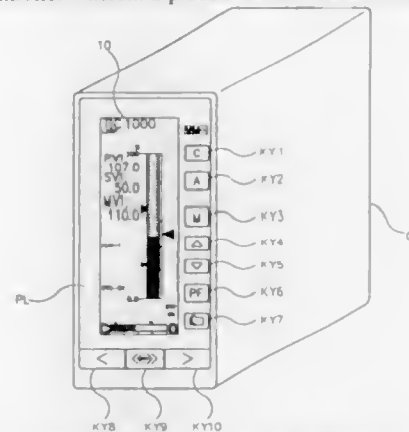
Claims priority, application Japan, Sep. 30, 1991, 3-251576; Oct. 7, 1991, 3-259405; Oct. 18, 1991, 3-271249

Int. Cl.⁶ G09G 5/00

U.S. Cl. 345—140

20 Claims

1. A controller wherein a process value obtained from a process



in inputted, a control calculation is carried out based upon a control parameter, and a control output is supplied to the process, said controller comprising

- a container comprising
- a main body (CL) consisting of an open box having four sides, a rear part, and an open front portion,
- a front part (PL) fitted over said open front portion of said main body and containing on a front face thereof display means and key means;
- display means (10) provided in said front part for displaying separately or in combination
- an operating panel wherein values of process and control output are shown as bar graphs,
- a trend graph panel of trend of process values,
- control calculating panel, and
- a tuning panel;
- panel expanding means (KY7) provided in said front part for manually instructing said display means to expand contents of said panels to be displayed in said display means;
- a plurality of key means (KY1-6, 8-10) provided in said front part and positioned besides and beneath said display means for manually setting control operations and various parameters;
- operating panel generating means (81) contained in said main body and operable by one of said plurality of key means assigned such function, for generating signals to cause display of process values and control output values as bar graphs on the operating panel to be displayed in said display means;
- trend graph panel generating means (82) contained in said main body and operable by one of said plurality of key means assigned such function, for generating signals to cause display of transition of the process values as a trend graph on the trend graph panel to be displayed in said display means
- tuning panel generating means (83) contained in said main body and operable by one of said plurality of key means assigned such function, for generating signals to cause display on the tuning panel to be displayed in said display means of symbols indicative of functions assigned to said plurality of key means at positions corresponding to said plurality of key means,
- and information used to control a control parameter used in said control calculation;
- display controlling means (9) contained in said main body for selecting for display in said display means

a combination of said operating panel and said trend graph panel upon receipt of a signal from said panel expanding means,

and said tuning panel singly upon concurrent receipt of a signal from said panel expanding means and a signal resulting from operation of one of said plurality of key means; and

key function changing means (11) contained in said main body for changing functions assigned to said plurality of key means and symbols displayed in said tuning panel corresponding to the changed functions of said plurality of key means; wherein all of the manually operable components and the display means are contained in the front face of said front part of said container for improved appearance and so that any two of said manually operable components can be accessed concurrently with two digits of one hand by an operator.

5,510,810

DISPLAY SCREEN CONTROL APPARATUS

Akio Nishijima, Naoya Iwama, Syoji Suganami, and Katsutoshi Suzuki, all of Iwaki, Japan, assignors to Alps Electric Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 148,302, Nov. 8, 1993, abandoned.

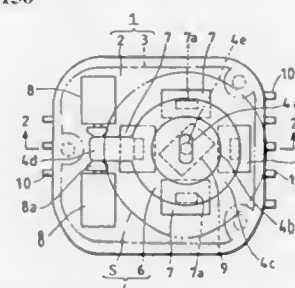
This application Dec. 5, 1994, Ser. No. 349,698

Claims priority, application Japan, Nov. 11, 1992, 4-301260

Int. Cl.⁶ G09G 5/00

U.S. Cl. 345—156

10 Claims



6. An input control device, comprising:

- a housing including a base and an upper case forming an enclosed area, the base including a flat lower surface defining a plane, the upper case defining an opening;
- an operation member including an actuating member movably disposed in the enclosed area and a shaft extending through the opening in the upper case, the operation member being rotatable around an axis, the axis being perpendicular to the plane defined by the base, the actuating member having first and second switch actuating portions;
- a tilt detection switch mounted on the flat lower surface of the base and disposed opposite to said first switch actuating portion such that the tilt detection switch is actuated by said first switch actuating portion when said operation member is tilted in a predetermined direction relative to the housing;
- a force converting member movably mounted in the enclosed area adjacent the second switch actuating portion, the force converting member having a first portion disposed to receive a horizontal force from said second switch actuating portion in response to a rotation of the operation member, and a second portion generating a vertical force in response to the horizontal force; and
- a rotation detection switch mounted on the flat lower surface of the base and disposed opposite to said second portion of said force converting member such that the rotation detection switch is actuated by said vertical force generating in response to rotation of said operation member.

5,510,811

APPARATUS AND METHOD FOR CONTROLLING CURSOR MOVEMENT

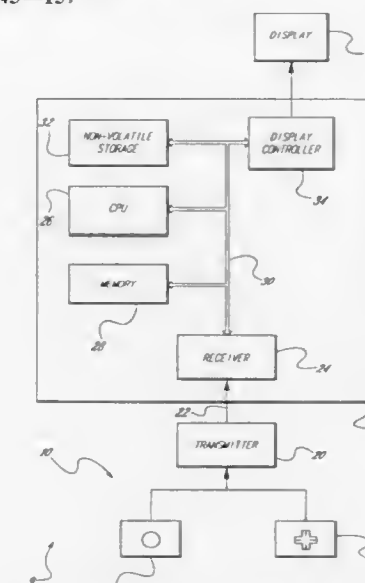
Chris E. Tobey, Seattle; Yung-Ho Shih, Bellevue; Michael B. Robin, Redmond; Wesley O. Rupel, Bellevue; Michael D. Edwards; Terence R. Spies, both of Redmond; James C. Bovee, Jr., Bothell; Robert B. Seidensticker, Jr., Redmond, and Mark R. McCulley, Seattle, all of Wash., assignors to Microsoft Corporation, Redmond, Wash.

Filed Nov. 25, 1992, Ser. No. 982,097

Int. Cl.⁶ G09G 5/08

U.S. Cl. 345—157

34 Claims



1. A system for controlling the navigation through a computer application program running on a host computer, the host computer coupled to a computer-controlled display displaying a plurality of hot spots, the system comprising:

- a hand-held remote controller sized to fit within one hand and able to operate in a plurality of operational modes;
- a first direction control button on said hand-held controller, having first and second positions and a resting position, and selectively controlling the movement of a cursor to jump from one of the plurality of hot spots to a second of the plurality of hot spots in a first dimension if the application program is operating in a first of said plurality of operational modes, and controlling the uniform incremental movement of said cursor from a present display position to adjacent display positions in said first dimension if the application program is operating in a second of said plurality of operational modes, said first and second positions indicating the desired direction of movement of said cursor in first and second directions in said first dimension, said resting position indicating the selection of no movement of said cursor in said first dimension;
- a second direction control button on said hand-held controller, having first and second positions and a resting position, and selectively controlling the movement of said cursor from said one hot spot to a second of the plurality of hot spots in a second dimension if the application program is operating in said first operational mode, and controlling the uniform incremental movement of said cursor from said present display position to an adjacent display position in said second dimension if the application program is operating in said second operational mode, said first and second positions indicating the desired direction of movement of said cursor in first and second directions in said second dimension, said resting position indicating the selection of no movement of said cursor in said second dimension;
- a function select button on said hand-held controller having first and second positions and controlling first and second computer functions, said first computer function enabling an action associated with a particular hot spot when said cursor is focused on said particular hot spot on the computer-controlled

display and said function select button is in said second position, said second computer function operating in conjunction with said first and second direction control buttons to control the movement of said cursor when said function select button is in said second position and either said first or said second direction control button is not in said resting position; and

a transmitter within said hand-held controller to transmit data concerning the position of said first and second direction control buttons and said function select button from said hand-held controller to the host computer.

a transmitter within said hand-held controller to transmit data concerning the position of said first and second direction control buttons and said function select button from said hand-held controller to the host computer.

5,510,812

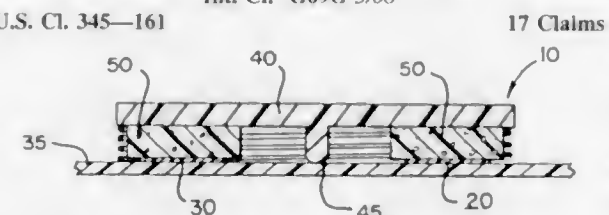
PIEZORESISTIVE INPUT DEVICE

Kerry D. O'Mara, Florence, and Paul J. Smalser, Sr., Hamilton Square, both of N.J., assignors to Hashro, Inc., Pawtucket, R.I.

Filed Apr. 22, 1994, Ser. No. 231,234

Int. Cl.⁶ G09G 5/08

U.S. Cl. 345—161



1. A device for sensing control input by a user comprising:
 - a base;
 - an actuation means for accepting said control input from said user in the form of a force applied by said user, said actuation means pivoting by single point contact on said base;
 - at least four piezoresistive elements disposed between said base and said actuation means, said at least four piezoresistive elements sensing said force applied by said user to said actuation means; and
 - a biasing means between said piezoresistive elements and said actuation means for biasing said actuation means to a neutral position when no force is applied by said user.

5,510,813

DATA PROCESSING DEVICE COMPRISING A TOUCH SCREEN AND A FORCE SENSOR

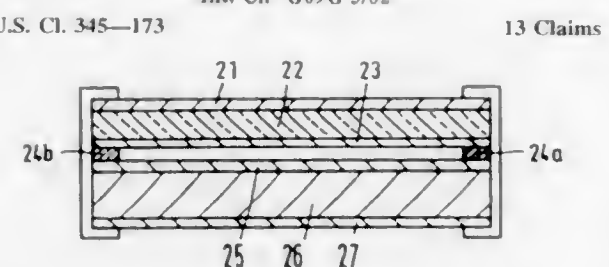
Kofi A. A. Makinwa, and Theunis S. Baller, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 12, 1994, Ser. No. 289,829

Claims priority, application Belgium, Aug. 26, 1993, 09300875

Int. Cl.⁶ G09G 3/02

U.S. Cl. 345—173



1. A touch screen data processing device comprising:

a touch screen having a first conductive panel, said first panel comprising a touch position sensor for detecting a touch position on said screen from a change in a current pattern in said first panel;

a second conductive panel parallel to said first panel and coextensive therewith, the second panel being spaced from the first panel in a direction transverse thereto, the second panel constituting portion of an image display;

resilient support means situated between the peripheries of said first and second panels for permitting partial movement of said screen toward said second panel, so that a touch force on said screen causes at least partial narrowing of the spacing between said screen and said second panel and a resulting change in electrical capacitance therebetween over an area substantially coextensive with said screen;

a touch force sensor comprising said second panel, for determining the value of a touch force on said screen by detection of the resulting change in capacitance between said screen and said second panel; and

means for performing combined processing of data produced by both the position sensor and the force sensor in response to a touch force on said screen.

5,510,814

DRIVE VOLTAGE GENERATING DEVICE FOR LIQUID CRYSTAL DISPLAY DEVICE

Masahiro Ise, Kashiwara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

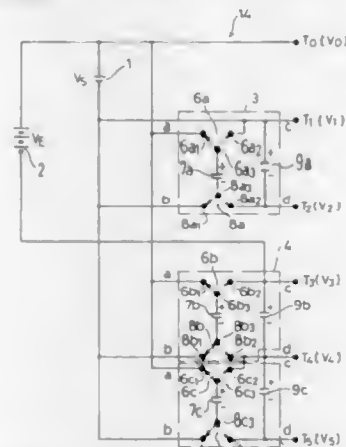
Filed Aug. 31, 1994, Ser. No. 298,678

Claims priority, application Japan, Aug. 31, 1993, 5-216668; Mar. 31, 1994, 6-063539

Int. Cl.⁶ H02M 3/18; G09G 3/36

U.S. Cl. 345—211

15 Claims



1. A drive voltage generating device for a liquid crystal display device, comprising:

a voltage supply source which generates a prescribed voltage;

first charge storing means for storing therein a charge supplied from said voltage supply source;

second charge storing means, corresponding to said first charge storing means, for storing therein a charge transferred from said first charge storing means;

an output terminal section including a plurality of output terminals which supply a voltage required for driving a liquid crystal display section, receiving said prescribed voltage from said second charge storing means through a predetermined pair of output terminals of said plurality of output terminals; and

switching means for switching a connection between said voltage supply source and said first charge storing means and a connection between said first charge storing means and said second charge storing means so that a charge is supplied to said first charge storing means from said voltage supply source and that a charge stored in said first charge storing means is transferred to said second charge storing means, said

switching means comprising two switching circuits, each being provided with a MOS type FET, the MOS type FET provided in one of said switching circuits not being driven in accordance with a switching of a parasitic diode generated by a back gate effect of the MOS type FET, the MOS type FET of the other switching circuit being driven in accordance with a switching of a parasitic diode generated by the back gate effect of the MOS type FET.

5,510,815

ADJUSTABLE PEN-TO-PAPER SPACING IN PRINTERS USING BLACK AND COLOR PENS

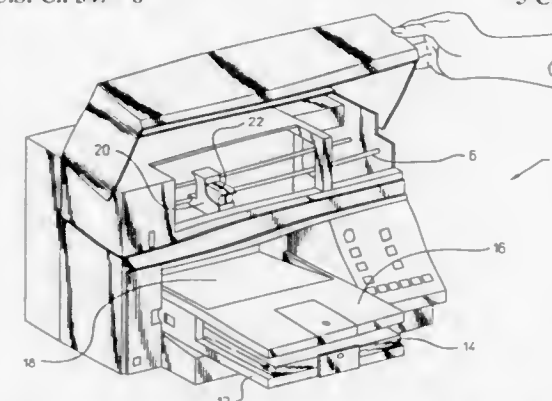
Thomas W. Linder, and John Dion, both of Corvallis, Oreg., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Oct. 29, 1993, Ser. No. 145,354

Int. Cl.⁶ B41J 25/308; 2/21

U.S. Cl. 347—8

5 Claims



2. A method for improving print quality in an inkjet printer having a first pen and an optional second pen each having a respective printhead for applying liquid ink to a sheet of media supported by the printer at a predetermined location inside the printer and each being adapted for installation in a common carriage assembly, the method comprising the steps of:

locating a cartridge positioning means for positioning a pen in a first cartridge receptacle on said common carriage assembly relative to the sheet of media at a first position such that when the first pen is installed in the first cartridge receptacle, the printhead of the first pen is at a predetermined first distance above said predetermined location, said first distance being suitable for a first print mode which does not require the optional second pen;

determining whether the optional second pen is currently installed in the carriage assembly;

if the optional second pen is not currently installed, maintaining the cartridge positioning means at said first position; and

if the optional second pen is currently installed in the carriage assembly, relocating the cartridge positioning means to a second position different from said first position such that the printhead of a pen installed in the first cartridge receptacle is at a predetermined second distance above said predetermined location, said second distance being different than said first distance and suitable for a second print mode which requires the optional second pen.

whereby said print quality is improved by changing the print-head to media distance of the pen in the first receptacle when the optional pen is installed for use with the second print mode, to thereby obtain a variable print head to media distance suitable for more than one type of pen and more than one print mode.

5,510,816

METHOD AND APPARATUS FOR DRIVING INK JET RECORDING HEAD

Satoru Hosono; Tomoaki Abe; Shuji Yonekubo; Tsuyoshi Kitahara, and Takahiro Katakura, all of Nagano, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

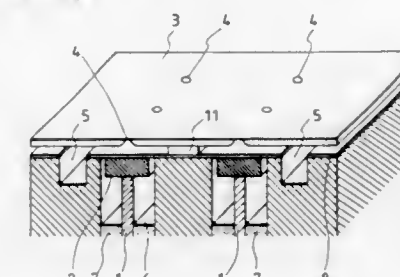
Filed Nov. 6, 1992, Ser. No. 972,558

Claims priority, application Japan, Nov. 7, 1991, 3-291669; Dec. 26, 1991, 3-345342; Oct. 30, 1992, 4-316632

Int. Cl.⁶ B41J 2/045

U.S. Cl. 347—10

12 Claims



1. A method of driving an ink jet recording head, said ink jet recording head including a nozzle plate having one or more nozzle openings therein, a vibrating plate which opposes said nozzle plate to form a pressure chamber therebetween, said vibrating plate communicating with said nozzle openings in cooperation with said nozzle plate, one or more piezoelectric vibrating elements, each of said piezoelectric vibrating elements having one end which opposes at least one of said nozzle openings wherein said end is fixed to said vibrating plate, each of said piezoelectric vibrating elements vertically vibrates according to an applied voltage; said method comprising the steps of:

retreating said vibrating plate away from at least one of said nozzle openings to a predetermined position at such a speed as to allow a meniscus to retreat from said at least one of said nozzle openings by a retreat distance by applying a first drive voltage to at least one of said piezoelectric vibrating elements for contracting said at least one of said piezoelectric vibrating elements;

holding said vibrating plate at said predetermined position by applying a second drive voltage to said at least one of said piezoelectric vibrating elements for holding said at least one of said piezoelectric vibrating elements as contracted; and

advancing said vibrating plate toward said at least one of said nozzle openings when said meniscus has returned by 1/4 or more of the retreat distance, by applying a third drive voltage to said at least one of said piezoelectric vibrating elements for expanding said at least one of said piezoelectric vibrating elements.

5,510,817

WRITING METHOD FOR INK JET PRINTER USING ELECTRO-RHEOLOGICAL FLUID AND APPARATUS THEREOF

Sang-suk Sohn, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Filed Dec. 22, 1992, Ser. No. 994,908

Claims priority, application Rep. of Korea, Sep. 30, 1992, 92-17897

Int. Cl.⁶ B41J 2/015

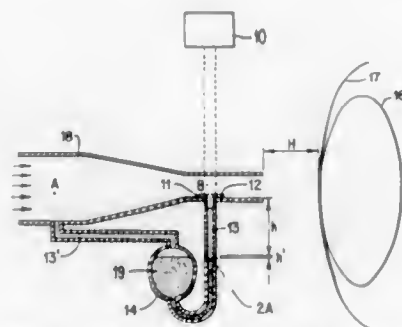
U.S. Cl. 347—21

8 Claims

1. A writing method for an ink jet printer using an electro-rheological fluid which ejects the electro-rheological fluid so as to write images on paper, said method comprising:

(a) providing an electro-rheological fluid reservoir between static pressure tubes circuitously communicating with a larger-diameter portion and a smaller-diameter portion of a venturi tube on which a predetermined pressure acts;

(b) creating a pressure difference in said venturi tube which can force the ejection of said electro-rheological fluid; and



(c) applying a writing potential to the exit of said static pressure tubes from which said electro-rheological fluid is ejected so as to control the ejected amount.

5,510,818

TRANSFER-MOLDING RESIN COMPOSITION FOR USE TO MANUFACTURE INK JET RECORDING HEAD, AND INK JET RECORDING HEAD MANUFACTURED BY USING THE SAME

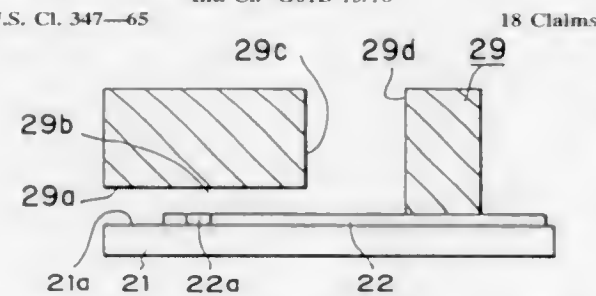
Akihiko Shimomura; Kelichi Mural, both of Yokohama, and Shigeo Toganoh, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 30, 1992, Ser. No. 969,376

Claims priority, application Japan, Oct. 31, 1991, 3-286273; Jun. 25, 1992, 4-167796; Jun. 25, 1992, 4-167797; Jun. 25, 1992, 4-167798

Int. Cl.⁶ G01D 15/16

U.S. Cl. 347—65



1. An ink jet recording head comprising a fluid passage constituted by forming, on a substrate, an outer frame made of a hardened resin obtained by transfer molding, wherein

a transfer-molding resin composition which is a material of said hardened resin is composed of an epoxy resin, a hardening agent, an agent for enhancing hardening and a filler, and an amount of said filler is in a range from 0.5 to 17.0 wt. %.

5,510,819

INK JET PRINTING HEAD AND ELECTRONIC MACHINE INCORPORATING THE SAME

Hisayoshi Fujimoto, and Akihiro Shimokata, both of Kyoto, Japan, assignors to Rohm Co., Ltd., Kyoto, Japan

Filed Feb. 18, 1993, Ser. No. 18,816

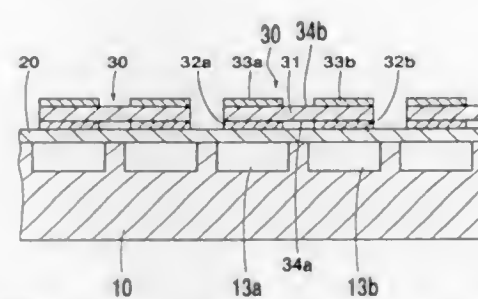
Claims priority, application Japan, Feb. 24, 1992, 4-036237
Int. Cl.⁶ B41J 2/045

U.S. Cl. 347—70

20 Claims

1. An ink jet printing head comprising:
a substrate including a plurality of pressure chambers which are formed in an array on said substrate such that each of said chambers extends from one end of said substrate to another end thereof, portions of the substrate intermediate adjacent pressure chambers separating and defining said pressure chambers;

a nozzle corresponding to each of said pressure chambers;



a diaphragm disposed on a surface of said substrate to cover said plurality of pressure chambers and to cover the portions of the substrate intermediate adjacent pressure chambers;

a plurality of piezoelectric elements, the plurality of piezoelectric elements being less than the plurality of pressure chambers, each of said piezoelectric elements provided over a portion of said diaphragm corresponding to a plurality of adjacent pressure chambers, and over portions of the substrate intermediate said adjacent pressure chambers, said diaphragm being intermediate said piezoelectric elements and said substrate; and

means for actuating said piezoelectric elements to selectively actuate said adjacent pressure chambers so that each of said plurality of said adjacent pressure chambers corresponding to a piezoelectric element is actuable independently of actuation of adjacent pressure chambers that are activated by the same piezoelectric element.

5,510,820

DEVICE FOR INK REFILL OF A RESERVOIR IN A PRINT CARTRIDGE

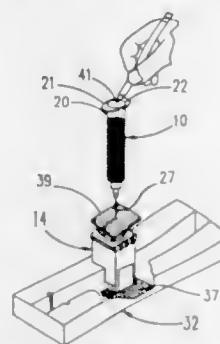
Rodney O. Aulick, Louisville; Bradley L. Beach, Lexington; Terence E. Franey, Lexington; James M. Mryos, Lexington, and David G. Vella, Lexington, all of Ky., assignors to Lexmark International, Inc., Greenwich, Conn.

Filed Apr. 22, 1992, Ser. No. 872,749

Int. Cl.⁶ B41J 2/175

U.S. Cl. 347—85

16 Claims



1. An ink refill device for refilling an ink reservoir in a print cartridge of an ink jet printer with ink through a continuously open vent of the reservoir including:

a body having a chamber therein, said chamber having an amount of the ink therein to partially fill said chamber so that said chamber has one portion with the ink therein and another portion having none of the ink therein;

said chamber having inner surfaces, said inner surfaces of said one portion of said chamber being contacted by the ink;

said chamber having a substantially constant volume irrespective of the amount of the ink therein at any time;

said body having a needle always communicating with said chamber so that said needle has the ink therein when said one portion of said chamber has the ink therein, said needle extending from said body for communication with a reservoir of a print cartridge to refill the reservoir through the continuously open vent with the ink;

said chamber having a substantially flat first wall and a plurality of additional walls, said substantially flat first wall and said plurality of additional walls constituting all of said walls of said chamber, said substantially flat first wall of said chamber being at an end of said chamber remote from said needle;

means for selectively enabling communication of an ambient with said another portion of said chamber so that said another portion of said chamber is at a pressure of the ambient when the ink flows from said chamber to prevent creation of any partial vacuum within said chamber and to enable the ink to flow from said chamber without any force exerted by a user on said chamber or the ink therein;

said selectively enabling means including said substantially flat first wall formed of a material that is more frangible than said plurality of additional walls of said chamber so that said substantially flat first wall can be selectively and readily broken in said another portion of said chamber having none of the ink therein to enable said another portion of said chamber to be at a pressure of the ambient;

and said substantially flat first wall of said chamber being capable of being broken by a pencil.

5,510,821

SOLID INK STICK

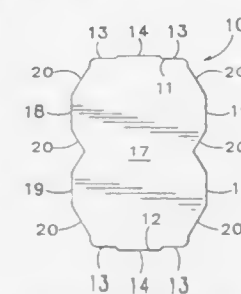
Brent R. Jones, Tuatatin, and Clark W. Crawford, Wilsonville, both of Oreg., assignors to Tektronix, Inc., Wilsonville, Oreg.

Filed Sep. 20, 1994, Ser. No. 309,364

Int. Cl.⁶ B41J 2/175

U.S. Cl. 347—88

12 Claims



1. An ink stick for use in a printer having, in combination:

(a) a top surface and an opposing bottom surface; and
(b) a first side and an opposing second side connecting the top surface and the opposing bottom surface at junctions, the first side and opposing second side being at least partly angled from a vertical line through at least one of the junctions such that one area intermediate the top surface and the bottom surface is a greater distance from the vertical line than at least one of the junctions.

5,510,822

INK-JET PRINTER WITH HEATED PRINT ZONE

Kent D. Vincent, Cupertino, and Michael A. Nguyen, Escondido, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

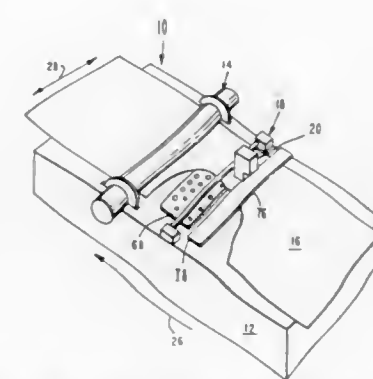
Continuation of Ser. No. 946,246, Sep. 17, 1992, abandoned, which is a continuation of Ser. No. 600,640, Oct. 19, 1990, abandoned. This application Aug. 24, 1993, Ser. No. 111,028

Int. Cl.⁶ B41J 2/01; 2/21

U.S. Cl. 347—102

6 Claims

1. A color ink-jet printer, comprising:
a paper feed mechanism for moving a print medium to be printed upon in a medium advancement direction, said paper feed mechanism comprising media handling rollers for passing the media through a printing area, wherein none of the rollers is actively heated;
multiple printing nozzles for ink-jet printing with solvent-based, low viscosity ink on said medium, said nozzles carried on a traversing mechanism for movement transverse to said



medium advancement direction to print successive swaths, said multiple printing nozzles including a first nozzle array for ejecting ink droplets of a first ink color and a second nozzle array for ejecting ink droplets of a second ink color;
a stationary platen arranged to extend under and support said medium in close proximity to said nozzles at the printing area as said medium is drawn along said advancement direction adjacent said printhead;

a stationary platen heating assembly for heating said platen; apparatus for holding a first surface of said medium in direct contact with said heated platen as said medium is drawn between said printhead and said heated platen by said paper feed mechanism to heat said medium, said first medium surface opposed to a second medium surface on which the ink droplets are to be ejected, such that heating of any given area of the medium occurs prior to, during and after printing actually occurs on that given area;

said heated platen for (i) heating said print medium in a preheating area covering at least one full swath immediately prior to the printing area to bring the given area of the medium up to temperature before printing on the given area, (ii) in the printing area, and (iii) in a postheating area covering at least full swath immediately after the printing area, the heated platen continuously heating the given area of the medium as it is advanced and proceeds through the preheating area, the printing area and the postheating area such that said given medium area is preheated before it is printed upon, such that a solvent component of said ink will volatilize upon contact with said medium, and such that the given medium area is heated while it is being printed upon and immediately thereafter in order to dry and fix the ink at the printing area, so that color bleeding of ink of said first and second colors on said print medium is minimized; and

heater control circuitry, said circuitry including heat regulating circuit means permitting adjustment and control of the heat output of said platen heater assembly, and wherein said heater control circuitry further comprises means for modulating the temperature of said platen heater assembly to match print density on the same plot to optimize energy consumption without slowing the print speed; and wherein said heated areas of said platen are displaced from all of said media handling rollers.

5,510,823

PASTE FOR RESISTIVE ELEMENT FILM

Iliroyuki Tanaka; Kaoru Torikoshi; Fumiaki Tambo; Katsuhiko Sato, and Yutaka Akasaki, all of Minami Ashigara, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Feb. 26, 1992, Ser. No. 841,465

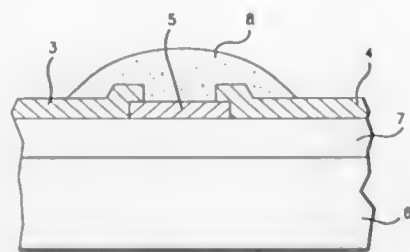
Claims priority, application Japan, Mar. 7, 1991, 3-041680; Mar. 7, 1991, 3-041681; Mar. 7, 1991, 3-041682; Mar. 7, 1991, 3-041683

Int. Cl.⁶ B41J 2/335; H01C 7/00; 7/06

U.S. Cl. 346—141

18 Claims

16. A thermal head, comprising (1) a substrate, (2) a thin glass film provided on said substrate, and (3) a resistive element film provided on said thin glass film and having a means of conducting



electric current to said resistive element film, wherein said resistive element film is formed by a process which comprises coating on said thin glass film a resistive element film-forming material comprising an organic iridium (Ir) compound, a compound containing at least one element (M) selected from the group consisting of silicon (Si), bismuth (Bi), lead (Pb), aluminum (Al), zirconium (Zr), calcium (Ca), tin (Sn), boron (B), titanium (Ti) and barium (Ba), with a ratio of atoms in said elements (M) to iridium atoms in said organic iridium (Ir) compound ranging from 2.7 to 5, and a solution of asphalt dissolved in a solvent, and then calcining the material.

5,510,824

SPATIAL LIGHT MODULATOR ARRAY

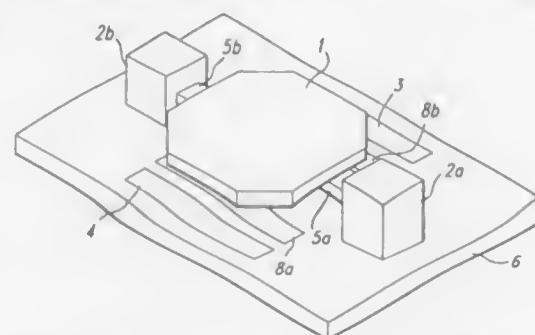
William E. Nelson, Dallas, Tex., assignor to Texas Instruments, Inc., Dallas, Tex.

Filed Jul. 26, 1993, Ser. No. 97,419

Int. Cl.⁶ B41J 15/16

U.S. Cl. 347—239

5 Claims



1. A spatial light modulator array with and optically active level and an electrically active level comprising:
 - a. spatial light modulator cells of a standard size centered about an x-y grid;
 - b. spatial light modulator cells of fractions of the standard size centered about an x-y grid;
 - c. spatial light modulator cells of fractions of the standard size horizontally offset from said cells centered about said x-y grid; and
 - d. spatial light modulator cells of standard size horizontally offset from said cells centered about said x-y grid.

5,510,825

METHOD OF CONTROLLING A RECORDING DEVICE WITH PICTURE DATA OF A HALFTONE PICTURE

Stefan Brues, Steinfurt, Germany, assignor to Stefan Brues, Steinfurt, Germany

Filed Jun. 24, 1993, Ser. No. 82,259

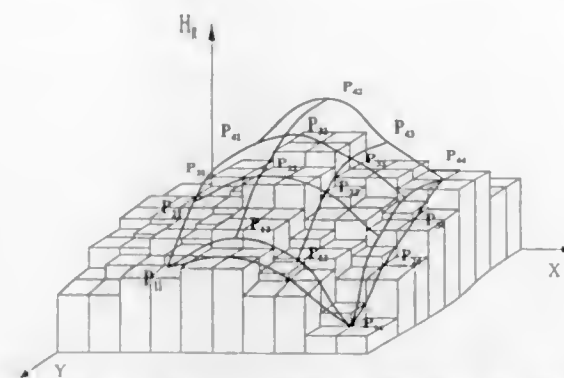
Claims priority, application Germany, Jul. 23, 1992, 42 24 352.1

Int. Cl.⁶ H04N 1/21

U.S. Cl. 347—251

10 Claims

1. A method of producing an output data field for a recording device from picture data that represent a halftone picture, in which



a scanning device used for scanning the halftone picture and the recording device can have a different picture resolution, characterized by the following method steps:

- (a) converting at least a portion of the halftone picture into an input data field that represents the halftone picture in three-dimensional space, with two dimensions representing the relative locations of the picture data within the halftone picture and the third dimension representing the brightness of the picture data at those locations;
- (b) determining a surface function which approximates the surface structure of the input data field in the three-dimensional space; and
- (c) using the surface function to generate the output data field with a resolution corresponding to the resolution of the recording device.

5,510,826

OPTICAL SCANNING APPARATUS

Jun Kolde, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

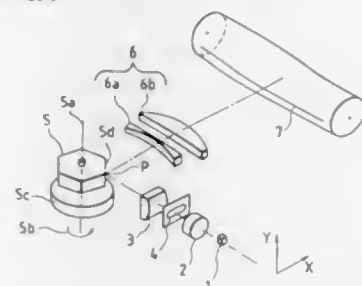
Filed Jun. 15, 1993, Ser. No. 76,786

Claims priority, application Japan, Jun. 19, 1992, 4-186187

Int. Cl.⁶ B41J 15/16

U.S. Cl. 347—256

16 Claims



1. An optical scanning apparatus comprising:

light source means;
a collimating optical system for collimating a beam from said light source means into a parallel beam;
an optical deflector for deflecting the beam from said collimating optical system;
a stop member arranged between said collimating optical system and said optical deflector and having a shape as a combination of slit-like and circular apertures; and
an optical system for focusing the beam deflected by said optical deflector.

5,510,827

LASER BEAM PRINTER WITH COOLING

ARRANGEMENTS FOR OPTICAL BOX

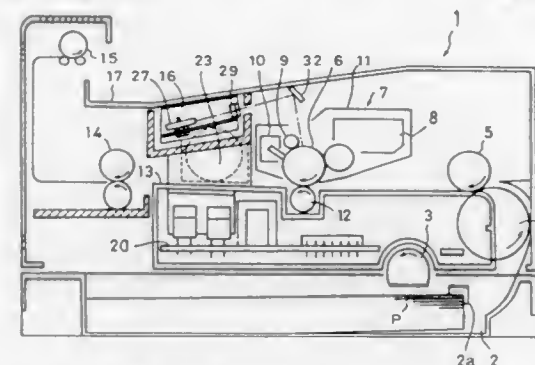
Takeshi Kubota, Tokyo, and Hideaki Watanabe, Yokohama, both of, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 79,823, Jun. 23, 1993, abandoned. This application Jul. 5, 1995, Ser. No. 498,460

Claims priority, application Japan, Jun. 30, 1992, 4-196070 Int. Cl.⁶ G01D 15/14

U.S. Cl. 347—257

28 Claims



1. A laser beam printer apparatus comprising:
deflector means for deflecting a laser beam;
a plastic lens which transmits the laser beam deflected by said deflector means;
an optical box containing at least said deflector means and said plastic lens; and
cooling means for cooling said optical box by drawing air in from the outside of said laser beam printer apparatus and passing the drawn-in air through said cooling means directly to said optical box.

5,510,828

INTERACTIVE VIDEO DISPLAY SYSTEM

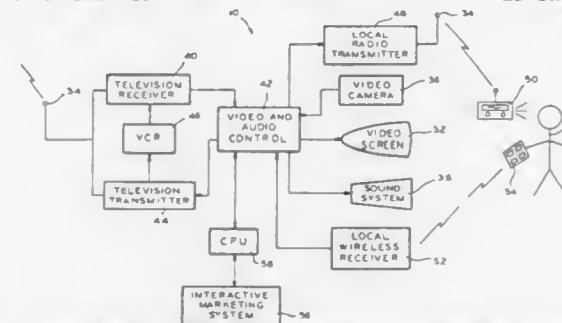
R. Steven Lutterbach, Frederick Smith, and Peter J. Zapf, all of c/o The Leap Partnership, 22 W. Hubbard, Chicago, Ill. 60610

Filed Mar. 1, 1994, Ser. No. 203,788

Int. Cl.⁶ H04N 7/173

U.S. Cl. 348—13

23 Claims



1. An integrated video display system for communicating with local viewers comprising:
means for receiving a modulated signal carrying related audio and video information;
a video and audio control operatively connected to said receiving means for receiving the modulated signal and separating the signal into a video signal and an audio signal;
a video display monitor connected to said control for receiving the video signal and displaying the video information carried by said video signal;
a radio transmitter connected to said control for receiving the audio signal and transmitting a radio frequency signal at a select frequency so that the audio information related to the video information can be received by users proximate the video display monitor; and

an interactive control operatively associated with said video and audio control for locally generating instructions to be displayed, the locally generated instructions being related to the audio and video information of the received modulated signal, said video and audio control combining the received instructions with the received video information prior to transferring the video signal to the video display monitor,
the receiving means, video and audio control, video display monitor, radio transmitter and interactive control all being operatively associated together as an integral system.

5,510,829

VOICE AND VIDEO COMMUNICATION APPARATUS

Akira Sugiyama, Kawasaki, and Masatoshi Otani, Yokohama, both of, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

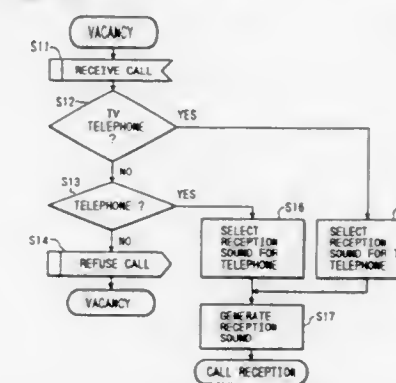
Continuation of Ser. No. 668,897, Mar. 13, 1991. This application Sep. 26, 1994, Ser. No. 319,058

Claims priority, application Japan, Mar. 15, 1990, 2-64888; Apr. 3, 1990, 2-89794

Int. Cl.⁶ H04N 7/14

U.S. Cl. 348—14

10 Claims



1. A communication apparatus comprising:
voice data communication means for communicating voice data;
video data communication means for communicating video data;
memory means for storing a terminal ability to be notified in a partner's terminal for each terminal of of first and second partner's terminals at a communication start time; and
notification means for giving notice of the terminal ability stored in said memory means in accordance with a partner's terminal at reception or transmission time,
wherein said memory means stores the voice data as the terminal ability to be notified to said first partner's terminal, and
said notification means notifies the voice data as the terminal ability when communicating with the first partner's terminal, and notifies the voice and video data as the terminal ability when communicating with said second partner's terminal.

5,510,830

APPARATUS AND METHOD FOR PRODUCING A PANORAMA IMAGE USING A MOTION VECTOR OF AN IMAGE IN AN IMAGE SIGNAL

Masashi Ohia, Tokyo; Hiroshi Kobayashi, Chiba; Tsuneo Sekiya; Toshimichi Hamada, both of Tokyo; Kyoko Fukuda, and Koji Iijima, both of Kanagawa, all of Japan, assignors to Sony Corporation, Tokyo, Japan

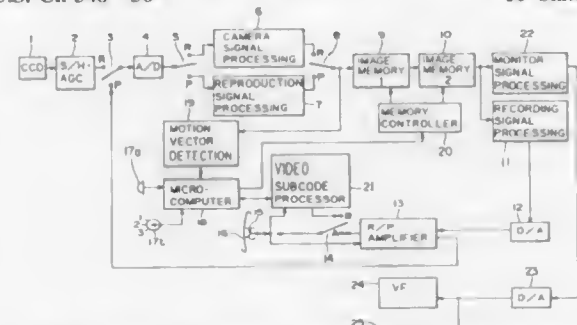
Division of Ser. No. 133,377, Oct. 8, 1993. This application Feb. 27, 1995, Ser. No. 395,419

Claims priority, application Japan, Oct. 9, 1992, 4-297771; Oct. 9, 1992, 4-297772; Oct. 9, 1992, 4-297773; Oct. 9, 1992, 4-297774; Oct. 23, 1992, 4-309451

Int. Cl.⁶ H04N 13/02

U.S. Cl. 348—36

10 Claims



1. An apparatus for producing a panorama image from an input image signal representing a plurality of images produced by imaging a subject, comprising:

- image storage means for storing the input image signal;
- motion vector detecting means for detecting a motion vector of an image from the input image signal; and
- control means for controlling a storage position of said image storage means in response to the motion vector detected by said motion vector detecting means so as to control a width size in accordance with the motion vector of the image of portions of adjacent images in said input image signal which are joined together.

5,510,831

AUTOSTEREOSCOPIC IMAGING APPARATUS AND METHOD USING SUIT SCANNING OF PARALLAX IMAGES

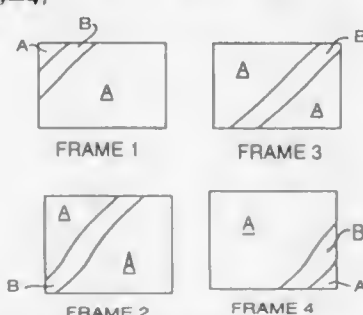
Christopher A. Mayhew, Oakton, Va., assignor to Vision III Imaging, Inc., Herndon, Va.

Filed Feb. 10, 1994, Ser. No. 194,398

Int. Cl.⁶ H04N 13/02

U.S. Cl. 348—47

38 Claims



1. Autostereoscopic imaging apparatus comprising in combination:

- imaging means for acquiring first and second images of the same scene from respectively different points of view; and
- an image processor coupled to receive the first and second images and adapted to extract a succession of different partial images from the second image and to sequentially substitute the extracted partial images in place of corresponding partial images in a repetitive scanning manner in the first image to

create a succession of composite images viewable in perceived three-dimensional illusion without special viewing aids.

5,510,832

SYNTHESIZED STEREOSCOPIC IMAGING SYSTEM AND METHOD

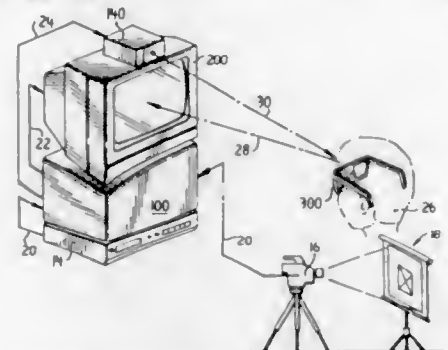
Baxter J. Garcia, Ridgefield, Conn., assignor to Medi-Vision Technologies, Inc., Key Biscayne, Fla.

Filed Dec. 1, 1993, Ser. No. 158,773

Int. Cl.⁶ H04N 13/82

U.S. Cl. 348—56

28 Claims



1. An imaging system for producing a synthesized stereoscopic image from a single two-dimensional monocular source video signal, which signal includes a sequence of video images, comprising:

- a) means for receiving the single two-dimensional monocular source video signal;
- b) means for i) digitally converting the single two-dimensional monocular source video signal to a three-dimensional video image signal by a first analog-to-digital step of acquiring a sequence of the video images from the two-dimensional monocular source video signal, storing these video images in a digital buffer memory, and thereafter temporally displacing and horizontally offsetting the digital buffered video images, and for ii) then time-multiplexing the converted three-dimensional video images;
- c) a single-screen video display receiving and displaying said time-multiplexed three-dimensional video image;
- d) viewing glasses adapted for alternate left-eye, right-eye human viewing said video display by alternate shuttering; and
- e) means for controlling said alternate left-eye, right-eye shuttering of said viewing glasses.

5,510,833

METHOD AND APPARATUS FOR TRANSFORMING COORDINATE SYSTEMS IN AN AUTOMATED VIDEO MONITOR ALIGNMENT SYSTEM

James R. Webb, Boulder, and Gregory A. Kern, Louisville, both of Colo., assignors to Display Laboratories Inc., Boulder, Colo.

Filed Jun. 13, 1994, Ser. No. 258,695

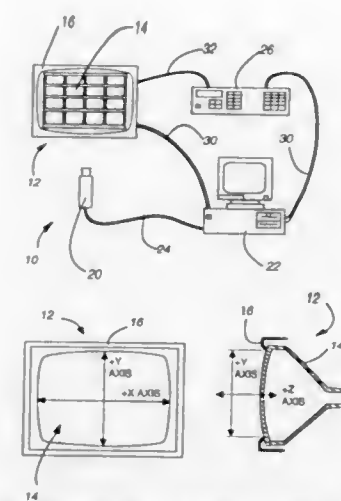
Int. Cl.⁶ H04N 17/04

U.S. Cl. 348—190

12 Claims

1. A method for transforming X-Y spacial coordinates of portions of a camera-image, as captured by a video camera, into a video-monitor-referenced X-Y spacial coordinate system, comprising the steps of:

- placing a video camera at a location to view a video monitor, the camera being located at an X-Y spacial position and alignment relative to the monitor;
- using the video camera to capture a camera-image of the monitor;
- said camera-image being indicative of the size and type of the monitor as a function of the X-Y spacial position and alignment of the camera relative to the monitor;



receiving monitor-configuration-data indicative of the actual size and type of monitor being viewed by the camera; comparing the camera-image with the monitor-configuration-data; determining the X-Y spacial position and alignment of the monitor relative to the camera from the comparison step; and utilizing the determined X-Y spacial position and alignment of the monitor relative to the camera to establish the video-monitor-referenced X-Y coordinate system.

5,510,834

METHOD FOR ADAPTIVE ESTIMATION OF UNWANTED GLOBAL PICTURE INSTABILITIES IN PICTURE SEQUENCES IN DIGITAL VIDEO SIGNALS

Peter Weiss, Hägersten, and Björn Christensson, Bandhagen, both of, Sweden, assignors to DV Sweden AB, Stockholm, Sweden

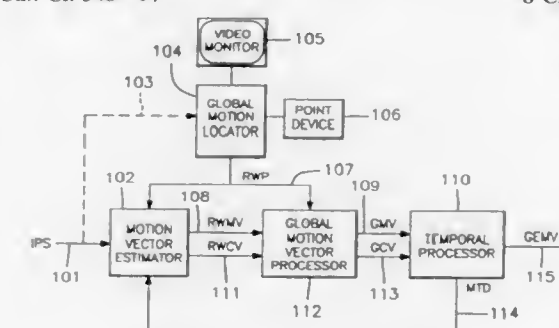
PCT No. PCT/SE93/00313, § 371 Date Oct. 13, 1994, § 102(e) Date Oct. 13, 1994, PCT Pub. No. WO93/21733, PCT Pub. Date Oct. 28, 1993

PCT Filed Apr. 8, 1993, Ser. No. 318,734

Claims priority, application Sweden, Apr. 13, 1992, 9201183 Int. Cl.⁶ H04N 9/11;724

U.S. Cl. 348—97

8 Claims



1. A method for estimation of global error motion vectors, which represent unwanted global picture instabilities in an input picture sequence (101) in digital video signals, by using a motion vector estimator (102) with a specific measuring time distance (21) between pictures in said picture sequence, as well as spatial processing and temporal processing, in order to estimate a sequence of global motion vectors (109), from which a sequence of global error motion vectors (115) is separated, characterized in that said measuring time distance (21) used in the motion vector estimator is adjusted in response to a maximum length of said global motion vectors (30) and to a motion vector frequency, within a specific interval of the picture sequence (1), said measuring time distance (21) being increased in case only small global motion vectors and low global motion vector frequency are present and being

decreased in case large global motion vectors are present and in case a high global motion vector frequency is present.

5,510,835

VIDEO CAMERA HAVING A SOLID-TYPE IMAGE SENSOR

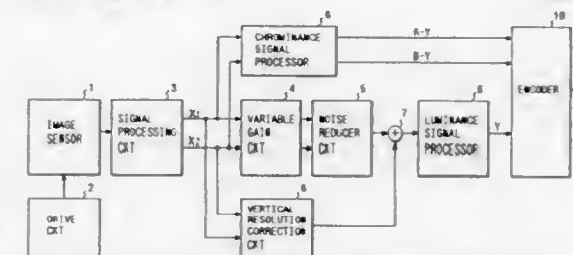
Akihito Nishizawa, Yokosuka; Ryuji Nishimura, Yokohama, and Hiroyasu Ohtsubo, Chigasaki, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 25, 1992, Ser. No. 981,398

Claims priority, application Japan, Nov. 25, 1991, 3-334470 Int. Cl.⁶ H04N 5/217

U.S. Cl. 348—242

5 Claims



1. A color video camera which is provided with a plurality of color separation filters being different in spectral sensitivity, and with an image pickup section mixing and outputting respective color signals generated from said color separation filters in different combinations for each horizontal scanning, said color video camera comprising:

- first means for controlling signal amounts of each color signal corresponding to respective color separation filters of output signals of said image pickup section respectively;
- second means for adding the output signals of said first means during neighboring horizontal scanning periods; and
- third means for generating a vertical resolution correction signal from the input signals of said first means, and for correcting degradation of the vertical resolution of output signals of said second means being attendant on processing of said second means;

wherein said third means serves also as vertical aperture correction means of output signals of said image pickup section.

5,510,836

SOLID STATE IMAGING DEVICE HAVING AN ADJUSTABLE WIDTH/HEIGHT RATIO

Michael A. W. Stekelenburg, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 991,692, Dec. 16, 1992, abandoned.

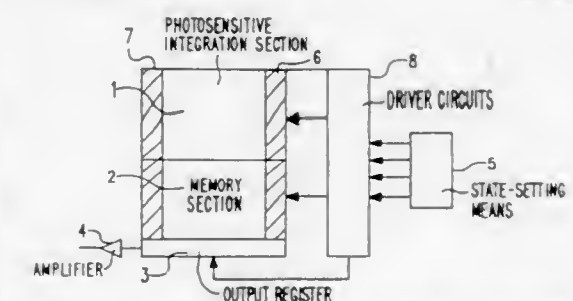
This application Sep. 22, 1994, Ser. No. 310,504

Claims priority, application European Pat. Off., Dec. 18, 1991, 91203339

Int. Cl.⁶ H04N 5/335

U.S. Cl. 348—299

8 Claims



1. A charge-coupled solid state imaging device comprising a system of sensor elements arranged in rows and columns for converting photo-radiation into electric charges which are transported parallel to the column direction by vertical charge coupled

1. A process for the synchronization of the scanning circuit of an image display device incorporating an input buffer, processing means making it possible to reconstitute an image I entering the buffer, display storage means in which the images are recorded after processing, and control means including a display clock and able to control the reading and writing of images in said display storage means, said images being acquired by a camera having a scanning circuit controlled by a given acquisition clock, said process comprising the steps of

clearing permanently the input buffer;

produce a set of rows of modified luminescence values for each color component of each pixel of the corresponding row of luminescence values; and displaying the rows of modified pixels on the monitor.

5,510,852 METHOD AND APPARATUS USING SYMMETRICAL CODING LOOK-UP TABLES FOR COLOR SPACE CONVERSION

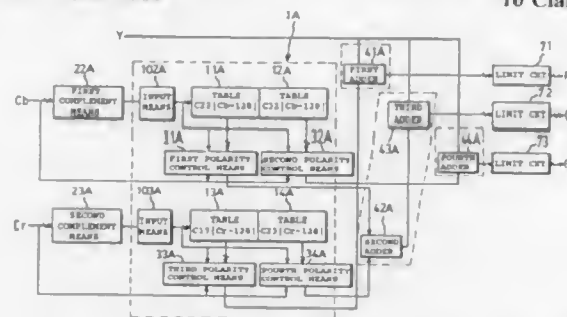
Rong-Fuh Shyu, Hsinchu, Taiwan, assignor to Winbond Electronics, Corp., Hsinchu, Taiwan

Filed Apr. 28, 1994, Ser. No. 234,426

Int. Cl.⁶ H04N 9/67; I/46; G09G 5/04

U.S. Cl. 348—660

10 Claims



1. A method for converting digitized YCbCr color components to digitized RGB color components, said method comprising the steps of:

- (i) providing a color lookup table means which has a plurality of address inputs and which includes a first segment provided with a digitized transformation component value corresponding to a Cb-in-G component, a second segment provided with a digitized transformation component value corresponding to a Cb-in-B component, a third segment provided with a digitized transformation component value corresponding to a Cr-in-R component, and a fourth segment provided with a digitized transformation component value corresponding to a Cr-in-G component;

generating 2's complement of said Cb color component when a most significant bit of the Cb color component is equal to 0, and generating 2's complement of said Cr color component when a most significant bit of the Cr color component is equal to 0,

- (ii) inputting said digitized Cb and Cr components to said address inputs of said color lookup table means to effect reference to corresponding said Cb-in-G transformation component value, corresponding said Cb-in-B transformation component value, corresponding said Cr-in-R transformation component value and corresponding said Cr-in-G transformation component value;

inverting polarities of said corresponding Cb-in-G transformation component value and said corresponding Cb-in-B transformation component value when said most significant bit of said Cb color component is equal to 0, and inverting polarities of said corresponding Cr-in-R transformation component value and said corresponding Cr-in-G transformation component value when said most significant bit of said Cr color component is equal to 0, each of the RGB color components and YCbCr color components being an 8-bit component, and said set of conversions being

$$\begin{bmatrix} R \\ G \\ B \end{bmatrix} = \begin{bmatrix} 1 & -0.001 & 1.370 \\ 1 & -0.336 & -0.698 \\ 1 & 1.733 & 0.001 \end{bmatrix} \begin{bmatrix} Y-128 \\ Cb-128 \\ Cr-128 \end{bmatrix} + \begin{bmatrix} 128 \\ 128 \\ 128 \end{bmatrix}$$

- (iii) adding said Y component and said corresponding Cr-in-R transformation component value to obtain the digitized R component;

- (iv) adding said Y component, said corresponding Cb-in-G transformation component value and said corresponding Cr-in-G transformation component value to obtain the digitized G component; and
- (v) adding said Y component and said corresponding Cb-in-B transformation component value to obtain the digitized B component.

5,510,853 AUTOMATIC GAIN CONTROL CIRCUIT FOR STABILIZING THE LEVEL OF A REPRODUCED COLOR SIGNAL

Mitsuo Kawano, Saitama, Japan, assignor to Kabushiki Kaisha Toshiha, Kawasaki, Japan

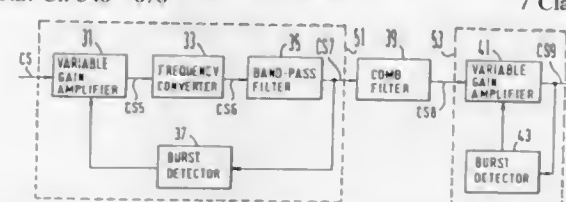
Filed Jan. 13, 1994, Ser. No. 181,100

Claims priority, application Japan, Jan. 13, 1993, 5-004042

Int. Cl.⁶ H04N 5/52

U.S. Cl. 348—678

7 Claims



1. Automatic gain control circuit for processing an input signal and providing an output signal having a stabilized level, said automatic gain control circuit comprising:

- a first feedback loop for receiving and amplifying said input signal and for providing a first signal having a first level, said first feedback loop controlling amplification and stabilizing said first level in response to said first signal;
- a noise filter for receiving said first signal and reducing noise contained within said first signal, and for providing a second signal; and
- a second feedback loop for receiving and amplifying said second signal and for providing said output signal having a second level, said second feedback loop controlling amplification and stabilizing said second level in response to said output signal, wherein said second level will approximately equal said first level.

5,510,854 DEVICE FOR ADJUSTING THE BLACK LEVEL OF A VIDEO SIGNAL

Thierry Meunier, Pommiers La Placette, France, assignor to SGS-Thomson Microelectronics, S.A., Pouilly, France

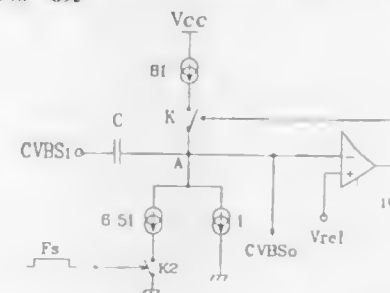
Filed May 5, 1994, Ser. No. 238,687

Claims priority, application France, May 19, 1993, 93 06250

Int. Cl.⁶ H04N 5/16

U.S. Cl. 348—695

26 Claims



5. A circuit for adjusting the voltage level of an electrical signal to coincide with a predetermined reference level, comprising:

- a capacitor having a first terminal that receives the electrical signal and a second terminal that provides an adjusted electrical signal having a voltage;

- a charging current source, providing a charging current, that charges the voltage at the second terminal of the capacitor;
- a discharging current source, providing a discharging current, that discharges the voltage at the second terminal of the capacitor;
- a differential amplifier that accepts the adjusted electrical signal and the predetermined reference level, and generates a first control signal that controls at least one of the charging and discharging current sources to generate at least two different values of current; and
- a circuit that provides a second control signal in response to a pattern in the electrical signal, the second control signal controlling at least one of the charging and discharging current sources to generate at least two different values of current.

16. A device for adjusting a video signal so that its black level is in coincidence with a predetermined reference level, comprising: means for AC-coupling the video signal to generate an adjusted video signal having a voltage;

means for increasing the voltage of the adjusted video signal at a first rate;

means for decreasing the voltage of the adjusted video signal at a second rate;

means for generating a first control signal having a value that is determined by a difference between the adjusted video signal and the reference level;

first means, operative in response to a change in the value of the first control signal, for changing one of the first rate and the second rate;

second means, operative in response to a detection of a frame retrace pulse train, for changing one of the first rate and the second rate.

23. A method for adjusting the black level of a video signal to be coincident with a predetermined reference level, comprising the steps of: AC-coupling the video signal to produce an adjusted video signal; comparing the adjusted video signal to the reference signal; charging the adjusted video signal to a higher voltage when the adjusted video signal exceeds the reference signal; discharging the adjusted video signal to a lower voltage when the reference signal exceeds the adjusted video signal; and varying a rate of the discharging in response to an occurrence of a frame retrace pulse train.

5,510,855 SATELLITE TELEVISION BROADCASTING RECEIVER INCLUDING IMPROVED CLAMPING CIRCUIT

Shigeru Kawakami, Suita; Noriaki Omoto, and Toshihiro Shogaki, both of Takatsuki, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

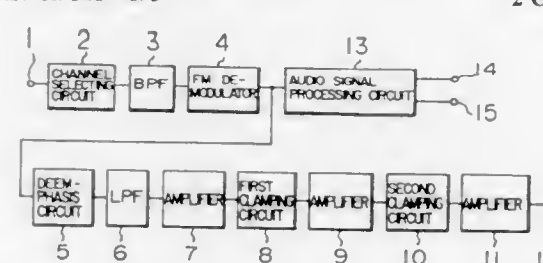
Continuation of Ser. No. 286,226, Aug. 5, 1994, abandoned, which is a continuation of Ser. No. 897,676, Jun. 12, 1992, abandoned. This application Apr. 17, 1995, Ser. No. 424,568

Claims priority, application Japan, Jun. 18, 1991, 3-145822; Jan. 29, 1992, 4-013521

Int. Cl.⁶ H04N 5/18; 5/44

U.S. Cl. 348—695

2 Claims



1. A satellite television broadcasting receiver comprising:

- a channel selecting circuit for receiving, as an input signal, a first intermediate frequency signal obtained by frequency converting a plural channel of radio waves received from a satellite and for frequency converting said first intermediate frequency signal into a second intermediate frequency signal such that a selected channel of the second intermediate frequency signal has a predetermined frequency;
- a band-pass filter for receiving said second intermediate frequency signal and for passing therethrough only a desired FM signal of said selected channel of said second intermediate frequency signal;
- an FM demodulator for demodulating the desired FM signal so as to obtain a pre-emphasized video signal which has been pre-emphasized at a transmitter;
- a de-emphasis circuit for de-emphasizing the pre-emphasized video signal;
- a low-pass filter, receiving an output signal of said de-emphasis circuit, for passing therethrough only a video signal;
- a first amplifier for amplifying said video signal from said low-pass filter and outputting an amplified video signal;
- a first clamping circuit for clamping the amplified video signal and outputting a clamped video signal;
- a second amplifier for amplifying the clamped video signal and outputting a second amplified video signal; and
- a second clamping circuit for clamping the second amplified video signal and outputting a second clamped video signal, wherein each of said first clamping circuit and said second clamping circuit has an input terminal and an output terminal and each comprises:

a capacitor connected at a first end to said input terminal and connected at a second end to said output terminal;

a DC power source; and

a transistor having an emitter connected to said output terminal and a base connected to said DC power source.

2. An apparatus, for use in a motion-compensated video signal encoder, for determining motion vectors representing a displacement between a current frame and a reference frame of video signals, wherein the current frame is divided into a plurality of processing blocks, each processing block having P×Q pixels with P and Q being integers larger than two and said P×Q pixels include therein an object pixel, the object pixel representing a pixel located at the center of each processing block, which comprises:

means for providing a motion vector for each of the pixels included in the current frame, the motion vectors including object motion vectors, each of the object motion vectors being a motion vector for each of the object pixels;

median filter for filtering the motion vectors to generate filtered motion vectors for the pixels included in the current frame,

3. An apparatus, for use in a motion-compensated video signal encoder, for determining motion vectors representing a displacement between a current frame and a reference frame of video signals, wherein the current frame is divided into a plurality of processing blocks, each processing block having P×Q pixels with P and Q being integers larger than two and said P×Q pixels include therein an object pixel, the object pixel representing a pixel located at the center of each processing block, which comprises:

means for providing a motion vector for each of the pixels included in the current frame, the motion vectors including object motion vectors, each of the object motion vectors being a motion vector for each of the object pixels;

median filter for filtering the motion vectors to generate filtered motion vectors for the pixels included in the current frame,

4. An apparatus, for use in a motion-compensated video signal encoder, for determining motion vectors representing a displacement between a current frame and a reference frame of video signals, wherein the current frame is divided into a plurality of processing blocks, each processing block having P×Q pixels with P and Q being integers larger than two and said P×Q pixels include therein an object pixel, the object pixel representing a pixel located at the center of each processing block, which comprises:

means for providing a motion vector for each of the pixels included in the current frame, the motion vectors including object motion vectors, each of the object motion vectors being a motion vector for each of the object pixels;

median filter for filtering the motion vectors to generate filtered motion vectors for the pixels included in the current frame,

5. An apparatus, for use in a motion-compensated video signal encoder, for determining motion vectors representing a displacement between a current frame and a reference frame of video signals, wherein the current frame is divided into a plurality of processing blocks, each processing block having P×Q pixels with P and Q being integers larger than two and said P×Q pixels include therein an object pixel, the object pixel representing a pixel located at the center of each processing block, which comprises:

means for providing a motion vector for each of the pixels included in the current frame, the motion vectors including object motion vectors, each of the object motion vectors being a motion vector for each of the object pixels;

median filter for filtering the motion vectors to generate filtered motion vectors for the pixels included in the current frame,

6. An apparatus, for use in a motion-compensated video signal encoder, for determining motion vectors representing a displacement between a current frame and a reference frame of video signals, wherein the current frame is divided into a plurality of processing blocks, each processing block having P×Q pixels with P and Q being integers larger than two and said P×Q pixels include therein an object pixel, the object pixel representing a pixel located at the center of each processing block, which comprises:

means for providing a motion vector for each of the pixels included in the current frame, the motion vectors including object motion vectors, each of the object motion vectors being a motion vector for each of the object pixels;

median filter for filtering the motion vectors to generate filtered motion vectors for the pixels included in the current frame,

7. An apparatus, for use in a motion-compensated video signal encoder, for determining motion vectors representing a displacement between a current frame and a reference frame of video signals, wherein the current frame is divided into a plurality of processing blocks, each processing block having P×Q pixels with P and Q being integers larger than two and said P×Q pixels include therein an object pixel, the object pixel representing a pixel located at the center of each processing block, which comprises:

means for providing a motion vector for each of the pixels included in the current frame, the motion vectors including object motion vectors, each of the object motion vectors being a motion vector for each of the object pixels;

median filter for filtering the motion vectors to generate filtered motion vectors for the pixels included in the current frame,

8. An apparatus, for use in a motion-compensated video signal encoder, for determining motion vectors representing a displacement between a current frame and a reference frame of video signals, wherein the current frame is divided into a plurality of processing blocks, each processing block having P×Q pixels with P and Q being integers larger than two and said P×Q pixels include therein an object pixel, the object pixel representing a pixel located at the center of each processing block, which comprises:

means for providing a motion vector for each of the pixels included in the current frame, the motion vectors including object motion vectors, each of the object motion vectors being a motion vector for each of the object pixels;

median filter for filtering the motion vectors to generate filtered motion vectors for the pixels included in the current frame,

9. An apparatus, for use in a motion-compensated video signal encoder, for determining motion vectors representing a displacement between a current frame and a reference frame of video signals, wherein the current frame is divided into a plurality of processing blocks, each processing block having P×Q pixels with P and Q being integers larger than two and said P×Q pixels include therein an object pixel, the object pixel representing a pixel located at the center of each processing block, which comprises:

means for providing a motion vector for each of the pixels included in the current frame, the motion vectors including object motion vectors, each of the object motion vectors being a motion vector for each of the object pixels;

median filter for filtering the motion vectors to generate filtered motion vectors for the pixels included in the current frame,

means for positioning said image forming device generally horizontally in a low profile housing and substantially in said optical path to enable light from said source of high intensity light to be modulated;

an optical system;

means for positioning said optical system in said low profile housing substantially below said device for directing light from said source of light through said device;

a lamp assembly;

means for positioning said lamp assembly at a rear portion of said housing to provide said source of high intensity projection light;

a display control system; and

means for coupling said display control system electrically to said image forming device to facilitate modulating the high intensity projection light as it passes through said device to form the image;

wherein said means for positioning a lamp assembly includes means for collimating the light from said source of light for image projection purposes; and

wherein said means for positioning an optical system includes: a first faceted mirror;

means for positioning said first faceted mirror at a predetermined angle relative to the collimated light to produce beam segments reflecting therefrom for spreading them by a predetermined amount in a desired dimension;

a second faceted mirror;

means for positioning said second faceted mirror at a predetermined angle relative to the first mirror to reflect said beam segments therefrom and to in turn produce beam segments reflecting therefrom for spreading them by a predetermined amount in another desired dimension;

said mirrors being positioned at a predetermined distance of a sufficient length to permit the beam segments reflecting from the first mirror to diverge and intersect to fill in dark areas therebetween before impinging on the second mirror.

5,510,862

COLLAPSIBLE LARGE SCREEN AUDIOVISUAL DISPLAY SYSTEM

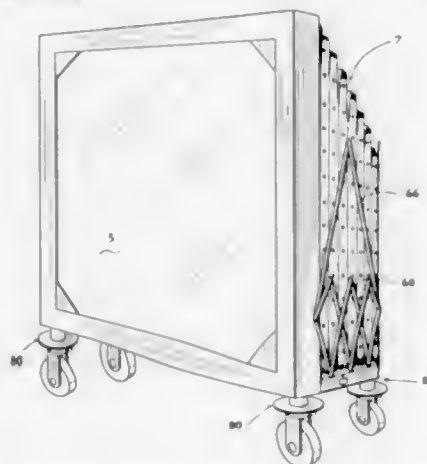
Phillip L. Lieberman, 6702 E. South Lewis, Tulsa, Okla. 74136, and William J. Wiseman, Jr., 1408 S. Denver, Tulsa, Okla. 74119

Continuation-in-part of Ser. No. 278,513, Jul. 21, 1994, Pat. No. 5,434,631. This application Jul. 14, 1995, Ser. No. 502,573

Int. Cl.⁶ G03B 21/00

U.S. Cl. 353—119

17 Claims



1. A large screen audiovisual display system, comprising:
 - (a) a forwardly placed, vertically oriented, framed rear projection screen;
 - (b) a rearwardly placed, vertically oriented, support frame adapted to receive means to project images onto the screen and means for sound projection;

- (c) a pair of extendable scissor arms affixed to and extending between the screen and the rear support frame for collapsibly connecting the screen and the rear support frame;
- (d) a flexible drape for creating an enclosure around and between the screen and the rear support frame;
- (e) means for maintaining the drape substantially expanded about the space between the screen and the support frame when such are extended apart so that the images may be projected upon the screen; and
- (f) a plurality of wheels connected to the screen and the rear support frame for facilitating movement of the system.

5,510,863

POCKET TRIPOD

Waldemar Kliever, 9, Niewaldstrasse, 33729 Bielefeld, Germany

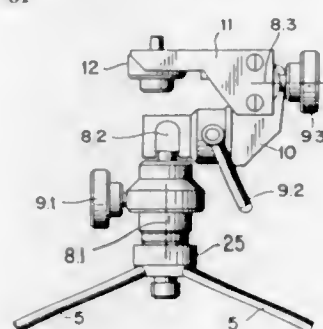
Filed Nov. 17, 1993, Ser. No. 153,188

Claims priority, application Germany, Nov. 24, 1992, 42 39 405.8

Int. Cl.⁶ G03B 29/00

U.S. Cl. 354—81

23 Claims



1. A camera support structure comprising:
 - a camera holder;
 - a head piece mountable to said camera holder to permit swiveling of said camera holder to different positions;
 - a column having axial openings in its ends onto which said head piece is mountable;
 - a plurality of supporting legs for supporting said column said supporting legs having a screw-thread at one end thereof;
 - a hollow slide bushing mountable on said column for adjustable movement therealong in the direction of a longitudinal axis of said column, said slide bushing including a lateral recess formed in a side wall thereof;
 - a universal adapter containing threaded tapholes for receiving said supporting legs, said universal adapter being selectively mountable to said recess of said slide bushing and to said head piece; and
 - a base seal mountable in an axial opening of said column.

5,510,864

CAMERA WITH FILM RECORDING MODULE

Robert G. Hills, Spencerport, and Craig A. Baker, Marion, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

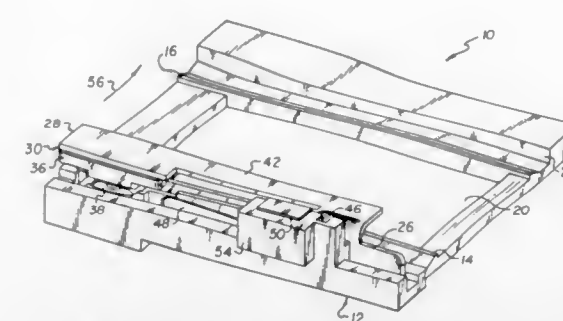
Filed Mar. 14, 1995, Ser. No. 403,319

Int. Cl.⁶ G03B 17/24

U.S. Cl. 354—106

5 Claims

1. A camera including a frame defining a film gate having a fixed longitudinal edge wall defining one edge of a path for film travel through the gate and a magnetic head module defining an opposite edge of said film travel path, a pair of spaced longitudinal rails disposed between said edges and defining a plane for film travel and an optical opening for application of images to film lying in said plane, said camera characterized by:
 - said module including a carriage mounted on the frame and having a wall defining said opposite edge of the film travel



path, the carriage mounting restraining the module against longitudinal movement in the direction of film travel but allowing limited motion in directions lateral and normal to said plane;

a magnetic head and a pressure pad mounted on said carriage in opposed relation and positioned to engage a film in said film path on opposite sides of and adjacent an edge of the film adjacent the adjacent plane defining rail, said head being adapted to apply magnetic information to the film adjacent said film edge; and

spring means acting between said carriage and said frame and urging said carriage wall against said film edge for maintaining a precise relation of said head with said film edge.

5,510,865

CAMERA WITH MID-ROLL REWIND MODE

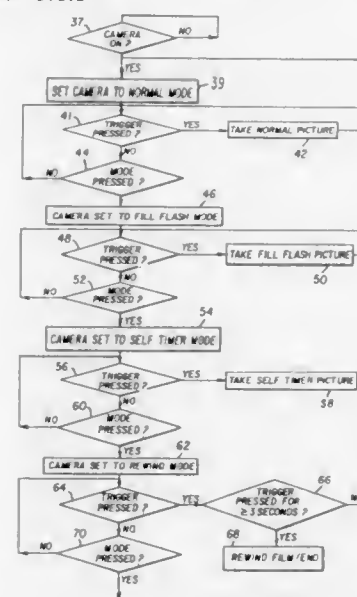
Norbert Koenig, Rochester, and Glenn W. Johnson, Webster, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Sep. 15, 1994, Ser. No. 306,749

Int. Cl.⁶ G03B 1/02

U.S. Cl. 354—173.1

5 Claims



1. A camera comprising means for commencing a picture taking sequence to record an image on a photographic filmstrip and means for selecting an operating mode of the camera, is characterized by:
 - said selecting means being operable to select a mid-roll rewind mode of said camera in which said filmstrip, having one or more unexposed image frames, is wound back into a cartridge in the camera, said camera also including means for allowing said mid-roll rewind mode to be actuated by said commencing means.

5,510,866

METHOD AND APPARATUS FOR PREVENTING FILM CREEP BY DELAYING DEACTIVATION OF FILM METERING MEMBER BY SHUTTER DRIVER MEMBER

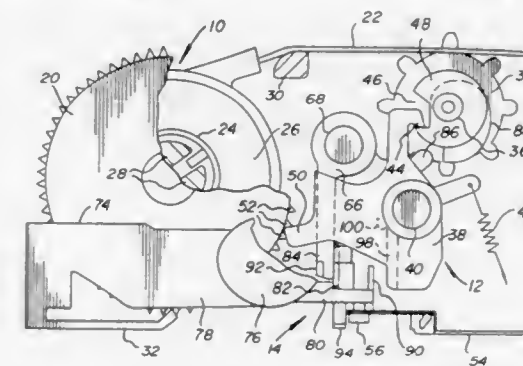
Jeffrey A. Solomon, and Jude A. SanGregory, both of Spencerport, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 21, 1995, Ser. No. 391,752

Int. Cl.⁶ G03B 17/42

U.S. Cl. 354—204

8 Claims



1. A photographic camera adapted to be loaded with an elongate strip of film and including a film advancing mechanism, a metering mechanism capable of being activated to temporarily block film advancement by said film advancing mechanism, a shutter operable to expose said film, and a shutter driver resiliently biased for movement along a predetermined path from a cocked position to an uncocked position to operate said shutter and then to engage and deactivate said metering mechanism so that said film can again be advanced; characterized by:

blocking means for temporarily blocking said movement of said shutter driver at an intermediate position between said cocked and uncocked positions after said driver has operated said shutter but before said driver has deactivated said metering mechanism.

5,510,867

CAMERA PREVENTING LOADING OF EXPOSED CARTRIDGE

Tsutomu Wakabayashi, Kanagawa, Japan, assignor to Nikon Corporation, Tokyo, Japan

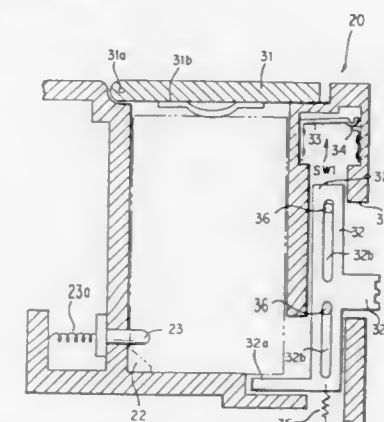
Filed Dec. 12, 1994, Ser. No. 354,792

Claims priority, application Japan, Dec. 20, 1993, 5-320460

Int. Cl.⁶ G03B 19/02

U.S. Cl. 354—207

20 Claims



1. A camera for use with a film cartridge having a film usage indicator movable from a position indicating all of the film in the film cartridge is unexposed to at least one position indicating exposure of at least some of the film in the film cartridge, said camera comprising:

a cartridge chamber for holding the film cartridge;
a loading prevention member that is movable to a first position projecting into said cartridge chamber to prevent loading of the film cartridge with exposed film and that is movable to a second position not projecting into said cartridge chamber when an unused film cartridge is loaded into said cartridge chamber; and
an ejection member arranged with respect to the cartridge chamber so that the ejection member can eject from the cartridge chamber a film cartridge held in the cartridge chamber, said ejection member being movable to a position in which the film cartridge is moved to a fixed position enabling said loading prevention member to move to said first position.

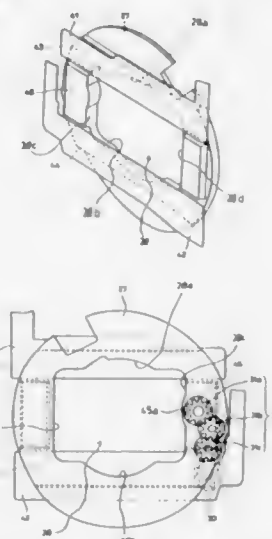
5,510,868
ZOOM LENS CAMERA HAVING APERTURE SIZE
CHANGING MECHANISM

Hiroshi Nomura, and Takamitsu Sasaki, both of Tokyo, Japan, assignors to Asahi Kogyo Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 19, 1994, Ser. No. 358,758
Claims priority, application Japan, Dec. 24, 1993, 5-69391 U
Int. Cl.⁶ G03B 19/02

U.S. Cl. 354—208

8 Claims



1. A camera having a zoom lens barrel, comprising:
an aperture size changing mechanism including a pair of light intercepting members which are inserted into and retracted from a rectangular-shaped photographing aperture of said camera for changing a photographing aperture size;
a non-rotational barrel which moves in a direction of an optical axis of the zoom lens without rotating;
a rotational barrel which is driven to rotate with respect to said non-rotational barrel about said optical axis;
a gear supporting member which is secured at the rear end of said non-rotational barrel, said gear supporting member having a central opening and a raised portion projecting toward said photographing aperture, wherein said raised portion is formed such that an orthographic projection thereof in said optical axis direction may not overlap said pair of light intercepting members; and,

a gear train for transmitting a drive force to said rotational barrel, wherein at least a part of said gear train is supported by said raised portion.

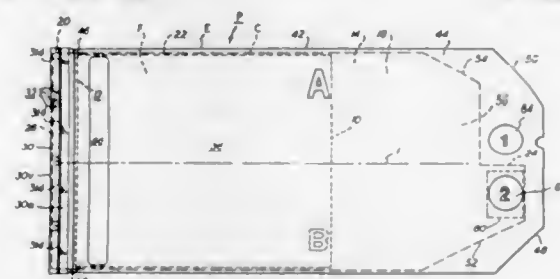
5,510,869
PHOTOGRAPHIC FILM PACKET AND LIGHT LOCKING
ELEMENT

Peter Affolter, Hilton; Peter C. Runke, Scottsville, and Joseph H. Prato, Victor, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 30, 1994, Ser. No. 220,758
Int. Cl.⁶ G03B 17/26

U.S. Cl. 354—282

19 Claims



1. An improved photographic film packet comprising:
a photosensitive film sheet having a leading and trailing end;
an elongate carder sheet having first and second outward-facing surfaces, said carder sheet including leading and trailing end sections and an intermediate section between said end sections, said film sheet being detachably attached to said first outward-facing surface of said intermediate section with said leading and trailing ends thereof oriented toward said leading and trailing end sections respectively, said leading end section extending longitudinally beyond said intermediate section, said trailing end section extending longitudinally beyond said intermediate section having a substantially U-shaped transversely disposed element secured thereto;
a light shielding envelope removably enclosing said carder sheet and said film sheet, said envelope comprising first and second opposing walls having first and second inward-facing surfaces overlying said first and second outward-facing surfaces of said carder sheet, said envelope including longitudinally extending leading and trailing end portions overlying said leading and trailing end sections respectively, said trailing end portion having a lateral edge portion, said leading end portion being sealed closed, said trailing end portion being closable by cooperative engagement of said lateral edge portion with said transversely disposed element; and,
wherein said substantially U-shaped transversely disposed element comprises a vertex defining a closed end section having an interior wall, and generally diverging first and second flange portions projecting from said vertex defining an open end section, said first and second flange portions each having a plurality of angular portions, at least one of said angular portions on each said first and second flange portions comprising a plurality of opposed inward-facing dimples for compressively engaging said first and second opposing walls of said envelope thereby preventing the ingress of light therein, and wherein at least the lateral edge portion of said trailing end portion of said envelope, when fully disposed in the open end portion of said element, abuts against said interior wall of said closed end section thereby providing a light-lock closure of the trailing end portion.

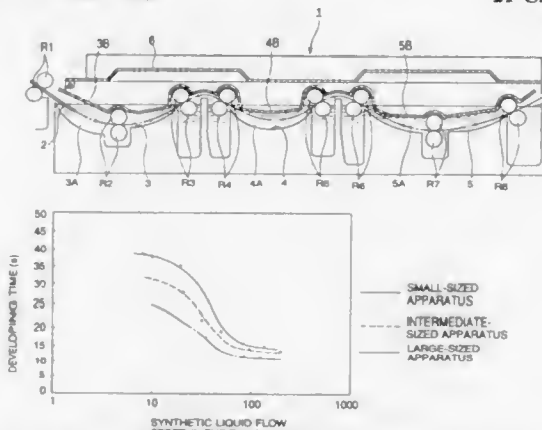
5,510,870
SHEET-LIKE MATERIAL PROCESSING APPARATUS
AND PHOTSENSITIVE MATERIAL PROCESSING
APPARATUS

Teruo Kashino; Shinichi Otani; Kazuhiro Nemoto, and Futoshi Wada, all of Hino, Japan, assignors to Konica Corporation, Tokyo, Japan

Filed Sep. 29, 1994, Ser. No. 315,932
Claims priority, application Japan, Oct. 8, 1993, 5-253466
Int. Cl.⁶ G03D 13/00

U.S. Cl. 354—298

21 Claims



1. An apparatus for processing a photosensitive material, comprising:
a processing vessel in which a developing solution used to develop the photosensitive material is stored;
conveyance means for conveying the photosensitive material in a predetermined conveying direction in the processing vessel;
and
solution flow forming means for creating a flow of the developing solution on a surface of the photosensitive material, wherein a synthetic flow speed on a surface of the photosensitive material is not less than 80 mm/sec, the synthetic flow speed is a composition of a flow speed component by the solution flow forming means and a conveyance speed component by the conveyance means.

5,510,871
FILTER FOR A PHOTOTHERMOGRAPHIC DEVELOPER

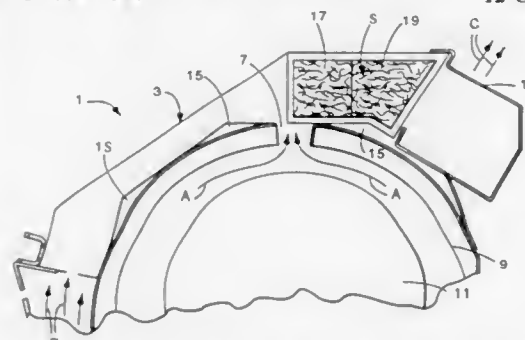
Robert M. Biegler, Woodbury; Rosanne E. Gronseth, Minneapolis; Robert J. Ryther, St. Paul; Michael P. Juarez, Maple Grove; John A. Svendsen, Marine-on-St. Croix, and Young-tzung Shih, North Oaks, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed May 9, 1994, Ser. No. 239,888

Int. Cl.⁶ G03D 7/00

U.S. Cl. 354—300

12 Claims



1. A thermal developing unit for the thermal development of photothermographic media which comprises a means for thermally developing photothermographic media by placing said media in contact with a heated element within a case, a first and a second opening for venting gas from said case, said first opening being

connected to an area surrounding said heated element, said second area being connected to an area within said unit where said media passes after it has been thermally developed, and in a path by which said gas can be vented through at least one of said first and second openings from said case there is a filter cartridge comprising a filter housing containing bonded absorbent particles.

5,510,872
DEVICE FOR AUTOMATIC COMPENSATION OF THE
LEVEL OF CHEMICAL TREATMENT BATHS,
APPLICABLE IN PARTICULAR TO DEVELOPING
MACHINES

Giosué Franci; Ennio Pessot; Daniele Bravin, all of Pordenone; Danny Lant, Udine, and Dragan Raus, Pordenone, all of Italy, assignors to San Marco Imaging S.r.l., Pordenone, Italy

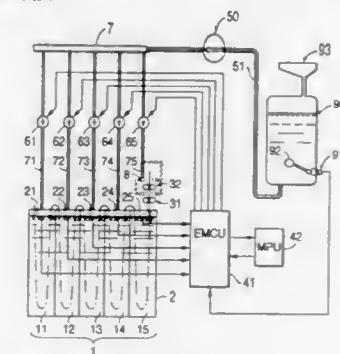
Filed Jun. 9, 1994, Ser. No. 257,286

Claims priority, application Italy, Jun. 10, 1993, PN93A0038

Int. Cl.⁶ G03D 3/02

U.S. Cl. 354—324

14 Claims



1. An apparatus, comprising:
a vessel containing a supply of water;
a first pipeline connecting said vessel to a manifold;
an electronic monitoring and control unit;
a main processing unit connected to said electronic monitoring and control unit for controlling said electronic monitoring and control unit;
a plurality of baths containing respective solutions therein, each of said plurality of baths having a respective sensor for detecting a drop in the level of solution therein connected to said electronic monitoring and control unit for relaying a signal corresponding to the level of solution to said electronic monitoring and control unit, said plurality of baths comprising a final bath having a squeeze roller assembly that includes a plurality of squeeze rollers located above said final bath;
a plurality of second pipelines each extending from said manifold to a respective one of said plurality of baths so as to be able to deliver water from said vessel to said baths;
a single pump connected to said first pipeline and said manifold for pumping the water from said vessel to said manifold and said plurality of second pipelines, said single pump being operable by said electronic monitoring and control unit in response to signals from said plurality of sensors;
a plurality of solenoid valves in respective ones of said plurality of second pipelines, said solenoid valves controlling the flow of water through said second pipelines and said solenoid valves being connected with and operated by said electronic monitoring and control unit in response to signals from said plurality of sensors;
wherein said second pipelines comprise ends located above the level of the solution in the respective baths such that the distance separating the respective said ends from the levels of the respective solutions creates a separation in flow from said ends to said baths sufficient to prevent any reflux from said baths to said pipelines; and
wherein one of said second pipelines comprises at least one tubular element having apertures therein positioned above and parallel with one of said squeeze rollers of said squeeze roller assembly and above the level of the solution of said final bath.

5,510,873

AUTOMATIC FOCUSING APPARATUS

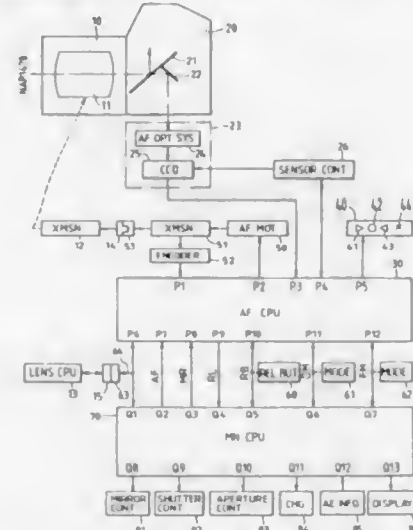
Yosuke Kusaka; Masaru Muramatsu; Ken Utagawa, all of Yokohama, and Shozo Yamano, Tokyo, all of Japan, assignors to Nikon Corporation, Tokyo, Japan
Division of Ser. No. 825,810, Jan. 21, 1992, abandoned, which is a continuation of Ser. No. 727,382, Jul. 5, 1991, abandoned, which is a continuation of Ser. No. 453,203, Dec. 26, 1989, abandoned, which is a continuation of Ser. No. 350,463, May 11, 1989, abandoned. This application May 17, 1995, Ser. No. 442,878

Claims priority, application Japan, May 13, 1988, 63-116171; Jul. 20, 1988, 63-179112; Oct. 3, 1988, 63-250600

Int. Cl.⁶ G03B 13/00

U.S. Cl. 354-402

12 Claims



1. An automatic focusing apparatus comprising:
focusing means for repetitively detecting a defocus amount of a photographing lens;
means for calculating a change in defocus amount caused by movement of an object on the basis of previous and present defocus amounts;

correcting means for correcting said defocus amount of said photographing lens on the basis of the calculated change;
driving means for driving said photographing lens on the basis of the corrected defocus amount; and

control means for repetitively causing said driving means to drive said photographing lens so that the period of every driving operation is shorter than a predetermined value, wherein said control means stops said driving means from driving said photographing lens irrespective of the focusing state of said photographing lens before the period of the driving operation becomes larger than said predetermined value.

5,510,874

AUTOMATIC FOCUSING APPARATUS

Yosuke Kusaka; Masaru Muramatsu; Ken Utagawa, all of Yokohama, and Shozo Yamano, Tokyo, all of Japan, assignors to Nikon Corporation, Tokyo, Japan
Division of Ser. No. 825,810, Jan. 21, 1992, abandoned, which is a continuation of Ser. No. 727,382, Jul. 5, 1991, abandoned, which is a continuation of Ser. No. 453,203, Dec. 26, 1989, abandoned, which is a continuation of Ser. No. 350,463, May 11, 1989, abandoned. This application May 17, 1995, Ser. No. 442,887

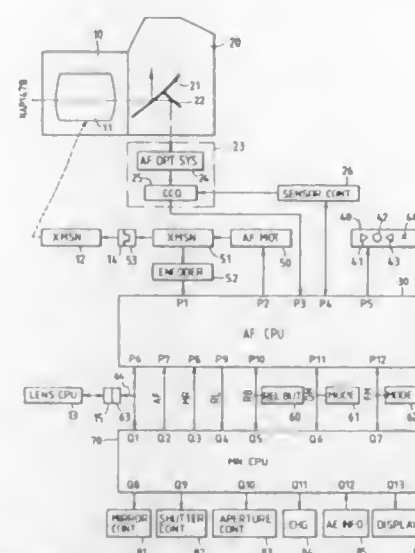
Claims priority, application Japan, May 13, 1988, 63-116171; Jul. 20, 1988, 63-179112; Oct. 3, 1988, 63-250600

Int. Cl.⁶ G03B 13/00

U.S. Cl. 354-402

11 Claims

1. An automatic focusing apparatus comprising:



focusing means for repetitively detecting a defocus amount of a photographing lens;

moving object discriminating means for discriminating on the basis of present and previous defocus amounts whether or not an object is moving;

pursuit correction amount calculating means for calculating a pursuit correction amount for a moving object on the basis of the present and previous defocus amounts;

lens drive means for calculating a drive amount of said photographing lens on the basis of the present defocus amount when said moving object discriminating means discriminates that the object is not moving, and for calculating the drive amount of said photographing lens on the basis of a pursuit drive amount as a sum of the present defocus amount and the pursuit correction amount when said moving object discriminating means discriminates that the object is moving, so as to drive said photographing lens; and

first display means using a first display member for displaying a focusing state of said photographing lens on the basis of the present defocus amount or the present and previous defocus amounts; and

second display means using a second display member for displaying an object moving state on the basis of the discriminating result of said moving object discriminating means.

5,510,875

REPRESENTATION OF DEPTH OF FIELD IN CAMERA
Masato Yamamoto, Saitama; Toshimasa Yamanaka, Tokyo; Masahiro Nakajima, Tokyo, and Yutaka Ohsawa, Tokyo, all of Japan, assignors to Asahi Kogyo Kogyo Kaishiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 984,496, Dec. 2, 1992, abandoned, which is a continuation of Ser. No. 656,597, Feb. 19, 1991, abandoned, which is a continuation of Ser. No. 324,043, Mar. 16, 1989, Pat. No. 5,019,852. This application Nov. 30, 1993, Ser. No. 159,106

Claims priority, application Japan, Mar. 16, 1988, 63-63814

Int. Cl.⁶ G03B 13/36

U.S. Cl. 354-409

38 Claims



1. A method of representing a depth of field in a camera, wherein a field depth factor Df is obtained; said method of representing comprising the steps of processing a calculated depth of field with respect to a predetermined set of photographic parameters, modifying said calculated depth of field, for said predetermined set of

photographic parameters, in accordance with at least one of an object distance, a lens hyper-focal length, a diameter of a permissible circle of confusion, a lens aperture value and a lens focal length, to obtain said field depth factor Df for said predetermined set of photographic parameters, and displaying depth of field on the basis of the magnitude of the field depth factor Df that has been obtained.

5,510,876

CONTROL SYSTEM FOR CONTROLLING THE CONNECTION OF AN IMAGE FORMING APPARATUS THROUGH A CONTROL DEVICE BY MEANS OF A COMMUNICATION CONTROL UNIT

Masayuki Hayashi; Yoshihiro Mitekura; Koichi Kanaya, all of Yokohama; Masato Terao, Tokyo; Toshiya Tagawa, Ichikawa; Nobuaki Tomidokoro, Sagami-hara; Masahiro Kitayama, Kawasaki; Osamu Kizaki, Asaka; Yasuo Kawada, Kawasaki; Kazuki Nakahara, Tokyo; Tomofumi Harada, Yokohama, and Yasunari Hashimoto, Tokyo, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

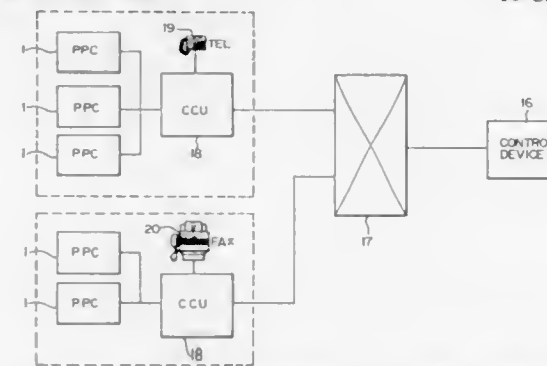
Division of Ser. No. 69,350, May 28, 1993. This application Oct. 21, 1994, Ser. No. 327,420

Claims priority, application Japan, May 28, 1992, 4-137128; May 28, 1992, 4-137130; Nov. 30, 1992, 4-321045; Dec. 18, 1992, 4-339147; Mar. 15, 1993, 5-53542

Int. Cl.⁶ G03G 21/00

U.S. Cl. 355-202

16 Claims



1. A control system for controlling at least one image forming apparatus connected to a control device by a communication line wherein each of said at least one image forming apparatus comprises:

a communication permit switch having an ON position and an OFF position for respectively permitting and inhibiting the execution of a communication mode between each said image forming apparatus and said control device wherein when said switch is in said OFF position, said communication mode is inhibited even if said each image forming apparatus is communicable with said control device and communication is desired, whereby unnecessary data is prevented from being accidentally transmitted.

5,510,877

METHOD AND APPARATUS FOR LATERAL REGISTRATION CONTROL IN COLOR PRINTING

Joannes N. M. deJong, Suffern; Jan Bares, Webster, and Vittorio R. Castelli, Yorktown Heights, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

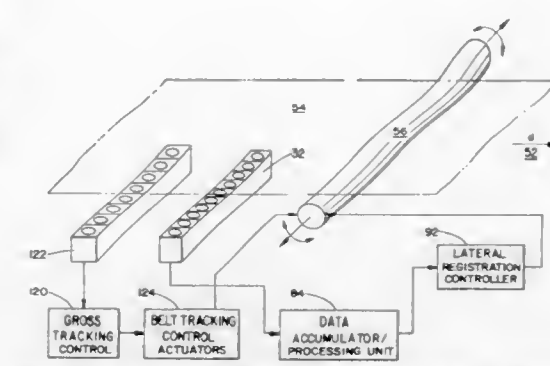
Filed Apr. 20, 1994, Ser. No. 230,469

Int. Cl.⁶ G03G 21/00

U.S. Cl. 355-208

16 Claims

1. A method for transverse registration of an image area to be exposed on a longitudinally moving belt subject to lateral deviation from linear travel, said method comprising the steps of:



providing belt edge profile data relating i) each of a plurality of longitudinal positions along said moving belt to ii) a lateral position of an edge of the belt with respect to a spatially fixed reference point;

detecting a first lateral position of said belt during movement of the belt by measuring the lateral position of said belt edge at a first one of said plurality of longitudinal positions along said belt; and,

adjusting the transverse location of the image area on the belt by shifting an active scan line to compensate for a difference between the detected first lateral position of said belt edge and the belt edge profile data related to said first one of said plurality of longitudinal positions.

5,510,878

PROCESS CARTRIDGE AND IMAGE FORMING SYSTEM

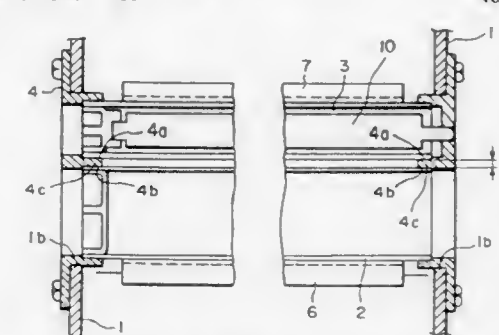
Shinya Noda, Yokohama; Kazumi Sekine, Kawasaki; Tadayuki Tsuda, Kawasaki; Isao Ikemoto, Kawasaki; Kazushi Watanabe, Yokohama; Yoshikazu Sasago, Tokyo; Kazunori Kobayashi, Kawasaki, and Shinichi Sasaki, Fujisawa, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 204,518, Mar. 2, 1994, abandoned, which is a division of Ser. No. 951,753, Sep. 28, 1992, Pat. No. 5,404,198, which is a continuation-in-part of Ser. No. 626,553, Dec. 12, 1990, Pat. No. 5,223,893. This application Apr. 4, 1995, Ser. No. 416,469

Claims priority, application Japan, Dec. 15, 1989, 1-324090; Jun. 30, 1992, 4-194655

Int. Cl.⁶ G03G 5/00

U.S. Cl. 355-211

46 Claims



1. A process cartridge detachably mountable onto a main body of an image forming system, said process cartridge comprising:

a frame;
an electrophotographic photosensitive member;
a toner carrying member for directing toner to said electrophotographic photosensitive member for developing a latent image formed on said electrophotographic photosensitive member;
a magnet disposed within said toner carrying member;
a common positioning member, discrete from said frame, contacting each of said electrophotographic photosensitive mem-

ber and said magnet to mutually position said electrophotographic photosensitive member and said magnet; and an earth contact, attached to said common positioning member, for earthing said electrophotographic photosensitive member to the main body when said process cartridge is mounted onto the main body.

5,510,879

PHOTOCONDUCTIVE CHARGING PROCESSES

John S. Facci, Webster; Richard B. Lewis, Williamson; Milan Stolka, Fairport; Martin A. Abkowitz; Michael J. Levy, both of Webster; Joseph Mammino, Penfield, and Michael M. Shalin, Pittsford, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed May 27, 1994, Ser. No. 250,749

Int. Cl.⁶ G03G 15/02; 13/02

U.S. Cl. 355—219

13 Claims

1. A process for charging layered imaging members by the transfer of ions thereto from an ionically conductive gel medium.

5,510,880

COMPENSATION DEVICE FOR SENSITIVITY OF THE PHOTSENSITIVE DRUM OF COPYING APPARATUS

Yong Il Song, Buchon, Rep. of Korea, assignor to Hyundai Electronics Ind. Co., Ltd., Kyeonggi, Rep. of Korea

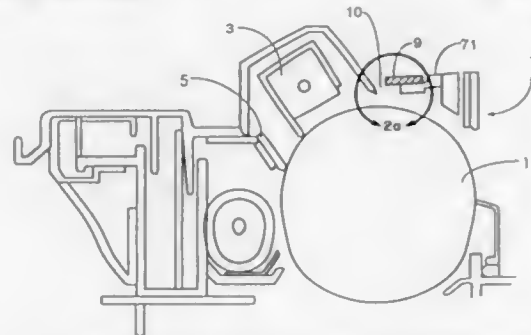
Filed Dec. 27, 1993, Ser. No. 172,739

Claims priority, application Rep. of Korea, Dec. 30, 1992, 1992-26624

Int. Cl.⁶ G03G 15/04

U.S. Cl. 355—228

3 Claims



1. In an image forming apparatus having a photosensitive drum (1), a lens (2), a staticizer (3), a destaticizer (4), a cleaning blade (5), a magnetic roller (6) in a body in a common housing, a compensation device for compensating for the light sensitivity of the particular photosensitive drum (1) in said image forming apparatus, comprising: a bracket (71) carried by said housing, a slit opening (10) formed between said bracket (71) and said charger (3) above the photosensitive drum (1) for passing a light therethrough, and an adjuster member (9) mounted on said bracket so as to be able to slide toward or away from said charger (3) for adjusting the width of said slit opening and being made of a material which passes light but has a reflectivity selected to compensate for the light sensitivity of said photosensitive drum.

5,510,881

POSITIVE PUSH DEVELOPMENT AUGER

Lewis S. Smith, Fairport; Thomas W. Nash, Ontario, and Steven C. Hart, Webster, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

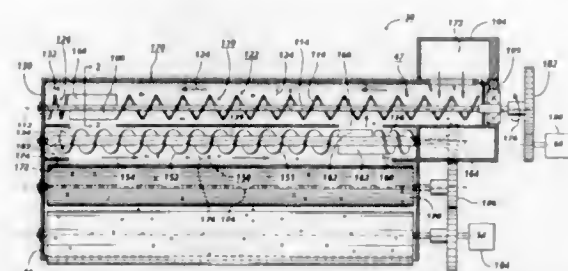
Filed Nov. 18, 1994, Ser. No. 341,810

Int. Cl.⁶ G03G 15/08

U.S. Cl. 355—245

30 Claims

15. A particle transport comprising a spiral auger including a first vane section for moving particles in a first direction, a second



vane section for moving particles in a second direction opposite to the first direction, and a paddle connected to at least one of said first vane section and said second vane section to move particles substantially transverse to the first direction.

5,510,882

DEVELOPING DEVICE HAVING AN IMPROVED AGITATION AND CONVEYANCE DEVICE

Shinji Kikuta; Motoyuki Fukuda; Tsutomu Nagata; Toshio Nishino, and Akihiko Ichiba, all of Osaka, Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan

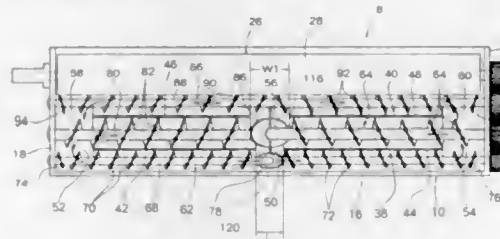
Filed Dec. 9, 1994, Ser. No. 352,620

Claims priority, application Japan, Dec. 17, 1993, 5-317671

Int. Cl.⁶ G03G 15/06

U.S. Cl. 355—245

21 Claims



1. A latent electrostatic image developing device comprising a development housing for accommodating a developer comprising a toner and carrier particles, developer applicator means for applying the developer within the development housing to a latent electrostatic image, developer agitating/conveying means for agitating and conveying the developer within the development housing, said developer agitating/conveying means including upstream agitating/conveying means, midstream agitating/conveying means, and downstream agitating/conveying means, and toner feed means for feeding a toner into the development housing, wherein

upstream partitioning means and downstream partitioning means, each extending in the widthwise direction, are disposed in the development housing, and developer transfer openings are disposed at opposite end portions in the widthwise direction and a central portion in the widthwise direction of each of the upstream partitioning means and the downstream partitioning means,

the upstream agitating/conveying means is disposed on the upstream side of the upstream partitioning means, the midstream agitating/conveying means is disposed between the upstream partitioning means and the downstream partitioning means, the downstream agitating/conveying means is disposed on the downstream side of the downstream partitioning means, and the developer applicator means is disposed on the downstream side of the downstream agitating/conveying means,

the upstream agitating/conveying means is so constructed as to convey the developer from the central portion in the widthwise direction toward the opposite end portions in the widthwise direction while agitating it, the midstream agitating/conveying means is so constructed as to convey the developer from the opposite end portions in the widthwise direction toward the central portion in the widthwise direction while

agitating it, and the downstream agitating/conveying means is so constructed as to convey the developer from the central portion in the widthwise direction toward the opposite end portions in the widthwise direction while agitating it, and the conveying capacity of the midstream agitating/conveying means is greater than the conveying capacity of the upstream agitating/conveying means and the conveying capacity of the downstream agitating/conveying means.

5,510,883

ELECTROPHOTOGRAPHIC SINGLE-COMPONENT DEVELOPING DEVICE

Tsutomu Kimura; Masaaki Fukuhara; Yasuhito Takahashi, and Toru Isosu, all of Ebina, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

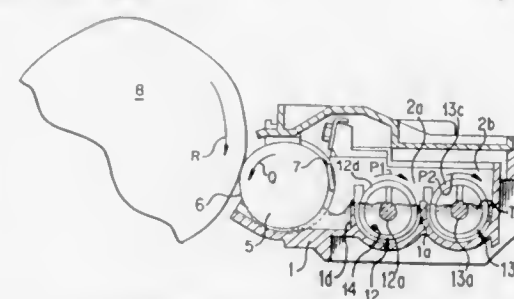
Continuation of Ser. No. 87,327, Jul. 8, 1993, abandoned. This application Feb. 10, 1995, Ser. No. 386,598

Claims priority, application Japan, Jul. 16, 1992, 4-189428

Int. Cl.⁶ G03G 15/00

U.S. Cl. 355—245

9 Claims



1. An electrophotographic single-component developing device comprising:

a development roller; toner storing means provided in parallel relationship to an axis of said development roller, for storing a single-component toner; and toner feeding means provided in said toner storing means, for feeding said single-component toner stored in said toner storing means in a direction parallel to said axis of said development roller and supplying said single-component toner to said development roller, said toner feeding means comprising a spiral agitator housing spirals formed from a wire and an accelerator rod mounted on said spirals of said spiral agitator.

5,510,884

SUPPLY ACCESSORY FOR A PRINTING MACHINE WITH HIDDEN IDENTIFIER

Raphael F. Bov, Jr., Pittsford; Jose R. Diaz, Rochester; Thomas L. Edelman, Marion; Michael J. McVeigh, Webster; Ana S. Nola, Rochester; Martin J. Curynski, Williamson; Cindy L. Casper, Marion, and Richard D. Szczepanski, Rochester, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Mar. 24, 1995, Ser. No. 409,245

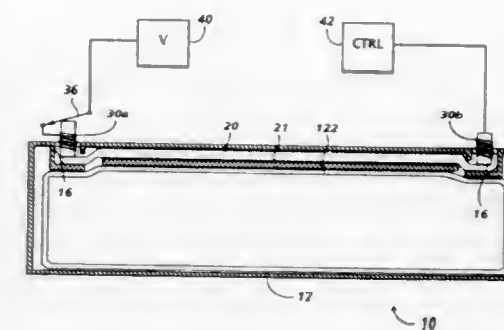
Int. Cl.⁶ G03G 15/06

U.S. Cl. 355—260

18 Claims

4. A supply accessory installable in a printing apparatus, comprising:

an outer housing; a tank, disposed at least partially within the outer housing, adapted to retain a supply of print material; a first conductive surface disposed on the housing; a second conductive surface disposed on the housing; and a conductor operatively disposed between the first conductive surface and the second conductive surface, the conductor being not exposed on an outer surface of the outer housing.



5,510,885

COLOR IMAGE FORMING APPARATUS

Hirota Mori, and Ryo Ando, both of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

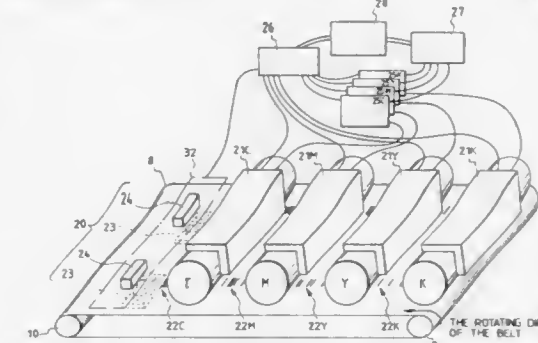
Filed Mar. 30, 1995, Ser. No. 413,848

Claims priority, application Japan, May 16, 1994, 6-101338

Int. Cl.⁶ G03G 15/01

U.S. Cl. 355—271

9 Claims



1. A color image forming apparatus, comprising: an endless image bearing member driven for turn, an image transfer member placed on said endless image bearing member,

a photosensing device with a number of photosensing picture elements linearly arrayed, and

a controlling means for sampling the color out-of-registration detect patterns in order to control out-of-registrations of toner images of different colors formed on said image transfer member or directly formed on said endless image bearing member in a manner that said color out-of-registration detect patterns being arrayed at preset distances in the directions substantially parallel to the advancing direction of said endless image bearing member and substantially orthogonal to the advancing direction of said endless image bearing member, to form a plural number of toner images of different colors on said image transfer member placed on said endless image bearing member or directly on said endless image bearing member, wherein said control means controlling in a manner that the output signals of said line photosensing device are prohibited from the shading correction, when a plural number of color out-of-registration detect patterns arrayed in the direction substantially orthogonal to the advancing direction of said endless image bearing member are sampled; and the output signals of said line photosensing device are performed in the shading correction, when a plural number of color out-of-registration detect patterns arrayed in the direction substantially parallel to the advancing direction of said endless image bearing member are sampled.

5,510,886

IMAGE FORMING APPARATUS HAVING AN INTERMEDIATE IMAGE CARRIER

Hiroyuki Sugimoto, Tokyo; Miki Kai, Yokohama, and Makoto Arai, Tokyo, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

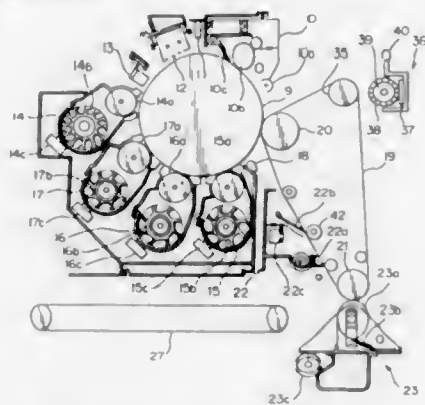
Filed Apr. 1, 1994, Ser. No. 221,670

Claims priority, application Japan, Apr. 3, 1993, 5-100516; May 18, 1993, 5-138994; May 19, 1993, 5-140214

Int. Cl.⁶ G03G 15/14

U.S. Cl. 355—273

25 Claims



1. An image forming apparatus comprising: an image carrier for carrying a toner image formed by developing a corresponding latent image; an intermediate image carrier for carrying the toner image transferred from said image carrier; first image transferring means for transferring the toner image from said image carrier to said intermediate image carrier; second image transferring means for transferring the toner image from said intermediate image carrier to one of a final toner image carrier and another intermediate image carrier; a cleaning device for removing a toner remaining on said intermediate image carrier; and an applying device for applying to a surface of said intermediate image carrier fine particles capable of preventing toner filming from occurring; said applying device including an applicator and means for moving said applicator between a contact position at which said applicator contacts said intermediate image carrier and a non-contact position at which said applicator is spaced from said intermediate image carrier; the apparatus further comprising control means for controlling said cleaning device and said applying device such that said fine particles are applied only to an area of the surface of said intermediate image carrier from which said cleaning device has removed the toner.

5,510,887

CLEANING BLADE, PROCESS CARTRIDGE CONTAINING SAME AND ELECTROPHOTOGRAPHIC APPARATUS USING SAME

Masahiro Watabe, and Toshinari Miura, both of Yokohama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 28, 1994, Ser. No. 233,948

Claims priority, application Japan, Apr. 30, 1993, 5-124822

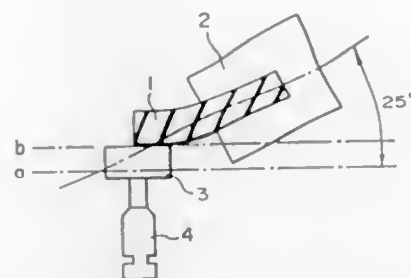
Int. Cl.⁶ G03G 21/00

U.S. Cl. 355—299

19 Claims

1. A cleaning blade, comprising: a polyurethane elastomer obtained by using a hardener composition comprising at least trimethylolpropane, wherein said polyurethane elastomer has the following properties (1) to (3):

- (1) a trimethylolpropane concentration of at least 0.10 mM/g;
- (2) a urethane group concentration of at least 2.20 mM/g; and
- (3) a tanδ having a maximum value at a temperature of at most 12° C.



5,510,888

IMAGE FORMING METHOD AND APPARATUS FOR FORMING TWO IMAGES OF TWO ORIGINALS WITH CONTROL OF IMAGE FORMING TIMING AND IMAGE READING TIMING

Tadayoshi Kuge, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

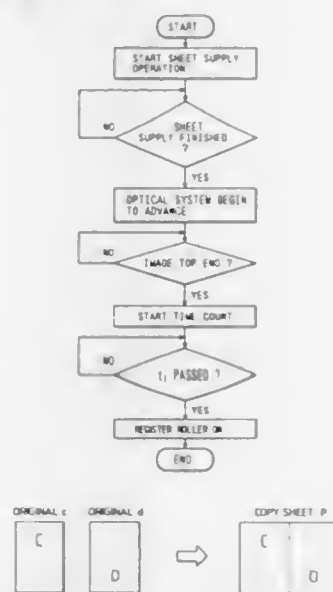
Continuation of Ser. No. 940,754, Sep. 8, 1992, abandoned, which is a continuation of Ser. No. 611,748, Nov. 13, 1990, abandoned. This application Jun. 10, 1993, Ser. No. 74,739

Claims priority, application Japan, Nov. 14, 1989, 1-295436; Nov. 14, 1989, 1-295437

Int. Cl.⁶ G03G 15/00

U.S. Cl. 355—317

21 Claims



1. An image forming apparatus for forming images on a single sheet side by side, comprising:

- an original reading means having an optical system for reading a first original image and a second original image;
- an image forming means for forming the first and second original images read by said original reading means on a sheet;
- a sheet conveying means having register means for feeding the sheet in register with operation of said image forming means, for conveying a blank sheet to said image forming means so as to form a first image on the blank sheet;
- a re-supplying means for directing the sheet on which the first image was formed by said image forming means to said image forming means again by re-circulation of the sheet through said sheet conveying means so as to form a second image on the sheet; and
- a timing control means wherein said register means is operated in register with the operation timing of said optical system for the first original image to form the first original image on one half of the sheet, and then said optical system is operated in register with the operation timing of said register means to form the second original image on another half of the sheet,

whereby the first and second original images are formed on one sheet side by side sequentially.

5,510,889

HIGHWAY PROFILE MEASURING SYSTEM

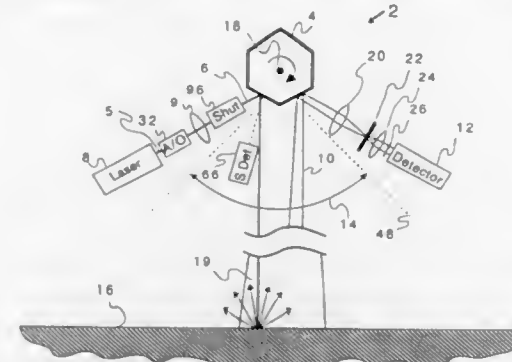
William J. Herr, 2353 Terraza Salvo, Carlsbad, Calif. 92009

Filed Sep. 30, 1993, Ser. No. 130,099

Int. Cl.⁶ G01C 3/08; 11/12; 3/00; E01C 23/00

U.S. Cl. 356—5.1

3 Claims



1. A highway profile measuring system for measuring the profiles of large surfaces comprising:

- A) a vehicle defining a forward direction and a transverse direction
- B) a laser means mounted on said motor vehicle for producing a laser beam for illuminating small spots on said large surfaces,
- C) a first detector means for detecting reflections of portions of said laser beam from said large surface,
- D) a first scanner means having a fixed or adjustable scan rate for scanning said laser beam on said large surfaces and reflecting portions of said beam reflected from said surfaces into said detector means, said scanner being arranged to scan in a direction parallel to said forward direction
- E) a modulating means for modulating said laser beam with a predetermined frequency of less than 10 GHz,
- F) a phase measuring means for digitally determining the phase shift of said portion of said modulated beam reflected into said detector means from a very large number of said small spots on said surfaces, said phase measuring means comprising a means to start and stop counting by reference to said portion of said modulated reflected beam and to a reference signal.

5,510,890

LASER RADAR WITH REFERENCE BEAM STORAGE

Roger M. Langdon, Colchester, and Edward L. Lewis, Maidstone, both of, United Kingdom, assignors to GEC-Marconi Limited, Middlesex, United Kingdom

Filed Oct. 18, 1993, Ser. No. 136,918

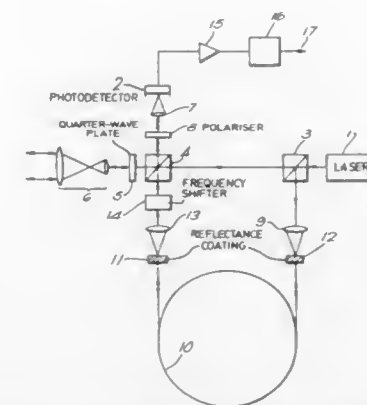
Claims priority, application United Kingdom, Nov. 3, 1992, 9222955

Int. Cl.⁶ G01C 3/08

U.S. Cl. 356—5.09

9 Claims

1. A laser radar system, comprising:
- a pulse laser for producing successive optical pulses;
 - a detector, coupled to said pulse laser, for receiving back-scattered radiation mixed with a reference laser beam, a frequency shift existing between the back-scattered radiation and the reference laser beam to allow heterodyne detection by said detector;
 - a cavity, coupled to said pulse laser and said detector, for producing a multiplicity of output pulses; and
 - first and second reflectors optically coupled to said cavity, each pulse of the successive optical pulses entering said cavity through said first reflector and a corresponding output pulse



leaving said cavity through said second reflector, said reflectors producing multiple reflections within said cavity from each pulse of the successive optical pulses produced by the pulse laser, the output pulses of said cavity resulting from repeated transversals within said cavity by each pulse of the successive optical pulses, to form the reference laser beam.

5,510,891

OBJECT CHARACTERISTIC DIRECT MEASURING DEVICE UTILIZING A MAGNETICALLY ATTRACTED LOWER BASE AND AN UPPER FRAME HAVING A SCALED LENS THEREIN

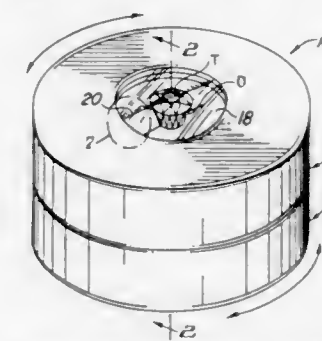
Nehme Frangie, 125 Wolf Rd., #313, Albany, N.Y. 12205

Filed Jan. 23, 1995, Ser. No. 376,788

Int. Cl.⁶ G01N 21/00; G02B 27/02

U.S. Cl. 356—30

21 Claims



1. An object characteristic direct measuring device, comprising:

- (a) a lower base;
- (b) an upper frame disposed upon said lower base and having a central aperture extending through said upper frame;
- (c) means for holding an object to be measured, said holding means being mounted to said lower base and extending upwardly therefrom into said central aperture of said upper frame;
- (d) a transparent lens disposed on said upper frame across said central aperture therein and above said holding means; and
- (e) a graduated measuring scale applied on said transparent lens for use in measuring a characteristic of the object held by said holding means;
- (f) said upper frame being rotatable about and relative to said holding means extending into said central aperture of said upper frame and relative to said lower base for moving said measuring scale relative to said holding means and to thereby align said measuring scale with a characteristic of the object to be measured.

5,510,892

INCLINATION DETECTING APPARATUS AND METHOD
Hideo Mizutani, Yokohama; Kesayoshi Amano; Shinji Wakamoto, both of Tokyo, and Yuji Imal, Ohmiya, all of Japan, assignors to Nikon Corporation, Japan

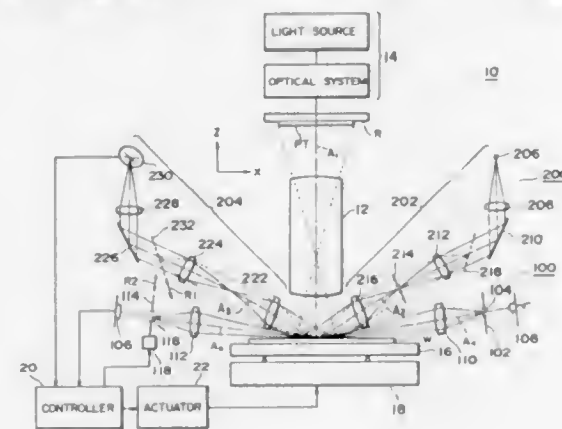
Filed Nov. 24, 1993, Ser. No. 158,060

Claims priority, application Japan, Nov. 25, 1992, 4-314837; Mar. 15, 1993, 5-053450

Int. Cl.⁶ G01B 11/26; 11/14; G01N 21/00

U.S. Cl. 356—139.1

27 Claims



1. An inclination detecting apparatus for detecting an inclination of an object relative to a plane which a predetermined reference axis crosses, comprising:

an illumination optical system having a first optical axis obliquely set to said reference axis, said illumination optical system supplying a collimated beam onto a front surface of the object along a direction oblique to said reference axis;

a condenser optical system having a second optical axis arranged symmetric with said first optical axis of said illumination optical system with respect to said reference axis, said condenser optical system having a condensing member for condensing the collimated beam supplied from said illumination optical system and then reflected by the front surface of the object, and a light receiving member for receiving the beam condensed by said condensing member and generating a position signal corresponding to a light receiving position;

inclination detecting system for detecting an inclination of the front surface of the object, based on the position signal generated from said light receiving member;

first light limiting member having a light-transmitting portion and a light shield portion, said first light limiting member being disposed on the first optical axis of said illumination optical system such that a conjugate image thereof is formed on the front surface of the object arranged substantially perpendicular to said reference axis, and

second light transmitting member having a light-transmitting portion and a light shield portion, said second light transmitting member being disposed on the second optical axis of said, condenser optical system such that a conjugate image thereof is formed on the front surface of the object arranged substantially perpendicular to said reference axis and that the conjugate image of said second light limiting member is substantially coincident with the conjugate image of said first light limiting member.

5,510,893

OPTICAL-TYPE POSITION AND POSTURE DETECTING DEVICE

Toru Suzuki, Kanagawa, Japan, assignor to Digital Stream Corporation, Kanagawa, Japan

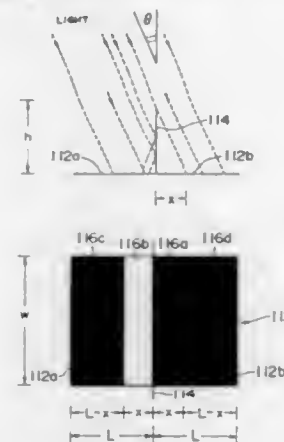
Filed Feb. 14, 1994, Ser. No. 195,320

Claims priority, application Japan, Aug. 18, 1993, 5-225252; Aug. 26, 1993, 5-234019

Int. Cl.⁶ G01B 11/26; G01C 1/00; 21/02

U.S. Cl. 356—139.03

7 Claims



1. A device for determining an incident angle of light, comprising:

a photodetector having at least two adjacent light receiving portions,

at least one light intercepting plate made of light absorbing material and disposed between said two light receiving portions, said plate being disposed vertically with regard to said light receiving portions, and

means for calculating an incident angle θ of light from a light source incident on said photodetector based on the quantities of light received on each of said light receiving portions, in which the angle θ of light falling on the light receiving portions with regard to the light intercepting plate is expressed in the following equation:

$$\theta = \tan^{-1} (L \times D_N / h)$$

wherein L is the length of each of the adjacent light receiving portions of said photodetector, h is the height of the light intercepting plate disposed between the two light receiving portions, and D_N is the difference in quantities of light normalized by taking a ratio of the difference between quantities of light received on the light receiving portions to the quantity of light received on the light receiving portions as a whole.

5,510,894

SPECTROSCOPIC APPARATUS AND METHODS

David N. Batchelder, London, and G. David Pitt, Gloucestershire, both of, United Kingdom, assignors to Renishaw plc, Gloucestershire, United Kingdom

Continuation of Ser. No. 13,063, Feb. 3, 1993, abandoned, and a continuation-in-part of Ser. No. 543,729, Aug. 16, 1990, Pat. No. 5,194,912. This application Nov. 30, 1994, Ser. No. 351,175

Claims priority, application United Kingdom, Jun. 8, 1991, 9112343; Nov. 16, 1991, 9124397

Int. Cl.⁶ G01F 3/34

U.S. Cl. 356—301

21 Claims

1. A spectroscopy method, comprising:
illuminating a sample to obtain therefrom a spectrum of scattered light;
analysing said spectrum;
passing at least one component of the analysed spectrum to a photodetector, light scattered from a given plane in the sample

5,510,896

AUTOMATIC COPY QUALITY CORRECTION AND CALIBRATION

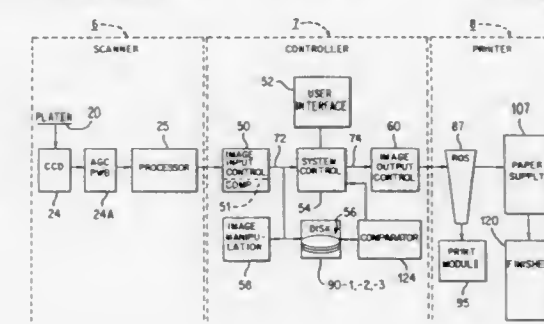
Walter F. Wafler, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jun. 18, 1993, Ser. No. 77,904

Int. Cl.⁶ G02B 26/10

U.S. Cl. 358—296

19 Claims



being brought to a tight focus in a given area on the photodetector while light scattered from other planes in the sample is brought to a more diffuse focus on the photodetector; and detecting light which is received in said given area on the photodetector, wherein the light received in said given area is detected without or separately from diffusely focused light outside said given area, thereby reducing the effect of light scattered from said other planes in the sample.

5,510,895

PROBE FOR MONITORING A FLUID MEDIUM

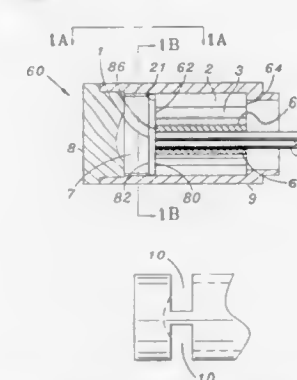
Armen N. Sahagen, 16757 Bolero La., Huntington Beach, Calif. 92649

Filed Mar. 5, 1993, Ser. No. 26,987

Int. Cl.⁶ A61B 5/00; H01J 40/14; G01L 7/08

U.S. Cl. 356—436

83 Claims



1. A probe for monitoring a fluid pressure, temperature and composition, simultaneously or separately, comprising:

a base having an upper and lower surface, a cavity located along the upper surface, at least one hole extending from the upper surface to the lower surface;

at least one fiber optic, in the hole, for transmitting an electromagnetic wave;

a diaphragm having a first and second major surface, the first major surface facing the upper surface and the second major surface facing the fluid, wherein the fluid pressure is applied in a direction that causes the diaphragm to flex toward the cavity, wherein the diaphragm is capable of transmitting the electromagnetic wave;

a pressure sensitive element on the diaphragm;

a temperature sensitive element on the diaphragm; and

a reflector, spaced from the diaphragm, for reflecting the electromagnetic wave after interaction with the fluid.

9. A digital copier capable of automatic copier calibration and correction having at least one adjustable process control parameter, comprising:

a scanner subsystem including a platen;

a printer subsystem;

a pre-existing hard copy of a first known test image;

a processor subsystem including a plurality of memory locations including

a first memory location for storing an electronic digital representation of the first known test image,

a second memory location for temporarily storing an electronic digital representation of a scanned image, and

a third memory location for at least temporarily storing an electronic digital representation of a second known test image;

means within the scanner subsystem for initiating scanning of the pre-existing hard copy;

means within the processor subsystem for storing electronic scanning data obtained from the scanning of the hard copy into the second memory location;

a comparator within the processor subsystem for electronically comparing data stored in the first memory location and the second memory location and determining differences therebetween;

an adjustment circuit within the processor subsystem for adjusting operating parameters of the scanning subsystem based on differences determined by the comparator;

means within the printer subsystem for creating a hard copy printout of the second known test image;

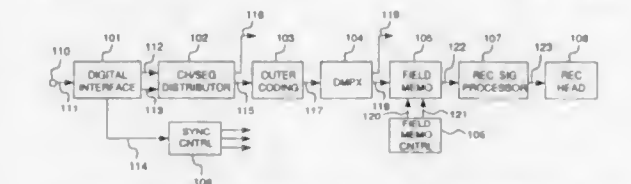
means within the scanner subsystem for initiating scanning of the hard copy printout after the scanning subsystem has been adjusted;

means within the processor subsystem for storing electronic scanning data obtained from the scanning of the hard copy printout in the second memory location;

a comparing circuit within the processor subsystem for comparing data from the third memory location and the second memory location and determining differences therebetween; and

an adjustment circuit within the processor subsystem for adjusting parameters of the printer subsystem based on differences determined by the comparing circuit.

5,510,897
DIGITAL VIDEO SIGNAL RECORDING APPARATUS
AND METHOD
Keiichi Ishida, Kobe, and Masaaki Higashida, Neyagawa, both
of Japan, assignors to Matsushita Electric Industrial Co.,
Ltd., Osaka, Japan
Filed Jan. 31, 1994, Ser. No. 188,895
Claims priority, application Japan, Feb. 4, 1993, 5-017247;
Mar. 18, 1993, 5-058221; Sep. 20, 1993, 5-232901
Int. Cl.⁶ H04N 9/797; 9/80
U.S. Cl. 358—310 38 Claims



1. A digital video signal recording method for recording a video signal expressed by four digital components such that even numbered pixel is expressed by a first type luminance signal component and two color difference signal components, and odd numbered pixel is expressed by a second type luminance signal component, said method comprising the steps of:

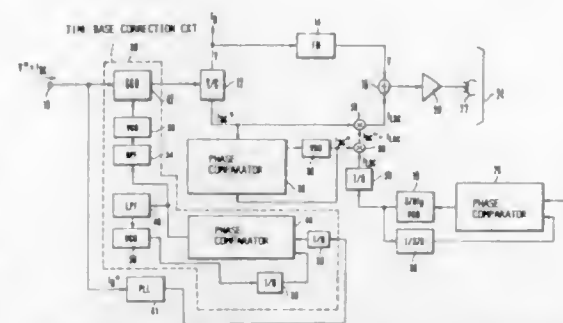
- presenting four different channels through which said four digital components are stored;
- providing a predetermined number of segments for storing one field video signal;
- setting a standard channel order of a recurring channel pattern;
- aligning channels based on said standard channel such that a first group is the standard channel order, and following groups take such an order that the standard channel order is shifted, after each group, by a first predetermined increment amount, and also that the channel order in one line is shifted, after each line, by a second predetermined increment amount;
- allocating said first and second type luminance signal components with said aligned channels;
- assigning sequentially said predetermined number of segments to said first and second type luminance signal components;
- allocating said two color difference signal components with channels based on said aligned channels such that every other channel data from said aligned channels are taken and each channel data is repeated twice; and
- assigning sequentially said predetermined number of segments to said two color difference signal components, whereby said first type luminance signal component and two color difference signal components for the even numbered pixel are stored in a same segment by the same channel.

5,510,898
INFORMATION SIGNAL RECORDING APPARATUS
Katsuji Yoshimura, and Mitsuru Owada, both of Kanagawa,
Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 278,564, Jul. 21, 1994, abandoned,
which is a continuation of Ser. No. 139,332, Oct. 18, 1993,
abandoned, which is a continuation of Ser. No. 926, Jan. 6,
1993, abandoned, which is a continuation of Ser. No. 758,280,
Aug. 27, 1991, abandoned, which is a continuation of Ser. No.
267,574, Nov. 7, 1988, abandoned. This application Jun. 7,
1995, Ser. No. 488,955

Claims priority, application Japan, Nov. 26, 1987, 62-298452;
Nov. 26, 1987, 62-298453; Nov. 26, 1987, 62-298454
Int. Cl.⁶ H04N 9/80
U.S. Cl. 358—320 13 Claims

1. A composite color video signal processing apparatus for processing a composite color video signal containing a luminance signal and a color information signal, comprising:

- recording/reproducing signal processing means arranged to receive said composite color video signal and to transform the

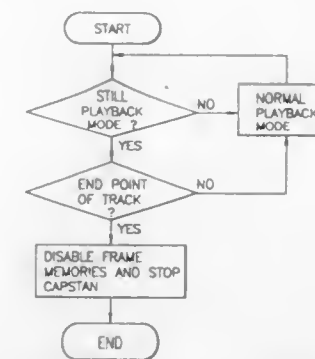


received composite color video signal into a component color video signal consisted of both the luminance signal and color information signal and to perform either a recording signal processing or a reproducing signal processing to both the luminance signal and color information signal, and to transform back into the composite color video signal the component color video signal processed by either the recording signal processing or the reproducing signal processing, thereby outputting the composite color video signal;

- recording/reproducing means arranged to record on a recording medium the composite color video signal processed by the recording signal processing outputted from said recording/reproducing signal processing means or reproduce the composite color video signal recorded on said recording medium, thereby supplying the reproduced composite color video signal to said recording/reproducing signal processing means;
- time-base variation correction means arranged to receive a composite color video signal add to correct a time-base; variation generated on the received composite color video signal; and
- switching means arranged to switch connection between said time-base variation correcting means and said recording means, in such a manner that in a case where a composite color video signal supplied from other reproducing apparatus is input, said composite color video signal is supplied to said time-base variation correction means and to correct said time variation generated on said composite color video signal in said time-base variation correction means, thereby recording on a recording medium the composite color video signal processed by the recording signal processing of said recording/reproducing signal processing means and then reproducing it and, in another case where a composite color video signal processed by the reproducing signal processing in the recording/reproducing signal processing means is input, said composite color video signal is supplied to said time-base variation correction means and said time-base variation generated on said composite color video signal is corrected by said time-base variation correction means and then to output it.

5,510,899
METHOD OF MULTI-SPEED RECORDING-
REPRODUCING A VIDEO SIGNAL IN DIGITAL VIDEO
CASSETTE RECORDER
Dae J. Kim, Seoul, Rep. of Korea, assignor to Goldstar Co.,
Ltd., Seoul, Rep. of Korea
Filed Dec. 30, 1993, Ser. No. 175,712
Claims priority, application Rep. of Korea, Apr. 2, 1993,
93-5614
Int. Cl.⁶ H04N 5/76; 5/782; G11B 5/00; 5/09
U.S. Cl. 358—335 22 Claims

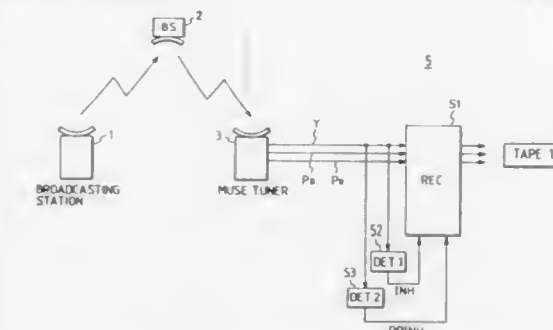
- A method of multi-speed recording-reproducing of a video signal in a digital video cassette recorder, comprising the steps of:
- performing intra-frame coding at an interval of a predetermined number frames of the video signal to compress the video signal, and recording the compressed video signal on a video tape;
 - discriminating whether the present mode is the slow reverse playback mode, under the condition that the normal playback



mode is performed and, if it is discriminated that the present mode is the slow reverse playback mode, then discriminating whether the present track position is an end point of a corresponding track; and

- scanning an intra-frame coded track by normal playback and storing the scanned data if it is discriminated that the present track position is the end point of the corresponding track in said step (b), and performing sequential output from the stored data in reverse order, and then performing skip field reverse at a high speed.

5,510,900
VIDEO SIGNAL RECORDING APPARATUS WITH
RERECORDING INHIBIT CIRCUIT
Yoshiki Shirochi, Chiba, and Keitaro Yamashita, Tokyo, both
of Japan, assignors to Sony Corporation, Tokyo, Japan
Continuation of Ser. No. 910,410, Jul. 8, 1992, abandoned.
This application Jan. 6, 1994, Ser. No. 178,467
Claims priority, application Japan, Jul. 29, 1991, 3-211525
Int. Cl.⁶ H04N 5/76; G11B 15/04; 19/04
U.S. Cl. 358—335 8 Claims

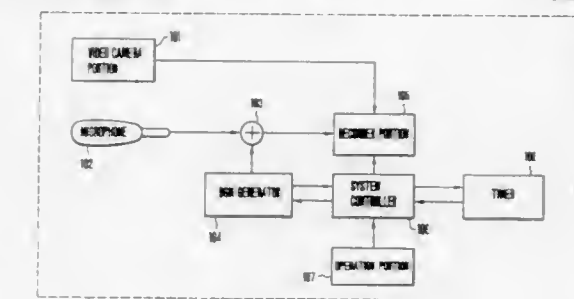


- A video signal recording apparatus which inhibits the rerecording of a video signal, comprising:
- receiving means for receiving the video signal with a first or a second inhibit recording signal superimposed thereon;
 - means for producing said second inhibit recording signal in response to reception of said first inhibit recording signal superimposed on said video signal, said second inhibit recording signal being distinguished from said first inhibit recording signal;
 - means for recording said video signal and for recording said second inhibit recording signal with said video signal when said first inhibit recording signal is received superimposed on said video signal; and

means for inhibiting rerecording of said video signal by said means for recording when said video signal is received with said second inhibit recording signal by said receiving means.

5,510,901
SIGNAL RECORDING SYSTEM USING SOUND
MEMORY
Koji Takahashi, Teruo Hieda, Kenji Kyuma, Yoshihiro Nakatani, Koichiro Suzuki, Takeshi Abe, and Yoshifumi Ishikawa, all of Kanagawa, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 112,049, Aug. 25, 1993, abandoned, which is a continuation of Ser. No. 633,974, Dec. 26, 1990, abandoned. This application Nov. 10, 1994, Ser. No. 337,317
Claims priority, application Japan, Dec. 28, 1989, 1-344804;
Jan. 9, 1990, 2-002968; Jan. 20, 1990, 2-011028
Int. Cl.⁶ H04N 5/76
U.S. Cl. 358—335 3 Claims



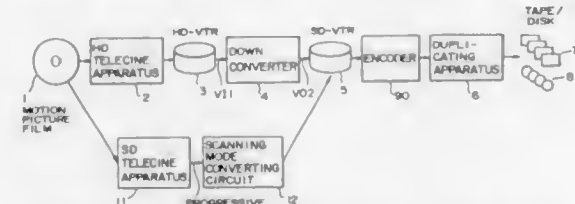
- An information signal recording apparatus comprising:
- information signal generating means having a read only memory storing data for generating a plural kinds of information signals, for reading from the read only memory data to generate an information signal selected from said plural kinds of information signals and generating the information signal according to the data read out;
 - recording means for recording with other information signal the information signal generated from said information signal generating means while causing a recording position to move for recording a signal on said recording medium, interrupting the recording operation when the recording operation of the information is intermittently operated, and restarting the recording operation upon reversing a recording position on the recording medium by a certain quantity; and
 - data reading control means for successively assigning a read address for reading said data relative to said memory during a period when the reading operation of the information signal is being operated by said recording means, said data reading control means being arranged, when the recording operation of said information signal by said recording means is interrupted, to temporarily hold the read address which has been assigned immediately before the interruption and to interrupt the reading operation of the data relative to said read only memory, and, when the recording operation of the information signal by said information signal recording means is restarted, to successively assign the read address of the data relative to said read only memory from the read address preceded said temporarily held read address by a certain quantity of read address and to restart the reading operation of data relative to said read only memory.

5,510,902
APPARATUS AND METHOD FOR PRODUCING
DOWNWARDS COMPATIBLE VIDEO SIGNALS WITH
INCREASED VERTICAL RESOLUTION, AND
APPARATUS FOR REPRODUCING AND DISPLAYING
SAME

Yasushi Fujinami, and Jun Yonemitsu, both of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan
 Continuation of Ser. No. 144,749, Oct. 27, 1993, Pat. No. 5,485,280. This application Jun. 2, 1995, Ser. No. 459,496
 Claims priority, application Japan, Oct. 30, 1992, 4-316302
 Int. Cl.⁶ H04N 5/76; 3/36; 5/84

U.S. Cl. 358—335

20 Claims



1. Apparatus for deriving from a motion picture fixed in a motion picture film an increased-definition interlaced video signal representing the motion picture for transfer to a non-volatile video recording medium, the increased-definition interlaced video signal having an increased vertical resolution, and being for display using progressive scanning, the apparatus comprising:

deriving means for deriving the increased-definition interlaced video signal from the motion picture film, the increased-definition interlaced video signal having a number of lines equal to, and a greater vertical resolution than, a standard-definition interlaced video signal;

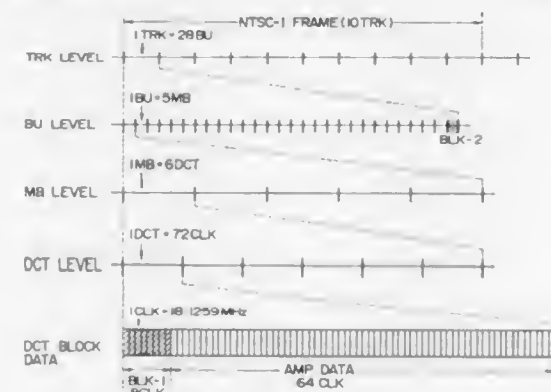
flag signal generating means for generating a flag signal indicating that the increased-definition interlaced video signal is for display using progressive scanning to prevent interline flicker; and

recording means for recording the increased-definition interlaced video signal representing the motion picture together with the flag signal in the non-volatile recording medium.

5,510,903
DIGITAL VIDEO TAPE RECORDER
 Osamu Matsumura, Chiba, Japan, assignor to Sony Corporation, Tokyo, Japan
 Continuation of Ser. No. 90,926, Jul. 14, 1993, abandoned.
 This application Jun. 6, 1995, Ser. No. 468,127
 Claims priority, application Japan, Jul. 24, 1992, 4-217473
 Int. Cl.⁶ H04N 5/76; 5/92

U.S. Cl. 358—335

7 Claims



1. A digital video tape recorder comprising:
 means for sampling an input analog video signal at a predetermined rate and converting the resulting samples into digital data;

means for forming said digital data into data blocks each including data corresponding to a predetermined number of said samples; and

means for compressing the data of said data blocks including means for discrete cosine transforming said data blocks so as to convert said data therein from a time domain to a frequency domain, means for assembling the converted data into respective discrete cosine transformed (DCT) blocks each of which has a respective first blanking area in which information incidental to the converted data may be contained, means for variable-length coding said DCT blocks to produce buffering units, each constituted by a predetermined number of said DCT blocks in succession, of equal length; and further comprising means for segment recording compressed data representing a frame of the input video signal among a plurality of tracks on a recording tape, with each of said tracks containing a predetermined number of said buffering units and a second blanking area, not occupied by said compressed data, which, during the reproduction of the respective track, provides an interval for processing said buffering units contained in the respective track.

5,510,904
VIDEO DATA COMPRESSOR MINIMIZING
PROPAGATION OF ERROR

Satoshi Ito, Tokyo, Japan, assignor to NEC Corporation, Japan

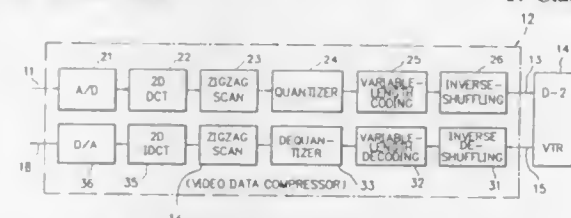
Filed Feb. 23, 1994, Ser. No. 200,754

Claims priority, application Japan, Feb. 23, 1993, 5-33496

Int. Cl.⁶ H04N 5/78; 5/94; 7/30

U.S. Cl. 358—336

17 Claims



1. A video data compressor for converting a set of video data into an adapted sequence of compressed data to be outputted to a video medium subjected to a data error correction process including a data shuffling process, said video data compressor comprising:

a data compressing means compressing said set of video data into a first sequence of compressed data with a predetermined bit rate; and

an inverse shuffling means shuffling said first sequence of compressed data in an inverse manner to said data shuffling process to obtain said adapted sequence of compressed data, so that an arbitrary pair of neighboring data in said first sequence of compressed data are neighbors to each other in said data error correction process.

5,510,905
VIDEO STORAGE SERVER USING TRACK-PAIRING
 Yitzhak Birk, 3350 Thomas Dr., Palo Alto, Calif. 94303
 Filed Sep. 28, 1993, Ser. No. 128,418
 Int. Cl.⁶ H04N 5/76

U.S. Cl. 358—342

20 Claims

1. A video storage server system capable of being coupled to a communications network, comprising:

at least one disk drive for storing video data for a plurality of video titles in a zone bit recording format, the video data for each of the video titles includes successive data segments that are alternately recorded in two different tracks, and

a controller for controlling transmission of certain video data onto the communication network such that when the data

5,510,907
FACSIMILE APPARATUS HAVING URGENCY MESSAGE
TRANSMISSION FUNCTION

Hiroshi Koichi, Isehara, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

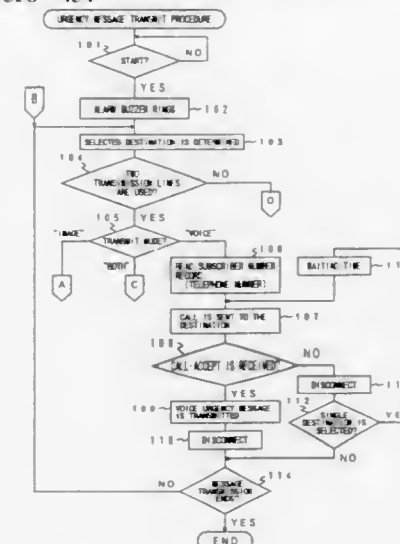
Filed Sep. 15, 1994, Ser. No. 305,338

Claims priority, application Japan, Sep. 17, 1993, 5-253671

Int. Cl.⁶ H04N 1/00; H04M 11/04

U.S. Cl. 358—434

9 Claims



segments are alternately retrieved from the different tracks a nearly constant data transfer rate results regardless of track position.

wherein the two different tracks form a track pair,

wherein said at least one disk drive comprises at least one recording disk, and

wherein when a first track of the track pair is TR1, then a second track of the track pair is TR2=N-TR1+1, where N is the number of tracks of the recording disk that are being paired.

5,510,906
MOTION PICTURE RECORDING METHOD, MOTION
PICTURE RECORDING MEDIUM, AND MOTION
PICTURE REPRODUCING APPARATUS

Yoichi Yagasaki, and Hideki Koyanagi, both of Kanagawa, Japan, assignors to Sony Corporation, Japan

Continuation of Ser. No. 109,089, Aug. 19, 1993, abandoned.

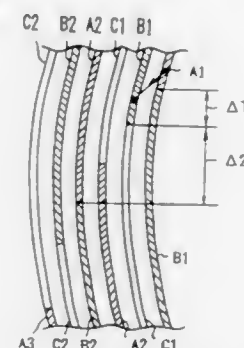
This application Feb. 2, 1995, Ser. No. 384,369

Claims priority, application Japan, Aug. 31, 1992, 4-255517

Int. Cl.⁶ H04N 5/76

U.S. Cl. 358—342

4 Claims



1. A method for recording motion picture data onto a spiral recording track of a disc recording medium, comprising the steps of:

dividing each of a plurality of groups of motion picture data into track units, each group of motion picture data representative of sequential motion, each track unit of each group of motion picture data contemporaneously corresponding to a track unit of each of the other groups of motion picture data; and

separately and sequentially recording corresponding track units of each group of motion picture data onto the spiral recording track, such that each track unit is recorded along a length of the spiral recording track sufficient to overlap itself in the radial direction of the disc recording medium, wherein the overlapped portion of each track unit has a length corresponding to a time needed for a one-track-jump of an optical pick-up used for reproducing the motion picture data recorded on the spiral recording track.

1. A facsimile apparatus having an urgency message transmission function, comprising:

memory means for storing a plurality of subscriber number records indicating a plurality of destination stations, and for storing voice and image urgency message records which respectively indicate voice and image urgency messages;

operation means provided within said facsimile apparatus for selecting one of the plurality of destination stations whose records are stored in said memory means, and for selecting one of a plurality of message transmit modes;

transmission starting means for starting an urgency message transmit procedure when one of the destination stations is selected by said operation means and one of the plurality of message transmit modes is selected by said operation means; and

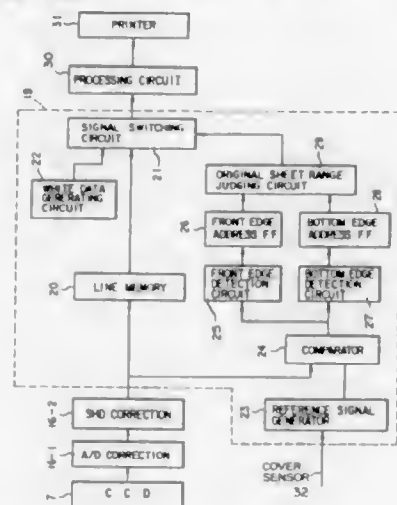
transmission means for transmitting an urgency message to the selected destination station through a transmission line when the urgency message transmit procedure is performed in accordance with the selected message transmit mode, said urgency message being either or both of said stored voice and image urgency messages selected in accordance with the selected message transmit mode.

wherein said apparatus further comprises radio transmitter means, provided outside said facsimile apparatus, for transmitting a signal from a remote location to said facsimile apparatus through a radio wave transmission, said radio transmitter means including an operation part for selecting one of the plurality of destination stations and for selecting one of the plurality of message transmit modes, wherein said transmission starting means starts the urgency message transmit procedure in response to said transmitted start signal from said radio transmitter means, said transmission means transmitting either or both of said stored voice and image urgency messages to the destination station selected by said operation part, said transmitted message being selected in accordance with the message transmit mode selected by said operation part.

5,510,908
IMAGE READING DEVICE FOR REMOVING THE BACKGROUND OF A SCANNED ORIGINAL DOCUMENT
 Yoshio Watanabe, Hiratsuka, and Yasuo Abuyama, Ebina, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan
 Continuation of Ser. No. 277,261, Jul. 21, 1994, abandoned, which is a continuation of Ser. No. 35,790, Mar. 23, 1993, abandoned. This application Mar. 13, 1995, Ser. No. 403,128 Claims priority, application Japan, Sep. 25, 1992, 4-280437 Int. Cl.⁶ H04N 1/04; 1/38

U.S. Cl. 358—448

16 Claims



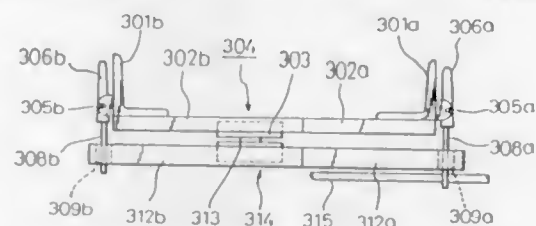
1. An image forming apparatus, comprising:
 an original document table on which an original document is placed;
 a line scanner for scanning, in a main scanning direction and a sub scanning direction different from the main scanning direction, said original document placed on said original document table, thereby to read out one line at a time image data corresponding to said original document;
 memory means for storing said image data scanned by said line scanner each time said line scanner performs a reading operation for one line in the main scanning direction;
 reading means for reading out said image data from said memory means in units of one line while a sequential line is being scanned by said line scanner;
 first outputting means for outputting white image data from the time said reading means reads the first of said image data stored in said memory means until said reading means reads out the front edge of the original document while image data corresponding to a subsequent line is scanned by said line scanner; and
 second outputting means for outputting white image data from the time the rear edge of said original document is read out until said image data corresponding to the last image of one line is read out by said reading means while image data corresponding to a subsequent line is scanned by said line scanner.
2. An image forming apparatus, comprising:
 an original document table on which an original document is placed, the original document covering an area on the original document table corresponding to an original document area;
 means for scanning the original document table from a first edge to a second edge in a main scanning direction to produce image signals representative of a shade of darkness of a scanned area, the scanned area scanned by the scanning means including the original document area and areas outside of the original document area, the image signals having a plurality of levels, the scanning means moving in a sub-scanning direction different from the main scanning direction while scanning;
 means for comparing the image signals corresponding to the scanned area from the first edge to the second edge with a reference level signal;

means for detecting the image signals corresponding to the areas outside of the original document area on the basis of the comparison performed by the comparing means;
 means for converting the image signals detected by the detecting means to predetermined image signals;
 means for controlling the comparing means, the detecting means, and the converting means so as to repeat each operation when the scanning means moves in the sub-scanning direction; and
 means for forming an image on the basis of the image signals except for the predetermined image signals.

5,510,909
IMAGE READING APPARATUS HAVING A PAPER GUIDE MECHANISM WITH SPRING BIASED LOCKING RELEASING PIECES CONNECTED BY SYMMETRICAL MOVEMENT AND LOCKING MECHANISMS
 Shuichi Morikawa, Kanazawa; Masahiko Futatsuka, Ishikawa; Satoshi Ishida; Yasunori Miyauchi, both of Kanazawa; Minoru Masuda, Ishikawa, and Makoto Takagawa, Kanazawa, all of Japan, assignors to PFU Limited, Unoke, Japan, and Fujitsu Limited, Kawasaki, Japan
 Division of Ser. No. 140,161, Mar. 7, 1994, Pat. No. 5,453,852. This application Jun. 5, 1995, Ser. No. 463,856
 Claims priority, application Japan, Mar. 19, 1992, 4-93746; Apr. 20, 1992, 4-128049; Apr. 20, 1992, 4-128051; Nov. 19, 1992, 4-335574

Int. Cl.⁶ H04N 1/00; B65H 1/00; 9/00
 U.S. Cl. 358—498

6 Claims



1. An image reading apparatus having a paper guide mechanism in which one pair of paper guides (301a, 301b) provided on a paper stand or both sides of a paper passage are connected via a first symmetrical movement mechanism (304) symmetrically around the center thereof for synchronous and free movement of the guides and for sheets of paper having different widths to always be guided with the center as the reference, characterized in that locking releasing pieces (306a, 306b), biased in one direction by springs (307, 326), are provided in the paper guides, said locking releasing pieces being connected by a second symmetrical movement mechanism (314) for independent movement with respect to said first symmetrical movement mechanism (304), and said second symmetrical movement mechanism and locking releasing pieces being connected by a locking mechanism (317).

5,510,910
PRINTING WITH FULL PRINTER COLOR GAMUT, THROUGH USE OF GAMUT SUPERPOSITION IN A COMMON PERCEPTUAL SPACE
 Francis E. Bockman, and Paul H. Dillinger, both of San Diego, Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Continuation-in-part of Ser. No. 878,931, May 4, 1992, Pat. No. 5,377,024. This application May 3, 1994, Ser. No. 238,118 Int. Cl.⁶ H04N 1/46

U.S. Cl. 358—502

21 Claims

1. A method for printing, with a color printer that has an at least partly known color gamut, a color image portion based on initial color specifications for use in a display device that has an at least partly known color gamut; said method comprising the steps of:

5,510,912
METHOD AND APPARATUS FOR MODULATION OF MULTI-DIMENSIONAL DATA IN HOLOGRAPHIC STORAGE

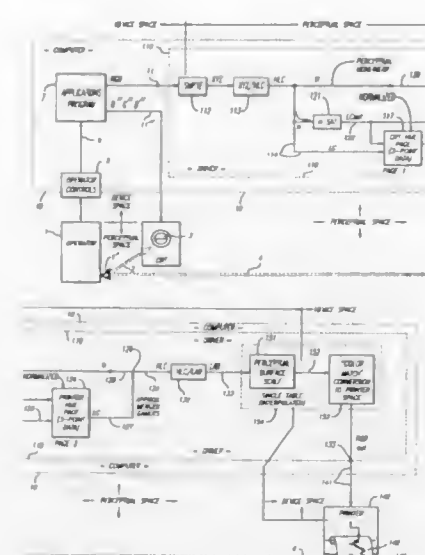
Miguel M. Blaum; Paul H. Siegel; Gleon T. Sincerbox, and Alexander Vardy, all of San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 9, 1993, Ser. No. 104,267

Int. Cl.⁶ G02B 5/32

U.S. Cl. 359—21

3 Claims



performing on such initial specifications a transformation that includes the effect of performing these sub-steps:

- interpreting relative-position values of lightness and chroma, within a display-device hue page that is part of the display-device gamut in a perceptual space, as also being relative-position values of lightness and chroma of a corresponding hue page of the printer gamut in said same perceptual space, and
- using said relative-position values of lightness and chroma of the printer gamut, to derive printer signals; and
- then applying the printer signals, to control printing of the particular image portion by the printer.

5,510,911
HOLOGRAPHIC IMAGE CONTAINING FOIL-TEXTILE LAMINATE AND PROCESS FOR THE PRODUCTION THEREOF

Richard A. Sharpe, and Mia J. Mannors, both of London, Great Britain, assignors to Own Label Products Limited, England

Filed Apr. 8, 1993, Ser. No. 916,843

Claims priority, application United Kingdom, Feb. 13, 1990, 9003272

Int. Cl.⁶ G03H 1/00; B32B 31/00

U.S. Cl. 359—1

14 Claims

1. A process for producing a flexible laminate in which an outer and visible layer provides a holographic effect, which process comprises providing a first roller on which is stored an aluminum foil bearing a holographic image, and having a layer of plastics size, providing a second roller on which is stored a flexible woven or unwoven fabric substrate having a degree of flexure such that clothing can be made therefrom in which at least an outer layer comprises a plastics material which is compatible with said size sufficient to enable the plastics material and size to adhere together under conditions of temperature and pressure which do not destroy the holographic effect, and supplying said foil and said substrate from said rollers to a laminating station comprising at least two press rollers between which said foil and substrate are pressed together with their plastics layers adjacent each other to form a combination, said press rollers applying to the combination heat and pressure at a level and for a time sufficient to adhere the foil to the substrate but insufficient to destroy the holographic effect, the laminate, subsequent to lamination, having generally the same degree of flexure as the fabric substrate such that clothing can be made therefrom.

13. A flexible laminate made by the process of claim 1.

5,510,913
HEAD-UP DISPLAY SYSTEM WHERE POLARIZED LIGHT FROM A DISPLAY IMPINGES ON A GLASS PLATE CONTAINING TWISTED NEMATIC LIQUID CRYSTAL AT THE PLATE'S BREWSTERS ANGLE

Chikara Hashimoto, Tokyo; Atsushi Takamatsu, Matsusaka; Hiroyuki Itoh, and Takehiro Toyooka, both of Yokohama, all of Japan, assignors to Central Glass Company, Limited, Ube, and Nippon Oil Company, Ltd., Tokyo, both of Japan

Filed Jul. 20, 1993, Ser. No. 93,848

Claims priority, application Japan, Jul. 23, 1992, 4-196841

Int. Cl.⁶ G03H 1/00; G02F 1/13; 1/1335; G02B 5/30

U.S. Cl. 359—37

10 Claims

1. A display system comprising:
 a glass plate;
 means for displaying an image on said glass plate to be viewed by a viewer of said image, said displaying means being disposed such that light therefrom is incident on said glass plate at an angle which is substantially equal to Brewster's angle;

5,510,920

LOCAL AREA NETWORK

Takeshi Ota, Kanagawa, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

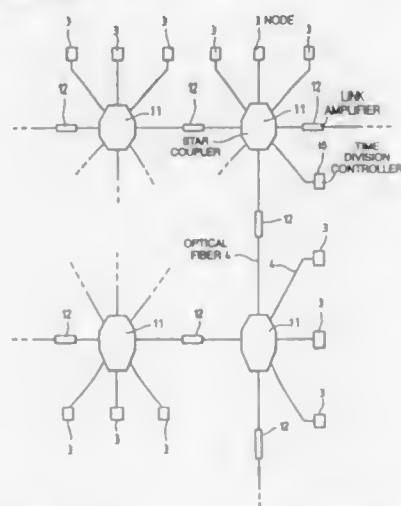
Filed Apr. 24, 1992, Ser. No. 873,448

Claims priority, application Japan, Apr. 26, 1991, 3-097406; Jun. 28, 1991, 3-158580; Sep. 30, 1991, 3-251677; Oct. 7, 1991, 3-259429

Int. Cl.⁶ H04B 10/207; H04J 14/02; 14/08

U.S. Cl. 359-121

16 Claims



1. An optical communication network comprising:
 - a plurality of passive star couplers, each passive star coupler having a plurality of terminals through which an optical signal is output and input, each of said passive star couplers having a transfer characteristic such that an input signal which is initially inputted to one of said terminals is distributed as an output signal to all terminals other than said one terminal, and said passive star couplers being optically coupled to each other through said terminals;
 - a plurality of nodes, and communicating with each other through said passive star couplers; and
 - a plurality of transmission channels, each transmission channel being wavelength multiplexed among said nodes;
- wherein said nodes communicate with each other by a determined wavelength optical signal through each of said transmission channels.

5,510,921

OPTICAL FREQUENCY DIVISION MULTIPLEXING NETWORK

Atsushi Takai; Ryoji Takeyari, both of Kokubunji, and Akihiko Takase, Tokyo, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 800,255, Nov. 29, 1991, Pat. No. 5,321,540. This application Apr. 28, 1994, Ser. No. 233,974

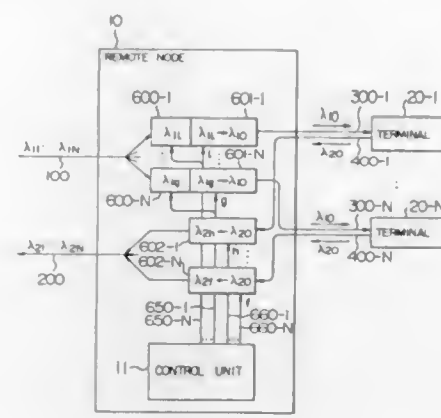
Claims priority, application Japan, Nov. 30, 1990, 2-337118

Int. Cl.⁶ H04J 14/02

U.S. Cl. 359-124

6 Claims

1. A method of transmitting optical signals to terminals comprising the steps of:
 - receiving first optical signals in optical frequency division multiplexing fashion through an optical communication path;
 - demultiplexing said first optical signals in optical frequency division multiplexing fashion to second optical signals having a first common optical frequency which is independent of the optical frequencies of said first optical signals; and
 - distributing said second optical signals having the first common optical frequency to the corresponding terminals.



5,510,922

OPTICAL FREQUENCY STABILIZER AND OPTICAL FREQUENCY SELECTOR

Takao Naito, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

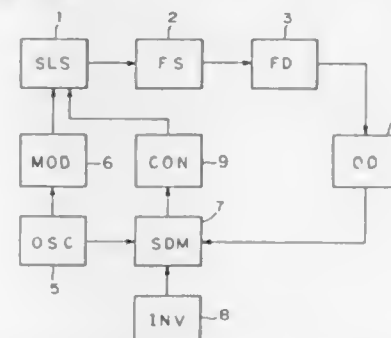
Filed Jun. 2, 1995, Ser. No. 458,678

Claims priority, application Japan, Jun. 28, 1994, 6-146186

Int. Cl.⁶ H04J 14/02

U.S. Cl. 359-124

10 Claims



1. An optical frequency stabilizer comprising:
 - a signal light source for outputting signal light of a frequency f_s ;
 - a frequency shifter having a pumping light source to emit pumping light of a frequency f_p and producing converted signal light of a frequency $2f_p - f_s$ from said signal light supplied thereto;
 - a frequency discriminator having such input/output characteristics that a peak frequency for giving a maximum or minimum of the output intensity is included, and converting a frequency change of said converted signal light into an intensity change and outputting the same therefrom;
 - an optical detector supplied with the output light of said frequency discriminator and producing a detection signal of a level corresponding to the intensity of said output light;
 - an oscillator for outputting a low-frequency signal of a frequency f_m ;
 - a modulation means for frequency-modulating said signal light source in accordance with said low-frequency signal;
 - a synchronous detection means connected operatively to both of said oscillator and said optical detector, and having specific output characteristic corresponding to the frequency differential of the input/output characteristics of said frequency discriminator;
 - an inversion means for inverting the output characteristic of said synchronous detection means; and
 - a control means for controlling said signal light source in such a manner as to maintain constant the output of said synchronous detection means.

5,510,923

TELECOMMUNICATIONS SYSTEM COMBINING WAVELENGTH MULTIPLEXING AND PACKET SWITCHING NETWORKS

Guignard Philippe, Pleumeur Bodou, and André Hamel, Lanion, both of France, assignors to France Telecom Etablissement Autonome De Droit Public, Paris, France

Continuation of Ser. No. 41,826, Apr. 1, 1993, abandoned.

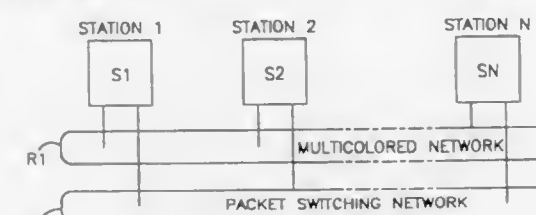
This application Apr. 3, 1995, Ser. No. 416,432

Claims priority, application France, Apr. 3, 1992, 92 04080

Int. Cl.⁶ H04J 14/08

U.S. Cl. 359-137

8 Claims



1. Telecommunications network comprising:
 - a plurality of stations exchanging information at a high rate or at an average traffic;
 - a first network of a wavelength multiplexing optical type, said first network operating in a spatial switching mode, said first network being connected for transmitting information between said stations at said high rate;
 - a second network operating in a packet switching mode, said second network being connected for transmitting information between said stations at said average traffic, said second network having a traffic capacity limit and said high rate exceeding the limit;
- said networks being connected for sharing information traffic such that the information is transmitted on said first network when the rate of transmitting information between said stations is above the limit and information traffic is shifted so that the information is transmitted on said second network when the rate of transmitting information is below the limit, said information traffic being shifted back to the first network when the rate returns to being above the limit, and
- said first network being controlled by control information for accomplishing said sharing, said control information being transmitted on said second network in said packet switching mode.

5,510,924

VOICE INFORMATION TRANSFER SYSTEM CAPABLE OF EASILY PERFORMING VOICE INFORMATION TRANSFER USING OPTICAL SIGNAL

Nobuo Terui; Takafumi Ohnishi, and Kenji Furuta, all of Hachioji, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

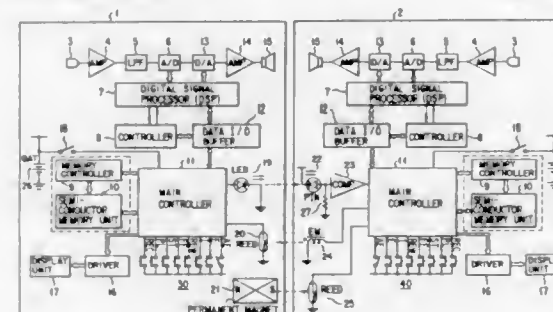
Filed Apr. 6, 1995, Ser. No. 417,944

Claims priority, application Japan, Jul. 13, 1994, 6-161440; Oct. 13, 1994, 6-247851

Int. Cl.⁶ H04B 10/00

U.S. Cl. 359-143

6 Claims



6. A voice information transfer system for transferring voice information in a form of an optical signal from a first voice information processing apparatus to a second voice information processing apparatus, wherein:
 - said first voice information processing apparatus including:
 - proximity signal transmission means for transmitting a proximity signal representing a proximity to said second voice information processing apparatus;
 - transfer enable signal reception means for receiving a transfer enable signal for enabling transfer of the voice information from said second voice information processing apparatus in a noncontact state; and
 - voice information transmission means for transmitting the voice information converted into the optical signal to said second voice information processing apparatus when said transfer enable signal reception means receives the transfer enable signal from said second voice information processing apparatus, and
 - said second voice information processing apparatus including:
 - proximity signal reception means for receiving the proximity signal transmitted from said first voice information processing apparatus;
 - transfer enable signal transmission means for transmitting the transfer enable signal to said first voice information processing apparatus when said proximity signal reception means receives the proximity signal; and
 - voice information reception means for receiving the voice information from said first voice information processing apparatus, which is converted into the optical signal, in a noncontact state.

5,510,925 RELAY TRANSMISSION SYSTEM INCLUDING OPTICAL AMPLIFICATION

Katsuo Suzuki, and Junichi Yoshimura, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kanagawa, Japan

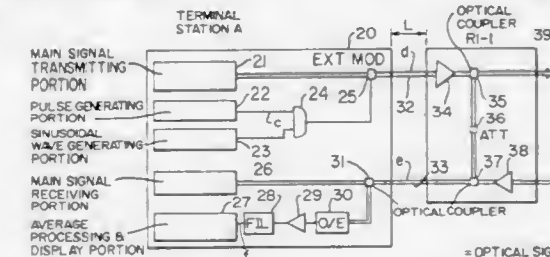
Filed Feb. 15, 1994, Ser. No. 196,966

Claims priority, application Japan, Sep. 20, 1993, 5-233762

Int. Cl.⁶ H04B 10/02

U.S. Cl. 359-177

13 Claims



1. An optical amplification transmission system comprising:
 - a terminal station for transmitting and receiving optical signals;
 - a first optical transmission line for transmitting the optical signals transmitted from the terminal station;
 - a second optical transmission line forming a pair with the first optical transmission line for transmitting optical signals to be received by the terminal station;
 - at least one optical repeater, provided on the pair of said first and second optical transmission lines for amplifying the optical signals transmitted through the respective first and second optical transmission lines;
 - said terminal station comprising:
 - burst signal transmitting means for transmitting in a burst mode a burst optical signal through the first optical transmission line, said burst optical signal being repeatedly transmitted and
 - burst signal receiving means for receiving the burst optical signal transmitted back through the second optical transmission line, said burst signal receiving means including average means for obtaining an average value of received levels of the burst optical signals, repeatedly transmitted

through the at least one optical repeater, in response to the repeated transmission;

each optical repeater comprising:

a first optical coupler for branching out the burst optical signal transmitted through the first optical transmission line, and a second optical coupler for receiving the burst optical signal branched out by the first optical coupler, and sending it onto the second optical transmission line.

5,510,926

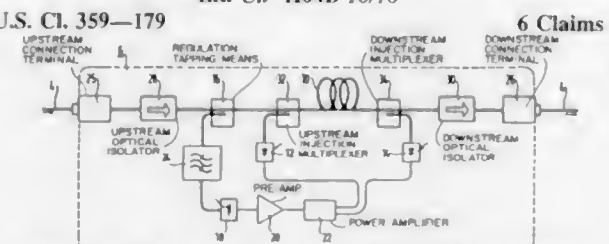
TRANSMISSION METHOD AND AN OPTICAL LINK USING MULTIPLEXING WITH APPLICATION

Dominique Bayart, Clamart; Bertrand Clesca, and José Chesnoy, both of Paris, all of France, assignors to Alcatel N.V., Rijswijk, Netherlands

Filed Jan. 11, 1995, Ser. No. 371,142

Claims priority, application France, Jan. 13, 1994, 94 00320 Int. Cl.⁶ H04B 10/16

U.S. Cl. 359—179



1. An optical link using spectrum multiplexing with amplification, said link using a plurality of spectrum channels and comprising:

a transmitter assembly for simultaneously receiving a plurality of signals to be transmitted and for responding by simultaneously transmitting a plurality of optical carrier waves carrying the signals by occupying respective ones of said channels;

an optical line receiving said carrier waves and guiding them together in the form of a spectrum-type multiplex;

an amplifier inserted in said optical line and amplifying said carrier waves, with respective gains that are specific to the busy channels occupied by said waves; and

a receiver assembly receiving said carrier waves at an output of said line and responding by restoring said signals to be transmitted;

said amplifier including:

an amplifier waveguide inserted in series in said line so as to pass said multiplex in a forward direction, said amplifier waveguide being doped with a doping element which responds to being excited by a pump wave by applying amplification to said multiplex, the gain of the amplification depending on a controlled characteristic of said pump wave;

a pump source supplying said pump wave and defining said controlled characteristic thereof;

regulation tapping means for tapping light from said amplifier waveguide, which light is amplified thereby and constitutes amplifier control light; and

pump drive means receiving said amplifier control light and responding by driving said pump source so as to cause said controlled characteristic of the pump wave to take a value that ensures amplification of said multiplex;

wherein said amplifier includes spectrum gain flattening means for causing the gains of all of said busy channels to take a common value when said busy channels have a number, positions, and spectrum widths that are predetermined, and when the corresponding carrier waves have powers that are predetermined, said common value constituting a flatness gain;

said amplifier control light being constituted by carrier waves other than those of said multiplex and constituting gain regulation light, said gain regulation light occupying a regulation band in the spectrum, and being chosen so that

its power increases with a regulation gain constituted by a mean gain presented by said amplifier waveguide in said regulation band;

said pump drive means responding to said gain regulation light by driving said pump source so as to servo-control said regulation gain to a constant value so that said gain of one of said channels remains equal to said flatness gain, whereby the gain of each of said channels remains equal to said flatness gain even when the number of said busy channels occupied by said carrier waves deviates from said predetermined number or when the power of at least one of said carrier waves deviates from said predetermined power.

5,510,927

METHOD FOR SETTING THE LOCAL OSCILLATOR OF AN OPTICAL SUPERHETERODYNE RECEIVER

Reinhold Noe, Paderborn, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

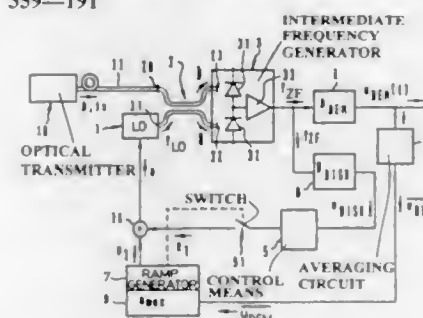
Filed Sep. 19, 1994, Ser. No. 308,842

Claims priority, application Germany, Sep. 20, 1993, 43 31 882.7

Int. Cl.⁶ H04B 10/06

U.S. Cl. 359—191

10 Claims



6. An optical superheterodyne receiver comprising: an optical local oscillator for generating a local oscillator signal having a frequency which may be adjusted by a control signal;

an optical coupler for superimposing a data signal and the local oscillator signal to generate an optical superimposed signal;

a means for acquiring an intermediate frequency signal from the optical superimposed signal;

a demodulator for demodulating the intermediate frequency signal having a demodulator characteristic representing a time-independent output of the demodulator as a function of the intermediate frequency which exhibits a positive value at a first characteristic frequency of the data signal and a negative value at a second characteristic frequency of the data signal and wherein there is a monotonic drop from the positive value to the negative value with a zero-axis crossing midway between the first and second characteristic frequencies;

a control means for controlling a frequency of the intermediate frequency signal by adjusting the frequency of the local oscillator with a control signal;

a means for generating a chronological average of an output from the demodulator; and

a means for determining the maximum of the chronological average and the corresponding value of local oscillator frequency at which this maximum occurs.

5,510,928

MULTIPLE PASS OPTICAL FILTER

Patrick J. Hood, Thousand Oaks, Calif., assignor to Rockwell International Corporation, Seal Beach, Calif.

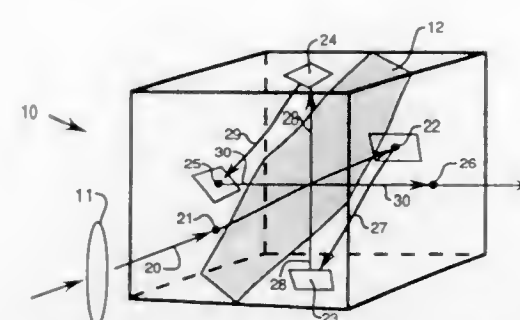
Filed Nov. 7, 1989, Ser. No. 433,626

Int. Cl.⁶ G02F 1/03; G02B 5/22

U.S. Cl. 359—241

12 Claims

1. An optical filtering apparatus, comprising:



a filter disposed within the apparatus for receiving focused radiation entering the apparatus, said focused radiation projecting on an area of said filter;

a plurality of mirrors disposed within the apparatus;

said mirrors positioned to project said focused radiation through said filter a plurality of times in succession; and each successive projection of said focused radiation falling on a successively smaller area of said filter wholly within said area through which said focused radiation previously passed.

5,510,929

SOLID SOLUTION CRYSTALS OF Tl_3AsSe_3 AND Tl_3AsS_3 FOR HIGH EFFICIENCY OPTICAL APPLICATIONS

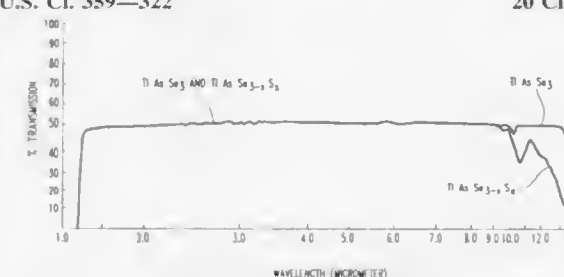
Narsingh B. Singh, Export; Tom Henningsen, Monroeville; James P. McHugh, Wilkins Township, Allegheny County; Emmanuel P. Supertzi, Pittsburgh; Richard P. Storrick, East McKeesport, and Robert Mazelsky, Monroeville, all of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Dec. 13, 1993, Ser. No. 165,290

Int. Cl.⁶ G02F 1/00

U.S. Cl. 359—322

20 Claims



1. A solid-solution crystal comprised of Tl_3AsSe_3 and Tl_3AsS_3 .

5,510,930

LIGHT AMPLIFYING APPARATUS

Kuniaki Motoshima; Tadayoshi Kitayama; Junichiro Yamashita; Eiichi Nakagawa, all of Kamakura; Shigeyuki Akiba; Masatoshi Suzuki, both of Kamifukuoka; Koji Goto, Tokyo; Haruo Abe, Tokyo, and Naoki Norimatsu, Tokyo, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 18, 1994, Ser. No. 276,408

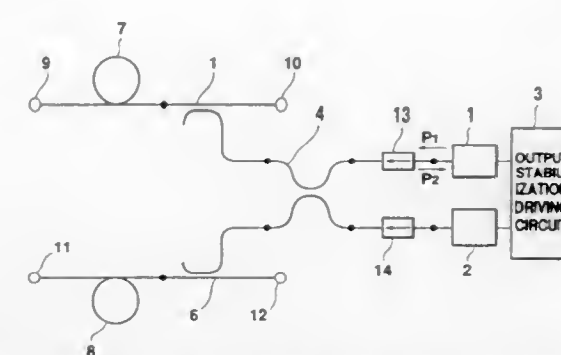
Claims priority, application Japan, Jul. 19, 1993, 5-177719

Int. Cl.⁶ H01S 03/00

U.S. Cl. 359—341

6 Claims

1. A light amplifying apparatus adopting a redundant structure comprising: pump light sources for outputting pump lights; optical fibers to which a laser active metal composed of at least one selected from a group consisting of a rare-earth element and a transition metal is added;



an optical coupler for combining pump lights from said pump light sources and distributing said pump lights to said optical fibers; and

means, coupled to the optical coupler and the pump light sources, for preventing injection locking of the pump light sources.

5,510,931

OPTICAL AMPLIFIER AND OPTICAL COMMUNICATION SYSTEM WITH OPTICAL AMPLIFIER USING PUMPING RIGHT BEAM

Masuo Suyama, Sagami, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

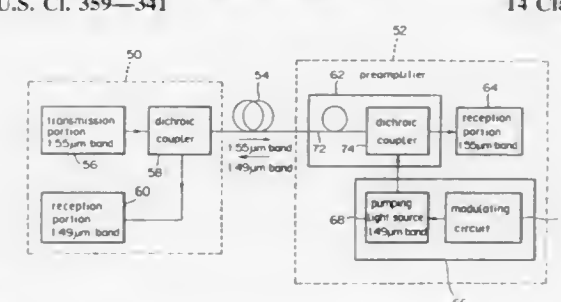
Division of Ser. No. 189,841, Feb. 1, 1994, which is a continuation of Ser. No. 987,568, Dec. 8, 1992, Pat. No. 5,299,048, which is a continuation of Ser. No. 574,097, Aug. 29, 1990, abandoned. This application Mar. 8, 1995, Ser. No. 400,761

Claims priority, application Japan, Aug. 31, 1989, 1-223172

Int. Cl.⁶ H01S 3/00

U.S. Cl. 359—341

14 Claims



1. An optical amplifier amplifying a received optical signal, comprising:

a first optical coupler splitting the received optical signal into a first input optical signal and a second input optical signal;

a detector to receive the second input optical signal and detect the received optical signal level;

a pumping light source emitting a pumping light beam;

an optical fiber, doped with a rare earth element, having an input and an output; and

a second optical coupler to introduce the first input optical signal and the pumping light beam to the input of said optical fiber to amplify the first input optical signal.

5,510,932

OPTICAL DEMULTIPLEXING MODULE, OPTICAL MULTIPLEXING MODULE AND HOUSINGS THEREFOR
Hisao Go, and Norimasa Kushida, both of Kanagawa, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

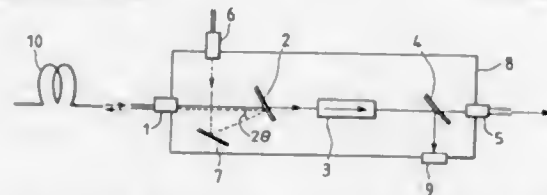
Filed Nov. 2, 1994, Ser. No. 333,344

Claims priority, application Japan, Nov. 2, 1993, 5-274485; Jun. 22, 1994, 6-139984

Int. Cl.⁶ G02B 27/14

U.S. Cl. 359—341

21 Claims



1. An optical demultiplexing module for admitting pumping light into a rare-earth element doped fiber and for passing signal light that is amplified by the rare-earth element doped fiber, comprising:

- a square or rectangular housing body;
- a first collimator and a second collimator provided normal to opposing sides of said housing body, respectively;
- a third collimator provided normal to a side of said housing body at right angles to said opposing sides;
- a multiplexer provided on an optical axis of signal light which is admitted into said housing body from said first collimator;
- an optical isolator provided on the optical axis of the light passing through said multiplexer; and
- a beam splitter being provided at an output end of the optical isolator, wherein said multiplexer, said optical isolator and said beam splitter are provided in linear alignment;
- a reflector mirror provided on an optical axis of the pumping light to be admitted into said housing body from said third collimator;
- wherein said second collimator is provided on the optical axis of the signal pumping light passing through said beam splitter, said multiplexer is provided on the optical axis of the pumping light to be reflected from said reflector mirror, and said first collimator is disposed on the optical axis of the signal light to be reflected from the multiplexer, and said pumping light is admitted into said multiplexer at an angle no more than 22.5 degrees.

5,510,933

BINOCULARS WITH BUILT-IN GYROSCOPE FOR STEADYING

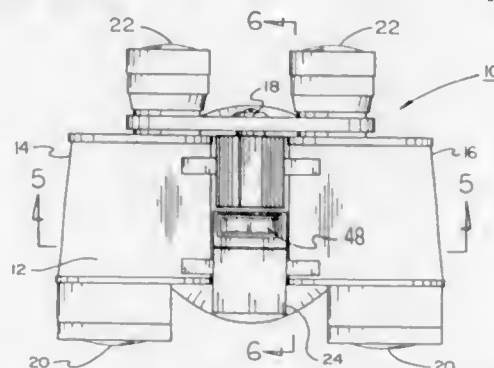
Carl E. Hullers, Sr., 208 Rte. 85, Home, Pa. 15747

Filed Aug. 3, 1994, Ser. No. 285,118

Int. Cl.⁶ G02D 23/00

U.S. Cl. 359—430

1 Claim



1. New and improved binoculars with built-in gyroscope for steadying comprising, in combination:

- a housing comprising a first housing half and a second housing half with means to pivotally couple the housing halves together, each of the housing halves having lenses for optical magnification;
- a supplemental housing in a cylindrical configuration located between the optical halves adjacent at an intermediate extent thereof;
- a gyroscope having a shaft coincident with an axis of the supplemental housing, the gyroscope having an enlarged circular periphery and radial supports between the shaft and the periphery; and
- an additional housing coupled to the pivotal coupling means of the housing halves and further coupled to an upper extent of the supplemental housing, the additional housing including an electric assembly coupled therein, the assembly including a motor and an associated power source, the motor for driving the shaft of the gyroscope to effect its rotation freely within the supplemental housing, the electrical assembly also including a trigger with a first orientation to energize the motor to rotate the gyroscope and a second orientation to inactivate the motor and stop the rotation of the gyroscope.

5,510,934

MEMORY SYSTEM INCLUDING LOCAL AND GLOBAL CACHES FOR STORING FLOATING POINT AND INTEGER DATA

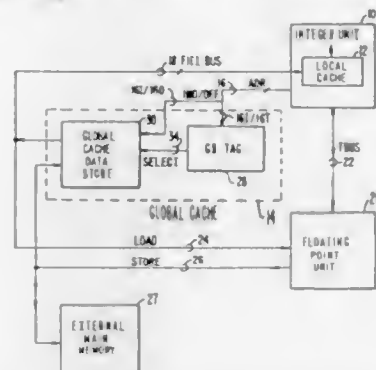
John Brennan, Mountain View; Peter Y. Hsu, Fremont; William A. Huffman, Los Gatos; Paul Rodman, Palo Alto; Joseph T. Scanlon, Sunnyvale; Man K. Tang, Milpitas, all of Calif., and Steve J. Ciavaglia, Williston, Vt., assignors to Silicon Graphics, Inc., Mountain View, Calif.

Filed Dec. 15, 1993, Ser. No. 168,832

Int. Cl.⁶ G06F 12/00; 13/00

U.S. Cl. 395—446

5 Claims



1. A split level cache memory system in a data processor comprising:

- an integer unit, having a data input port_{IU} and a data output port_{IU};
- a floating point unit, having a data input port_{FPU} and a data output port_{FPU};
- a first memory cache, for storing integer and address data to be processed by said integer unit, having a data output port_{LC} coupled to said data input port_{IU} for transferring integer and address data to said integer unit, and a data input port_{LC} coupled to said data output port_{IU} for receiving integer and address data from said integer unit; and
- a second memory cache, for storing said integer and address data to be processed by said integer unit and for storing floating point data to be processed by said floating point unit, having a data input port_{GC} coupled to said data output port_{FPU} for receiving floating point data from said floating point unit, said data input port_{GC} further coupled to said data output port_{LC} for receiving integer and address data from said first memory cache, and a data output port_{GC} coupled to said data input port_{FPU} for transferring floating point data to said floating point unit, said data output port_{GC} further coupled to said

data input port_{LC} for transferring integer and address data to said first memory cache.

5,510,935

LENS MOUNTING TECHNIQUE

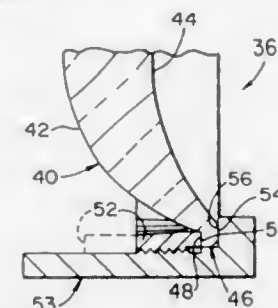
James Whitty, and Brien Ross, both of Midland, Canada, assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Oct. 13, 1994, Ser. No. 322,621

Int. Cl.⁶ G02B 7/02

U.S. Cl. 359—822

3 Claims



1. A lens mounting system that is self-centering at an operating temperature, said system comprising:

- a lens mount having a cylindrical inner surface defining an internal cavity;
- an annular mounting shoulder projecting into the cavity having a fixed forward facing mounting surface;
- a mounting ring having a movable rearward facing mounting surface, said mounting ring being operably engaged with said inner surface for selective movement of said movable mounting surface between a withdrawn position distant from said mounting shoulder and an advanced position adjacent said mounting shoulder;
- a lens including:
 - a forward facing first optical surface;
 - a rearward facing second optical surface;
 - an annular mounting member at an interface between said first optical surface and said second optical surface, said annular mounting member including:
 - a first forward facing mounting surface for flush mating engagement with said movable mounting surface of said mounting ring; and
 - a second rearward facing mounting surface spaced from said first mounting surface for flush mating engagement with said fixed mounting surface of said mounting shoulder;
 - said lens becoming rigidly supported on said lens mount as said mounting ring is moved from said withdrawn position toward said advanced position;
 - said lens mount and said lens having different rates of thermal expansion such that said lens mount contracts and forces said lens into a centering position when the system is cooled to the operating temperature.

5,510,936

APPARATUS FOR ADJUSTING LENS POSITION
Nobuaki Aoki; Shinsuke Kohmoto, and Zenichi Okura, all of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 24, 1994, Ser. No. 327,596

Claims priority, application Japan, Oct. 25, 1993, 5-266682

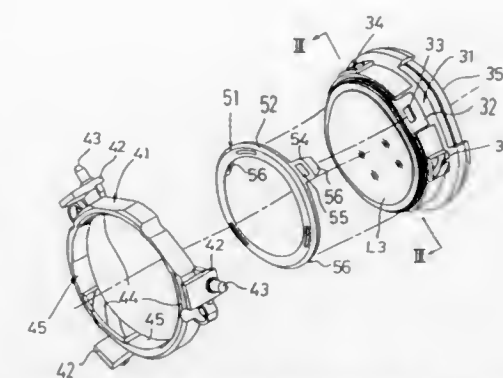
Int. Cl.⁶ G02B 7/02

U.S. Cl. 359—822

13 Claims

1. An apparatus for adjusting an axial position of a lens, comprising:

- a cylindrical lens frame which holds said lens;
- a cylindrical lens frame holder which holds said lens frame; and
- connecting means including a plurality of segments of screw engaging portions provided on each of said lens frame and



said lens frame holder, said segments of screw engaging portions of said lens frame extending outwardly in a radial direction and being separated from each other in a circumferential direction and said segments of screw engaging portions of said lens frame holder extending inwardly in a radial direction and being separated from each other in a circumferential direction by a recess, wherein said lens frame and said lens frame holder are initially engaged by inserting said segments of screw engaging portions of said lens frame into said recess, in an optical axis direction, and, after initial engagement, said screw engaging portions of said lens frame and said screw engaging portions of said lens frame holder are engaged by relative rotation between said lens frame and said lens frame holder.

5,510,937

APPARATUS FOR ADJUSTING INTERMESHING ANGLE IN FEED SCREW MECHANISM

Makoto Mogamiya, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

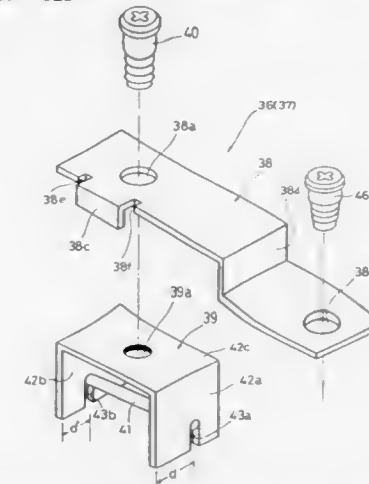
Filed Dec. 14, 1993, Ser. No. 165,849

Claims priority, application Japan, Dec. 14, 1992, 4-333260; Dec. 14, 1992, 4-333261; Dec. 14, 1992, 4-333262

Int. Cl.⁶ G02B 7/02

U.S. Cl. 359—823

20 Claims



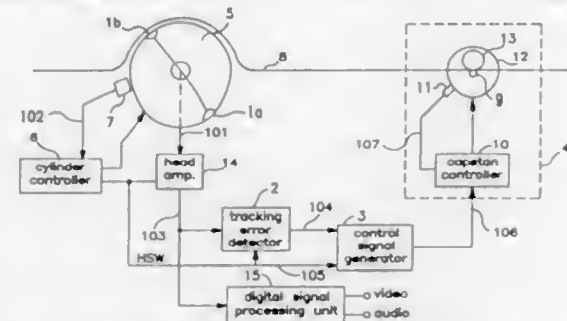
1. An apparatus for adjusting an intermeshing angle of a pin and a feed screw in a mechanism in which rotational movement of said feed screw is converted to a linear movement of said pin, comprising:

- at least one pin which is in engagement with said feed screw; and
- a linearly movable member which supports said pin and which moves in an axial direction of said feed screw, wherein said linearly movable member includes an adjusting means for adjusting the intermeshing angle of said pin and said feed screw.

5,510,938
TRACKING CONTROL APPARATUS WHICH USES PILOT SIGNALS TO CONTROL A CAPSTAN
 Yoshio Sakakibara, Neyagawa; Makoto Gotou, Nishinomiya, and Haruo Isaka, Yawata, all of, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan
 Filed Oct. 25, 1993, Ser. No. 142,865
 Claims priority, application Japan, Oct. 23, 1992, 4-285767; Oct. 30, 1992, 4-292457

Int. Cl.⁶ G11B 5/584; 5/58
 U.S. Cl. 360—77.14

1 Claim



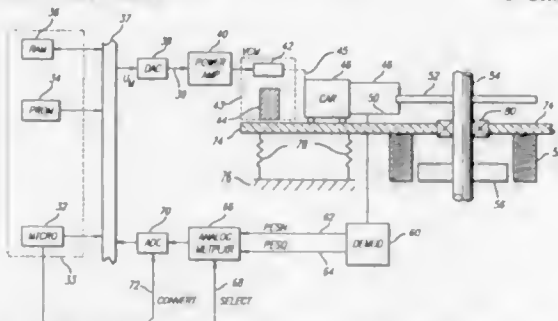
1. An information reproducing apparatus comprising:

a rotary cylinder having a plurality of magnetic heads, one magnetic head among the plurality of magnetic heads for reproducing a tracking pilot signal recorded on slant information tracks on a magnetic tape,
 tracking error detecting means for receiving said tracking pilot signal, for detecting a tracking error from said tracking pilot signal when said one magnetic head scans said magnetic tape, and for generating a tracking error signal indicating a bending pattern of said slant information track,
 control signal generating means for receiving said tracking error signal and for generating a control signal for controlling a scanning position of said magnetic head in response to said tracking error signal,
 wherein said tracking error signal has a maximum value, a minimum value and an average value within a specific scanning period, and said control signal has a value corresponding to a combination of said tracking error signal and a correction amount where said correction amount corresponds to (the maximum value+the minimum value)/2—the average value, a capstan for driving the magnetic tape,
 tracking control means for controlling said slant information track scanning position of said one magnetic head by adjusting the rotation of the capstan in response to said control signal.

5,510,939
DISK DRIVE WITH ADAPTIVE POSITIONING
 Martyn A. Lewis, Pacific Palisades, Calif., assignor to Micropolis Corporation, Chatsworth, Calif.
 Filed Jul. 16, 1992, Ser. No. 915,104
 Int. Cl.⁶ G11B 5/596

U.S. Cl. 360—78.09

5 Claims



1. A disk drive storage system utilizing adaptive head positioning comprising:

one or more storage disks;
 at least one of said storage disks including servo control information encoded thereon;
 means including a plurality of heads for performing input and output operations on said storage disks;
 means for mounting one of said heads to read said servo control information;
 means for mounting and positioning said heads with respect to said disks;
 control circuitry coupled to said means for mounting and positioning said heads for regulating a movement of said heads with respect to said storage disks;
 a compliant suspension system supporting said storage disks and said means for mounting and positioning said heads, said compliant suspension system allowing a deflection of the disk drive storage system during the movement;
 means for measuring a radial displacement of said heads relative to a desired position, known as a position tracking error, the radial displacement and the desired position being relative to said disks, the radial displacement after a control input to said control circuitry has substantially subsided being measured to provide a correction factor;
 means for predicting position tracking errors resulting from an acceleration of said heads across said disks and a resultant deflection of the disk drive storage system as a result of said compliant suspension system, the acceleration being caused by an application of the control input to said control circuitry, said means for predicting including a continuous transfer function receiving as inputs the control input and the correction factor; and
 means for dynamically adapting a positioning of said heads to oppose the position tracking error and to maintain said heads substantially on a track despite the position tracking error which otherwise would have occurred;
 said means for predicting position tracking errors comprising:
 means for detecting the position tracking error using servo pulse signals;
 means for determining when a magnitude of the position tracking error exceeds a predetermined threshold;
 means for modelling the position tracking error as a dynamic response of a damped system of at least a second order, according to a transfer function with variable parameters;
 means for applying supplemental signals generated using said means for modelling to said control circuitry; and
 means for modifying said variable parameters to minimize a time required for said heads to settle on the track with subsequent position tracking errors remaining below the pre-determined threshold.

5,510,940
BALL SPINDLE FOR REDUCED FRICTION ROTARY ACTUATOR IN DISK DRIVE

Thomas A. Tacklind, San Martin, and William G. Moon, Saratoga, both of Calif., assignors to Quantum Corporation, Milpitas, Calif.

Continuation-in-part of Ser. No. 979,974, Nov. 23, 1992, abandoned. This application Nov. 14, 1994, Ser. No. 339,584

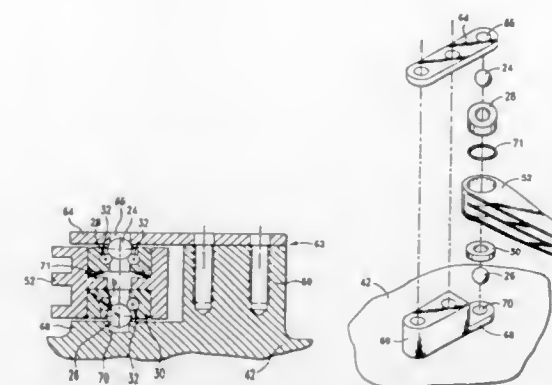
Int. Cl.⁶ G11B 5/54; F16C 19/50

U.S. Cl. 360—106

17 Claims

1. A rotary voice coil actuator structure for a micro-Winchester hard disk drive including a base and a rotating data storage disk journaled to the base, the rotary voice coil actuator structure comprising:

a support member fixed to the base and having oppositely facing portions defining a gap therebetween, each of the oppositely facing portions including a bore having a bore diameter,
 a rotating member having an axis of rotation and occupying at least a portion of the gap and mounted to the oppositely facing portions of the support member, for incrementally rotationally positioning a data transducer head relative to data locations defined on a storage surface of the rotating disk, the



axis of rotation of the rotating member being generally coaxial to each bore, and

two bearing assemblies, each mounted between an adjacent bore of one of the oppositely facing portions and an adjacent part of the rotating member for facilitating low friction incremental rotation of the rotating member along a limited locus of rotation lying in a plane substantially perpendicular to the axis of rotation of the rotating member, each bearing assembly comprising:

an outer bearing annular race in substantial alignment with the axis of rotation of the rotating member,
 a ring of equally dimensioned small bearing balls disposed in the outer bearing annular race,
 a main bearing ball having a diameter in substantial alignment with the axis of rotation of the rotating member and having a diameter larger than the diameters of the equally dimensioned small bearing balls and being in rotational contact therewith and wherein the small bearing balls of each bearing assembly rotate around the main bearing ball, and wherein the outer bearing annular race is mounted to the adjacent part of the rotating member in a plane orthogonal to the axis of rotation and the main bearing ball engages the adjacent bore.

5,510,941
MAGNETO-RESISTIVE TYPE MAGNETIC HEAD WITH A SHUNT LAYER OF MOLYBDENUM

Tatsushi Ohyama, Kadoma; Masahiro Nakata, Osaka, and Naoto Matono, Kadoma, all of, Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Apr. 13, 1994, Ser. No. 227,277

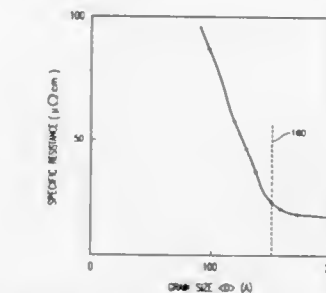
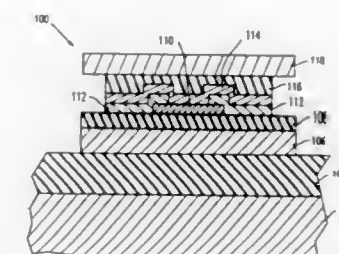
Claims priority, application Japan, Apr. 14, 1993, 5-087373; Dec. 21, 1993, 5-322170

Int. Cl.⁶ G11B 5/39

U.S. Cl. 360—113

18 Claims

15. A magneto-resistance type magnetic head comprising:
 an upper shield layer;
 a lower shield layer spaced a distance from the upper shield layer;
 a magneto-resistance effect device disposed over the lower shield layer;
 a shunt layer disposed adjacent to the magneto-resistance effect device and providing a magnetic bias field to the magneto-resistance effect device in response to an electric current, wherein the shunt layer has a thickness that is less than 150 angstroms; and
 an electrode layer in contact with the magneto-resistance effect device and the shunt layer for providing an electric current to both the magneto-resistance effect device and the shunt layer, the magneto-resistance effect device, the shunt layer and the electrode layer being disposed between the upper shield and the lower shield, the shunt layer consisting of molybdenum having a predetermined grain size along a direction in a plane of the shunt layer, wherein the predetermined grain size is determined from a characteristic curve between a specific

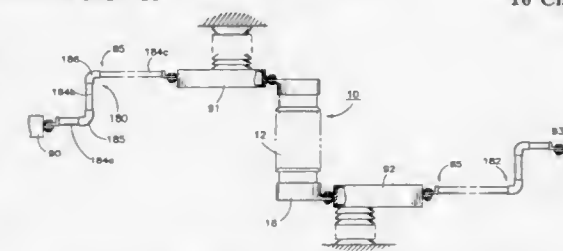


resistance and the grain size of the shunt layer where the curve is substantially flat.

5,510,942
SERIES-CAPACITOR COMPENSATION EQUIPMENT
 Larry E. Bock, South Glens Falls; John C. Hill, Jr., Ballston Spa, both of N.Y., and Josef Urbanek, Media, Pa., assignors to General Electric Company, Plainville, Conn.
 Filed Dec. 19, 1994, Ser. No. 358,404
 Int. Cl.⁶ H02H 9/04

U.S. Cl. 361—16

10 Claims



1. Series-capacitor compensation equipment comprising:

(a) a series-capacitor bank for connection in series with a power line,
 (b) an overvoltage protection circuit for the series-capacitor bank for connection in series with said power line and in parallel with said series-capacitor bank, the overvoltage protection circuit comprising the series combination of a surge arrester and bus structure, the surge arrester comprising an insulating housing and varistor elements within said housing, said bus structure being located externally of said housing and connected in series with said varistor elements, and in which:
 (c) said bus structure comprises stainless-steel bus conductor having a resistance that is sufficiently high to effectively limit the energy duty on the surge arrester during discharge of said series-capacitor bank through said overvoltage protection circuit in the event of a failure of a varistor element during surge-arrester operation.

5,510,943
CONTROL CIRCUIT FOR POWER DEVICE AND LEVEL
SHIFTING CIRCUIT AND SEMICONDUCTOR
INTEGRATED CIRCUIT DEVICE

Masanori Fukunaga, Itami, Japan, assignor to Mitsubishi
Denki Kabushiki Kaisha, Tokyo, Japan

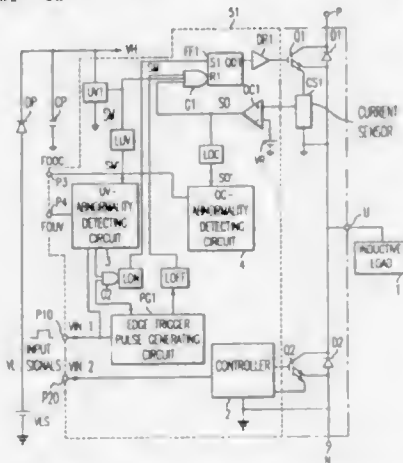
Filed Dec. 9, 1993, Ser. No. 163,509

Claims priority, application Japan, Dec. 10, 1992, 4-330448

Int. Cl. 6 H02H 3/08

U.S. Cl. 361—18

21 Claims



1. A control circuit coupled to a power transistor for applying a control signal to a control electrode of said power transistor in response to an input signal, said control circuit being driven by a control power voltage applied from a capacitor coupled to a control power source, said power transistor being operable to be turned-on and -off in response to first and second levels of said control signal, respectively, said control circuit comprising:

- (a) voltage monitor means for monitoring said control power voltage to generate a voltage drop signal when said control power voltage drops below a reference voltage level due to discharge of said capacitor;
- (b) recovery signal generating means for generating a recovery signal when a predetermined time period passed after said voltage drop signal has been generated, said predetermined time period being longer than a time required for re-charging said capacitor by said control power source;
- (c) signal control means for generating said control signal in response to said input signal and said voltage drop signal, comprising:
 - (c-1) first circuit means for providing said second level to said control electrode in response to a first level-transition of said input signal and said voltage drop signal; and
 - (c-2) second circuit means for providing said first level to said control electrode in response to a second level-transition of said input signal and said recovery signal.

5,510,944
POWER SUPPLY OVER-VOLTAGE PROTECTION
Stefan G. Mozar, Singapore, Singapore, and Tijmen C. Van
Bodegraven, Eindhoven, Netherlands, assignors to U.S. Philips
Corporation, New York, N.Y.

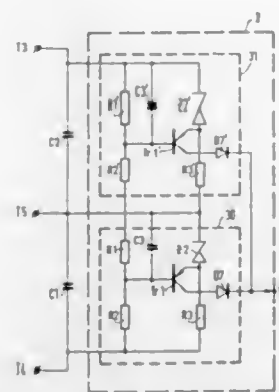
Filed May 5, 1995, Ser. No. 435,308

Int. Cl. 6 H02H 7/10

U.S. Cl. 361—18

11 Claims

1. A power supply input circuit (1,2,3) comprising
- a disconnecting circuit (1) coupled to receive an AC-input voltage (Vac) and a disconnecting signal (Vd) for disconnecting the AC-input voltage (Vac) from output terminals (T1,T2) of the disconnecting circuit (1) if the disconnecting signal (Vd) is active,
 - a series arrangement of a first and a second smoothing capacitor (C1,C2) coupled between output terminals (T3,T4) of the power supply input circuit (1,2,3).



a voltage doubler circuit (20) coupled to said output terminals (T1,T2) for supplying a rectified output voltage across the series arrangement of the first and the second smoothing capacitor (C1,C2) in a first situation where no voltage doubling is required, and for supplying one polarity of the AC-input voltage (Vac) across said first smoothing capacitor (C1) and the other polarity of the AC-input voltage (Vac) across said second smoothing capacitor (C2), to provide a doubled rectified output voltage across the series arrangement of the first and the second smoothing capacitor (C1,C2) in a second situation where a voltage doubling is required, and an over-voltage detection circuit (3) having an output for supplying the disconnecting signal (Vd).

characterized in that the over-voltage detection circuit (3) comprises a first over-voltage prevention circuit (30) to detect an over-voltage across said first smoothing capacitor (C1), and a second over-voltage prevention circuit (31) to detect an over-voltage across said second smoothing capacitor (C2), the over-voltage detection circuit (3) activating the disconnecting signal (Vd) if an over-voltage is detected across at least one of said smoothing capacitors (C1,C2).

5,510,945
POWER SUPPLY FOR GROUND FAULT CIRCUIT
INTERRUPTER

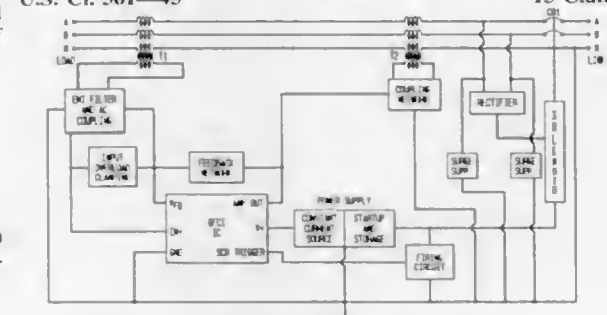
Harold L. Taylor, Norcross, and Jerry M. Green, Tucker, both
of Ga., assignors to Siemens Energy & Automation,
Alpharetta, Ga.

Filed Jan. 31, 1994, Ser. No. 189,535

Int. Cl. 6 H02H 3/00

U.S. Cl. 361—45

13 Claims



1. A ground fault circuit interrupter, for attachment to a load and detecting a ground fault condition associated with a load in an electrical distribution system, and for disconnecting the load from the system in response thereto, comprising:
- a coupling circuit means connected to an electrical distribution system to provide a signal indicative of a ground fault imbalance in the system;
 - a ground fault detector circuit connected to receive a ground fault imbalance signal, and operative in response to a power signal having specified voltage and current levels, said ground fault triggering circuit providing a ground fault trigger signal

- when the imbalance exceeds a certain level indicative of a ground fault in a load in the system;
 - a regulated power supply circuit connected to the electrical distribution system for generating and supplying to said ground fault interruption circuit a power signal having the specified voltage level at a regulated constant current level; and
 - a power disconnecter including circuit breaker contacts for disconnecting the load from the system in response to receipt of a ground fault trigger signal;
- wherein the power supply circuit comprises a start up and storage portion, and a constant current supply portion; and wherein the start up and storage portion comprises a transistor having its collector connected to receive a rectified pulse signal, its base connected to a voltage reference source and first capacitor, and its emitter connected to a storage capacitor, to provide a charging path to charge the storage capacitor with a regulated voltage.

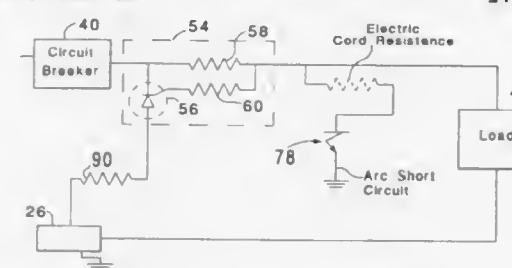
5,510,946
CIRCUIT BREAKER PROTECTION AGAINST "ARC
SHORT CIRCUIT" HAZARDS
Frederick F. Franklin, 3501 Tiffany Ridge, Blue Ash, Ohio
45241

Filed Sep. 19, 1994, Ser. No. 308,686

Int. Cl. 6 H02H 9/02

U.S. Cl. 361—56

24 Claims



1. An electric service installation comprising,
- A. a circuit breaker box,
 - B. an incoming electrical service connection extending into said circuit breaker box, and comprising
 - two energized conductors of opposite phase and a neutral conductor with respect to which the energized conductors have a potential that is half the potential between the two energized conductors,
 - C. a pair of main circuit breakers, mounted in said circuit breaker box, to which the energized conductors are, respectively, connected,
 - D. a pair of main buses, respectively connected to the output of each of the main circuit breakers,
 - E. a neutral bus, mounted in said circuit breaker box, to which the neutral conductor is connected,
 - F. a plurality of branch circuit breakers connected to each of said main buses, each branch circuit breaker having a current rating which has a relatively low magnitude, and a magnetic trip mode which is actuated by current flow exceeding a threshold value that is a several times multiple of the current rating for the circuit breaker,
 - G. a plurality of branch circuit cables extending into the circuit breaker box, each branch circuit cable in said first set comprising
 - a first cable conductor connected to the neutral bus and
 - a second cable conductor energized from one of the branch circuit breakers,
 whereby separate branch circuit loads may be, respectively, energized from said cable,
- said electric service installation being characterized by
- H. acceleration means for enhancing operation of the branch circuit breakers to provide protection against the hazards of

"arc short circuits" having a current flow which randomly varies in magnitude pursuant to a bell shaped frequency distribution curve, upwardly from a minimum threshold value,

said acceleration means being actuated in response to overcurrent flow, in any branch circuit cable, exceeding the threshold value for an "arc short circuit",

said acceleration means including

means, responsive to such overcurrent flow, for substantially instantaneously increasing current flow through the branch circuit breaker that is connected to the branch circuit cable in which such overcurrent has occurred,

whereby the circuit breaker will be magnetically tripped by branch circuit current flows substantially less than arc otherwise required for magnetic tripping, and

the acceleration means include acceleration current bypass circuit means connecting the output of each branch circuit breaker to the neutral bus, and

electric switch means associated with each branch circuit breaker and having a normally open condition preventing acceleration current flow from the branch circuit breaker with which it is associated,

each electric switch means being responsive to the current flow, in its branch circuit cable, exceeding the threshold value for an "arc short circuit", to shift to a closed position in which there is current flow through the acceleration circuit,

further characterized in that

the acceleration current bypass circuit means includes common load resistor means for limiting the current from through the bypass circuit means for a plurality of branch circuit breakers, regardless of which electric switch means for of bypass circuit means of the plurality of branch circuit breakers may be shifted to a closed condition.

5,510,947
ELECTROSTATIC DISCHARGE PROTECTIVE DEVICE
HAVING A REDUCED CURRENT LEAKAGE

Franco Pellegrini, Corsico; Marco Morelli, Livorno, and Athos
Canciani, Como, all of, Italy, assignors to SGS-Thomson
Microelectronics S.r.l., Agrate Brianza, Italy

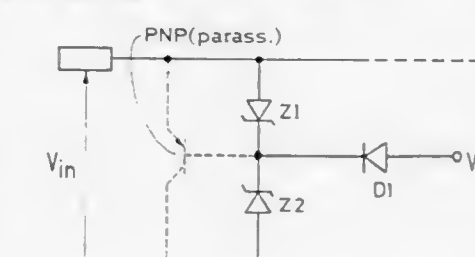
Continuation of Ser. No. 941,393, Sep. 8, 1992, abandoned.

This application Jan. 3, 1995, Ser. No. 367,747

Claims priority, application Italy, Sep. 19, 1991, VA91A0030
Int. Cl. 6 H02H 9/04

U.S. Cl. 361—56

27 Claims



1. An integrated structure for protecting integrated components connected to a pin of an integrated circuit which may be hit by an electrostatic discharge, the structure comprising:

a pair of discharging elements connected in series between the pin and ground, with the discharging elements opposing one another; and

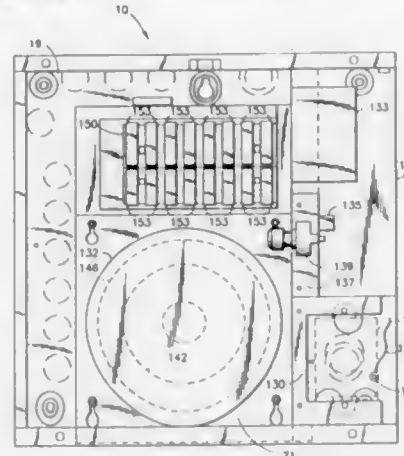
a biasing element connected between a node of interconnection between the discharging elements and a supply voltage node to provide a voltage at the node of interconnection greater than a maximum design voltage reached by the pin under normal conditions, said biasing element biasing said node of interconnection such that leakage current is limited during normal operation of the integrated circuit.

5,510,948
LOW VOLTAGE POWER SUPPLY AND DISTRIBUTION CENTER
 Susan C. Tremaine, and John M. Tremaine, both of New Canaan, Conn., assignors to Q Tran, Inc., South Norwalk, Conn.

Filed Dec. 16, 1994, Ser. No. 358,339
 Int. Cl.⁶ G05F 1/00

U.S. Cl. 361—90

28 Claims



1. A low voltage power supply and distribution center, for mounting in or on a wall or ceiling, connected between a high voltage supply line and at least one low voltage distribution line, each low voltage distribution line being electrically connected to at least one low voltage load which is located remotely from said low power supply and distribution center, said low voltage power supply and distribution center comprising:

- a housing having side housing walls extending generally perpendicular from a rear housing wall, thereby forming a housing chamber therein;
- a power tray removably mounted within said housing chamber, said power tray dividing said housing chamber into three compartments including a high voltage compartment, a low voltage compartment and a transformer compartment;
- a toroidal transformer, having primary windings and secondary windings, mounted within said transformer compartment, said primary windings being connected to the high voltage supply line in said high voltage compartment, said toroidal transformer reducing high voltage, supplied from said high voltage compartment on the high voltage supply line to said primary windings, into a lower voltage on said secondary windings;
- low voltage distribution means mounted in said low voltage compartment and connected between said secondary windings and the low voltage distribution lines, said low voltage distribution means comprising circuit protection means for interrupting current to a low voltage distribution line in response to the current on the low voltage distribution line exceeding a predetermined threshold rating of said circuit protection means; and
- a housing cover, removably mounted to said side housing walls, opposite to said rear housing wall, for covering said housing chamber.

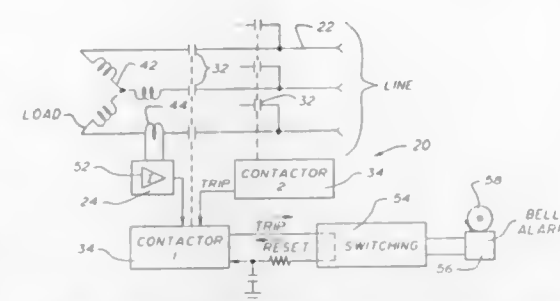
5,510,949
DUTY CYCLE FILTERED TRIP SIGNALING
 Mark E. Innes, Asheville, N.C., assignor to Eaton Corporation, Cleveland, Ohio

Filed Dec. 15, 1993, Ser. No. 168,030
 Int. Cl.⁶ H02H 3/16

U.S. Cl. 361—93

12 Claims

1. A contactor circuit operable for coupling electrical power to a load, comprising:
 means responsive to a parameter of the electrical power, operable to generate a trip output signal that changes from one state to another state for representing presence and absence of



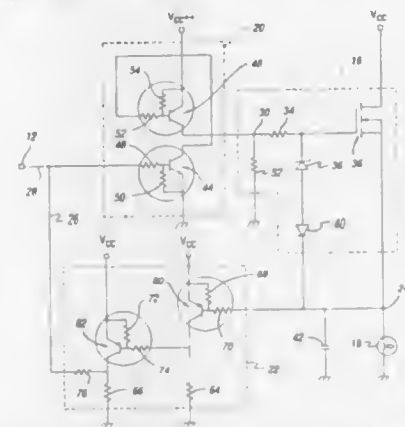
a fault condition, the trip output signal including at least one short duration pulse wherein the trip output signal changes briefly to one of said states indicating the fault condition; and, a switching means coupled to the trip output signal comprising a timing circuit and a driver responsive to the timing circuit, the driver being coupleable to trigger an alarm output, wherein the switching initializes the timing circuit immediately upon the trip output signal changing to the other of said states, namely not indicating the fault condition, and wherein the timing circuit has a time constant exceeding a length of said short duration pulse; whereby short duration pulses occurring on the trip signal are filtered to avoid triggering the alarm output.

5,510,950
METHOD AND CIRCUIT FOR CONTROLLING AND MONITORING A LOAD
 Peter J. Bills, Grosse Pointe, and Peter Langer, Troy, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Oct. 5, 1994, Ser. No. 318,399
 Int. Cl.⁶ H02H 3/14

U.S. Cl. 361—93

4 Claims



1. A circuit for controlling the application of a source of voltage to a load and for monitoring the condition of said load, said circuit including a driver for connecting said source of voltage to said load, said circuit connected between one pin of a control device and said load, said control device adapted to configure said pin as an input or an output pin, said circuit being responsive to a driver control output signal applied to said pin by said control device while said pin is configured as an output pin for connecting said source of voltage to said load by placing said driver in an ON state, said circuit including monitor circuit means for detecting an open circuited load by monitoring the current flow through said driver and for detecting a short circuited load by monitoring the voltage across said driver as a result of current flow through said driver, said monitor circuit means providing a voltage level at said pin for maintaining said driver in an ON state as long as the current flow through said driver is below a predetermined limit and providing a voltage level at said pin for switching said driver to the OFF state when the current flow through said driver exceeds said predetermined limit, said control device storing the occurrence of a short circuited load or an open circuited load responsive to the voltage

level supplied at said pin by said monitor circuit means while said pin is configured by said control device as an input pin.

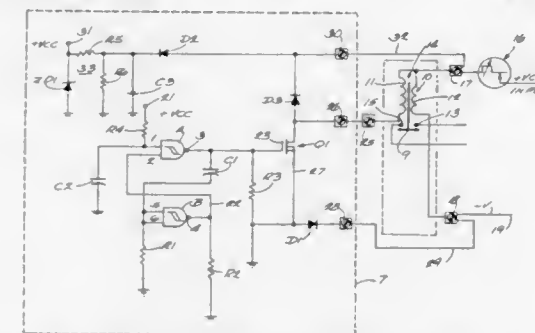
5,510,951
ELECTRONIC CONTROL FOR 3-WIRE DC COILS
 Gunars Briedis, Milwaukee; Jerome K. Hastings, Sussex, and Michael R. Scharnick, Brookfield, all of Wis., assignors to Eaton Corporation, Cleveland, Ohio

Filed Aug. 1, 1994, Ser. No. 283,464

Int. Cl.⁶ H01H 47/04

U.S. Cl. 361—154

6 Claims



1. An electronic controller for controlling operation of a contactor that comprises an armature which when in a pulled-in condition completes an electric circuit, and further comprises an electromagnetic pull-in coil which when conducting current above a predetermined magnitude pulls in the armature, and an electromagnet holding coil adapted for conducting current at least of sufficient magnitude for holding the armature in pulled-in condition, the controller including:

- a first switching device having an input and an output and operative to connect and disconnect the input to and from a power source,
- a solid state switching device connected in a series circuit with said pull-in coil and said output of the first switching device, the solid state switching device having a control element responsive to an applied pulse signal by causing the solid state switching device to conduct for a duration corresponding to the width of the pulse signal,
- a timing circuit having an input coupled to the output of the first switching device and an output coupled to said control element of the solid state switching device, said timing circuit responding to power from the output of the first switching device by applying to said control element at least one pulse signal having a duration corresponding to the time required for said pull-in coil to pull-in said armature so as to convert said solid state switching device to a conductive state to energize said coil for a duration corresponding substantially to the pulse duration;

said timing circuit including:

- first and second logic gates each having at least two inputs and an output,
- a first circuit comprised of a first resistor having an input end constituting the power input to the controller and a first capacitor connected in series, a point between the capacitor and first resistor being connected to one input of the first logic gate,
- a second circuit comprised of a second capacitor and a second resistor connected in series with the second capacitor and a point between the second capacitor and resistor connected to the two inputs of the second logic gate,
- the output of the second logic gate connected to the other input of the first logic gate,
- a third resistor connected to the output of said second logic gate and a fourth resistor connected to the output of the first logic gate,
- the first capacitor starting to charge when voltage is applied to the first resistor from said output of said switching device to thereby cause the output of the first logic gate to switch to a

high logic voltage state for initiating conduction of the solid state switching device developing a positive voltage drop across said fourth resistor,

said second capacitor starting to charge in response to the output of said first logic gate switching to a high logic voltage state to thereby cause said inputs of the second logic gate to be at a high logic level and the output of the gate to therefore be held at a low logic level until said second capacitor is charged to a predetermined voltage level, upon which event the output of the second logic gate switches to a high logic voltage state which is coupled to the other input of said first logic gate, to thereby cause said first logic gate to switch its output to a low logic voltage level for controlling said solid state switching device to switch to a nonconductive state.

5,510,952
IGNITION SYSTEM USING MULTIPLE GATED SWITCHES WITH VARIABLE DISCHARGE ENERGY LEVELS AND RATES

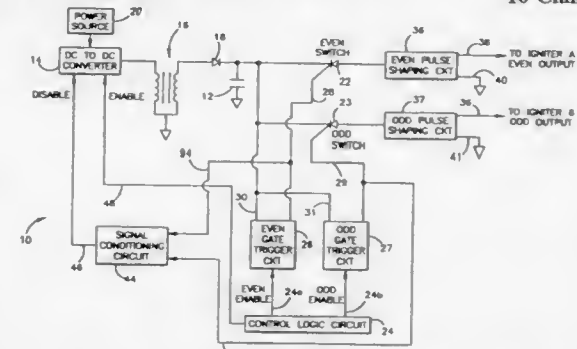
Howard V. Bonavia, Groton, and John E. Killeen, Norwich, both of N.Y., assignors to Simmonds Precision Engine Systems Inc., Akron, Ohio

Continuation of Ser. No. 92,160, Jul. 15, 1993. This application Mar. 1, 1995, Ser. No. 396,883

Int. Cl.⁶ F02P 3/06

U.S. Cl. 361—251

16 Claims



1. An ignition system for a gas turbine engine comprising: a plurality of igniters, an energy storage capacitance, a charging circuit for charging the capacitance, a plurality of gated switches, with at least one switch connected between each igniter and the capacitance for controlling the igniter spark rate, and control means for discharging energy from the capacitance to each respective igniter at an individually selectable spark rates for each igniter.

5,510,953
CONCEALED LOCKING ASSEMBLY FOR A REMOVABLE PORTABLE COMPUTER KEYBOARD
 Harold S. Merkel, Houston, Tex., assignor to COMPAQ Computer Corporation, Houston, Tex.

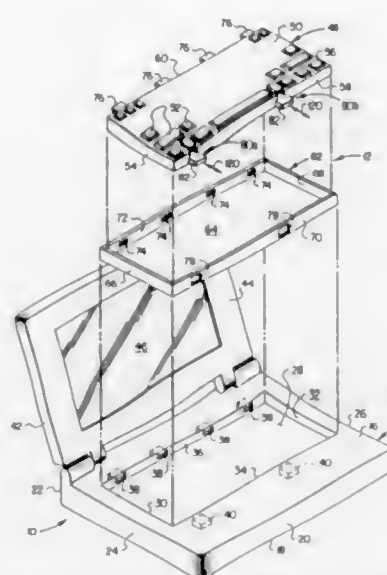
Filed Nov. 21, 1994, Ser. No. 342,698

Int. Cl.⁶ G06F 1/16

U.S. Cl. 361—680

19 Claims

1. A computer comprising:
 a housing having a top side wall with an opening formed therein, said top side wall having opposite first and second peripheral edge portions partially bounding said opening;
 a keyboard assembly having a top side upon which a series of key members are operatively mounted, and first and second opposite side edge portions, said keyboard assembly being complementarily receivable in said top side wall opening with said first and second opposite side edge portions of said keyboard assembly respectively facing said first and second peripheral edge portions of said top side wall of said housing; and



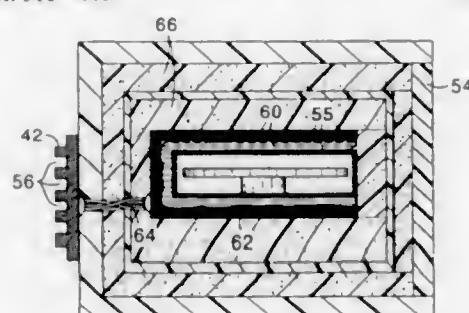
mounting means for releasably securing said keyboard assembly in said housing top side wall opening, said mounting means including:

- a first spaced plurality of openings formed in said first side edge portion of said keyboard assembly and extending inwardly therethrough toward said second side edge portion of said keyboard assembly;
- a second spaced plurality of openings extending inwardly through said first peripheral edge portion of said top housing side wall and being alignable with said first spaced plurality of openings;
- a first spaced plurality of locking members captively retained in said first spaced plurality of openings for movement relative to said keyboard assembly between an extended position in which said first plurality of locking members project outwardly beyond said first side edge portion of said keyboard assembly and are received in said second spaced plurality of openings, and a retracted position in which said first plurality of locking members are withdrawn from said second spaced plurality of openings; and
- latching means, positioned above said top side of said keyboard assembly, for releasably holding said first spaced plurality of locking members in said extended positions thereof.

5,510,954
SILENT DISK DRIVE ASSEMBLY
 Gregory T. Wyler, Winchester, Mass., assignor to Silent Systems, Inc., Burlington, Mass.
 Filed May 20, 1994, Ser. No. 246,866
 Int. Cl.⁶ H05K 5/00

U.S. Cl. 361—685

15 Claims



1. In a computer having a data storage read/write device, the improvement comprising:
- a sound absorption layer surrounding said data storage read/write device;
 - a heat sink mounted exterior of said sound absorption layer; and

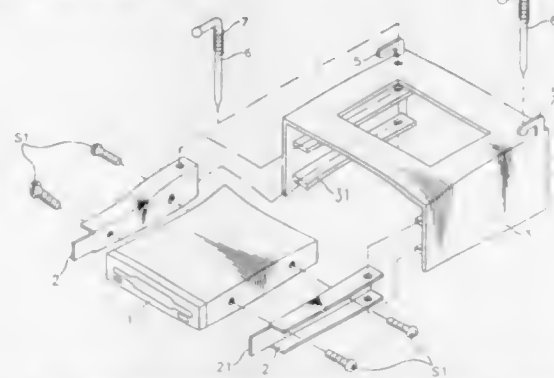
a heat conductive path from said heat sink through said sound absorption layer so as to conduct heat from said data storage read/write device to said heat sink.

5,510,955
CAGE IN COMPUTER EQUIPMENT FOR LOCKING PERIPHERAL EQUIPMENT THEREWITHIN USING HOOKED LOCKPINS
 Kim Taesang, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea
 Filed Oct. 4, 1994, Ser. No. 317,514
 Claims priority, application Rep. of Korea, Oct. 4, 1993, 93-20231 U

U.S. Cl. 361—685

Int. Cl.⁶ H05K 5/00

19 Claims



1. A cage with a rectangular opening at a surface of a piece of computing equipment; said cage for having inserted therewithin a piece of peripheral equipment with a rectangular front plate, with respective first and second sides parallel to each other and perpendicular to said rectangular front plate, and with a first guide rail located along said first side thereof, said first guide rail having a circular hole of a prescribed diameter therethrough along the extent thereof at a first prescribed distance from said rectangular front plate; said rectangular opening having a perimeter comprised of a set of equal-length first and second edges oppositely disposed relative to each other and a set of equal-length third and fourth edges oppositely disposed relative to each other, said first and second edges being of sufficient length to admit the first and second sides of said piece of peripheral equipment in respective proximity thereto, said third and fourth edges being of such length that said rectangular front plate fills at least a portion of said rectangular opening between its said first and second edges; said cage being of such construction as to permit said piece of peripheral equipment being secured thereto using a first hooked locking pin, said first hooked locking pin having a substantially cylindrical shank portion of a diameter somewhat less than said prescribed diameter and having a hooked portion at substantially a right angle to its said respective shank portion; said cage comprising:

- first and second sides of said cage parallel to each other and perpendicular to said surface of said piece of computing equipment at said first and second edges respectively of said rectangular opening in said surface of said piece of computing equipment;
- a first lead rail located along said first side of said cage tier engaging with said first guide rail of said piece of peripheral equipment and extending perpendicularly from said first edge of said rectangular opening in said surface of said piece of computing equipment, said first lead rail having a circular hole of said prescribed diameter therethrough along the extent thereof at substantially said first prescribed distance from said first edge of said rectangular opening;
- a third side of said cage, perpendicular to said first and second sides of said cage, and extending between said first and second sides of said cage, said third side of said cage having a first circular hole of said prescribed diameter therethrough located such that a first perpendicular axis through its center

extends through the center of said hole through said first lead rail and defines a first locus for the insertion of said shank portion of said first hooked locking pin; and

- a first hooked catch located near said first circular hole of said prescribed diameter through said third side of said cage, said first hooked catch having its hook opening towards said third side of said cage, said first hooked catch thereby being disposed for capturing said hooked portion of said first hooked locking pin when forced thereagainst after said piece of peripheral equipment is inserted into said cage, said shank portion of said first hooked locking pin is inserted through said first hole through said third side of said cage and said holes in said first guide rail and said first lead rail aligned therewith along said first locus, and said hooked portion of said first hooked locking pin is pivoted on said shank portion of said first hooked locking pin so as to engage with said first hooked catch.

5,510,956
ELECTRONIC PART UNIT OR ASSEMBLY HAVING A PLURALITY OF ELECTRONIC PARTS ENCLOSED WITHIN A METAL ENCLOSURE MEMBER MOUNTED ON A WIRING LAYER

Masakazu Suzuki, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

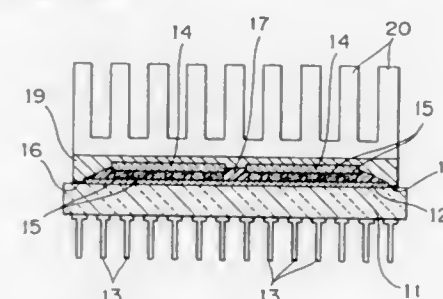
Filed Jul. 19, 1994, Ser. No. 277,205

Claims priority, application Japan, Nov. 24, 1993, 5-293532

Int. Cl.⁶ H05K 7/20

U.S. Cl. 361—704

3 Claims



1. An electronic part unit, comprising:
- a unit circuit board having a wiring pattern formed on a surface thereof;
 - an electronic part mounted on said wiring pattern of said unit circuit board;
 - a resin enclosure member for covering over a surface of said wiring pattern of said unit circuit board with said electronic part partially exposed outside; and
 - a metal enclosure member for covering over the exposed portion of said electronic part, a surface of said resin enclosure member and said unit circuit board, wherein said unit circuit board has a metal pad integrally formed over the entire periphery on the surface proximate the outer periphery of said unit circuit board, and wherein said metal enclosure member is integrally coupled to said metal pad.

5,510,957
LOCKING AND RETAINING MECHANISM FOR AN ELECTRONIC DEVICE HAVING A DETACHABLE CONTROL UNIT

Katsuhiko Takagi, Iwaki, Japan, assignor to Alpine Electronics, Inc., Tokyo, Japan

Filed Mar. 9, 1995, Ser. No. 401,587

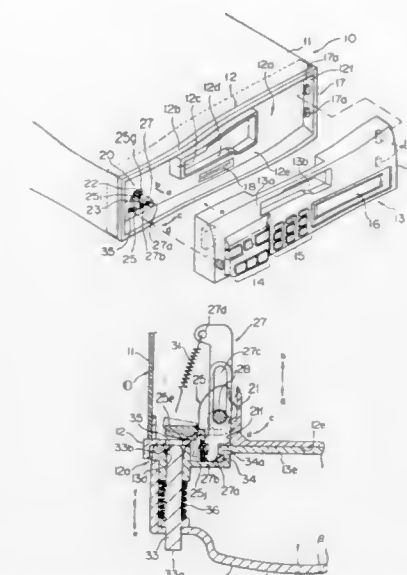
Claims priority, application Japan, Mar. 14, 1994, 6-068997

Int. Cl.⁶ H04B 1/03

U.S. Cl. 361—814

21 Claims

1. A locking and retaining mechanism for use with an electronic device which includes an equipment body and a control unit



detachably mounted on said equipment body, said locking and retaining mechanism comprising:

- a locking member positioned in said equipment body wherein said locking member selectively engages and disengages a portion of said control unit thereby securing said control unit to said equipment body;
- a temporary retaining member positioned in said equipment body whereby said temporary retaining member detachably engages and retains a portion of said control unit;
- an urging member coupled to said temporary retaining member, thereby urging said temporary retaining member in a direction such that said temporary retaining member protrudes from said equipment body; and
- a lock release unit coupled to said locking member whereby when said lock release unit is activated, said locking member disengages and releases said control unit, wherein when said locking member is engaged with said control unit, said temporary retaining member operates together with said locking member to secure said control unit to said equipment body and when said lock release unit causes said locking member to disengage said control unit, said temporary retaining member retains said control unit in a position protruding from said equipment body.

5,510,958
ELECTRONIC CIRCUIT MODULE HAVING IMPROVED COOLING ARRANGEMENT
 Norio Shimahara, and Teruhiko Tokumo, both of Tokyo, Japan, assignors to Yokogawa Electric Corporation, Tokyo, Japan

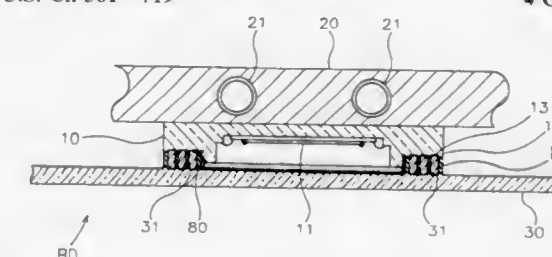
Filed Dec. 5, 1994, Ser. No. 349,668

Claims priority, application Japan, Jan. 11, 1994, 6-001080

Int. Cl.⁶ H05K 7/20

U.S. Cl. 361—719

4 Claims



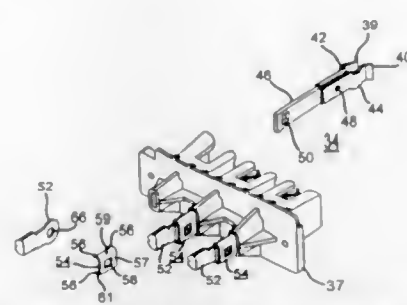
1. An electronic circuit module comprising
- a plurality of first terminals (13);
 - a plurality of second terminals (31);

an insulating container (10) having two surfaces with a depression in one of said two surfaces, said depression holding an electronic component therein, said plurality of first terminals being formed on one of said two surfaces of said insulating container and in electrical contact with said electronic component;

a metal board (20) having at least two surfaces and at least one hollow tube therein for passing a coolant therethrough, said insulating container being mounted on said metal board so that another of said two surfaces of said insulating container is in contact with said one of said two surfaces of said metal board;

a printed circuit board (30) having two surfaces and disposed on said insulating container so that one of said two surfaces of said printed circuit board is in contact with said one of said two surfaces of said insulating container and mounted in parallel to said metal board, said plurality of second terminals being formed on said one of said two surfaces of said printed circuit board and in electrical contact with said electronic component; and

surface contact connectors (80) positioned between each of said plurality of first terminals and each of said plurality of second terminals to form an electrical contact therebetween; whereby cooling is achieved without increased cooling surface area.



a metal bar having a first end extending through said base portion into said jaw connector cover and a second end extending through said bar cover, said second end is adapted for connection to a wire conductor;

first and second jaw fingers secured to and extending from said first end of said metal bar, said first and second jaw fingers are partially enclosed in said jaw connector cover and are adapted to secure to a vertical bus bar; and

first and second spring members secured to and extending from said first end of said metal bar, said first and second spring members engaging said first and second jaw fingers for biasing said first and second jaw fingers towards each other.

5,510,959

HIGH DENSITY PCMCIA FRAME KIT

Michael P. Derstine, Winston-Salem, and Randy G. Simmons, Lewisville, both of N.C., assignors to The Whitaker Corporation, Wilmington, Del.

Filed May 17, 1995, Ser. No. 443,143

Int. Cl.⁶ H05K 9/00

U.S. Cl. 361-816

18 Claims



1. In a PCMCIA frame kit for receiving a planar electronic device for electrical engagement with a complementary device in electronic equipment, said kit comprising a pair of matable, cover members to provide shielding to said planar electronic device, where each said cover member is integrally molded to a dielectric frame upon which said planar electronic device is seated, the improvement comprising in combination therewith the provision of each said frame including a dielectric extension from one end thereof, where said extensions intermate with one another to define a cavity for receiving a portion of said planar electronic device, said planar electronic device having an antenna thereon for the transmission of signals through said dielectric extension.

5,510,960

CONNECTOR ASSEMBLY FOR A MOTOR CONTROL UNIT

Gary M. Rosen, Clemson, S.C., assignor to Square D Company, Palatine, Ill.

Filed Aug. 5, 1994, Ser. No. 286,737

Int. Cl.⁶ H01R 9/00

U.S. Cl. 361-823

14 Claims

1. A connector stab assembly for a motor control unit, comprising:

a molded plastic housing having a base portion, at least one jaw connector cover extending from one side of said base portion and a corresponding bar cover extending from the other side of said base portion opposite said jaw connector, said jaw connector cover includes a pair of opposing u-shaped sidewall members;

5,510,961

CAP STRUCTURE WITH SOUND RECORDING AND GENERATING FUNCTIONS AND WARNING LIGHTS

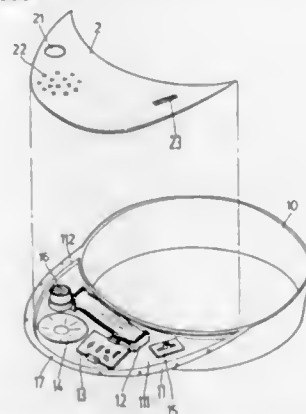
Yu-Lin Peng, 6F, No. 335, Sec. 4, Pateh Road, Taipei, R.O.C., Taiwan

Filed May 31, 1995, Ser. No. 445,459

Int. Cl.⁶ F21L 15/14

U.S. Cl. 362-106

2 Claims



1. A cap structure having sound recording and generating functions and warning lights, said cap structure comprising a cap with a visor and a ring, a recess formed on an underside of said visor, said recess having an inverted fastening means at an outer rim thereof, said recess accommodating a battery set, a circuit board, a buzzer, a select switch and a sound pick-up, light emitting diodes being arranged on an outer rim of said visor at suitable positions and connected to said circuit board, said circuit board being provided with digitalized circuits to provide sound recording and releasing functions, said light emitting diodes for giving out flickering lights on the visor, said cap structure further comprising a cover pressed to fit into said recess and positioned therein by means of said inverting fastening means to tightly seal said recess, with said select switch and said sound pick-up protruding through said cover of said visor.

5,510,962

SCREWDRIVER WITH AN ILLUMINATOR

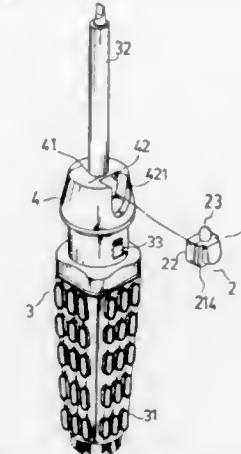
Hsuan-Sen Hsiao, No. 20, Alley 235, Fu-Shang Lane, Taichung, Taiwan

Filed Mar. 10, 1995, Ser. No. 402,524

Int. Cl.⁶ B25B 23/18

U.S. Cl. 362-120

4 Claims



1. A screwdriver with an illuminator comprising:

a) a handle provided with a driving shank mounted thereon;

b) a lamp holder at an end of the handle adjacent the driving shank, the lamp holder including a recessed hole and a flange extending around a border of the recessed hole;

c) a lamp assembly disposed within the recessed hole, the lamp assembly including a base provided with a battery holder and a groove, a battery mounted within the battery holder of the base, a cover engaged with the base and provided with a recess and a groove, the battery holder being received within the recess of the cover, and a light source disposed between the base and the cover;

d) the light source including contact means for establishing electrical contact with the battery to illuminate the light source when the cover is depressed by a user, the contact means being disposed within the grooves of the base and cover; and

e) the cover including a peripheral flange engaged with the flange extending around the border of the recessed hole.

5,510,963

ATTACHABLE FLASHLIGHT

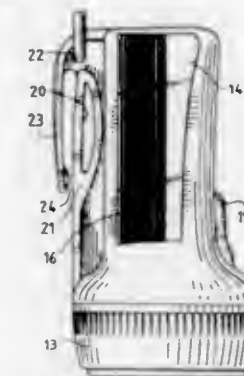
David Bamber, and Robert Deines, both of Wichita, Kans., assignors to The Coleman Company, Inc., Wichita, Kans.

Continuation of Ser. No. 988,803, Dec. 21, 1992. This application Apr. 24, 1995, Ser. No. 427,005

Int. Cl.⁶ F21L 7/00

U.S. Cl. 362-190

6 Claims



1. An attachable flashlight comprising: an elongate housing for containing a power source and a light source, said housing including a head portion at a first end of the housing and a handle portion with securing means for releasably securing the flashlight to an

article, said securing means including a hook segment which extends generally longitudinally of the housing along a side of the housing from a second end of the housing opposite the first end and defines an elongate slot, said securing means also including an elongate opening, said elongate slot being open at one end of the hook segment and closed at an opposite end of the hook segment proximate the second end of the housing, said elongate slot and opening being disposed generally parallel to one another, said housing including a segment for separating the elongate opening and the slot.

5,510,964

LUMINAIRE INCLUDING A DOUBLE-ENDED LAMP AND MEANS FOR PROTECTING AGAINST ELECTRIC SHOCK DURING RELAMPING

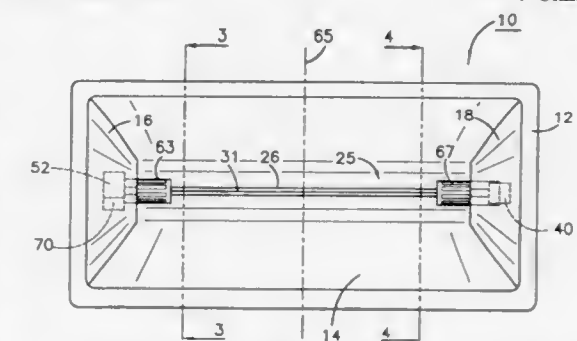
Brian L. Spittler, Elon College, and Suleyman O. Sumer, Chapel Hill, both of N.C., assignors to Regent Lighting Corporation, Burlington, N.C.

Filed Sep. 21, 1994, Ser. No. 309,667

Int. Cl.⁶ F21S 3/00

U.S. Cl. 362-217

7 Claims



1. In a luminaire that is adapted to employ as a light source a double-ended lamp comprising a tubular light-transmitting envelope having a central longitudinal axis, conductive terminals at opposite ends of the envelope, and a light-generating filament located within said envelope and connected between said terminals, the terminals having surfaces that face axially outward of the envelope, the combination of:

(a) a luminaire housing containing a light-emitting opening at one side through which said lamp is installed,

(b) a pair of contacts disposed at spaced-apart locations within said housing and having portions adapted to respectively engage said outwardly-facing surfaces of said lamp terminals when the lamp is installed within said luminaire,

(c) spring means for urging said contacts into engagement with said outwardly-facing terminal surfaces when the lamp is installed within said luminaire,

(d) a socket of insulating material around each contact,

(e) a pair of casings respectively disposed about said sockets, each casing including sidewalls at opposite sides of the associated socket and an end region through which said lamp is adapted to extend when installed within said luminaire, and in which:

(f) said luminaire includes a cavity adjacent one sidewall of one of said casings into which one terminal of the lamp can be inserted during lamp installation to position said one terminal laterally adjacent the socket in said one casing, following which the other lamp terminal can be inserted into the other of said sockets to engage the contact within said other socket while said one terminal is positioned within said cavity, following which a compressive force directed axially of said lamp envelope can be applied to said lamp envelope to retract the contact engaging said other terminal against the bias of said spring means, following or during which said one terminal can be shifted laterally into engagement with its associated contact while said other terminal remains in engagement with its retracted associated contact, and

- (g) each casing is provided with a barrier (i) facing the light-emitting opening of the luminaire, (ii) positioned between the associated socket and said light-emitting opening, and (iii) constructed to block the conductive lamp terminals from engaging their associated contacts during lamp installation unless one lamp terminal is first positioned in said cavity, and
- (h) one of said barriers covers said cavity sufficiently to block access by an installer to said cavity when said one lamp terminal is positioned therein.

5,510,965

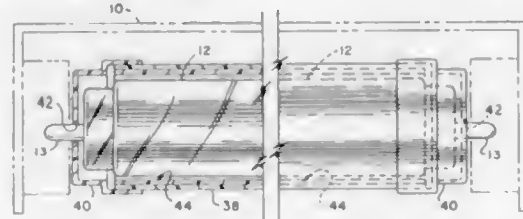
ADJUSTABLE REFLECTOR/DIRECTOR FOR FLUORESCENT LIGHT FIXTURE

Joe F. Teakell, Arlington, Tex., assignor to Plast-D-Fusers, Inc., Dallas, Tex.

Filed Sep. 15, 1994, Ser. No. 306,469
Int. Cl.⁶ F21S 3/00

U.S. Cl. 362—223

18 Claims



1. A light control device for an elongated light source, such as a tubular fluorescent light element, said device comprising: an elongated tube disposed around said light element and supported with respect to said light element for rotation substantially about a longitudinal axis of said tube, said tube including a variable light blocking surface disposed thereon and operable in response to rotation of said tube to change the intensity of light with respect to a particular point within range of light projection of said light source, said variable light blocking surface comprising an elongated opaque portion extending over a predetermined distance from opposite sides of a central axis of said surface and forming a predetermined part of a circle disposed about said longitudinal axis of said tube, and opposed portions of variable opacity being formed on said surface adjacent said opaque portion and radially spaced with respect to said longitudinal axis and arranged such that in response to rotation of said tube the direction and intensity of light emitted by said light source with respect to said point may be varied.

5,510,966

DISPLAY AND STORAGE FIXTURE FOR STRINGS OF DECORATIVE LIGHTS

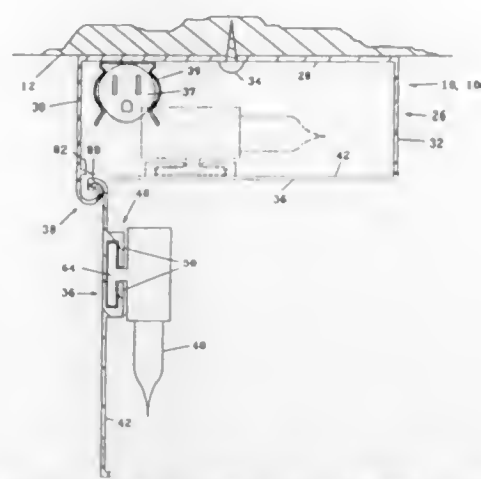
Francis C. Konecny, 14001 Sandhurst Dr. SW., Huntsville, Ala. 35803

Filed Sep. 15, 1994, Ser. No. 306,797
Int. Cl.⁶ F21V 21/00

U.S. Cl. 362—249

15 Claims

1. A storage and display fixture comprising: an elongated enclosure mountable to a structure and further comprising: a first elongated side having a first inner surface, second and third elongated sides each having second and third inner surfaces, said second and third sides extending from opposed edges of said first side, an end closure for each end of said enclosure exposed to weathering elements, for enclosing each said end, said first, second, third sides and each said end closure forming a housing structure having an open side, a fourth elongated side having a fourth inner surface and coupled in movable relation to said housing structure so



that said fourth elongated side is movable to cover said open side or expose at least one of said first inner surface, said second and third inner surfaces, and said fourth inner surface,

a string of decorative lights comprising:

a plurality of electrical light bulb sockets coupled together by electrical conductors, each said light bulb socket supporting a decorative light bulb therein, said conductors, said sockets and each said respective light bulb longitudinally positioned along at least one of said first inner surface, said second and third inner surfaces, and said fourth inner surface of said enclosure,

whereby said fourth side and said housing structure protectively enclose said light bulb sockets and said decorative light bulbs when said open side is covered by said fourth side, and said fourth side discretely exposes for viewing said light bulb sockets and said light bulbs when said fourth side is moved to expose said inner surface along which said string of decorative lights is positioned.

5,510,967

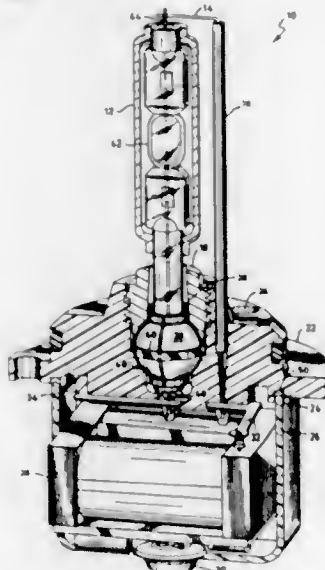
III D HEADLAMP ASSEMBLY

Charles M. Coughaine, Rindge, N.H.; Peter H. Corsini, Sandwich, Mass., and John L. Tremblay, Hopkinton, N.H., assignors to Osram Sylvania Inc., Danvers, Mass.

Filed Dec. 13, 1994, Ser. No. 354,508
Int. Cl.⁶ F21V 21/24

U.S. Cl. 362—261

17 Claims



1. A lamp assembly comprising:

a) a light source with a tubular end;

- b) a threaded nut having an axis, an exterior thread region, an internal surface defining a passage, and a concave surface extending around the axis at an end of the passage, defining a section of a sphere, the threaded nut being positioned around the tubular end of the light source;
- c) a split ball assembly comprising first and second half balls each having similar exterior surfaces defining sections of a sphere, conformal with the spherical section of the threaded nut, the first and second half balls each having similar internal surfaces defining a surface conformal with the tubular end of the light source, the first and second half balls being positioned around the tubular end of the light source adjacent to the concave section of the nut;
- d) a base having an axis and an aperture defining a thread section extending around the axis and a section of a sphere conformal with the split ball assembly; and electrical connections for the light source; wherein the threaded nut is threaded to the base to engage the split ball assembly and trap the light source in place with respect to the base.

5,510,968

BACK LIGHT ASSEMBLY

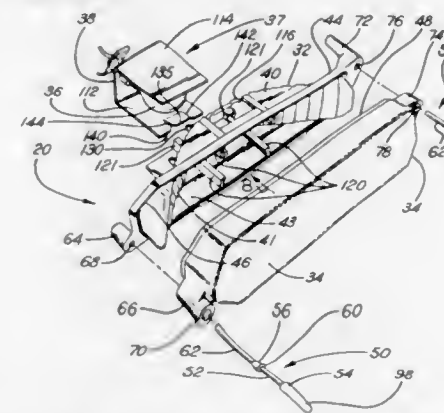
Gerald P. Pokriefka, Clarkston, and Paul E. Cole, Chelsea, both of Mich., assignors to Chrysler Corporation, Auburn Hills, Mich.

Filed Aug. 28, 1995, Ser. No. 520,139

Int. Cl.⁶ F21V 29/00

U.S. Cl. 362—294

7 Claims



1. A back light assembly for an automotive vehicle comprising a housing defining an inner chamber, said housing having a front wall and a translucent rear wall, said front wall having an aperture therein and also having opposite side edges, said walls extending rearwardly from the respective side edges of said front wall, slots in the front wall of said housing adjacent to the respective side edges thereof, a light bulb assembly comprising a supporting frame, said supporting frame being generally channel-shaped including a base having opposite side edges, side flanges extending rearwardly from the respective side edges of said base, the base of said frame being disposed forwardly of the front wall of said housing across the aperture therein, said side flanges extending through said slots into said chamber along the side walls of said housing, a light bulb mounted on the base of said frame and extending through said aperture into said chamber, the side flanges of said frame form a heat shield on opposite sides of the light bulb, and means securing said light bulb assembly to said housing.

5,510,969

LUMINAIRE

Christopher E. Rodger, 22 Chamberfield Road, Dunfermline, Fire, Scotland, and Douglas P. Hunter, 13 Den Street, Denbeath, Buckhaven, Fire, Scotland

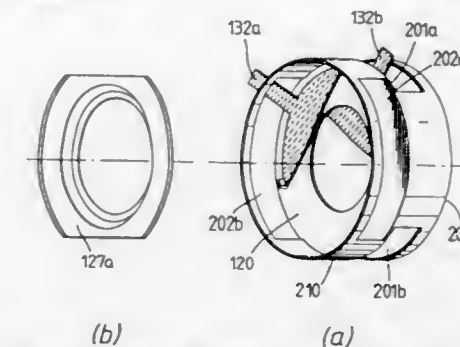
Filed Nov. 16, 1992, Ser. No. 977,278

Claims priority, application United Kingdom, Mar. 31, 1992, 9207048

Int. Cl.⁶ F21V 11/10; 17/02

U.S. Cl. 362—321

18 Claims



1. A luminaire housing in which is defined a number of circumferential slots, in which the handles of shutter blades are arranged to be slidable, the edges of adjacent slots being radially overlapped around the circumference of the luminaire housing so that each handle may be manipulated over an angular range approaching $360^\circ/n$, where n is the number of shutter blades.

5,510,970

LAMP

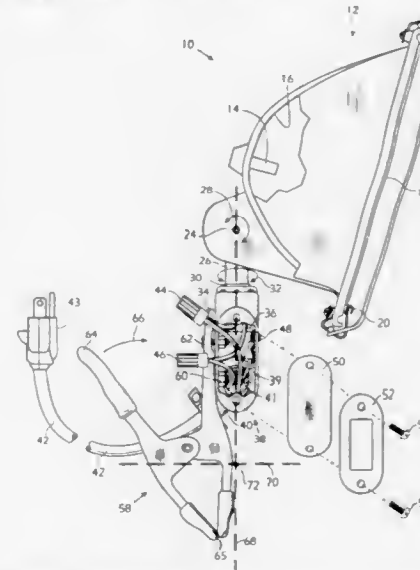
Gerald A. Hollenbach, and Patrick McLean, both of Aloha, Oreg., assignors to Ranger Enterprises, Inc., Aloha, Oreg.

Filed Dec. 4, 1992, Ser. No. 986,432

Int. Cl.⁶ F21V 21/08

U.S. Cl. 362—396

52 Claims



41. A lamp, comprising: a substantially rigid halogen light fixture having a cavity therein for housing a halogen light source and having an opening in said fixture to said cavity; and a clamp connected to said halogen light fixture at a position on said halogen light fixture, said position substantially establishing the center of a spherical coordinate system as to ensure that said jaws extend away from said position in a substantially radial direction, said clamp having two jaws forced toward one another by spring tension and a handle for spreading said jaws, said clamp being connected and said handle

being spaced from said halogen light fixture so that said handle can be grasped without touching said halogen light fixture.

5,510,971 SAFETY CONTROL DEVICE AND PROCESS WITH ANALOG POWER OUTPUT

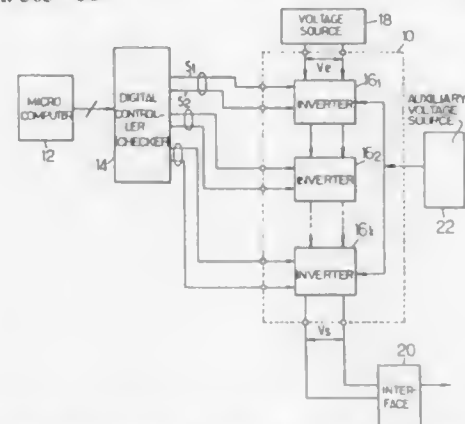
Philippe Forin, Montigny-Le-Bretonneux, and Didier Minesl, Saint-Fargeau-Ponthierry, both of France, assignors to Matra Transport, Montrouge, France

Filed May 5, 1994, Ser. No. 238,329

Claims priority, application France, May 6, 1993, 93 05450
Int. Cl.⁶ H02M 7/44

U.S. Cl. 363—56

7 Claims



1. Fail safe control device having a digital input and an analog power output, for delivering a mean output electrical power which is above a first predetermined threshold when two binary input sequences which are complementary, in mutual phase opposition, are applied to the digital input and a mean output power which is below a second predetermined threshold, lower than the first threshold in all other cases, comprising:

- one primary DC voltage power source, and
- a cascaded arrangement of a plurality of modules each having, in succession, AC converter bridge means and rectifier means, an input of said cascaded arrangement being connected to said primary power source for energization by said primary power source and each said AC converter bridge means having two branches each individually controlled by one of said binary input sequences.

5,510,972 BRIDGE RECTIFIER CIRCUIT HAVING ACTIVE SWITCHES AND AN ACTIVE CONTROL CIRCUIT

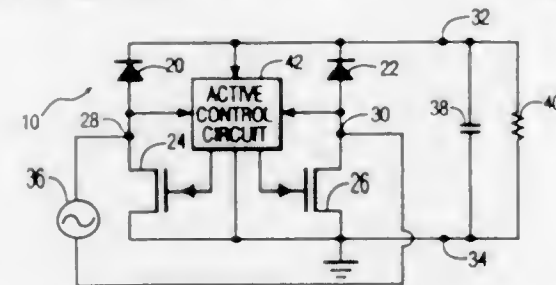
Stephen Wong, Scarsdale, N.Y., assignor to Philips Electronics North America Corporation, New York, N.Y.

Filed Jun. 29, 1994, Ser. No. 268,705

Int. Cl.⁶ H02M 7/217

U.S. Cl. 363—127

7 Claims



1. A bridge rectifier circuit comprising four rectifier elements in a bridge configuration having two AC input terminals and two DC output terminals, at least two of said rectifying elements compris-

ing active switches, and an active control circuit for controlling the state of said active switches, said control circuit having control inputs coupled to said AC input terminals and control outputs coupled to said at least two active switches, and said control circuit being coupled to and powered from said DC output terminals.

5,510,973

BUFFER STORAGE CONTROL SYSTEM

Tetsuya Morioka, Kawasaki, Japan, assignor to Fujitsu Limited, Kanagawa, Japan

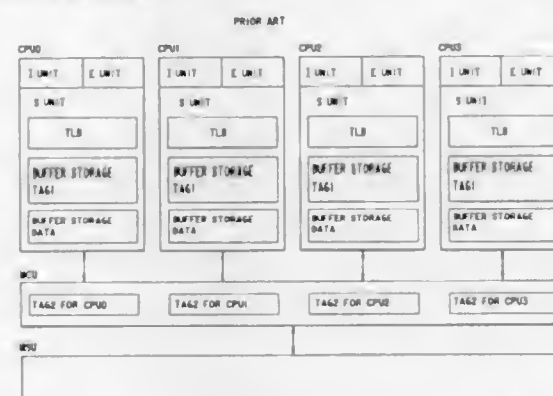
PCT No. PCT/JP92/01035, § 371 Date Apr. 9, 1993, § 102(e)
Date Apr. 9, 1993, PCT Pub. No. WO93/04431, PCT Pub. Date Apr. 3, 1992

PCT Filed Aug. 13, 1992, Ser. No. 39,008

Claims priority, application Japan, Aug. 15, 1991, 3-204522
Int. Cl.⁶ G05B 15/00; G06F 13/24

U.S. Cl. 364—134

1 Claim



1. A data processing apparatus formed by a plurality of central processing units, a main storage unit, and a main storage control unit provided between the central processing units and the main storage unit, the apparatus comprising:

- each central processing unit including a) a calculation control unit for generating an instruction fetch request and an operand access request and for receiving an instruction fetch data, b) a calculation execution unit for generating a store data and for receiving an operand fetch data, and c) a storage control unit for receiving the instruction fetch request and the operand access request,

the storage control unit including an instruction access pipe line for an instruction access and an operand access pipe line for an operand access,

the instruction access pipe line including a) an address conversion buffer for converting from the logical address to the absolute address to perform the fetch access for the instruction with high speed, b) a tag portion for retrieving based on the basic line address at the fetch access of the instruction and for determining a hit/mis-hit of data, and c) a buffer storage data for the instruction access to read the data when the data is hit,

the operand access pipe line including a) an address conversion buffer for converting from the logical address to the absolute address to perform the fetch access and store access of the operand, b) a tag portion for retrieving based on the basic line address at the fetch access and store access of the operand and for determining a hit/mis-hit of data, c) a buffer storage data for the operand access to read the data when the data is hit, and d) a store buffer for temporarily storing the store data, and

the main storage control unit including a) a first tag portion for the instruction access for retrieving based on the synonymic line address at the fetch access of the instruction and for determining the hit/mis-hit of the data, and b) a second tag portion for the operand access for retrieving based on the synonymic line address at the fetch access and the store access of the operand and for determining the hit/mis-hit of the data.

5,510,974 HIGH FREQUENCY PUSH-PULL CONVERTER WITH INPUT POWER FACTOR CORRECTION

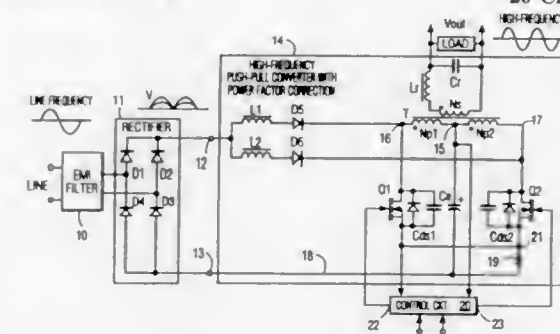
Wen-Jian Gu, and Rui Liu, both of Croton-on-Hudson, N.Y., assignors to Philips Electronics North America Corporation, New York, N.Y.

Filed Dec. 28, 1993, Ser. No. 174,532

Int. Cl.⁶ H02M 7/538

U.S. Cl. 363—134

20 Claims



1. A single stage boost converter and high-frequency DC/AC power inverter apparatus comprising:

- a pair of input terminals for connection to a source of AC voltage,
- rectifier means having an input coupled to said pair of input terminals and an output,
- a transformer having first and second primary windings and a secondary winding,
- inductor means coupling said first and second transformer primary windings to said output of the rectifier means,
- a pair of first and second switching transistors coupled to said first and second transformer primary windings to control current flow therein,
- a storage capacitor coupled to said first and second transformer primary windings and to the output of the rectifier means,
- a pair of output terminals for connection to a load,
- an LC resonant circuit coupling said transformer secondary winding to said pair of output terminals, and
- a single control circuit responsive to an output voltage at said output terminals and, via a circuit path independent of a load circuit coupled to said output terminals, to a voltage developed across the storage capacitor, thereby to supply complementary switching control signals to respective control electrodes of said first and second switching transistors.

5,510,975 METHOD OF LOGICAL OPERATIONS IN HOME AUTOMATION

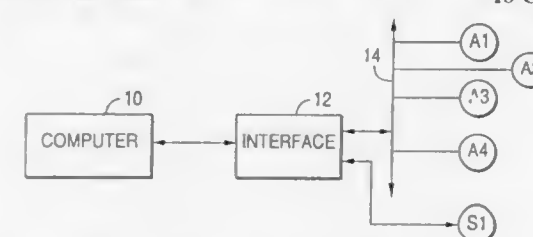
Eldon W. Ziegler, Jr., Columbia, Md., assignor to Atlantic Software, Inc., Columbia, Md.

Filed Jul. 1, 1994, Ser. No. 268,618

Int. Cl.⁶ G05B 13/02

U.S. Cl. 364—148

18 Claims



1. A method of controlling a system having input modules and sensors that provide input signals relating to at least one of a condition of a module and sensed conditions, and output modules that perform actions in response to control signals, the method comprising the steps of:

receiving the input signals, which are indicative of input values from the input modules and sensors;
determining which rules of a stored set of rules are dependent on said input values;
producing output values in accordance with those rules that are dependent on said input values, wherein at least one such rule produces output values via an arithmetic operation, having more than two distinct values;
generating control signals as a function of the output values and transmitting the control signals to the output modules; and
performing an action with the output modules in accordance with the control signals;
wherein each of said input modules and sensors has a specified address, and wherein said receiving step comprises transmitting said input signals from each of said respective input modules and sensors to a respective input node for receiving input signals, which node has an address that matches that of an input module or sensor; and
wherein the step of producing output values includes steps of weighting the input values, and adding weighted input values in an intermediate node according to at least one of said rules to produce one of the output values.

5,510,976 CONTROL SYSTEM

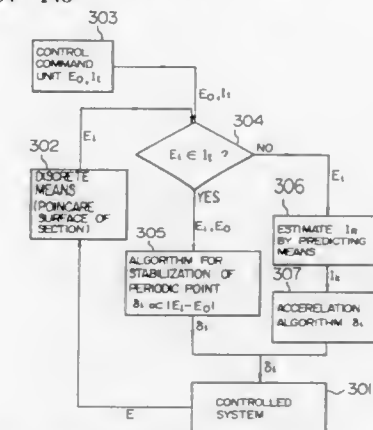
Naoki Tanaka, Tokyo; Hiroshi Okamoto, Ome; Masayoshi Naito, Kawagoe; Shin-ichiro Umemura, Hachioji; Yasuo Morooka; Masahiro Kayama, both of Hitachi, and Hiroaki Okudaira, Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 8, 1994, Ser. No. 194,378

Claims priority, application Japan, Feb. 8, 1993, 5-019886
Int. Cl.⁶ C05B 13/02; G06F 15/18

U.S. Cl. 364—148

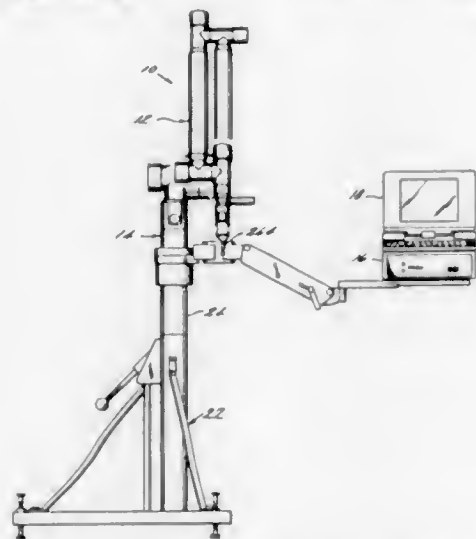
24 Claims



1. A control system comprising:
a stabilizing algorithm means for stabilizing a target system in a chaotic state into a periodic state;
an accelerating algorithm means for directing the target system rapidly to a region on a chaotic attractor; and
a predicting means for predicting a following variation of data originating from the target system based on a previous observation of corresponding data,
wherein a determination of a current state of the target system is determined based on observation of data originating from the target system, thereafter said stabilizing algorithm means is employed in a case where the stabilizing algorithm means is considered to be effective taking a result of the determination into account, otherwise prediction of following states of the target system are predicted by said predicting means, and said accelerating algorithm means is operated using results of the prediction to make a state of the target system a periodic state.

5,510,977
METHOD AND APPARATUS FOR MEASURING
FEATURES OF A PART OR ITEM
Simon Raab, Longwood, Fla., assignor to Faro Technologies
Inc., Lake Mary, Fla.

Filed Aug. 2, 1994, Ser. No. 284,397
Int. Cl.⁶ G05B 19/401; G06F 19/00
U.S. Cl. 364-167.01 32 Claims



1. A method of measuring position and orientation of at least one feature of an item using a dimensional coordinate measuring system having a probe for digitizing coordinates, the method comprising the steps of:

- providing an equivalent having a geometrical shape which conforms to the feature being measured, said equivalent having a measurement element, said measurement element being aligned relative to said geometrical shape of said equivalent; establishing a reference coordinate system;
- positioning said geometrical shape of said equivalent at the feature being measured; and
- probing said measurement element in said equivalent using said probe to provide a digitized coordinate relative to said reference coordinate system, said digitized coordinate corresponding to a position of said measurement element in said equivalent, whereby the position and orientation of the feature is provided.

5,510,978
ELECTRONIC APPARATUS FOR IMPLEMENTING
COMMUNITY POLICING PROGRAM AND METHOD
THEREFOR

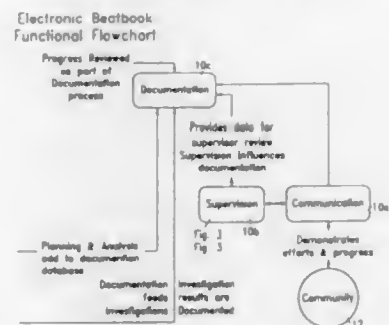
Patrick G. Colgan, Brooklyn, N.Y., assignor to VERA Institute
of Justice, New York, N.Y.

Filed Jan. 26, 1994, Ser. No. 187,347
Int. Cl.⁶ G06F 17/60

U.S. Cl. 364-401 13 Claims

1. A computer-implemented community policing system, comprising:

- an electronic data entry and processing apparatus including:
 - a processor;
 - a memory;
 - data entry means for inputting data and command signals; and
 - display means for displaying screens associated with a plurality of functions;
- where said processor is programmed to provide the following functions:
 - a condition log function that displays a condition log screen having a complete problem list that identifies problems in said beat area, and where each of said problems is associ-



ated with a list of particular occurrences relating to that problem and entered by said user and stored in said memory;

a work plan function that displays a work plan screen having a problem list that identifies one or more of said problems to be addressed by a user in a beat area, where said problems are each associated with goal data, strategy data, and assessment data entered by said user and stored in said memory, and where designation by said data entry means of one of said problems displayed on said work plan screen activates a cross-reference to said list of particular occurrences relating to said designated problem;

an emergency call report function that searches a log of emergency call data in response to user input, where designation via said data entry means links emergency call data from a search result to one of said problems, and where said linkage is indicated by said condition log function;

a crime report function that searches a log of crime reports in response to user input, where designation via said data entry means links a particular crime report to one of said problems, and where said linkage is indicated by said condition log function; and

a supervisor comments function that aggregates and displays a plurality of supervisor comments entered in different functional areas of said system.

5,510,979
DATA PROCESSING SYSTEM AND METHOD FOR
RETAIL STORES

Martin J. Moderi, Glen Ellyn, Ill.; Shigeharu Matsumoto, Tokyo, Japan; Paul M. Bouzide, Chicago; Yung-Chun Tsau, Oak Brook, both of Ill.; Inge B. Kristiansen, Pasadena, Calif.; Patrick F. Castor, Naperville, Ill.; John W. Nelson, Chicago, Ill., and Roger W. Carlson, Schamburg, Ill., assignors to Restaurant Technology, Inc., Oak Brook, Ill.

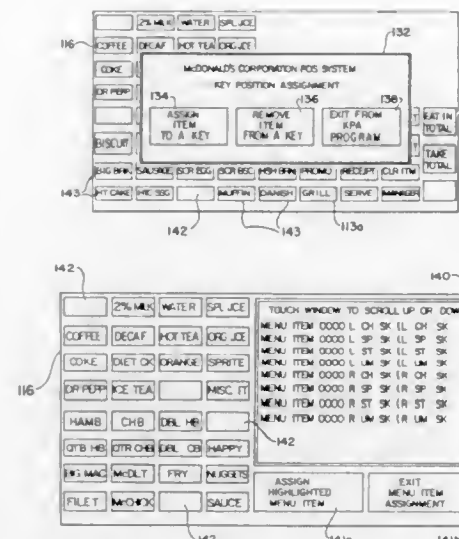
Continuation of Ser. No. 737,749, Jul. 30, 1991, abandoned.

This application Mar. 13, 1995, Ser. No. 402,809
Int. Cl.⁶ G07G 1/12

U.S. Cl. 364-405 19 Claims

1. A computer system for entering, processing and recording sales of items comprising:

- (a) a plurality of physically separated programmable POS register means for entering and tabulating customer orders, said POS register means including programmable display means responsive to a display program for displaying a plurality of keys, each of which is visually associated by the display program with an assigned label which corresponds to at least



one salable item, and touch sensitive means for detecting when one of said keys has been touched by a human operator;

(b) off-line processing means, at a location remote from said plurality of programmable POS register means, for programming said programmable POS register means, said off-line processing means including display means for displaying a plurality of keys and a plurality of labels corresponding to at least one salable item, selection means for allowing a human operator to select one of said displayed keys and one of said displayed labels and means responsive to the human operator's selection of one of said displayed keys and one of said displayed labels for revising said plurality of keys and assigned labels displayed on said POS register means without recompiling said display program;

(c) shared memory means, at a location remote from said plurality of programmable POS register means, for recording data entered and tabulated by said programmable POS register means; and

(d) communication means for networking said plurality of programmable POS register means, said off-line processing means and said shared memory means.

5,510,980
METHOD AND SYSTEM FOR SELECTING AND
EXECUTING ARITHMETIC FUNCTIONS AND THE LIKE
Chris Peters, Bellevue, Wash., assignor to Microsoft Corporation, Redmond, Wash.

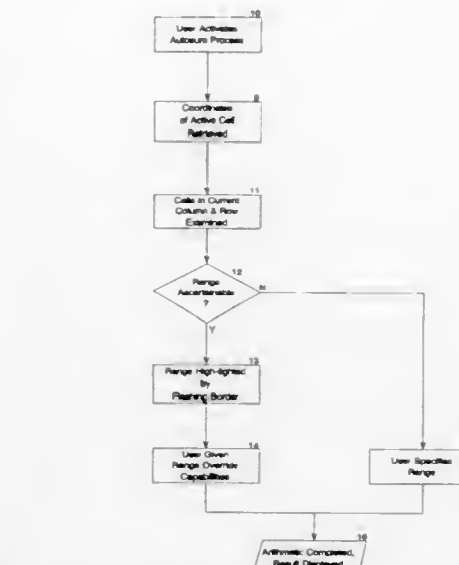
Continuation of Ser. No. 800,589, Nov. 27, 1991, abandoned.
This application Jun. 27, 1994, Ser. No. 266,799

Int. Cl.⁶ G06F 159/00

U.S. Cl. 364-406 31 Claims

1. A method, executed in a computer system, of implementing a sum function in an application program under the operation of a user during a user session, where the application program uses a worksheet to store and manipulate data, where the worksheet comprises a two dimensional grid of intersecting columns and rows, where the intersection of each column and row is a cell, where a cell may contain data, and where a plurality of cells is a contiguous range of cells in the same column or row, the method comprising the steps of:

- (a) during a user session, choosing a cell within the worksheet where a sum result will be displayed, the chosen cell having a location in the worksheet;
- (b) during the user session, requesting execution of the sum function;
- (c) in response to steps (a) and (b), the computer system automatically determining during the user session, which of a plurality of cells to select based upon the location of the chosen cell in the worksheet and without prior programming or input by a user to explicitly select the plurality of cells; and



(d) responsive to the execution request, calculating the sum result of data associated with the determined plurality of cells and displaying the sum result in the chosen cell.

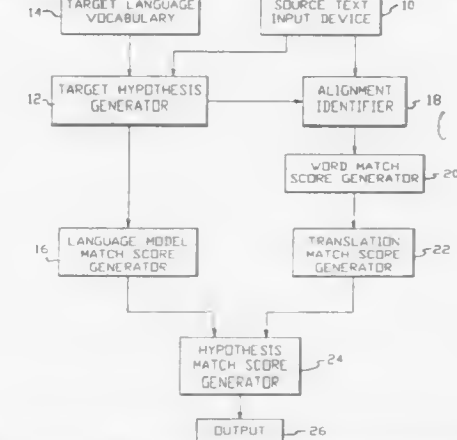
5,510,981
LANGUAGE TRANSLATION APPARATUS AND METHOD
USING CONTEXT-BASED TRANSLATION MODELS

Adam L. Berger; Peter F. Brown, both of New York; Stephen A. Della Pietra, Pearl River; Vincent J. Della Pietra, Blauvelt, all of N.Y.; Andrew S. Kehler, Somerville, Mass., and Robert L. Mercer, Yorktown Heights, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 28, 1993, Ser. No. 144,913

Int. Cl.⁶ G06F 17/28 21 Claims

U.S. Cl. 364-419.02



1. An apparatus for translating a series of source words in a first language to a series of target words in a second language different from the first language, said apparatus comprising: means for inputting said series of source words; means for generating at least two target hypotheses, each target hypothesis comprising said series of target words selected from a vocabulary of words in the second language, each target word having a context comprising at least one other word in the target hypothesis; means for generating, for each target hypothesis, a language model match score comprising an estimate of the probability of occurrence of the series of words in the target hypothesis; means for identifying at least one alignment between the input series of source words and each target hypothesis, the align-

ment connecting each source word with at least one target word in the target hypothesis;

means for generating, for each source word and each target hypothesis, a word match score comprising an estimate of the conditional probability of occurrence of the source word, given the target word in the target hypothesis which is connected to the source word and given the context of the target word in the target hypothesis which is connected to the source word;

means for generating, for each target hypothesis, a translation match score comprising a combination of the word match scores for the target hypothesis and the source words in the input series of source words;

means for generating a target hypothesis match score for each target hypothesis, each target hypothesis match score comprising a combination of the language model match score for the target hypothesis and the translation match score for the target hypothesis; and

means for outputting the target hypothesis having the best target hypothesis match score.

5,510,982

AUTOMATIC AUTOMOBILE TRANSMISSION WITH VARIABLE SHIFT PATTERN CONTROLLED IN RESPONSE TO ESTIMATED RUNNING LOAD

Hiroshi Ohnishi, Katsuta; Kouji Kitano, Kagawa; Mitsuo Kayano, Hitachi, and Nobuo Kurihara, Hitachi, all of, Japan, assignors to Hitachi, Ltd., Japan

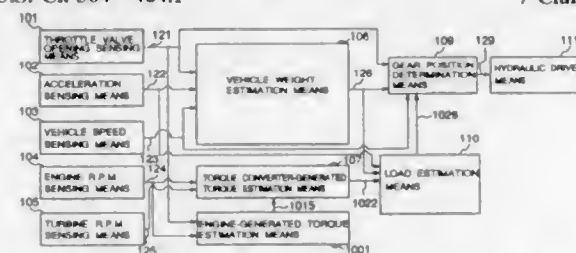
Filed Dec. 3, 1992, Ser. No. 985,199

Claims priority, application Japan, Dec. 3, 1991, 3-319205

Int. Cl.⁶ B60K 17/06

U.S. Cl. 364-424.1

7 Claims



1. System for controlling selection of gear position for an automatic transmission of an automobile comprising:

weight estimation means for estimating a total weight of said automobile;

acceleration input means for receiving an acceleration signal indicative of acceleration of said automobile;

output torque estimation means for estimating an output torque based on torque characteristics of a drive train of said automobile;

running load estimation means for estimating a running load from the estimated weight of the automobile, the acceleration, and the estimated output torque;

memory means for storing at least two shift schedules therein;

a shift schedule variable-control unit which determines a shift schedule of an automatic transmission of said drive train during actual running of said automobile on the basis of the estimated running load, the estimated weight of the automobile and the stored shift schedules; and

gear shift determination means for selecting a gear position of said automatic transmission based on the determined shift schedule;

wherein said output torque estimation means estimates said output torque based on torque characteristics of an engine of said drive train when a ratio between an input revolution speed and an output revolution speed of said torque converter is greater than a predetermined value, and based on torque characteristics of a torque converter of said automatic transmission when said ratio is less than said predetermined value.

5,510,983

ON-VEHICLE DISPLAY

Tadashi Iino, Shizuoka, Japan, assignor to Yazaki Corporation, Tokyo, Japan

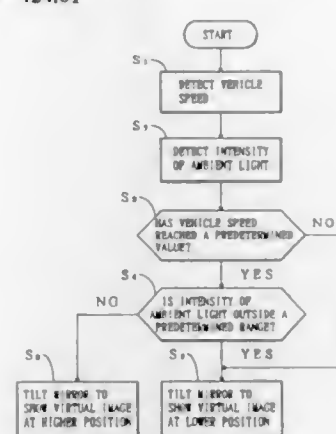
Filed Nov. 12, 1993, Ser. No. 151,118

Claims priority, application Japan, Nov. 13, 1992, 4-303654

Int. Cl.⁶ B60Q 1/54

U.S. Cl. 364-424.01

5 Claims



1. An on-vehicle display for displaying an image projected from within a dashboard of a vehicle, comprising:

- a windshield;
- a first reflecting surface defined by a lower end portion of the inner surface of the windshield, said first reflecting surface being operative to reflect an image projected from within the dashboard into a driver's eyes when the image falls on said first reflecting surface; and
- a second reflecting surface being fixed with respect to said windshield at a position lower than said first reflecting surface, said second reflecting surface being angularly displaced with respect to said first reflecting surface and being operative to reflect an image projected from within the dashboard into the driver's eyes when the image falls on said second reflecting surface;
- angularly adjustable image projecting means for projecting an image onto said first reflecting surface or said second reflecting surface;
- a light sensor; and
- a controller operative during a predetermined set of light conditions, as determined by said light sensor, to vary the disposition of said image projecting means to direct said image to various positions on said first reflecting surface when said vehicle operates over a higher range of speeds and to direct said image to various positions on said second reflecting surface when said vehicle operates over a range of speeds lower than said higher range of speeds;
- said controller including means operated in response to said light sensor to restrict the disposition of said image projecting means to direct said image to various positions on said second reflecting surface over the entire range of vehicle speeds when said light conditions are outside of said predetermined set of conditions;
- wherein the driver views a virtual image of the image projected from within the dashboard behind said first reflecting surface or said second reflecting surface.

5,510,984

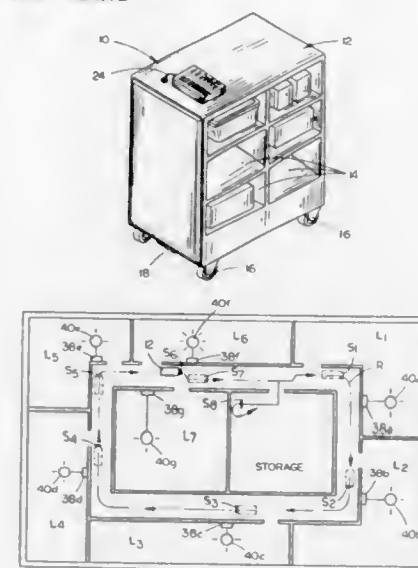
AUTOMATED GUIDED VEHICLE ENUNCIATOR SYSTEM

Rodney S. Markin, and Gary W. Kipp, both of Omaha, Nebr., assignors to Board of Regents-Univ. of Nebraska, Lincoln, Nebr.

Filed Nov. 28, 1994, Ser. No. 345,078

Int. Cl.⁶ G06F 15/50

U.S. Cl. 364-424.02



1. An enunciator system for an automated guided vehicle (AGV) traveling a circuitous route through a building having a plurality of designated locations, the AGV being of the type having an electrical control system for guiding and driving the vehicle along the route, and each designated location having individual identifier markings detectable by the AGV control system for recognizing and distinguishing each of said plurality of designated locations to the control system, comprising:

- a transmitter mounted on said AGV, with means for transmitting a first signal to a remote receiver;
- a first receiver mounted at a first of said plurality of designated locations, detecting the first signal from the transmitter and activating an alarm in response thereto;
- first alarm means mounted at said first location connected to said first receiver, for alerting a person at the first location of the detection of the first signal;
- an electrical control circuit connected to said AGV control system, including means for activating the transmitter to transmit the first signal upon detection of the identifier markings for said first location by the AGV control system; and
- a first switch connected to said control circuit and operable between an "on" position, permitting said means for activating the transmitter to transmit the first signal, and an "off" position, preventing said means for activating the transmitter from transmitting the first signal;
- said first receiver means for detecting the first signal and activating the first alarm means including means for continuously activating the first alarm for a predetermined period of time;
- said electrical control circuit including means for preventing the continued travel of the AGV for a period of time equal to the predetermined period of time for which the first alarm is continuously activated.

169-397 O.G.-96-21: QL3

5,510,985

SYSTEM FOR CONTROLLING DAMPING FORCE CHARACTERISTIC OF SHOCK ABSORBER OF VEHICLE

Fumiyuki Yamaoka; Toru Takahashi; Tetsuya Okamura, and Michiya Nakamura, all of Atsugi, Japan, assignors to Unisia Jecs Corporation, Japan

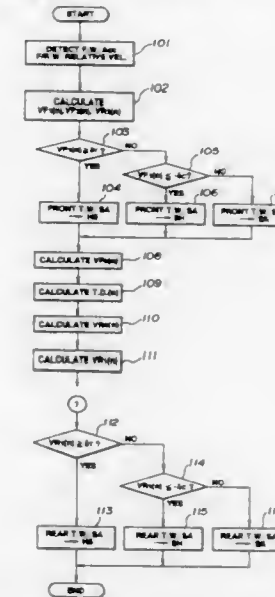
Filed Sep. 20, 1993, Ser. No. 123,470

Claims priority, application Japan, Sep. 29, 1992, 4-259739; Oct. 5, 1992, 4-266148; Oct. 20, 1992, 4-281410

Int. Cl.⁶ B60G 17/06

U.S. Cl. 364-424.05

25 Claims

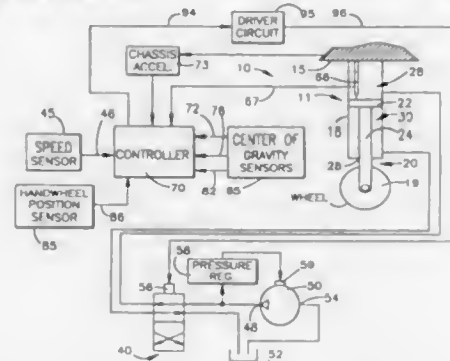


1. A system for controlling damping forces for respective shock absorbers of a vehicle, comprising:

- a) a plurality of shock absorbers, each shock absorber being interposed between a sprung mass and unsprung mass of the vehicle and located adjacent to a corresponding one of a front left tire wheel, front right tire wheel, rear left tire wheel, and rear right tire wheel of the vehicle;
- b) damping force characteristic changing means for changing a damping force characteristic of each shock absorber at either or both of stroke directions with respect to a piston of each shock absorber in response to an input control signal;
- c) front tire wheel side sprung mass vertical velocity determining means for determining a front tire wheel side sprung mass vertical velocity;
- d) front tire wheel side relative velocity determining means for determining a relative velocity between the sprung mass and unsprung mass of the vehicle at the front tire wheels side;
- e) means for deriving a front tire wheel side road surface input velocity from the front tire wheel side sprung mass vertical velocity and from the front tire wheel side relative velocity between the sprung mass and unsprung mass;
- f) rear tire wheel side sprung mass relative velocity determining means for determining a relative velocity between the sprung mass and unsprung mass at the rear tire wheels side;
- g) means for determining a rear tire wheel side sprung mass vertical velocity based on the rear tire wheel side relative velocity between the sprung mass and unsprung mass; and
- h) damping force characteristic controlling means for controlling the damping force characteristics of the shock absorbers located at the front tire wheels side on the basis of a first control signal determined on the basis of the front tire wheel side sprung mass vertical velocity via damping force characteristic changing means and for controlling the damping force characteristics of the shock absorbers located at the rear tire wheels side on the basis of a second control signal via said damping force characteristic changing means, the second control signal at the rear tire wheels side being determined on the

basis of said front tire wheel side road surface input velocity and on the basis of said rear tire wheel side sprung mass vertical velocity.

5,510,986
METHOD AND APPARATUS FOR CONTROLLING AN ACTIVE SUSPENSION SYSTEM
 Daniel E. Williams, Stuart, Fla., assignor to TRW Inc., Lyndhurst, Ohio
 Filed Mar. 14, 1994, Ser. No. 213,104
 Int. Cl.⁶ F16F 9/46
 U.S. Cl. 364—424.05 28 Claims



1. An apparatus for controlling a force actuator connected between a vehicle body and each vehicle wheel, the vehicle having a pair of front wheels and a pair of rear wheels, said apparatus comprising:

- a position sensor for sensing displacement between the vehicle body and each vehicle wheel and for providing a position signal indicative thereof;
- an acceleration sensor for sensing vertical inertial acceleration of the vehicle body relative to ground at each vehicle wheel and for providing an absolute inertial acceleration signal indicative of vertical inertial acceleration of the vehicle body at each vehicle wheel;

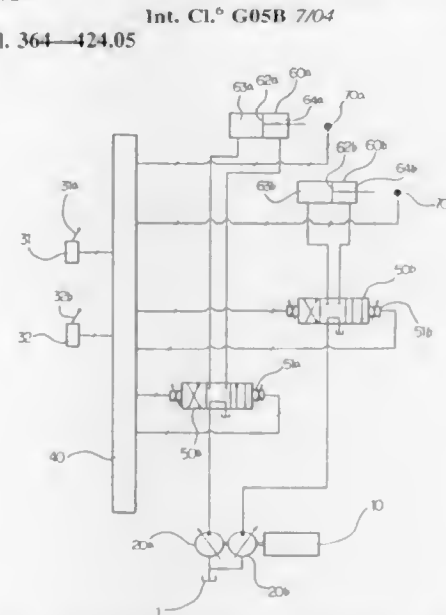
processing means including means for determining an absolute inertial velocity signal based on each absolute inertial acceleration signal;

said processing means including means for determining a first roll moment on the rear of the vehicle and a second moment on the front of the vehicle, said first and second roll moment having a roll moment distribution parameter;

said processing means including means for processing first and second moments and said position and absolute inertial velocity signals at the vehicle wheels to provide an absolute force actuator control signal at each vehicle wheel, the absolute force actuator control signals for the rear wheels varying as a function of said position and absolute inertial velocity signals and the roll moment on the rear wheels of the vehicle, the absolute force actuator control signals for the front wheels varying as a function of said position and absolute inertial velocity signals and the roll moment on the front wheels of the vehicle; and

means for applying said absolute force actuator control signal at each vehicle wheel to the associated force actuator to control operation of the force actuator for vehicle handling.

5,510,987
SHOCK PREVENTION APPARATUS FOR HYDRAULIC/AIR-PRESSURE EQUIPMENT AND METHOD THEREOF
 Myung-Hoon Song, Kyungki, Rep. of Korea, assignor to Samsung Heavy Industry Co., Ltd., Rep. of Korea
 Filed Oct. 20, 1994, Ser. No. 326,329
 Claims priority, application Rep. of Korea, Mar. 31, 1994, 1994-6729
 Int. Cl.⁶ G05B 7/04
 U.S. Cl. 364—424.05 7 Claims



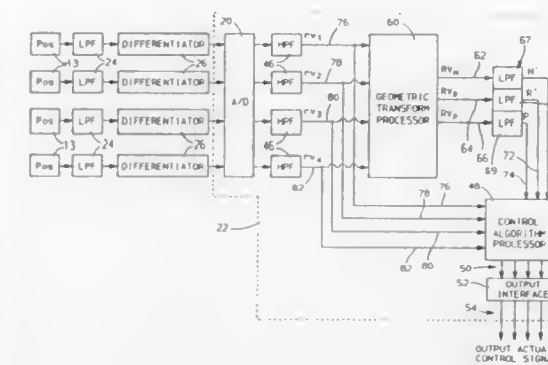
1. A shock prevention apparatus for equipment having at least one hydraulic/air pressure actuator performing mechanical work by hydraulic/air pressure and at least one valve for controlling the flow of oil/air to said actuator, comprising:

- at least one input means for generating an original actuator driving command signal; and
- controller means for receiving said original actuator driving command signal and data associated with the displacement of a piston of said actuator and said controller means generating a low-pass-filtered actuator driving command signal from said original actuator driving command signal and said data associated with the piston displacement of said actuator to control said valve by means of the low-pass-filtered actuator driving command signal.

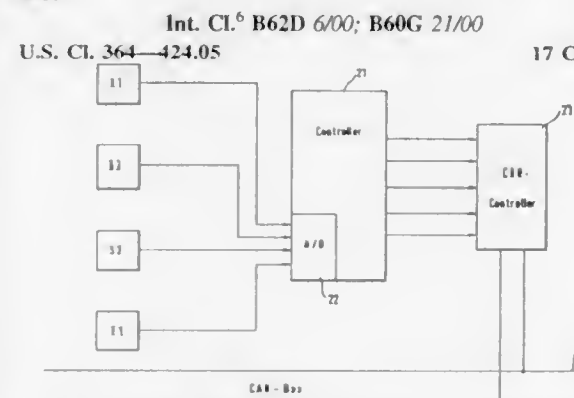
5,510,988
VEHICLE CHASSIS CONTROL SYSTEM
 Kamal N. Majeed, Centerville; Albert V. Fratini, Jr.; Scott A. Stacey, both of Kettering; Eric L. Jensen, Dayton, all of Ohio; Jay R. Varner, South Bend, Ind., and James W. Hauser, West Chester, Ohio, assignors to General Motors Corporation, Detroit, Mich., and Delco Electronics Corporation, Kokomo, Ind.
 Filed Dec. 19, 1994, Ser. No. 358,925
 Int. Cl.⁶ B60G 11/26; 17/08
 U.S. Cl. 364—424.05 23 Claims

1. A method for controlling an actuator in a chassis system on a vehicle, comprising the steps of:

- obtaining from a set of sensors, mounted on the vehicle to sense vertical motion between a set of vehicle wheels and a vehicle body suspended therefrom, a set of relative velocity signals between the set of vehicle wheels and a set of points on the suspended vehicle body;
- determining from the set of relative velocity signals a set of estimated absolute body modal velocity signals for the suspended vehicle body;
- deriving an actuator control signal from the set of estimated absolute body modal velocity signals; and
- applying the actuator control signal to the actuator.



5,510,989
SYSTEM FOR INFLUENCING THE TRAVEL DYNAMICS OF AN AUTOMOBILE
 Erich Zabler, Stutensee; Uwe Kassner, Moeglingen, and Bernd Maihoefer, Reutlingen, all of, Germany, assignors to Robert Bosch GmbH, Stuttgart-Feuerbach, Germany
 Continuation of Ser. No. 113,057, Aug. 25, 1993, abandoned.
 This application May 23, 1995, Ser. No. 447,499
 Claims priority, application Germany, Aug. 29, 1992, 42 28 893.2
 Int. Cl.⁶ B62D 6/00; B60G 21/00
 U.S. Cl. 364—424.05 17 Claims

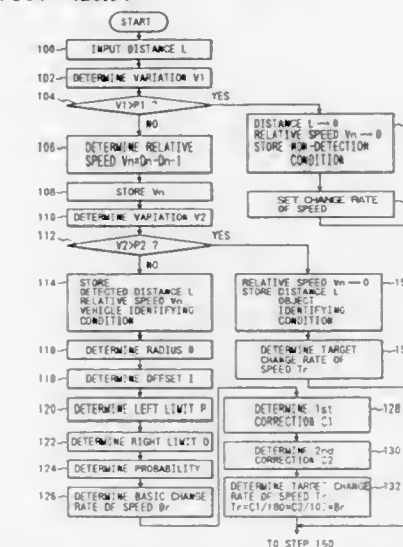


1. A system for influencing travel dynamics of a vehicle, the vehicle including a plurality of actuators which influence movements of the vehicle, said system comprising:

- first and second sensors for respectively sensing first and second movements of the vehicle and for providing respective first and second sensor output signals corresponding thereto, said first and second sensors mounted in close proximity to each other whereby vehicle movements and environmental influences affecting each of said sensors are substantially the same for each of said sensors, said first and second sensors including transverse sensitivities whereby said first and second sensor output signals respectively include components due to said respective second and first movements of said vehicle and which respective second and first movements are not desired to be measured by said respective first and second sensors;
- a first evaluation means for performing a first evaluation of said first and second sensor output signals and for providing corrected sensor output signals, said first evaluation comprising correcting for said transverse sensitivities of said first and second sensors by correcting said first sensor output signal as a function of said second sensor output signal based on characteristic dependency curves;
- a second evaluation means for activating one of a said actuators; and

linkage means for electronically connecting said first evaluation means and said second evaluation means.

5,510,990
SYSTEM FOR DISTINGUISHING A VEHICLE TRAVELING AHEAD BASED ON AN ADJUSTABLE PROBABILITY DISTRIBUTION
 Katsuhiko Hibino, Toyoake; Akira Kurahashi, Aichi, and Mitsufumi Hashimoto, Shizuoka, all of, Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan
 Filed Dec. 7, 1993, Ser. No. 162,276
 Claims priority, application Japan, Dec. 8, 1992, 4-328152
 Int. Cl.⁶ G06F 16/00
 U.S. Cl. 364—426.04 30 Claims



1. A system for detecting a preceding vehicle present ahead of a system vehicle equipped with the system, the system comprising: distance determining means for deriving distance data representing a distance between the system vehicle and an object detected ahead of the system vehicle if the detected object is within a preselected detection range;

curve determining means for determining curve data based on factors including a degree of a curve in a road on which the system vehicle is traveling;

probability distribution defining means for defining a probability distribution based on factors including a degree of a curve in the road and a distance between the detected object and the system vehicle, the probability distribution indicating a higher probability when the detected object is located at a central portion of a lane on which the system vehicle is traveling than when the detected object is located away from the central portion of the lane in a lateral direction;

probability determining means for determining a probability that the detected object is a preceding vehicle based on factors including the distance data derived by the distance determining means, the curve data determined by the curve determining means, and the probability distribution defined by the probability distribution defining means; and

change rate of speed determining means for determining a target change rate of speed of the system vehicle based on factors including a preselected relationship between the target change rate of speed and the probability determined by the probability determining means.

5,511,001

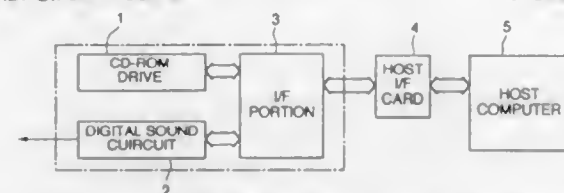
CD-ROM (COMPACT DISC READ-ONLY MEMORY) REGENERATIVE UNIT

Kazuo Ichihara, and Shingo Izuta, both of Daito, Japan, assignors to Funai Electric Co., Ltd., Daito, Japan
Filed May 14, 1993, Ser. No. 61,908

Claims priority, application Japan, May 19, 1992, 4-151549; Aug. 5, 1992, 4-229137

Int. Cl.⁶ G06F 17/00
U.S. Cl. 364-514 R

3 Claims



1. An independent CD-ROM playback unit connectable to an independent personal computer comprising:

- a CD-ROM drive for reading out audio data recorded optically on a CD-ROM and developing digital signals representative of the recorded audio data and connectable to an independent personal computer for reading out audio data outputs from the personal computer as digital signals;
- a digital sound circuit integral with the CD-ROM drive for converting digital signals into audio signals for playback;
- an interface circuit in said unit for controlling applying of the digital signal outputs from the CD-ROM drive to the digital sound circuit for conversion into audio signals and for connecting of the CD-ROM drive to said independent personal computer and controlling communications between the said independent personal computer and the CD-ROM drive and the digital sound circuit and the independent personal computer; and
- the CD-ROM drive, the digital sound circuit and said interface circuit being integrated as an independent unitary unit for housing thereof in a common housing.

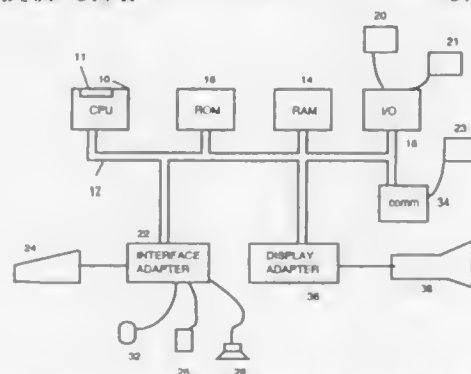
5,511,002

MULTIMEDIA PLAYER COMPONENT OBJECT SYSTEM
Steven H. Milne, Palo Alto; James M. Tindell, La Honda; John C. Tobias, II, Sunnyvale; Michael R. Dilts, Saratoga; Bradley A. Edelman, and Matthew Denman, Los Gatos, all of Calif., assignors to Taligent, Inc., Cupertino, Calif.

Filed Sep. 13, 1993, Ser. No. 120,269

Int. Cl.⁶ G06F 17/00
U.S. Cl. 364-514 R

37 Claims



1. A system for presenting multimedia data to a user, the system comprising:

- (a) a processor;
- (b) a storage under the control of and attached to the processor;
- (c) a multimedia device controlled by the processor for presenting the multimedia data to the user;
- (d) a multimedia component player object in the storage of the processor for managing the multimedia device, the multimedia component player object including at least one port for

exchanging multimedia information and including method commands for controlling the flow of multimedia data through the at least one port;

- (e) a multimedia device object for connecting the at least one port of the multimedia component player object to the multimedia device to exchange multimedia information therebetween; and
- (f) means under the control of the processor for executing the method commands for routing selected portions of the multimedia data from the multimedia component player object port through the multimedia device object to the multimedia device.

5,511,003

ENCODING AND DECODING VIDEO SIGNALS USING SPATIAL FILTERING

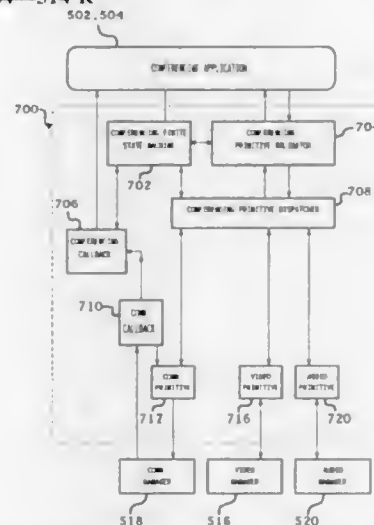
Rohit Agarwal, Beaverton, Oreg., assignor to Intel Corporation, Santa Clara, Calif.

Continuation of Ser. No. 158,855, Nov. 24, 1993. This application Jun. 29, 1994, Ser. No. 268,267

Int. Cl.⁶ G06F 17/00

U.S. Cl. 364-514 R

36 Claims



1. A computer-implemented process for encoding video signals, comprising the steps of:

- (a) generating a first reference frame corresponding to a first video frame;
- (b) generating pixel differences between the first reference frame and a second video frame;
- (c) encoding the second video frame in accordance with the pixel differences to generate an encoded second video frame;
- (d) decoding the encoded second video frame to generate decoded pixel differences;
- (e) generating a decoded second video frame in accordance with the decoded pixel differences and the first reference frame;
- (f) applying a spatial filter to the decoded second video frame to generate a second reference frame; and
- (g) encoding a third video frame using the second reference frame.

5,511,004

DIAGNOSTIC METHOD FOR AN EVOLUTIONARY PROCESS

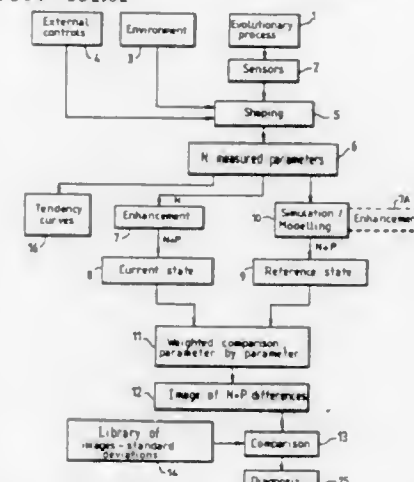
Laurent Dubost, Paris, and Jean-Noël Heude, Argenteuil, both of France, assignors to Thomson-CSF, Paris, France
PCT No. PCT/FR93/00527, § 371 Date Feb. 1, 1994, § 102(e)
Date Feb. 1, 1994, PCT Pub. No. WO93/24808, PCT Pub. Date Dec. 9, 1993

PCT Filed Jun. 2, 1993, Ser. No. 182,153

Claims priority, application France, Jun. 3, 1992, 92 06708
Int. Cl.⁶ G01D 1/14; G05B 23/02

U.S. Cl. 364-551.01

11 Claims



1. A diagnostic method for determining deviations of an evolutionary process, comprising the steps of: measuring a plurality of physical parameters characteristic of the evolutionary process;

calculating from the measured plurality of physical parameters a current state of the evolutionary process and a corresponding reference state of the evolutionary process;

first comparing the current state and the reference state physical parameter by physical parameter to generate relative differences between the current state and reference state for each parameter;

categorizing each parameter into one of a plurality of categories indicating a relevance of each parameter to a respective deviation in the evolutionary process;

determining for each respective deviation the relative difference between the current state and the reference state parameter by parameter which generate the respective deviation; and

diagnosing each respective deviation based on the category of each parameter and the parameter by parameter determined relative differences between the current state and the reference state which generate the respective deviation.

5,511,005

WAFER HANDLING AND PROCESSING SYSTEM

Robert C. Abbe, Newton; Noel S. Poduje, Needham Heights; Randal K. Goodall, North Chelmsford, all of Mass., and Peter Domenicali, Montpelier, Vt., assignors to ADE Corporation, Newton, Mass.

Filed Feb. 16, 1994, Ser. No. 197,394

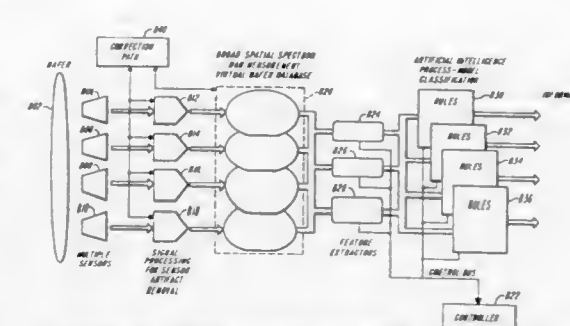
Int. Cl.⁶ G01R 31/265; G06F 17/60

U.S. Cl. 364-552

31 Claims

1. Apparatus for handling a disk comprising:

- a housing;
- a rotor disposed in said housing and having a central aperture for receiving said disk, said rotor having at least one gripping mechanism for retaining said received disk in a measurement position;
- a sensor for determining the location of a fiducial on said disk; and
- a motor for rotating said rotor relative to said housing, wherein said motor is operable to rotate said rotor prior to said



gripping mechanism retaining said disk so that said gripping mechanism avoids said fiducial when said disk is retained.

5,511,006

METHOD AND APPARATUS FOR DETERMINING AN AIR QUALITY LEVEL

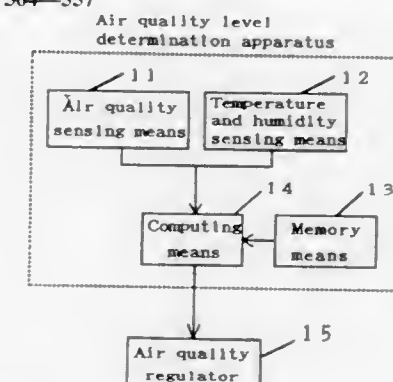
Hirokazu Tachibana, Kyoto, and Nobuyuki Yoshiike, Ikoma, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Aug. 9, 1993, Ser. No. 103,124

Claims priority, application Japan, Oct. 13, 1992, 4-274639
Int. Cl.⁶ A62B 11/00

U.S. Cl. 364-557

10 Claims



1. A method for determining an air quality level, comprising the steps of:

predetermining and storing a range of reference values of an air quality level utilizing conditions of air temperature and humidity;

sensing air temperature and humidity at a time subsequent to obtaining the predetermined and stored reference values and generating an output value of the sensed air temperature and humidity;

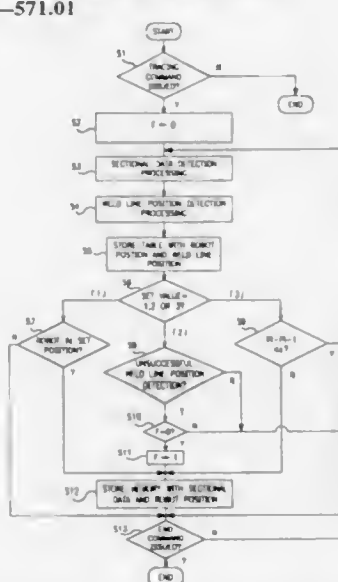
obtaining a threshold value of an air quality level from said reference values and said output value corresponding to a clean air state; and

comparing said threshold value and said output value to define a control value, wherein:

said predetermined and stored reference values are defined by various related temperatures and humidities and various temperature and humidity outputs at a clean state of the air quality; and

said threshold value is corrected by a preselected output correction amount from said reference values.

5,511,007
**DIAGNOSTIC METHOD FOR A REAL TIME SENSOR
 MOUNTED ON A ROBOT**
 Ryo Nihel; Yasuo Naito; Hiroshi Wakio, and Takashi Iwamoto,
 all of Oshino, Japan, assignors to Fanuc Ltd., Yamanashi,
 Japan
 PCT No. PCT/JP92/01081, § 371 Date Apr. 22, 1993, § 102(e)
 Date Apr. 22, 1993, PCT Pub. No. WO93/04339, PCT Pub.
 Date Apr. 3, 1993
 PCT Filled Aug. 26, 1992, Ser. No. 50,007
 Claims priority, application Japan, Aug. 27, 1991, 3-240473
 Int. Cl.⁶ G01P 21/00
 U.S. Cl. 364—571.01 6 Claims



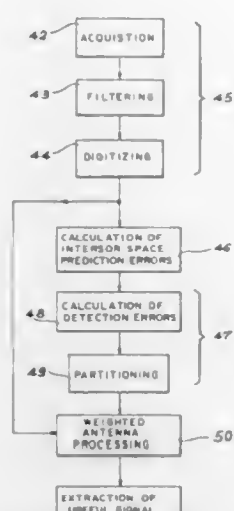
2. A diagnostic method for a real time sensor mounted on a robot and used to detect a position of an object on a real-time basis and to detect an operation target position, which is a location on the object that a particular operation is to be performed, said diagnostic method comprising the steps of:

- (a) detecting a position of the object with the sensor during operation of the robot to obtain object position data indicative of the object position;
- (b) analyzing the object position data obtained in said step (a) to determine operation target position data indicative of the operation target position;
- (c) storing the object position data obtained in said step (a) and the operation target position data determined in said step (b), along with robot position data indicative of designated robot positions at the time of the detection; and
- (d) diagnosing an operation state of the sensor by analyzing the object position data and operation target position data stored in said step (c) and, in response, adjusting parameters pertaining to the operation of the sensor.

5,511,008
PROCESS AND APPARATUS FOR EXTRACTING A
USEFUL SIGNAL HAVING A FINITE SPATIAL
EXTENSION AT ALL TIMES AND WHICH IS VARIABLE
WITH TIME

Bruno Flament, Grenoble, and Roland Blanpain, Entre-Deux-Guilers, both of, France, assignors to Commissariat a l'Energie Atomique, Paris, France
Filed Dec. 3, 1993, Ser. No. 161,787
Claims priority, application France, Dec. 14, 1992, 92 15027
Int. Cl.⁶ H03H 21/00

U.S. Cl. 364—572 10 Claims
1. A process for the extraction of a time-variable useful signal of finite spatial extension by an array of N sensors, N being equal to or greater than 3, receiving said useful signal from a magnetic object moving in the vicinity of this array, to which have been



added q spatially coherent additive noises, q being less than N , the measurements being performed on a sufficiently large surface to enable the detecting perimeter of each sensor of the array not to contain all the other sensors at once, said process comprising the following steps:

acquiring unprocessed signals on the output of each sensor,
band-pass filtering said signals in order to restrict to the frequency
band of the useful signals,
digitizing said filtered signals,
calculating space prediction error signals of the noise during
which:

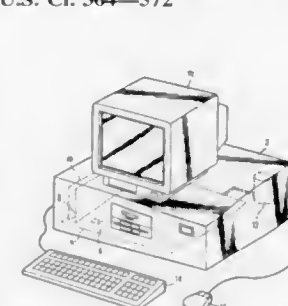
- a. a particular sensor from the array of N sensors is chosen,
- b. the remaining $N-1$ sensors are distributed into groups of the same size having q sensors, whereby the same sensor can belong to more than one group, and one group is used for constructing a prediction error signal if the q signals of the group are independent,
- c. for each admissible group of q sensors is constructed a spatial prediction of the signal of said particular sensor by constructing q transfer functions inherent in the chosen admissible group of q sensors and said particular sensor with the aid of elements of intersensor transfer functions characteristic of the distribution of the noises at all times and applied respectively to the signals of the sensors of the admissible group of q sensors considered and combining the q thus constructed signals for each group in order to construct the prediction signal of said particular sensor and
- d. the prediction of said particular sensor is compared by a comparison operator with the signal of said particular sensor in order to construct a prediction error signal on said particular sensor and

analyzing prediction error signals so as to carry out the detection of the useful signal and its separation from the q additive noises, wherein said analyzing prediction signals comprises the steps of calculating detection indexes, and

generating at all times a subdivision of the array of sensors into an array of sensors receiving the useful signal and noise and an array of sensors only receiving the noise, and weightings corresponding to said subdivision, and performing a weighted projection by associating the thus calculated weightings with the signal of each corresponding sensor for generating N weighted signals, and then applying an antenna processing method to the N weighted signals in order to carry out a source space/noise space separation, knowing the transfer functions of the noises, the N signals of the noise space being estimates of the useful signal present in each channel of the initial signal, and

wherein the steps a, b, c, and d are performed simultaneously for the N sensors and the admissible groups of q sensors of the network and this takes place at all times.

5,511,009
ENERGY-BASED PROCESS FOR THE DETECTION OF
SIGNALS DROWNED IN NOISE
Dominique Pastor, Saint Loubes, France, assignor to Sextant
Avionique, Meudon La Foret, France
Filed Apr. 7, 1994, Ser. No. 224,517
Claims priority, application France, Apr. 16, 1993, 93 04519
Int. Cl.⁶ H04B 15/00



1. A process for detecting a transmitted useful signal drowned in noise, comprising the steps of:

- receiving a noisy signal;
partitioning a portion of the received noisy signal into L frames
of N samples;
calculating energies of each of said L frames;
determining an optimum threshold, s;
preclassifying M of said L frames into a set Δ by using a
predetermined set of ratios, m, α_1 and α_2 which define char-
acteristic signal-to-noise ratios of the noisy signal;
calculating an average noise energy value, E_0 , from the frames
in Δ as determined in the preclassifying step; and
detecting for each frame not in set Δ if a useful signal exists by
using the average noise energy value, E_0 .

5,511,010
METHOD AND APPARATUS OF ELIMINATING
INTERFERENCE IN AN UNDERSAMPLED ELECTRICAL
SIGNAL

Mark A. Burns, Garland, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

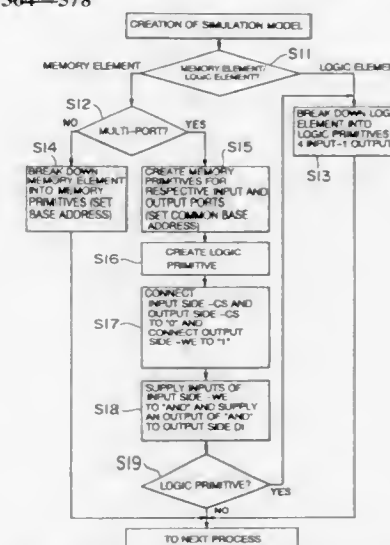
Filed Jun. 10, 1994, Ser. No. 258,049
Int. Cl.⁶ G06F 11/00
U.S. Cl. 364—574 14 Claims



1. A method of eliminating interference from an unsettled electrical signal, said unsettled electrical signal including a test signal at a known frequency, comprising the steps of:

- providing a digitized version of the undersettled signal;
generating a frequency spectrum of said digitized version of said undersettled electrical signal;
spectrally interpolating said frequency spectrum of said digitized version of said undersettled electrical signal to remove said test signal from said frequency spectrum to generate an interference signal frequency spectrum; and
subtracting said interference signal frequency spectrum from said undersettled electrical signal frequency spectrum to generate a settled signal spectrum.

5,511,011
METHOD AND APPARATUS FOR LOGIC SIMULATION
OF LOGIC SYSTEM INCLUDING MULTI-PORT
MEMORY
Minoru Saitoh, Kawasaki, Japan, assignor to Fujitsu Limited,
Kawasaki, Japan
Filed Apr. 30, 1993, Ser. No. 54,258
Claims priority, application Japan, May 8, 1992, 4-116230
Int. Cl.⁶ G06F 11/00



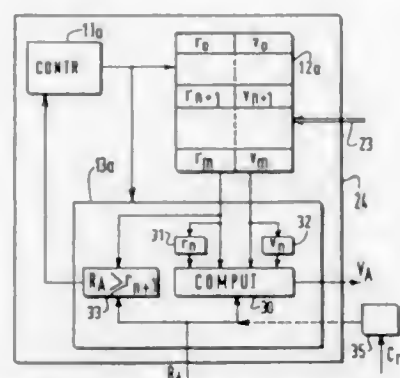
1. A logic simulation method for evaluating a logic system including a multi-port memory having a plurality of independently addressable ports, each of which is one of input and output ports, by use of logic simulation, comprising the steps of:

- constructing each of the input and output ports of said multi-port memory in a simulation model form using a corresponding plurality of memory primitives, said constructing step including the steps of:
- (1) setting said plurality of memory primitives representing the input and output ports of said multi-port memory to have a common base address, and
 - (2) creating logic primitives for effecting preset logic processes in connection with said respective memory primitives having said common base address by creating one of the logic primitives for transmitting an occurrence of a write operation of a memory primitive representing an input port to a memory primitive representing an output port; and
- evaluating the logic system using the constructed simulation model according to an event-driven simulation only when a status variation occurs in said logic system.

5,511,012
**APPARATUS COMPRISING A CIRCUIT HAVING AN
 INPUT/OUTPUT RESPONSE CONTROLLABLE BY A
 CONTROL SIGNAL, AND APPROXIMATION METHOD**
 Yannick Deville, Villecresnes, France, assignor to U.S. Philips
 Corporation, New York, N.Y.

Filed May 12, 1994, Ser. No. 241,839
Claims priority, application France, May 12, 1993, 9305716
Int. Cl.⁶ H03J 3/08

U.S. Cl. 364—579 7 Claims
1. An apparatus comprising: a signal transfer circuit which produces an output signal in response to an input signal thereto, the output signal being related to the input signal in accordance with a response value (R) of said circuit; means for supplying a control signal to said circuit which changes the response value (R) thereof in accordance with changes in the value (V) of said control signal; and calculation means for deriving second pairs (RA,VA) of response/control signal values on the basis of an approximation of



the relationship between measured first pairs (R_1, V_1) , (R_0, V_0) of response/control signal values; characterized in that:

- said apparatus further comprises coding means for deriving said approximation in the form of at least one linear regression function based on the measured first pairs of response/control signal values;
- said calculation means includes transcoding means which uses said linear regression function to transcode requested response values (REQ) into control signal values belonging to said second pairs of response/control signal values.

5,511,013

LOW POWER CONSUMPTION TYPE ONE-CHIP MICROCOMPUTER HAVING A PLURALITY OF PERIPHERAL CIRCUITS

Yusuke Tokieda, and Hiroshi Katsuta, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

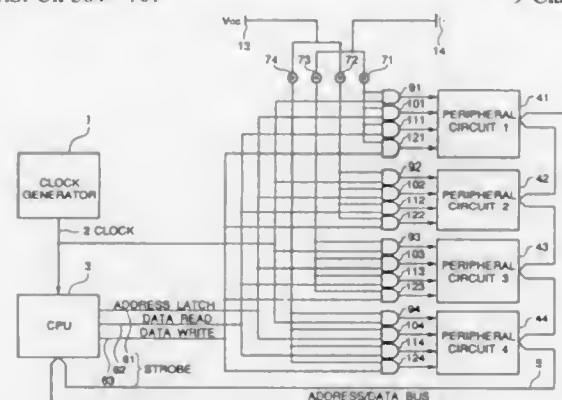
Filed Jul. 12, 1994, Ser. No. 274,004

Claims priority, application Japan, Jul. 12, 1993, 5-193857

Int. Cl. G06F 1/00

U.S. Cl. 364-707

9 Claims



I. A microcomputer comprising:

- a central processing unit;
 - a plurality of peripheral circuits accessed by said central processing unit for a reading/writing of said peripheral circuits;
 - selection means for generating a selection signal for each of said peripheral circuits, said selection signal being indicative of use or non-use of the corresponding peripheral circuit; and
 - means for controlling, without using a program instruction of the microcomputer, permission and inhibition of application of a clock signal and a strobe signal to each of said peripheral circuits on the basis of said selection signal for said each of said peripheral circuits,
- wherein said selection means comprises at least one external terminal of the microcomputer.

5,511,014 METHOD FOR DETERMINING THE TRANSMITTANCE OF A FILTER CIRCUIT ADAPTED TO TRANSFORM THE IMPULSE RESPONSE OF A FILTER INTO A MINIMAL PHASE RESPONSE AND FILTER IMPLEMENTING THIS METHOD

Christophe Mourot, Asnieres; Armelle Wautier, and Jean-Claude Dany, both of Gif-Sur-Yvette, all of, France, assignors to Alcatel N.V., Amsterdam, Netherlands

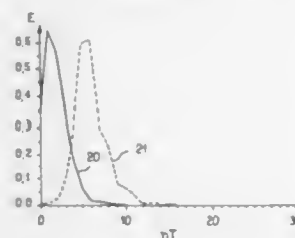
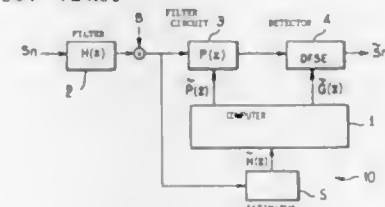
Filed Sep. 23, 1993, Ser. No. 125,663

Claims priority, application France, Sep. 25, 1992, 92 11467

Int. Cl. G06F 17/00

U.S. Cl. 364-724.01

17 Claims



13. A filter circuit located in a receiver providing received symbols to a detector via said filter circuit and associated with a filter such that a global impulse response of said filter and said filter circuit represents a minimal phase response, said filter circuit comprising:

- transversal filter means having a transmittance $P(z)$ for filtering said symbols;
- estimating means for estimating a frequency response $H(f)$ of the filter as a Fourier transform $\hat{H}(z)$ of the impulse response $H(z)$ of the filter; and

algorithm-based computation means, operatively connected between said estimator means and said transversal filter means, for determining a real part $a(f)$ of a cepstrum $\hat{H}(f) = \ln(H(f))$ of the frequency response $H(f)$ of the filter to thereby extract from said real part $a(f)$ an even part $p(f)$ and an odd part $q(f)$, for determining a cepstrum $\hat{G}(f) = \ln(G(f))$ of a global frequency response $G(f)$ from said even part $p(f)$ and said odd part $q(f)$ of said cepstrum $\hat{H}(f)$ of the impulse response $H(z)$ of said filter, for determining said global frequency response $G(f)$ from said cepstrum $\hat{G}(f)$, for determining a theoretical frequency response $C(f)$ of the transversal filter means responsive to said global frequency response $G(f)$ and the frequency response $H(f)$ of said filter, for calculating a theoretical transmittance $C(z)$ of the transversal filter means as an inverse Fourier transform of said theoretical frequency response $C(f)$ of the transversal filter means, for determining coefficients representing and estimated transmittance $\hat{P}(z)$ of the transversal filter means by truncating said theoretical transmittance $C(z)$ thereby retaining only a predetermined number of respective transmittance coefficients, and for providing said number of said coefficients so as to operate said transversal filter means.

5,511,015 DOUBLE-ACCUMULATOR IMPLEMENTATION OF THE CONVOLUTION FUNCTION

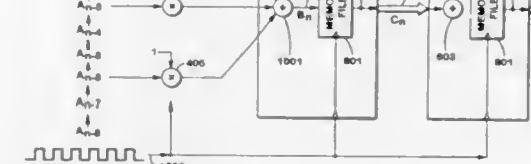
Stuart W. Flockencier, Cedar Hill, Tex., assignor to Loral Vought Systems Corporation, Grand Prairie, Tex.

Filed Nov. 30, 1993, Ser. No. 158,757

Int. Cl. G06F 17/15; 17/10

U.S. Cl. 364-728.01

9 Claims



full-modulus sum to compensate for the effect of the sign-extend means and addition of the reduced-modulus binary numbers;

whereby full-modulus addition is performed on reduced-width binary numbers by sign-extension and addition of the correction term during the subsequent step when signaled by the reduced-modulus carry-out and the sign bit.

5,511,018
MULTIPLIER, ESPECIALLY A SERIAL BIT MULTIPLIER, FREE FROM INTERNAL OVERFLOW, AND METHOD FOR PREVENTING INTERNAL OVERFLOW IN A MULTIPLIER

Alain Wittmann, Saint Martin d'Hères, and Freddy Balestro, Grenoble, both of, France, assignors to France Telecom, Paris, France

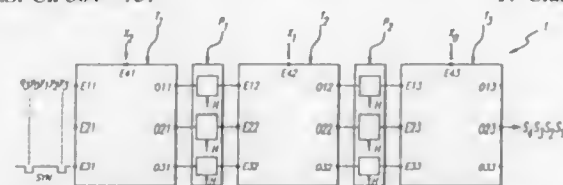
Filed May 9, 1994, Ser. No. 239,667

Claims priority, application France, May 19, 1993, 93 06068

Int. Cl.⁶ G06F 7/52

U.S. Cl. 364—757

17 Claims



1. Multiplier for least significant bit first multiplication of a multiplicand coded on n bits by a multiplier coefficient, said multiplier comprising processor means adapted for each bit of the decimal part of said multiplier coefficient between said least significant bit and a most significant bit to actually calculate the sum of rank $n+1$ obtained from partial products of said bit in question and the n bits of said multiplicand and from corresponding sums calculated for the preceding bit or bits of said multiplier coefficient, wherein said processor means comprises calculation means for calculating successive carries associated with sums of successive ranks, and wherein said processor means calculates, for each bit in question of the multiplier coefficient, the sum of rank $n+1$ from a complemented carry of rank n , in order to prevent internal overflow of said multiplier.

5,511,019
JOINT TRANSFORM CORRELATOR USING TEMPORAL DISCRIMINATION

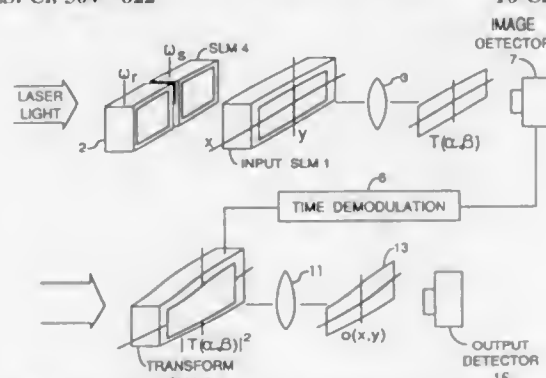
Thomas J. Grycewicz, Belmont; Jehad Khoury, Arlington, and Charles L. Woods, Stow, all of Mass., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Apr. 26, 1994, Ser. No. 234,523

Int. Cl.⁶ G06E 3/00; G02B 27/46; G06F 15/336

U.S. Cl. 364—822

16 Claims



1. Method of separating optical signals from their unwanted by-products comprising the steps of:

- providing at least two spatially modulated optical input signals;
- modulating at least one of said spatially modulated optical input signals in time;
- thereafter nonlinearly mixing said spatially modulated optical input signals to form a product signal modulated at temporal sum and difference frequencies of the spatially modulated optical input signals modulated in accordance with step (b);
- demodulating said product signal at the temporal sum or difference frequencies in order to recover those portions of the signal which are the result of mixing said optical input signals modulated in accordance with step (c); and
- inverse Fourier transforming the signal resulting from carrying out step (d).

5,511,020
PSEUDO-NONVOLATILE MEMORY INCORPORATING DATA REFRESH OPERATION

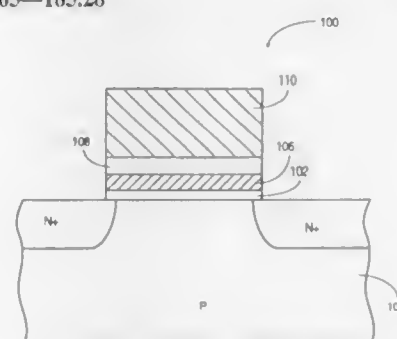
Chenming Hu, Alamo, and Fu-Chieh Hsu, Saratoga, both of Calif., assignors to Monolithic System Technology, Inc., San Jose, Calif.

Filed Nov. 23, 1993, Ser. No. 157,358

Int. Cl.⁶ G11C 13/00

U.S. Cl. 365—185.28

43 Claims



1. A pseudo-nonvolatile memory (PNVM) system comprising: a transistor comprising a substrate having a source region and a drain region spaced apart from the source region, a charge retaining region overlying the substrate and spaced apart therefrom, a control gate overlying the charge retaining region and spaced apart therefrom, a direct tunneling dielectric having a thickness less than a thickness of a Fowler-Nordheim tunneling dielectric, the direct tunneling dielectric juxtaposed with the charge retaining region, whereby transfer of charge occurs through the direct tunneling dielectric to the charge retaining region; and a refresher circuit coupled to the transistor, wherein the refresher circuit periodically refreshes the charge stored in the charge retaining region.

5,511,021
METHOD FOR PROGRAMMING A SINGLE EPROM OR FLASH MEMORY CELL TO STORE MULTIPLE LEVELS OF DATA THAT UTILIZES A FORWARD-BIASED SOURCE-TO-SUBSTRATE JUNCTION

Albert Bergemont, and Min-hwa Chi, both of Palo Alto, Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

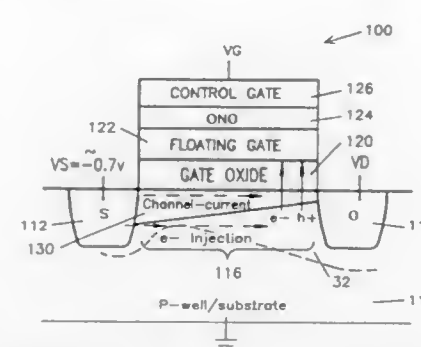
Filed Feb. 22, 1995, Ser. No. 394,171

Int. Cl.⁶ G11C 11/40

U.S. Cl. 365—185.03

5 Claims

1. A method for programming a single floating-gate memory cell to store one of three or more threshold voltages, the memory cell having a source formed in a substrate, a drain formed in the substrate a distance apart from the source, a floating gate formed



over the substrate, and a control gate formed over the floating gate, the method comprising the steps of:

- selecting one of three or more programming voltages as a selected programming voltage, the three or more programming voltages corresponding to said three or more threshold voltages;
- applying a first voltage to the substrate;
- applying a second voltage to the source so that a source-to-substrate junction is forward-biased;
- applying a third voltage to the drain so that a drain-to-substrate junction is reverse-biased; and
- applying the selected programming voltage to the control gate of the memory cell for a predetermined time.

5,511,022
DEPLETION MODE NAND STRING ELECTRICALLY ERASABLE PROGRAMMABLE SEMICONDUCTOR MEMORY DEVICE AND METHOD FOR ERASING AND PROGRAMMING THEREOF

Hyung-Kyu Yim, and Woong-Moo Lee, both of Seoul, Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Continuation of Ser. No. 359,686, May 31, 1989, abandoned.

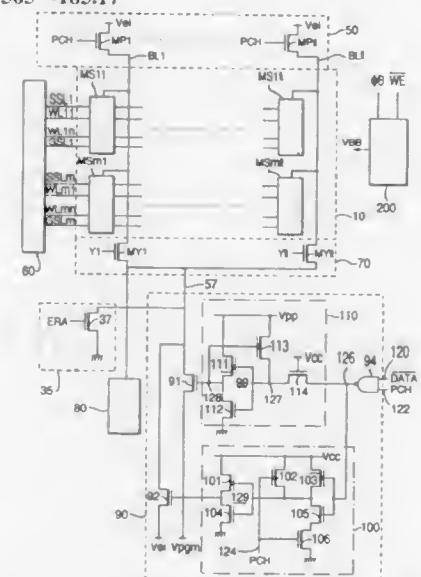
This application Aug. 21, 1995, Ser. No. 517,197

Claims priority, application Rep. of Korea, Dec. 15, 1988, 1988-16714

Int. Cl.⁶ G11C 16/06

U.S. Cl. 365—185.17

33 Claims



1. An electrically erasable programmable semiconductor memory device, comprising:

- a plurality of bit lines arranged in columns;
- a data line;
- a plurality of string selection lines arranged in rows;
- a plurality of ground selection lines arranged in rows;
- a plurality of word lines arranged in rows;

a plurality of memory strings arranged in columns, each of said memory string having a string selecting transistor, a plurality of floating-gate transistors and a ground selection transistor with respective drain-source paths coupled in series;

a memory cell array wherein a drain of the string selection transistor and a source of the ground selection transistor in each memory string of the same column, are each coupled with the bit line and the ground of a corresponding column, and wherein a gate of the string selection transistor, each control gate of the floating-gate transistors and a gate of the ground selection transistor in each memory string of a same row, are respectively coupled with a string selection line, word lines and a ground selection line;

row selection means coupled to the string selection line, the word lines and the ground selection line from memory strings for each row, for applying a given voltage according to either one of erase, program and read operations to selected word lines and unselected word lines, and the string and ground selection lines extending from the memory strings in a single row specific according to an input row address;

precharge means coupled with each bit line, for precharging unselected bit lines with an erase prevention voltage during the program operation;

column selection means coupled between the bit lines and the data line, for electrically connecting a selected bit line to said data line according to an input column address during the program and read operations and connecting all the bit lines to said data line during the erase operation;

ground selection means coupled to said data line, for grounding all the bit lines during the erase operation; and

program control means coupled to said data line, for providing said selected bit line with one of a program voltage and an erase prevention voltage in response to input data during the program operation, said program control means comprising:

- a logic gate for providing first and second logic signals in response to the input data and a precharge signal;
- a first transistor having a drain-source path connected between said data line and a program voltage terminal;
- a second-transistor having a drain-source path connected between said data line and an erase prevention voltage terminal;
- high-voltage switching means coupled between said logic gate and a gate of the first transistor, for enabling conduction of said first transistor in response to said first logic signal; and
- an AND gate coupled between said logic gate and a gate of the second transistor, for enabling conduction of said second transistor in response to said second logic signal and said precharge signal.

5,511,023
METHOD AND CIRCUIT CONFIGURATION FOR DEBITING A DEBIT CARD

Hartmut Schrenk, Haar, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed May 10, 1994, Ser. No. 240,928

Claims priority, application Germany, May 10, 1993, 43 15 542.1

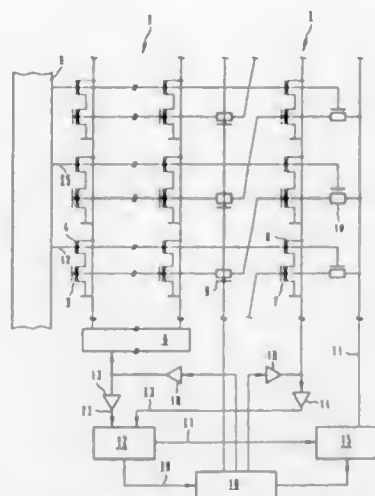
Int. Cl.⁶ G11C 7/00

U.S. Cl. 365—189.01

9 Claims

1. A method for debiting an integrable electronic circuit of a debit card, wherein the electronic circuit comprises a nonvolatile, electrically erasable and writable counter memory operated as a multi-stage counter with counter stages, and wherein the electronic circuit further comprises a nonvolatile, electrically erasable and writable check memory having check memory regions associated with respective counter stages of the counter memory, the method which comprises:

- defining at least two different weighting thresholds,
- reading at least one memory cell of each of the counter memory and the check memory with the at least two different weight-



ing thresholds, and controlling a counting process in the counter memory as a function of results obtained in the reading step.

5,511,024

DYNAMIC RANDOM ACCESS MEMORY SYSTEM

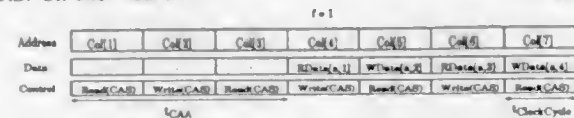
Frederick A. Ware, Los Altos Hills; John B. Dillon; Richard M. Barth, both of Palo Alto; Billy W. Garrett, Jr., Mountain View; John G. Atwood, Jr., San Jose, and Michael P. Farmwald, Portola Valley, all of Calif., assignors to Rambus, Inc., Mountain View, Calif.

Division of Ser. No. 71,177, Jun. 2, 1993. This application
Feb. 25, 1994, Ser. No. 201,981

Int. Cl.⁶ G06F 1/12

U.S. Cl. 365—189.04

3 Claims



1. A dynamic random access memory (DRAM) system, comprising:

- a DRAM array accessed according to a row address and a column address;
- array address/control circuitry coupled to an external bus for receiving the row and column addresses and control information to access the DRAM array;
- data input/output circuitry coupled to the bus for receiving data to be written in the DRAM array during a write access of the DRAM array and for transmitting data read from the DRAM array to the bus during a read access of the DRAM array;
- latency control circuitry for controlling the latency incurred during the write access of the DRAM array to equal the latency incurred during the read access of the DRAM array;
- circuitry for interleaving the read and write accesses of the DRAM array, wherein when (1) the latency of the write access is controlled to be equal to that of the read access and (2) the read and write accesses are interleaved, each clock cycle of the bus is utilized to communicate information.

5,511,025 WRITE PER BIT WITH WRITE MASK INFORMATION CARRIED ON THE DATA PATH PAST THE INPUT DATA LATCH

Scott E. Smith, Sugar Land; Duy-Loan T. Le, Missouri, and Michael Ho, Houston, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

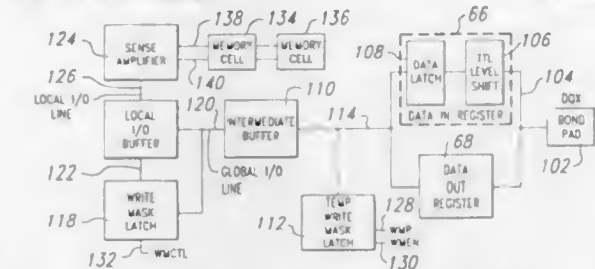
Continuation of Ser. No. 138,571, Oct. 18, 1993, abandoned.

This application Dec. 21, 1994, Ser. No. 361,901

Int. Cl.⁶ G11C 7/00

U.S. Cl. 365—189.05

9 Claims



1. A dynamic random access memory device formed on a substrate of semiconductor material and providing a write per bit feature, the device comprising:

- a semiconductor component;
- a data path on the substrate that extends from a data bond pad through the semiconductor component to an input-output buffer for exchanging data signals between the bond pad and the input-output buffer; and
- a write mask latch coupled to the data path, the write mask latch receiving mask write information applied to the bond pad and transmitted on the data path through the semiconductor component, the write mask latch coupled to the input-output buffer for controlling transmission of data signals there-through.

5,511,026 BOOSTED AND REGULATED GATE POWER SUPPLY WITH REFERENCE TRACKING FOR MULTI-DENSITY AND LOW VOLTAGE SUPPLY MEMORIES

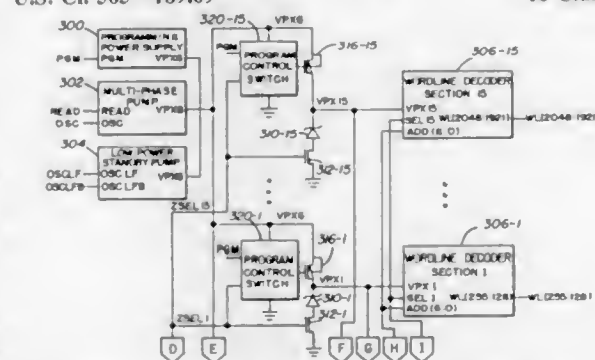
Lee E. Cleveland, and Shane C. Hollmer, both of Santa Clara, Calif., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Dec. 1, 1993, Ser. No. 160,578

Int. Cl.⁶ G11C 7/00; H03L 1/00

U.S. Cl. 365—189.09

18 Claims



1. A gate power supply for supplying power to a gate of an array cell in a memory array, the memory array being programmable using a verify cycle to verify programming of a given state in a plurality of possible states stored by the array cell and readable using a read cycle to read the given state of the array cell once the verify cycle is complete, the gate power supply connected to a power supply output, the power supply output connectable for providing a first power supply signal, Vcc, having a given magnitude, wherein if the first power supply signal was provided to the gate of the array cell, a working margin would exist between the plurality of possible states, the gate power supply comprising:

a voltage pump having an input connected to the power supply output and an output coupled to the gate of the array cell, the voltage pump for receiving the first power supply signal and boosting the given magnitude of the first power supply signal to provide a boosted signal to the gate of the array cell during the read cycle so that the working margin is increased.

5,511,027 SEMICONDUCTOR MEMORY APPARATUS HAVING A PLURALITY OF WORD LINE DRIVE CIRCUITS

Mitsuru Shimizu, Sakura, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 186,374, Jan. 25, 1994, abandoned.

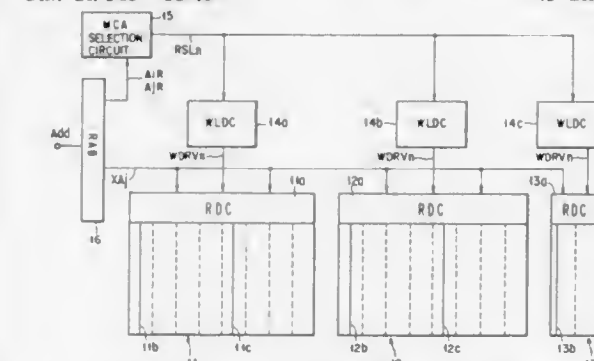
This application Jun. 2, 1995, Ser. No. 459,948

Claims priority, application Japan, Jan. 25, 1993, 5-009904; Dec. 24, 1993, 5-325602

Int. Cl.⁶ G11C 7/00; 8/00

U.S. Cl. 365—189.09

43 Claims



8. A semiconductor memory apparatus, comprising: a plurality of memory cell arrays, each memory cell array including a plurality of word lines;
- a plurality of selecting circuits, each selecting circuit selecting word lines of a respective corresponding one of said memory cell arrays in accordance with an address signal, said plurality of selecting circuits being operable such that word lines in different memory cell arrays are selected simultaneously; and
- a plurality of word line driving circuits, each word line driving circuit generating and supplying word line driving voltages to a respective corresponding one of said selecting circuits, whereby selected word lines in each respective memory cell array are driven by word line driving voltages supplied by a different one of said word line driving circuits.

5,511,028 REDUNDANCY ENABLE CIRCUIT CAPABLE OF ACHIEVING INCREASE IN REPAIR EFFICIENCY

Jong G. Nam, Ichonkun, Rep. of Korea, assignor to Hyundai Electronics Industries Co., Ltd., Rep. of Korea

Filed Dec. 28, 1994, Ser. No. 365,029

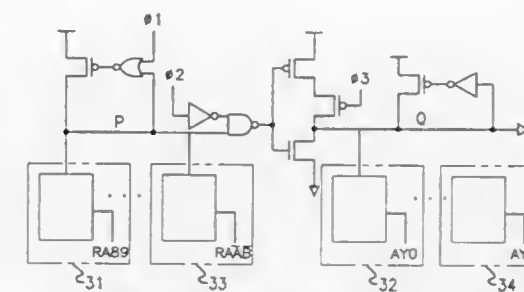
Claims priority, application Rep. of Korea, Dec. 29, 1993, 1993-30851

Int. Cl.⁶ G11C 7/00

U.S. Cl. 365—200

5 Claims

1. A redundancy enable circuit of a semiconductor memory device, comprising: address input means, including a plurality of repair fuses and a plurality of pass transistors respectively connected to the plurality of repair fuses, for respectively receiving address signals including address signals which are necessary for a refresh option and address signals which are unnecessary for the refresh option, the address input means allowing the necessary address signals to be inputted respectively at corresponding ones of the pass transistors to thereby control the pass transistors to which the address signals are inputted while preventing the unnecessary address signals from being



inputted respectively at corresponding ones of the pass transistors, whereby an increased repair efficiency is obtained.

5,511,029 TEST CIRCUIT IN CLOCK SYNCHRONOUS SEMICONDUCTOR MEMORY DEVICE

Seiji Sawada, and Yasuhiro Konishi, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

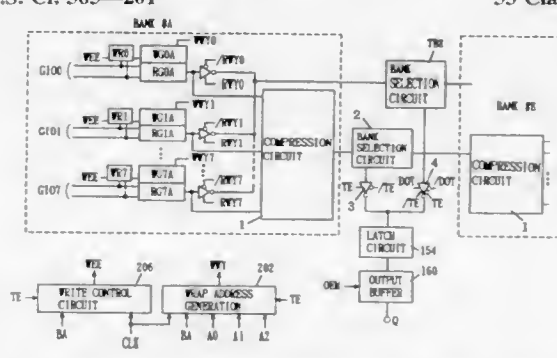
Filed May 19, 1994, Ser. No. 246,582

Claims priority, application Japan, May 25, 1993, 5-122439

Int. Cl.⁶ G11C 7/00

U.S. Cl. 365—201

33 Claims

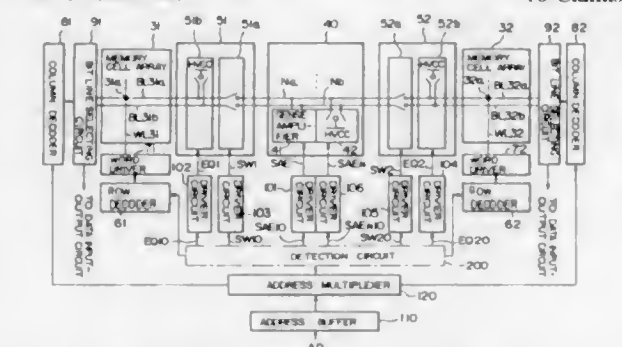


9. A synchronous type semiconductor memory device operating in synchronization with a clock signal, comprising: data output means for externally supplying received data in synchronization with said clock signal;
- a memory cell array having a plurality of memory cells;
- selection means responsive to an address signal received in synchronization with said clock signal for simultaneously selecting a predetermined number of said memory cells in said memory cell array,
- said predetermined number being a multiple of a number of data bits which said data output means can externally supply at a time;
- read means responsive to a read mode designating signal received in synchronization with said clock signal for simultaneously reading and storing data of said predetermined number of memory cells selected by said selection means; and
- compression means responsive to a test mode designating signal designating a test mode of operation for compressing the data of the predetermined number of cells stored in said read means to a one-bit data indicating whether or not a defective memory cell is included in said predetermined number of memory cells for external outputting.

5,511,030
SEMICONDUCTOR MEMORY DEVICE AND METHOD OF DRIVING SAME
 Yasuhiro Tanaka; Tetsuya Tanabe, and Satoru Tanoi, all of Tokyo, Japan, assignors to OKI Electric Industry Co., Ltd., Tokyo, Japan

Filed Aug. 24, 1994, Ser. No. 296,364
 Claims priority, application Japan, Aug. 31, 1993, 5-216028
 Int. Cl.⁶ G11C 7/00

U.S. Cl. 365—203 16 Claims



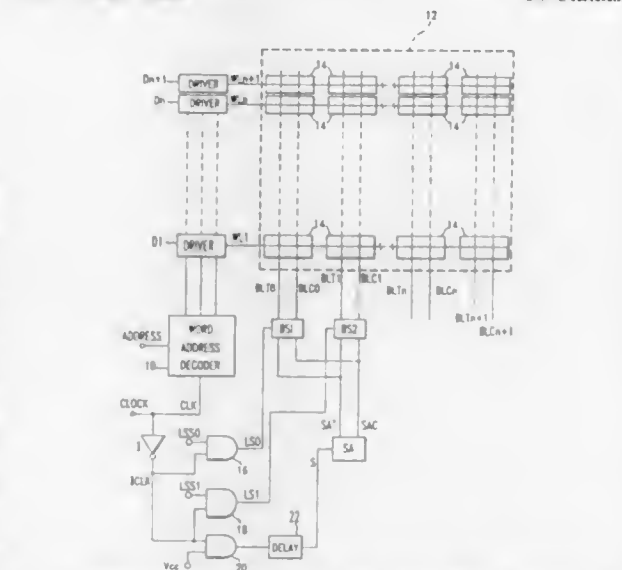
1. A semiconductor memory device comprising:
 - a first memory circuit including a first word line, a first bit line pair intersecting said first word line and a memory cell connected to a point where said first word line and said first bit line pair intersect;
 - a second memory circuit including a second word line, a second bit line pair intersecting said second word line and a memory cell connected to a point where said second word line and said second bit line pair intersect;
 - a sense amplifier having a pair of nodes provided so as to correspond to said first bit line pair and to said second bit line pair and means for amplifying a differential voltage between said pair of nodes;
 - a reset circuit for resetting the voltages on the two nodes of said pair of nodes to a predetermined voltage;
 - a first changeover element for connecting said first bit line pair and said pair of nodes to one another;
 - a second changeover element for connecting said second bit line pair and said pair of nodes to one another;
 - a first equalization element connected to said first bit line pair, for setting said first bit line pair to a first equalization potential;
 - a second equalization element connected to said second bit line pair, for setting said second bit line pair to a second equalization potential;
 - a first drive circuit for turning off said first changeover element after an access to said memory cell in said first memory circuit;
 - a second drive circuit for activating said first equalization element after a deactivation of said first word line following the turning off of said first changeover element;
 - a third drive circuit for causing a first operation for deactivating said first word line and a second operation overlapping the first operation in time, for activating said first equalization element after the turning off of said first changeover element, and for activating said reset circuit for resetting the voltages on the two nodes of said pair of nodes to the predetermined voltage;
 - a fourth drive circuit for activating said second equalization element for setting said second bit line pair to the second equalization potential to enable information stored in said second memory circuit to be transferred to said second bit line pair;
 - a fifth drive circuit for driving said second changeover element to transfer information stored in said memory cell in said second memory circuit to said pair of nodes after said pair of nodes has been reset;
 - a sixth drive circuit for driving said sense amplifier to amplify the differential voltage between the two nodes of said pair of nodes; and

detecting means for detecting that said second memory circuit has been selected after the selection of said first memory circuit, and adapted to independently control said first, second, third, fourth, fifth and sixth drive circuits.

5,511,031
SEMICONDUCTOR MEMORY SYSTEM HAVING SENSE AMPLIFIER BEING ACTIVATED LATE DURING CLOCK CYCLE
 David B. Grover, South Hero; Edward F. O'Neil, III, and Robert A. Ross, Jr., both of Essex Junction, all of Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 31, 1994, Ser. No. 298,649
 Int. Cl.⁶ G11C 7/02

U.S. Cl. 365—208 14 Claims

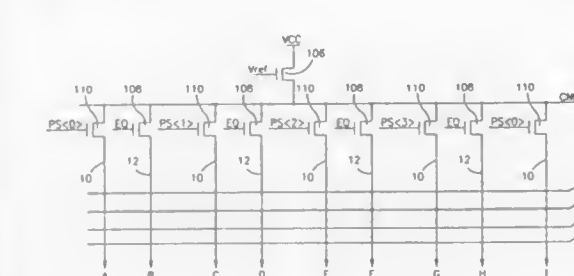


1. A memory system comprising an array having a plurality of memory cells, each of said memory cells having a cell voltage signal having one of a plurality of predetermined voltage magnitudes stored therein,
 - a sense amplifier,
 - a system clock having a voltage with a first phase of a given voltage magnitude and a subsequent second phase of a voltage magnitude significantly different from the given voltage magnitude,
 - means responsive to the first phase of the voltage of said system clock for applying the cell voltage signal from a selected one of said memory cells to an input of said sense amplifier, and
 - means responsive to the second phase of the voltage of said system clock and to a given voltage signal of a given voltage magnitude having its onset delayed with respect to the onset of the second phase of the voltage of said system clock for enabling said sense amplifier at a time subsequent to the arrival of the cell voltage signal at the input of said sense amplifier.

5,511,032
SOURCE PRE-CHARGE SYSTEM IN A MEMORY ARRAY
 William Kammerer, Mountain View, Calif.; Baruch R. Friedlander, and Yaron Slezak, both of Haifa, Israel, assignors to WaferScale Integration, Inc., Fremont, Calif.

Filed May 17, 1994, Ser. No. 245,087
 Int. Cl.⁶ G11C 7/00

- U.S. Cl. 365—230.06 7 Claims
1. A memory array comprising:
 - a multiplicity of source lines for reading;
 - a common bit line (CNBL);



U.S. Cl. 365—230.06 5 Claims

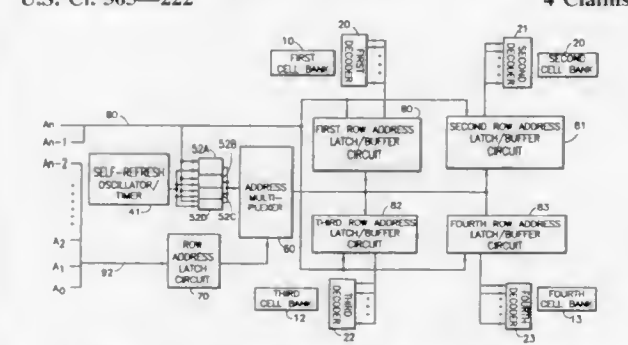
1. An addressing system comprising:
 - a plurality of address decoded control signals;
 - a multiplicity of groups of source pull-up transistors, each source pull-up transistor connecting one of said source lines to said CNBL line, wherein each group of source pull-up transistors is controlled by one of said address decoded control signals and, when one of said address decoded control signals is inactive, its corresponding group of source pull-up transistors disconnect a group of source lines from said CNBL line;
 - a source decoder connected to said multiplicity of source lines for discharging a portion of said group of disconnected source lines.

5,511,033
HIDDEN SELF-REFRESH METHOD AND APPARATUS FOR SYNCHRONOUS DYNAMIC RANDOM ACCESS MEMORY
 Chang H. Jung, Kyongki-do, Rep. of Korea, assignor to Hyundai Electronics Industries Co., Ltd., Kyongki-do, Rep. of Korea

Filed Nov. 8, 1994, Ser. No. 335,648
 Claims priority, application Rep. of Korea, Nov. 8, 1993, 93-23636

Int. Cl.⁶ G11C 11/34 4 Claims

U.S. Cl. 365—222



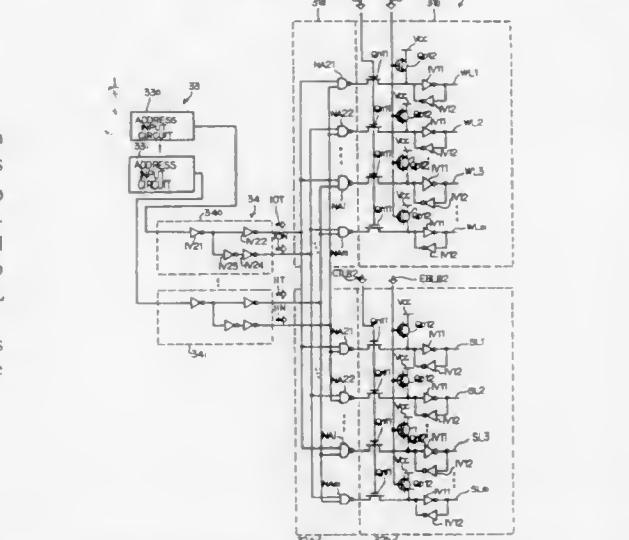
1. A method of controlling a hidden self-refresh operation of a synchronous dynamic random access memory having at least two cell banks, each of said cell banks including a plurality of cell arrays, comprising the steps of:
 - inputting an external first address signal for addressing any one of said cell banks;
 - generating a refresh address signal for addressing any one of the plurality of cell arrays in one of said cell banks corresponding to a logical value of said first address signal;
 - inputting an external second address signal for addressing any one of said cell arrays in said cell banks;
 - selecting successively said second address signal and said refresh address signal; and
 - latching said successively selected address signals dispersedly to said cell banks according to the logical value of said first address signal in such a manner that respective applications of said second address signal and said refresh address signal to said cell banks coincide partially with each other.

5,511,034
SIMPLE TEMPORARY INFORMATION STORAGE CIRCUIT CONTROLLABLE WITH ENABLE/RESET SIGNAL
 Yutaka Hirata, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jul. 29, 1994, Ser. No. 282,429
 Claims priority, application Japan, Jul. 30, 1993, 5-189931

Int. Cl.⁶ G11C 8/00

U.S. Cl. 365—230.06 5 Claims



1. An addressing system comprising:
 - a plurality of address predecoder circuits for producing address predecoded signals from address bits indicative of a plurality of addresses in a time division multiplexing sequence;
 - a first address decoder unit coupled to said plurality of address predecoders for producing first address decoded signals;
 - a plurality of first temporary information storage circuits responsive to a first and a second control signals in a first phase for temporarily storing said first address decoded signals;
 - a second address decoder unit coupled to said plurality of address predecoders for producing second address decoded signals, and
 - a plurality of second temporary information storage circuits responsive to said first and second control signals in a second phase after said first phase for temporarily storing said second address decoded signals.

5,511,035
OPTICAL RANDOM ACCESS MEMORY HAVING DIFFRACTIVE SIMPLEX IMAGING LENS
 James T. Russell, Bellevue, Wash., assignor to Information Optics Corporation, Issaquah, Wash.

Continuation-in-part of Ser. No. 815,924, Dec. 30, 1991. This application Jul. 7, 1994, Ser. No. 272,672

Int. Cl.⁶ G11C 11/42 12 Claims

1. An optical data system including: an optical data means for storing data as light altering characteristics and being organized into a plurality (P) of juxtaposed data regions each having capacity to store (B) bits of data; controllable light source means for selectively illuminating at least one of said juxtaposed data regions of said optical data means; data imaging lens means having a plurality of juxtaposed lenslets characterized in that said lenslets are each a diffractive surface arranged in such proximity to and in optical registration with a separate one of said juxtaposed data regions and shaped to coact with an intensity lobe of light from each data bit to form a virtual stop beyond each said lenslet to cause a uniform image of said separate one of said juxtaposed data regions on a common image surface spaced from said data means

5,511,041

PROCESS FOR SETTING THE TRANSMISSION FREQUENCY OF A DISTANCE MEASURING INSTRUMENT OPERATING ACCORDING TO THE ECHO-SOUNDING PRINCIPLE

Bernhard Michalski, Maulburg, Germany, assignor to Endress + Hauser GmbH + Co., Germany

PCT No. PCT/EP93/02630, § 371 Date Jun. 1, 1994, § 102(c)

Date Jun. 1, 1994, PCT Pub. No. WO94/08252, PCT Pub. Date Apr. 14, 1994

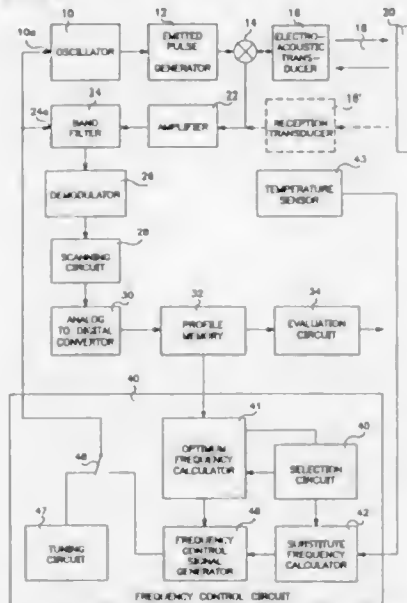
PCT Filed Sep. 28, 1993, Ser. No. 244,592

Claims priority, application Germany, Oct. 2, 1992, 42 33 257.5

Int. Cl. G01S 15/08

U.S. Cl. 367-99

25 Claims



1. A process for determining and setting an optimum transmission frequency of a distance measuring instrument operating according to an echo-sounding principle, including at least one electro-acoustic transducer for emitting sonic or ultrasonic pulses and for converting received sonic or ultrasonic signals into electric received signals, a frequency-adjustable oscillator for generating an electric signal having a frequency corresponding to the transmission frequency of the sonic or ultrasonic pulses which are to be transmitted for activating the electro-acoustic transducer, and an evaluation circuit for determining the travelling time of the sonic or ultrasonic pulses as a measure of the distance of a target object, the process for determining and setting the optimum transmission frequency comprising the steps of generating an amplitude-time-profile of the received signals during each of a plurality of reception intervals following the emission of a sonic or ultrasonic pulse, integrating each amplitude-time-profile to produce a plurality of integrated values for different transmission frequencies, storing the integrated values, and tuning the transmission frequency to a selected frequency corresponding to a maximum integrated value.

5,511,042

ENHANCED ADAPTIVE STATISTICAL FILTER PROVIDING IMPROVED PERFORMANCE FOR TARGET MOTION ANALYSIS NOISE DISCRIMINATION

Francis J. O'Brien, Jr., Newport, R.I., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

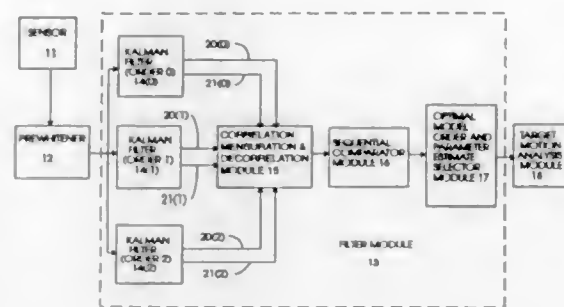
Filed May 25, 1995, Ser. No. 449,475

Int. Cl. G01S 15/66

U.S. Cl. 367-135

12 Claims

1. An adaptive statistical filter system for receiving data streams comprising a series of data values from a sensor associated with successive points in time, each said data value including a data



component representative of the kinematics of the relative positions of an object and the sensor and a noise component, with the noise components of data values associated with proximate points in time being correlated, the system including:

a prewhitener for receiving the data stream from the sensor and generating a corrected data stream, the corrected data stream comprising a series of corrected data values each associated with a data value of the data stream, each including a data component and a noise component with the noise components of data values associated with proximate points in time being decorrelated;

plural statistical filters of different orders coupled to receive said corrected data stream in parallel from said prewhitener, each statistical filter generating coefficient values to fit the corrected data stream to a polynomial of corresponding order and fit values representative of the degree of fit of the corrected data stream to the polynomial;

correlation mensuration and decorrelation means for receiving the fit values and generating a respective decorrelated fit value therefrom for each order filter in accordance with an autoregressive moving average methodology;

selection means for receiving the decorrelated fit values and coefficient values from the stochastic decorrelation means and selecting one of said filters in response to the decorrelated fit values; and

the coefficient values of the selected filter being used by a object motion analysis module to determine the position and velocity of the object.

5,511,043

MULTIPLE FREQUENCY STEERABLE ACOUSTIC TRANSDUCER

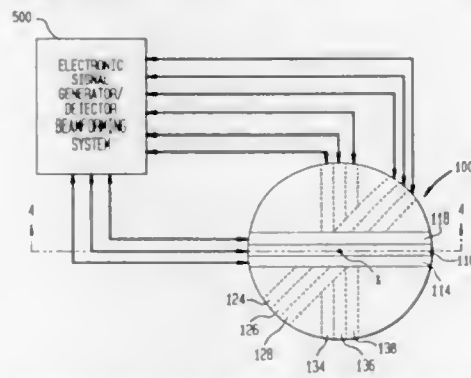
Jan F. Lindberg, Norwich, Conn., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 6, 1995, Ser. No. 417,544

Int. Cl. H04R 17/00

U.S. Cl. 367-155

13 Claims



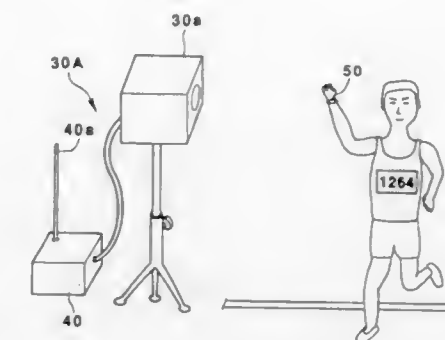
1. A multiple frequency acoustic transducer comprising: a stacked configuration of N groups of multi-layer transducer elements separated from one another by an electrical insulating material, each of said multi-layer transducer elements from an n-th one of said N groups having a layer of acousti-

cally transparent electro-acoustic transducer material of selected thickness t_n determined as a function of the speed of sound C_{LAYER} in said layer of acoustically transparent electro-acoustic transducer material of selected thickness t_n and a desired frequency of operation f_n ;

each of said multi-layer transducer elements from an n-th one of said N groups having opposing planar surfaces with electrically conductive material deposited thereon;

said electrically conductive material on at least one of said opposing planar surfaces for each of said multi-layer transducer elements being formed into parallel strips electrically isolated from one another; and

said parallel strips associated with each of said multi-layer transducer elements in said n-th one of said N groups having a unique angular orientation in said n-th one of said N groups.



5,511,044

THRUST PRODUCING APPARATUS

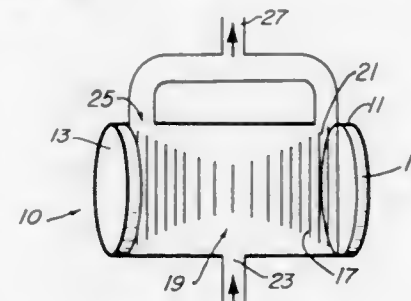
Boyd B. Bushman, Lewisville, Tex., assignor to Lockheed Corporation, Fort Worth, Tex.

Filed Oct. 19, 1991, Ser. No. 773,366

Int. Cl. H04B 11/00; G10K 11/00; F15B 21/12; B64B 1/24

U.S. Cl. 367-191

36 Claims



1. An apparatus for producing thrust, comprising in combination:

a chamber;

sound driver means for propagating a compression standing sound wave in the chamber, the sound wave having at least one low pressure node and at least one high pressure peak, the sound driver means producing a higher pressure in the chamber at the high pressure peak than at the low pressure node; intake means including at least one intake port extending into the chamber at a point adjacent to the low pressure node for drawing in a fluid from exterior of the chamber; and

discharge means including at least one discharge port extending into the chamber adjacent to the high pressure peak for discharging fluid from the chamber so as to create thrust.

5,511,045

TIME MEASUREMENT APPARATUS AND SYSTEM HAVING RECEPTION OR TRANSMISSION FUNCTION

Ken Sasaki, Hideyuki Shoji, and Yoshiyuki Murata, all of Tokyo, Japan, assignors to Casio Computer Co., Ltd., Tokyo, Japan

Filed Dec. 15, 1992, Ser. No. 990,916

Claims priority, application Japan, Dec. 19, 1991, 3-354909; Dec. 27, 1991, 3-360753

Int. Cl. G04F 8/00; G04B 47/00; G08B 23/00

U.S. Cl. 368-2

46 Claims

1. A time measurement apparatus comprising:

identification information receiving means, respectively arranged at a plurality of points through which a plurality of moving objects, each of which independently transmits moving object identification information, sequentially pass, for receiving pieces of moving object identification information respectively transmitted from the moving objects every time the moving objects pass through the respective points; and

information output means for, every time the pieces of moving object identification information are received by said identification information receiving means in a unit of moving objects, sequentially outputting the received pieces of moving object identification information and pieces of reception time point information indicating time points at which the pieces of moving object identification information are received;

and wherein:

said moving objects are mounted on a respective user's arm; said moving objects comprise respective wristwatches, each wristwatch having a display for displaying a current time, and transmitting means for transmitting said moving object identification information; and

said transmitting means is detachably attached to said respective wristwatches.

5,511,046

RECORDABLE TIMEPIECE

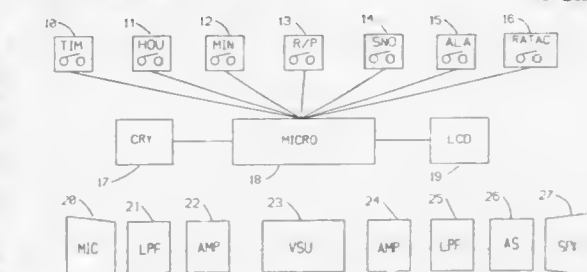
Geoffrey A. Vanderpal, 13 Wagner Dr., Cary, Ill. 60013

Filed May 20, 1993, Ser. No. 64,965

Int. Cl. G04B 21/08

U.S. Cl. 368-63

6 Claims



1. A recording/reproducing electronic timepiece having a crystal generating a high frequency standard signal, a divider circuit dividing said standard signal to lower frequency signals, key input means for inputting digital data, input means for receiving an audible signal, output means for generating a facsimile of an audible signal, memory means for storing digital data, input amplification and filtering means for processing the audible sounds transferred through the input means into sequential digital signals for storage into the memory means, and output amplification and filtering means for processing the digital signals from storage out to the output means, at least one alarm register capable of receiving keyed input for setting an alarm time, a time register capable of receiving keyed input for setting the current time, switch means for setting the alarm circuit on, the improvement therein comprising: microprocessor means for internally selecting memory addresses in the microprocessor memory in sequence for storage such that the selection of memory may be adjusted, inputting the digital signals into memory, selecting a rate for address selection into and out of the memory means such that quality of the audible signal stored may be adjusted, controlling the key input means, providing the timekeeping means to be performed within said microprocessor means, thereby providing an unlimited amount of flexibility in the LCD display and

providing a variable input/output rate into memory storage suitable to the available memory and varying the record/playback times,

wherein when said switch means is set to on, the microprocessor means is adapted to compare an alarm register to the time register until a coincidence condition is detected whereupon the microprocessor will trigger playback of digital signals stored in the memory means through the output amplification and filtering means to the output means for transference of the digital signals into an audible facsimile of the original input signal.

5,511,047

HIGH RESOLUTION TIMER USING LOW RESOLUTION COUNTER

Takashi Kashino, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

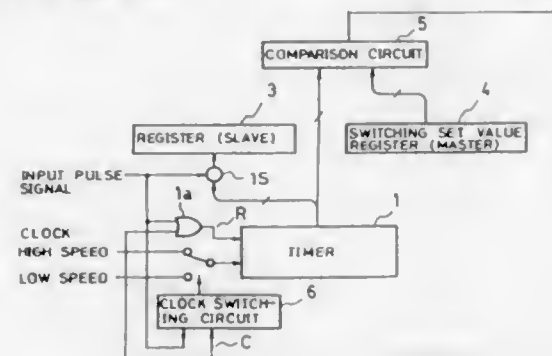
Continuation of Ser. No. 922,457, Jul. 30, 1992. This application Apr. 14, 1994, Ser. No. 227,766

The portion of the term of this patent subsequent to Oct. 18, 2011, has been disclaimed.

Int. Cl.⁶ G04F 8/00

U.S. Cl. 368—119

6 Claims



1. A measuring timer system coupled to an input signal source, an input signal generated by the source including previous and subsequent input pulses, the timer system outputting a value representing the period of the input signal, the timer system comprising low-speed clock means for providing a low speed sequence of clock pulses;

high-speed clock means for providing a high speed sequence of clock pulses;

timer means for counting and outputting a count of clock pulses, wherein the timer means begins to count said low speed sequence of clock pulses upon receipt of a previous input pulse of the input signal, wherein the timer means counts said low speed sequence of clock pulses for a predetermined time T_c and then counts said high speed sequence of clock pulses; clock switching means coupled to the high-speed clock means and to the timer means for selectively coupling the high-speed clock means to the timer means in response to a clock select signal; and

control means coupled to the clock switching means for outputting the clock select signal to the clock switching means when the predetermined time T_c elapses.

5,511,048 MAGNETO-OPTICAL RECORDING AND REPRODUCING APPARATUS

Mitsuru Irie; Takeshi Utakouji; Morihiko Karaki; Nobuo Takeshita; Manabu Koike; Yasuyuki Satou; Naoyuki Egusa; Masahisa Shinoda, all of Nagaokakyo; Akira Ishimori, Amagasaki; Akihiko Shima, Nagaokakyo, and Shigenori Yagi, Nagoya, all of, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

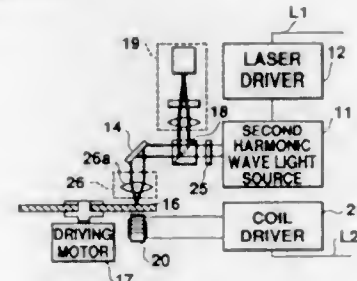
Continuation of Ser. No. 203,615, Feb. 28, 1994, abandoned, and a continuation of Ser. No. 904,030, Jun. 25, 1992, abandoned. This application Dec. 22, 1994, Ser. No. 361,478

Claims priority, application Japan, Jun. 27, 1991, 3-156804; Oct. 4, 1991, 3-258032

Int. Cl.⁶ G11B 11/00

U.S. Cl. 369—13

19 Claims



1. A magneto-optical recording and reproducing apparatus for recording information at a position of a record carrier irradiated with a laser beam by applying a magnetic field whose polarity is inverted or whose strength is modulated in accordance with said recording information to said record carrier and by irradiating said recording information to said record carrier with said laser beam, said magneto-optical recording and reproducing apparatus comprising:

- a second harmonic wave light source for emitting a second harmonic wave of semiconductor-laser-pumped solid laser light;
- laser beam splitting means for splitting said second harmonic wave emitted from said second harmonic wave light source into a plurality of laser beams;
- split spot forming means for impinging said plurality of laser beams emitted from said laser beam splitting means to form a plurality of corresponding light spots at a plurality of predetermined positions on said record carrier; and
- split magnetic field applying means for applying magnetic fields whose polarities are inverted or show strengths are modulated in accordance with said recording information to the plurality of corresponding light spots formed on said record carrier by said split spot forming means, such that focusing information, tracking information and said recording information are obtained from the plurality of corresponding light spots.

5,511,049

OBJECT LENS HOLDER, METHOD FOR PREPARATION OF THE OBJECT LENS HOLDER AND OBJECT LENS DRIVING DEVICE EMPLOYING OBJECT LENS HOLDER

Yoshimasa Goda, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Division of Ser. No. 871,661, Apr. 21, 1992, Pat. No. 5,381,273. This application Oct. 22, 1993, Ser. No. 141,268

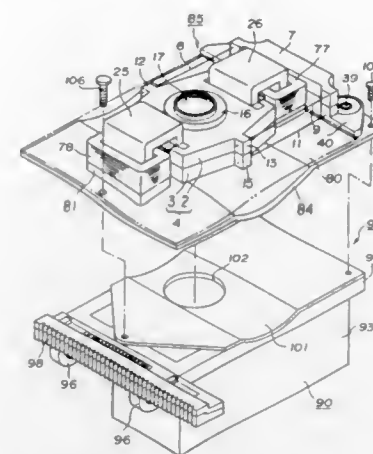
Claims priority, application Japan, Apr. 26, 1991, 2-123030

Int. Cl.⁶ G11B 7/00

U.S. Cl. 369—44.15

4 Claims

1. An object lens driving device adapted for converging a laser light radiated from a laser light source on a signal recording surface of a disc-shaped optical recording medium or causing the laser light to follow a recording track on said optical recording medium, comprising:



an object lens holder having an upper bobbin half and an upper holder half formed integrally with each other via first and second parallel resilient deflecting members, the object lens holder also having a lower bobbin half and a lower holder half integrally formed with each other via third and fourth parallel resilient deflecting members, the upper holder half engaging the lower holder half, the third and fourth parallel resilient deflecting members being parallel to said first and second resilient deflecting members;

a focusing controlling driving section for driving and displacing said object lens provided in said object lens holder in a direction along an optical axis of said object lens;

a tracking controlling driving section for driving and displacing said object lens in a direction normal to the optical axis of said object lens and traversing a recording track of said disc-shaped recording medium;

a supporting base plate supporting said object lens holder in such a manner as to drive and displace said object lens; and an optical block coupled to the supporting base plate, the supporting base plate being rotatable with respect to the optical block.

5,511,050

FOCUS ERROR DETECTING METHOD AND OPTICAL HEAD USING THE SAME

Kiyoshi Matsumoto; Takeshi Maeda, both of Kokubunji; Shigeru Nakamura, Tachikawa; Mariko Umeda, Tokyo, and Masuo Kasai, Hachioji, all of, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 406,735, Sep. 13, 1985, Pat. No. 5,396,477. This application May 24, 1991, Ser. No. 705,535

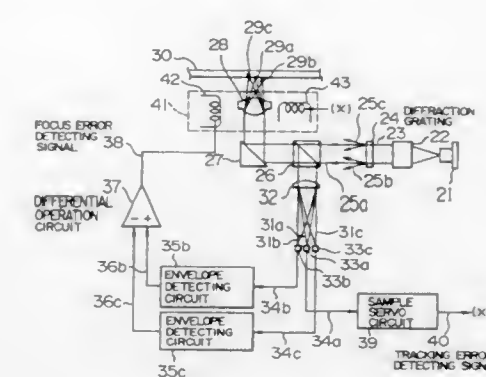
Claims priority, application Japan, Sep. 21, 1988, 63-234978; Jul. 10, 1989, 1-175462; May 25, 1990, 2-133822; Oct. 24, 1990, 2-284246

Int. Cl.⁶ G11B 7/00

U.S. Cl. 369—44.23

30 Claims

1. A focus error detecting method comprising the steps of: emitting a light beam from a light source, giving positive (+) astigmatism having two focal lines and negative (−) astigmatism having two focal lines to the light beam emitted, focusing the light beam provided with the astigmatism onto an information recording surface, receiving the light beam reflected from the information recording surface by a photo-detecting element, and comparing the light beam with positive astigmatism and negative astigmatism received by the photo-detecting element to calculate a difference therebetween, thus providing a focus error detecting signal.



5,511,051

OPTICAL RECORDING/REPRODUCING APPARATUS CAPABLE OF MULTI-TRACK ACCESS FOR SIMULTANEOUS MULTITRACK RECORDING/REPRODUCTION

Takao Rokutan; Mitsuo Oshiba; Takefumi Sakurada; Naoki Tani, and Takumi Sugaya, all of Tokyo, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 103,970, Aug. 9, 1993, abandoned.

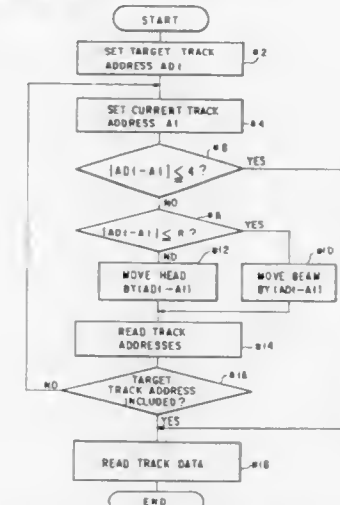
This application Sep. 6, 1995, Ser. No. 524,076

Claims priority, application Japan, Aug. 31, 1992, 4-231048; Aug. 31, 1992, 4-231049

Int. Cl.⁶ G11B 7/00

U.S. Cl. 369—44.28

10 Claims



1. A disk tray for a mini disk player comprising:
a tray body including a mini disk accommodating recess formed at a middle part thereof, a first opening extending longitudinally near one end thereof through which a stopper fixed at a housing of the disk player protrudes, and first, second, third and fourth pins formed at an upper surface thereof;
two first guide rails longitudinally extending at the opposite sides of the mini disk accommodating recess;
a tray cover including a cover body disposed above the mini disk accommodating recess and having retainers respectively enclosing a spring, at one side of which a head opening is formed, and a second tray cover side leg disposed at the first opening side of the cover body and having a second rack formed at a side surface thereof toward the first opening and a

5,511,057

MULTIPLANE INFORMATION STORAGE SYSTEM WITH AN IMPROVED RECORD CARRIER

Antonius H. M. Holtslag, and Derk Visser, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

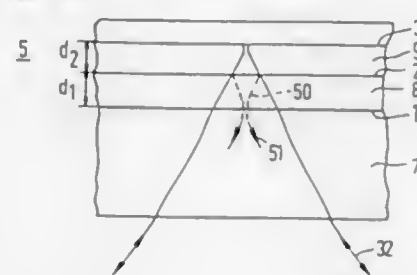
Continuation-in-part of Ser. No. 487,615, Jun. 7, 1995. This application Dec. 29, 1993, Ser. No. 175,331

Claims priority, application European Pat. Off., Jan. 4, 1993, 93200001

Int. Cl.⁶ G11B 7/00

U.S. Cl. 369—94

21 Claims



14. An information storage system comprising an optical record carrier having at least two information planes, and a reading device for scanning the information planes from one side of the record carrier, said device comprising a first optical system for forming a radiation spot on an information plane to be read, a second optical system for passing radiation from the record carrier to a radiation-sensitive detection system which converts the radiation into an electric detection signal, and a detection circuit electrically connected to the detection system for converting the detection signal into an information signal, wherein said detection circuit determines an interference ratio Q , characterized in that:

- the distances between the information planes, and
- the optical properties of the information planes each comply with the interference requirement of the information storage system, by which requirement the ratio between the sum of interference signals in the detection signal generated by the information planes not to be read and a read signal in the detection signal generated by the information plane to be read is smaller than said interference ratio Q determined by the detection circuit, and

the interference requirement is defined by

$$\frac{\left(\sum_{j \neq i} \left(\sum_f E_{mj}(f) MTF(f, d/n) \right)^2 \right)^{1/2}}{\sum_f E_{mi}(f) MTF(f, 0)} < Q,$$

in which the summation over j is over all information planes not being the information plane i to be read, the summation over f is over the frequencies present in the signal received from an information plane, E_j is the power of the radiation in the zeroth diffraction order from information plane j , $m_j(f)$ is the modulation factor at frequency f of the information plane j , $m_i(f)$ for an information plane not to be read is determined with the radiation beam focused on plane j , $MTF(f, d/n)$ is the modulation transfer function at the frequency f of the radiation from the information plane j to the detection signal, d_j is the distance between the information plane j and the information plane i to be read, and n is the refractive index of the medium between the information planes i and j .

5,511,058

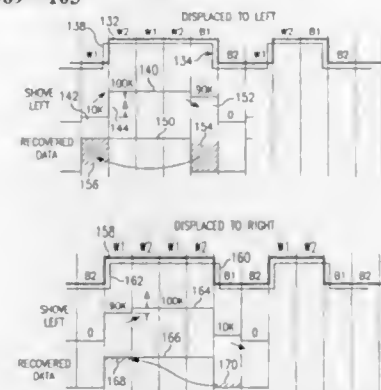
DISTORTION CORRECTION OF A RECONSTRUCTED HOLOGRAPHIC DATA IMAGE

Thomas A. Visel; John Stockton, and Joel H. Regen, all of Austin, Tex., assignors to Tamarack Storage Devices, Austin, Tex.

Filed Dec. 23, 1993, Ser. No. 173,668
Int. Cl.⁶ G11B 7/00; G03H 1/02; 1/22

U.S. Cl. 369—103

12 Claims



1. A method for distortion correction of a reconstructed holographic data image on an optical storage medium, which data image is comprised of a two dimensional grid of bit images in rows and columns of either a dark bit image or a light bit image, comprising the steps of:

- providing a detection device having a surface on which is disposed a grid of imager pixels each having an output and corresponding to the grid of bit images, which imager pixels are for detecting the bit images;
- directing the data image onto the imager pixels of the detecting device;
- scanning the outputs of a row of the imager pixels;
- measuring the output of each of the imager pixels during scanning thereof;
- determining if the edge of a bit image is physically overlapping the boundary between two adjacent imager pixels through the step of measuring the output of the imager pixels; and
- shifting the output energy associated with the imager pixel that is overlapped to sum with at least the output of another one of the imager pixels to provide a reconstructed data image that is substantially shifted relative to the boundary of the imager pixels.

5,511,059

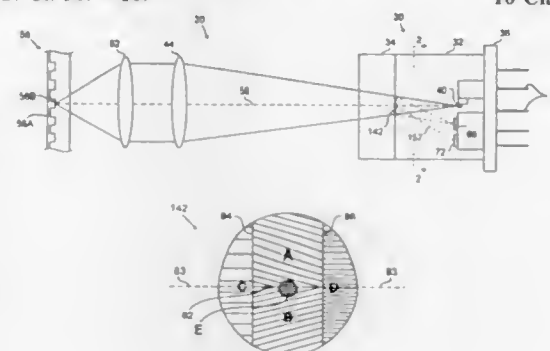
MULTI-ELEMENT GRATING BEAM SPLITTER WITH A REFLECTION GRATING ELEMENT FOR USE IN FRONT FACET SUBTRACTION

John C. Brazas, Jr., Hilton, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 14, 1994, Ser. No. 259,587
Int. Cl.⁶ G11B 7/00

U.S. Cl. 369—109

16 Claims



1. A multi-element grating beam splitter for use in an optical system having an optical source for generating a radiation beam to be applied to a data track of an optical storage medium, said grating beam splitter comprising:

- a first grating element;
- a second grating element, said first and said second grating elements arranged on opposite sides of a plane substantially parallel to a reference plane defined by an optical axis of said radiation beam and a tangent to said data track, such that said first and said second grating elements separate a first and a second portion, respectively, of a return beam resulting from application of said radiation beam to said data track, along at least one plane substantially parallel to said data track;
- a third grating element, arranged adjacent to and on one side of said first and said second grating elements, to separate a third portion of said return beam along a plane substantially perpendicular to said reference plane;
- a fourth grating element, arranged adjacent to and on an opposite side of said first and said second grating elements, to separate a fourth portion of said return beam along another plane substantially perpendicular to said reference plane; and
- a fifth grating element for directing a portion of said radiation beam to a front facet detector.

where, T_p is the transmittance of a horizontal polarization beam transmitted through said beam splitter, R_s is a reflectance of the vertical polarization beam reflected from said beam splitter, and T_s is the transmittance of the vertical polarization beam transmitted through said beam splitter.

5,511,061

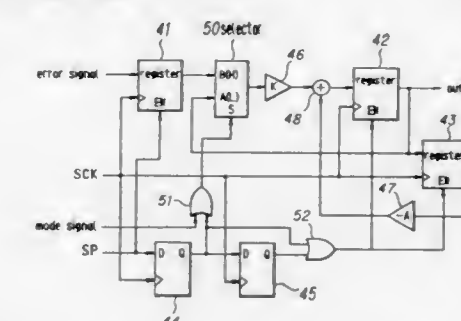
FILTER CIRCUIT, FILTERING METHOD AND DISC ROTATION CONTROL METHOD AND APPARATUS

Ryo Ando, Tokyo, and Yayoi Mochizuki, Kanagawa, both of Japan, assignors to Sony Corporation, Tokyo, Japan
Filed Jun. 1, 1995, Ser. No. 457,852

Claims priority, application Japan, Jun. 10, 1994, 6-128507
Int. Cl.⁶ G11B 7/00

U.S. Cl. 369—124

6 Claims



3. A disc rotation control apparatus comprising:
control signal input means for inputting a control signal relating to rotation of a disc;
selective output means for selectively outputting said control signal or an output signal;
first amplifying means for amplifying an output of said selective output means at a first amplification factor;
first delay output means for delaying a received signal by a first delay time, and for outputting a delayed signal as said output signal;
second delay output means for delaying said output signal as output from said first delay means by a second delay time, and for outputting a delayed signal;
second amplifying means for amplifying an output of said second delay output means at a second amplification factor;
adding means for adding together an output of said first amplifying means and an output of said second amplifying means, and for supplying an addition signal to said first delay output means; and
control means for controlling selection of said selective output means in accordance with a drive mode of said disc.

5,511,060

MAGNETO-OPTICAL HEAD WITH A THREE PRISM BEAM SPLITTER TO SPLIT A REFLECTED BEAM INTO THREE BEAMS

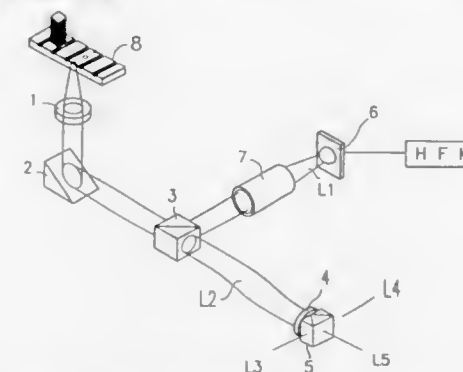
Ju Jau-Jiu, Hsinchu, and Wang Jinn-Kang, Taipei, both of Taiwan, assignors to Industrial Technology Research Institute, Taiwan

Continuation of Ser. No. 24,153, Feb. 26, 1993, abandoned.
This application Dec. 15, 1994, Ser. No. 356,668

Int. Cl.⁶ G11B 7/00

U.S. Cl. 369—118

7 Claims



1. A magneto-optical information system of reflected light path of a magneto-optical head, for splitting a light beam reflected from a magneto-optical disk into three light beams for tracking, data reproducing and focusing respectively, comprising:

- a convex lens for receiving and focusing the light beam reflected from the magneto-optical disk; and
- a beam splitter for receiving the reflected light beam coming from said convex lens and splitting said light beam into three orthogonal light beams, said beam splitter being a quadrangle including a three triangular cubic prism, where a side angle in one of the triangular cubic prisms for reflecting the light path of said focus signal photo detection is 45°, and wherein said beam splitter includes a coating satisfying the follow conditions:

$$T_p \geq 80\%$$

$$R_s \geq 5\%$$

$$R_s + T_s = 1$$

5,511,062

LOOKING SLIDE DRIVE FOR A DISC SCANNER

Pieter A. Schoneveld, Eindhoven, Netherlands; Leo G. M. Metzemaekers, Vienna, Austria; Johannes T. A. Van De Veerdonk, Eindhoven, Netherlands; Robertus J. M. Verhoeven, Eindhoven, Netherlands; Cornelius A. Hezcmans, Eindhoven, Netherlands; Petrus J. Blankers, Eindhoven, Netherlands; Johannes M. M. Hensing, Eindhoven, Netherlands; and Cornelis M. Beijersbergen Van Henegouwen, Son, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 821,509, Jan. 15, 1992, abandoned.
This application Oct. 6, 1993, Ser. No. 132,437

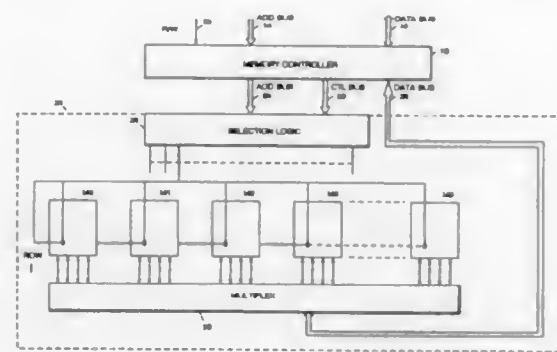
Claims priority, application European Pat. Off., Apr. 8, 1991, 91200808

Int. Cl.⁶ G11B 7/085

U.S. Cl. 369—219

20 Claims

1. An apparatus for inscribing and/or reading a rotating information carrier, comprising



$$H = \begin{bmatrix} 1 & 1 & 1 & \dots & 1 & 1 & 0 & 0 \\ 1 & T & T^2 & \dots & T^{2^B-2} & 0 & 1 & 0 \\ 1 & T^2 & T^4 & \dots & T^{2^{2^B-2}} & 0 & 0 & 1 \end{bmatrix}$$

where T is a $B \times B$ companion matrix, I is the $B \times B$ identity matrix and O is the $B \times B$ null matrix, said H matrix allowing to generate error correction bits which make it possible to correct one block in error and detect two blocks in error, said method being characterized in that it comprises the steps of:

for each word to be stored into an addressed location of the memory, computing error correction bits for the word using a depopulated parity check matrix:

$$H = \begin{bmatrix} 1 & T & T^2 & \dots & T^{2^B-2} & 1 & 0 \\ 1 & 1 & 1 & \dots & 1 & 0 & 1 \end{bmatrix}$$

which gives the capability of only correcting one block in error, whereby a limited number of error correction bits are needed,

appending the computed error correction bits to the data bits to form a word storing the word at the addressed location of the memory,

for each word read from memory, testing the word for an error using the error correction bits stored with the word, correcting an error if found in a read word, and

periodically refreshing all error correction bits stored in the memory by successively reading each stored word, computing the error correction bits for the word, correcting the word if necessary, appending the error correction bits to the data bits and writing the corrected data bits and the computed error correction bits in place of the read word.

5,511,079

APPARATUS AND METHOD FOR CONTROLLING FORWARD ERROR CORRECTION ENCODING IN A VERY SMALL APERTURE TERMINAL

Douglas Dillon, Galtersberg, Md., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed May 26, 1993, Ser. No. 67,765

Int. Cl. G06F 11/10; H03M 13/00

U.S. Cl. 371-43

13 Claims

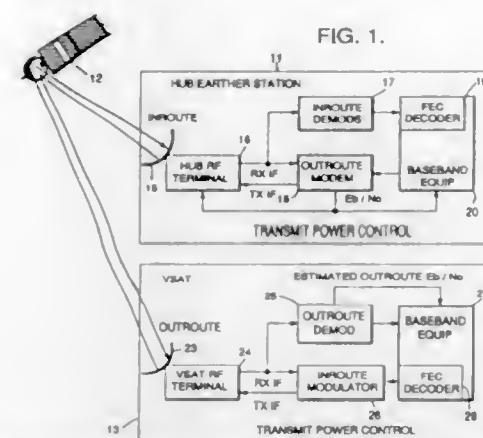
1. A method for adjusting the forward error encoding rate of a VSAT each station digital data transmission comprising:

measuring at a hub station the level of an echo signal produced in response to a transmission from said hub station to a satellite transponder;

determining from said level an indication of propagation conditions;

transmitting a signal from said hub station to a plurality of VSAT earth stations, said signal comprising said indication of propagation conditions; and

altering the forward error correction rate (FEC) of said VSAT earth station transmission in accordance with said indication



of propagation conditions such that the bit error rate for said VSAT earth station transmissions is maintained below a predefined value.

5,511,080

PLAYBACK DATA DETECTING METHOD FOR IMPROVING BIT ERROR RATE FOR RANDOM ERROR

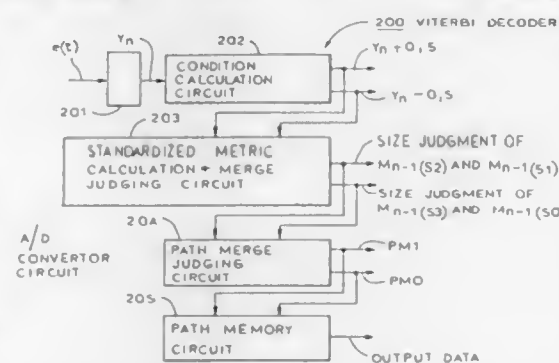
Satoshi Ito, and Shigeru Araki, both of Tokyo, Japan, assignors to NEC Corporation, Japan

Filed May 28, 1993, Ser. No. 70,103

Claims priority, application Japan, May 29, 1992, 4-164352
Int. Cl. H03M 5/14; 5/18; 7/46; 13/00

U.S. Cl. 371-43

25 Claims



1. A playback data detecting method for producing an NRZ playback data according to a Viterbi decoding method using a playback signal having a value of "1" or "0" played back from a recording medium, for an NRZ recording data recorded to the recording medium after having been converted to channel bits while constraining the number of continuous noninverse bits within a range of a minimum of "2," and using four playback states which are state S0, state S1, state S2, and state S3 comprising:

a step of making a state transition and producing an output signal as follows:

when the playback signal of "1" is inputted during state S0, the transition is made to state S0 and the value of the output signal is made "0,"

when the playback signal of "1" is inputted during state S0, the transition is made to state S1 and the value of the output signal is made "1,"

when the playback signal of "1" is inputted during state S1, the transition is made to state S2 and the value of the output signal is made "0,"

when the playback signal of "1" is inputted during state S2, the transition is made to state S2 and the value of the output signal is made "0,"

when the playback signal of "1" is inputted during state S2, the transition is made to state S3 and the value of the output signal is made "1,"

and when the playback signal of "1" is inputted during state S3, the transition is made to state S0 and the value of the output signal is made "0;" and

a step of performing bit error correcting by detecting an incorrect state and judging an original state when the playback signal violating the above-described state transition rules is inputted.

5,511,081

METHOD FOR SOURCE-CONTROLLED CHANNEL DECODING BY EXPANDING THE VITERBI ALGORITHM

Joachim Hagenauer, Seefeld, Germany, assignor to Deutsche Forschungsanstalt für Luft- und Raumfahrt e.V., Köln, Germany

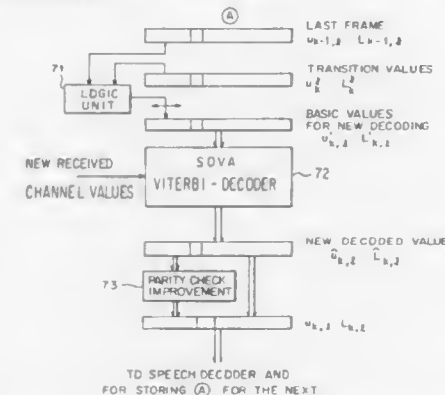
Filed Jul. 22, 1993, Ser. No. 95,708

Claims priority, application Germany, Sep. 22, 1992, 42 24 214.2

U.S. Cl. 371-43

Int. Cl. H03M 13/12

6 Claims



1. In Viterbi decoding of radio signals of the type calculating a metric increment

$$\lambda_{k,i} = \sum_{j=1}^N (a_{k,j} \cdot x_{k,j} \cdot y_{k,j})$$

wherein λ_k is calculated at time intervals indexed by k , i is a data bit position index, y is a received value, x is a coded bit of a predetermined sequence, and a is a fading factor, the improvement comprising:

source-controlled channel coding wherein a metric addition B_k is incorporated into the decoding according to the equation

$$\lambda_k = \left[\sum_{i=1}^N (a_{k,i} \cdot x_{k,i} \cdot y_{k,i}) \right] + B_k$$

where B_k is a function of the quantity

$$u_k L_k = \log_{10} [P(u_k = +1) / P(u_k = -1)]$$

and

if the channel is a binary symmetrical channel then

$$B_k = u_k L_k / L_{k0}$$

where

$$L_{k0} = \log [(1 - P_{00}) / P_{00}]$$

and P_{00} is the binary symmetrical channel error probability; and

if the channel is a gaussian and fading channel then

$$B_k = u_k L_k / (E_b / N_0) \log_{10} e$$

where E_b / N_0 is the channel signal-to-noise ratio and $\log_{10} e$ is approximately equal to 0.434.

5,511,082

PUNCTURED CONVOLUTIONAL ENCODER

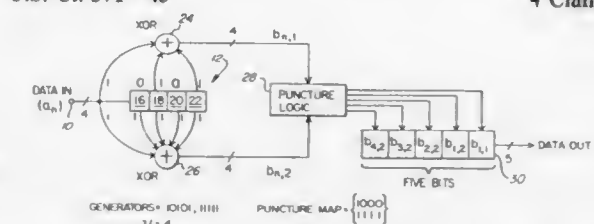
Stephen K. How, San Diego, Calif., and Chris Heegard, Ithaca, N.Y., assignors to General Instrument Corporation of Delaware, Chicago, Ill.

Filed May 10, 1994, Ser. No. 240,232

Int. Cl. H03M 13/12

U.S. Cl. 371-43

4 Claims



1. A method for convolutionally encoding digital data with a rate $1/2$ convolutional code, comprising the steps of: puncturing a rate $1/2$, sixteen state convolutional code based on octal generators 25, 37 to rate $1/4$ using a puncture map of

$$\begin{Bmatrix} 1000 \\ 1111 \end{Bmatrix}$$

wherein $v=4$; and processing an incoming data stream using said rate $1/4$ code.

5,511,083

POLARIZED FIBER LASER SOURCE

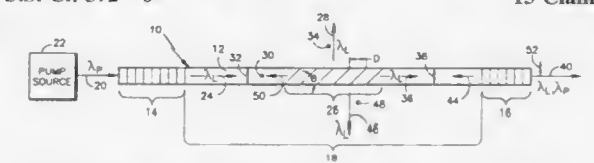
Francis X. D'Amato, deceased, late of Holden, Mass.; Gary A. Ball, Simsbury, and Gerald Meltz, Avon, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Mar. 2, 1995, Ser. No. 398,206

Int. Cl. H01S 3/30

U.S. Cl. 372-6

13 Claims



1. A polarization controlled waveguide laser, comprising: a solid optical waveguide which propagates laser light having polarization components along a first polarization mode and along a second polarization mode;

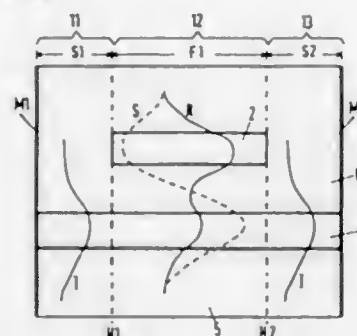
a pair of reflective elements disposed a predetermined distance apart along said waveguide, each reflecting said laser light; a portion of said waveguide between said reflective elements being a gain medium;

one of said reflective elements passing a predetermined amount of said laser light as a laser output light; and

a grating tap having a predetermined angle and grating spacing such that a predetermined amount of said laser light along said first polarization mode is coupled out of said waveguide so as to cause sufficient loss along said first polarization mode to not allow lasing to occur along said first polarization mode and such that a sufficient amount of said laser light along said second polarization mode is not coupled out of said waveguide so as to allow lasing to be sustained along said second polarization mode, thereby causing said output light to be polarized only along said second polarization mode.

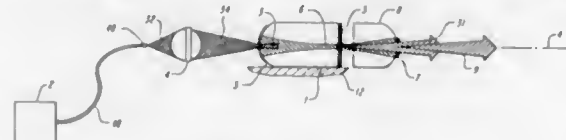
5,511,084
TUNABLE LASER DIODE
Markus-Christian Amann, Baunatal, Germany, assignor to
Siemens Aktiengesellschaft, Munich, Germany
Filed Jan. 17, 1995, Ser. No. 372,936
Claims priority, application Germany, Jan. 19, 1994, 44 01
444.9

U.S. Cl. 372-20 Int. Cl.⁶ H01S 3/10;3/19 10 Claims



1. Tunable laser diode, comprising:
a first and a second waveguide arranged in a layer plane as layers vertically above one another with respect to said layer plane and separated from one another by a cladding layer, said first and second waveguides being arranged so closely adjacent to one another so that a mode coupling occurs between said waveguides;
wherein said first waveguide is located only in a coupling region that has a length less than the entire length of a section of the laser diode provided as a laser resonator;
wherein said first and second waveguides have such dimensions and material combinations such that a coupling of two different modes occurs in said coupling region;
wherein said coupling region has at least one interconnected section having a length equal to a natural multiple of the coupling length of said two different modes;
an active layer and a tuning layer arranged vertically relative to one another with respect to said layer plane in said first and second waveguide in said coupling region; and
means for separately injecting currents into said active layer and into said tuning layer.

5,511,085
PASSIVELY STABILIZED INTRACAVITY DOUBLING
LASER
Larry R. Marshall, Reston, Va., assignor to Light Solutions
Corporation, Mountain View, Calif.
Filed Sep. 2, 1994, Ser. No. 300,137
Int. Cl.⁶ H01S 3/10
U.S. Cl. 372—22
24 Claims

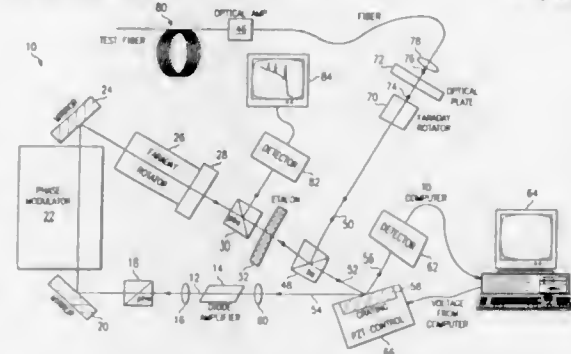


1. A laser device comprising a laser crystal in which diode pump radiation is confined to less than approximately ten millimeters of axial length along the optical axis, optical pumping means for producing pump light, imaging means for collecting and directing the pumping light into the laser crystal in alignment with respect to a desired laser cavity mode to pump the laser crystal and produce fundamental laser light, a back mirror which reflects the fundamental laser light, a front mirror which is highly reflecting at the fundamental laser wavelength, the front mirror forming with the back mirror a resonant optical cavity around the laser crystal,

a non-linear optical crystal placed in the cavity between the laser crystal and front mirror to convert the fundamental laser light to light of another wavelength forming a laser output light, wherein said resonant optical cavity has a length between ten millimeters and ten centimeters, which, in conjunction with the non-linear crystal, is effective in limiting instabilities and noise in the laser output light.

5,511,086
**LOW NOISE AND NARROW LINEWIDTH EXTERNAL
 CAVITY SEMICONDUCTOR LASER FOR COHERENT
 FREQUENCY AND TIME DOMAIN REFLECTOMETRY**
 Chin B. Su, College Station, Tex., assignor to The Texas A&M
 University System, College Station, Tex.
 Filed Mar. 22, 1995, Ser. No. 408,739
 Int. Cl.⁶ H10J5 3/13

U.S. Cl. 372—31 20 Claims



1. A semiconductor laser having an external cavity used for coherent frequency and time domain reflectometry comprising:
 a semiconductor optical amplifier having a front and back facet and emitting a coherent light beam from said front facet;
 a phase modulator receiving said coherent light beam and linearly varying an optical frequency of the laser;
 an etalon selecting and stabilizing one longitudinal mode of the laser cavity for lasing, narrowing the lasing linewidth and reducing the noise of the laser;
 means for varying the length of the laser cavity and thereby tuning the optical frequency of said selected longitudinal mode to track the transmission frequency of the etalon by maintaining maximum power intensity; and
 means for communicating and directing a portion of said coherent light beam to said back facet of said semiconductor optical amplifier; whereby a reference portion of said coherent light beam is coherently mixed with a back scattered signal portion of said light beam to yield coherent frequency and time domain reflectometry measurement or detection.

5,511,087
METHOD AND DEVICE FOR CONTROLLING
SEMICONDUCTOR LASER
Shinichi Sato; Munenori Ohtsuki; Isao Iwaguchi, and Ichiro
Shinoda, all of Kawasaki, Japan, assignors to Fujitsu Limited,
Kawasaki, Japan
Filed Aug. 30, 1993, Ser. No. 113,109
Claims priority, application Japan, Mar. 19, 1993, 5-060732
Int. Cl.⁶ H01S 3/10

U.S. Cl. 372—38 25 Claims

1. A semiconductor control method wherein a light amount current controllable semiconductor laser is subjected to a feedback control based on a predetermined constant while said semiconductor laser is monitored, comprising the steps of:

subjecting the light amount of said semiconductor laser to a feedback control based on a first time constant when a light amount of said semiconductor laser is less than a predetermined light amount; and

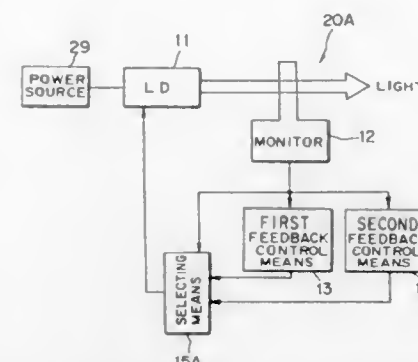
5,511,089
SEMICONDUCTOR LASER ELEMENT WITH
EXCELLENT HIGH-TEMPERATURE CHARACTERISTIC
AND CAPABLE OF BEING READILY MOUNTED ON AN
OPTICAL CIRCUIT BOARD

Hirohito Yamada, Tokyo, Japan, assignor to NEC Corporation,
Tokyo, Japan

Continuation of Ser. No. 9,944, Jan. 27, 1993, abandoned.

This application Aug. 17, 1994, Ser. No. 291,498
Claims priority, application Japan, Jan. 27, 1992, 4-011485;
Mar. 12, 1992, 4-053887; May 6, 1992, 4-113284

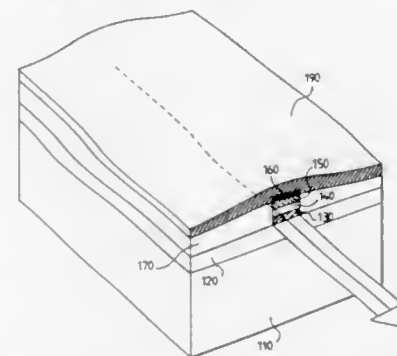
U.S. Cl. 372—45 14 Claims



subjecting the light amount of said semiconductor laser to a feedback control based on a second time constant when a light amount of said semiconductor laser is more than said predetermined light amount.

5,511,088
PROCESS FOR FABRICATING STRIP
OPTOELECTRONIC DEVICES, PARTICULARLY
LASERS, AND DEVICES OBTAINED
Slimane Loualiche; Claude Vaudry, and Loïc Henry, all of
Lannion, France, assignors to France Telecom, Paris, France
Filed Sep. 9, 1993, Ser. No. 119,412
Claims priority, application France, Sep. 11, 1992, 92 10848
Int. Cl.⁶ H01S 3/19

U.S. Cl. 372—45 7 Claims



1. A laser device comprising a complete structure including a first transverse confinement layer an active layer, a second transverse confinement layer and at least one ohmic contact layer, produced by a single epitaxy, in which a strip is etched down to the base of the active layer of the device, and wherein said laser further comprises an optical lateral confinement deposit of an electrically insulating material of controlled index surrounding on each lateral side of said strip, said optical lateral confinement deposit of electrically insulating material having an optical index which is substantially equal to an index of said confinement layers so as to define an optical lateral confinement for said strip wherein the electrically insulating material of controlled index is silicon nitride.

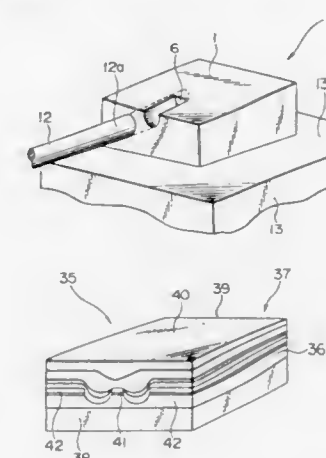
1. A semiconductor laser element capable of being operated with a low driving current under a high temperature operating condition, comprising:

- a semiconductor block having:
 - a first end surface which defines a laser beam emitting surface;
 - a second end surface which is opposite to said first end surface;
 - a principal surface contiguous to said first and said second end surfaces;
 - said second end surface being remote from said first end surface by a predetermined distance not longer than 150 μm to provide an optical resonator therebetween;
 - a plurality of coating layers which are coated on said second end surface to provide a reflectivity not lower than 90%; and

active layers each of which is made of a material selected from a group consisting of InGaAs and InGaAsP; said active layers being interposed between cladding layers; wherein said active layers have a multiple quantum well (MQW) structure; and wherein said active layers comprise:

at least five wells which are made of InGaAsP lattice-matched with InP and having a composition defined by a bandgap corresponding to a wavelength between 1.35 μm and 1.45 μm , and barriers which are interposed between said wells and which are made of InGaAsP lattice-matched with InP and having a composition defined by a bandgap corresponding to a wavelength between 1.05 μm and 1.20 μm ;

said semiconductor laser element producing a light output greater than 5 mW in response to an input current not larger than 30 mA at 85° C.



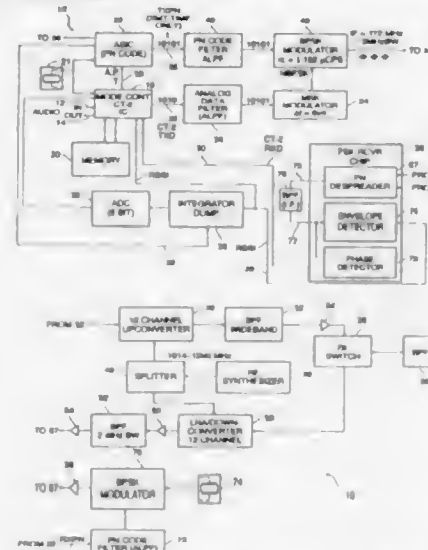
5,511,090 WIRELESS FREQUENCY-DIVISION-MULTIPLE-ACCESS DIRECT SEQUENCE SPREAD SPECTRUM TELEPHONE SYSTEM

D. Darryl Denton, Cupertino, and Douglas Lau, Hillsborough,
both of Calif., assignors to Tatung Telecom Corporation,
Mountain View, Calif.

Filed Mar. 17, 1994, Ser. No. 210,187

Int. Cl.⁶ H04B 15/00

U.S. Cl. 375—205



1. In a digital cordless telephone system, a battery-operated handset for use in conjunction with a compatible base station unit, said handset comprising:

- a modular controller means, said controller means including memory, a central processor unit, a transmit signal output for a transmit signal, a receive signal input for receiving a receive signal, a receive signal strength indicator (RSSI) input for receiving an RSSI signal, a control output for controlling a pseudo-random number generator/decoder means, an audio signal input and an audio signal output;
- a pseudo-random number generator means coupled to said controller means, for generating a transmit pseudo-random-noise (PN) bit sequence and a receive pseudo-random-noise (PN) bit sequence for use in spread spectrum coding and decoding;
- first digital signal modulator means coupled to receive said transmit pseudo-random-noise bit sequence and said transmit signal to produce a direct sequence spread-spectrum-modulated signal;
- upconverting and transmitting means for producing an output spread spectrum analog r.f. signal in a first preselected spread spectrum frequency channel;
- receiving means for receiving an input spread spectrum analog r.f. signal in a second preselected spread spectrum frequency channel;
- downconverting means for said input spread spectrum analog r.f. signal to produce an intermediate spread spectrum signal;
- second digital signal modulator means coupled to receive said receive pseudo-random-noise bit sequence and a fixed oscillator signal to produce a spread-spectrum-demodulated signal;
- third digital modulator means coupled to receive said spread-spectrum-demodulated signal and said intermediate spread spectrum signal operative as a despreader to produce a despread receive signal and to produce an RSSI signal;
- means coupling said RSSI signal to said controller means;
- means for integrating said RSSI signal over a preselected time window of integration to produce a time-integrated RSSI signal;
- means for converting said time-integrated RSSI signal to a digital time-integrated RSSI signal; and
- signal processing means coupled to receive said time-integrated RSSI signal, to control said integrator means and to control said second digital modulator means for regulating relative

phase of said time window of integration for acquiring, pulling-in and tracking said receive spread-spectrum signal.

5,511,091 CLOCK SYNCHRONIZATION CONTROL CHECK SYSTEM

Naritoshi Saito, Hino, Japan, assignor to Kabushiki Kaisha
Toshiba, Japan

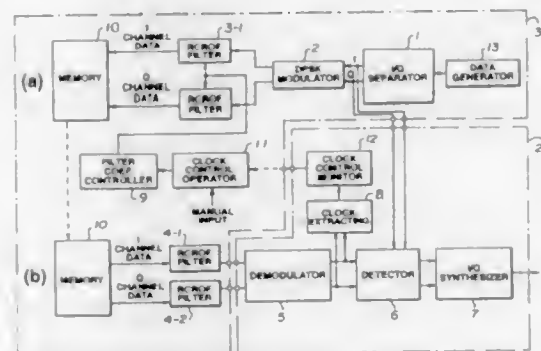
Filed Jun. 13, 1994, Ser. No. 258,817

Claims priority, application Japan, Jun. 14, 1993, 5-142114

Int. Cl.⁶ H04B 3/46; 17/00

U.S. Cl. 375—226

8 Claims



1. A clock synchronization control check system for checking a phase error correcting function of a digital signal receiver having demodulation means for demodulating a digital modulated signal and phase error detection means for extracting a synchronization clock signal from a demodulated signal output from the demodulation means and for detecting a phase error of the synchronization clock signal, the system comprising:

- data signal generating means for generating a predetermined data signal;
- digital modulation means, connected to the data signal generating means, for modulating the predetermined data signal output from the data signal generating means and producing the digital modulated signal;
- digital filtering means for filtering the digital modulated signal produced by the digital modulation means in accordance with a set of coefficients given thereto so as to shift a phase of the digital modulated signal;
- filtering controlling means for changing the set of coefficients to be given to the digital filtering means from one set to another so as to control the amount of phase shift of the digital modulated signal;
- means for supplying an output of the digital filtering means to the demodulation means of the digital signal receiver; and
- memory means for storing the digital modulated signal produced by the digital modulation means, wherein the digital filtering means filters the digital modulated signal stored in the memory means.

5,511,092 DATA RECOVERY TECHNIQUE WHICH AVOIDS A FALSE CONVERGENCE STATE

Frederick R. Cathers, Baltimore; Glenn D. Fowler, Canal Winchester; J. Arthur Grandle, Reynoldsburg, and Ronald Hartung, Gahanna, all of Ohio, assignors to AT&T Corp., Murray Hill, N.J.

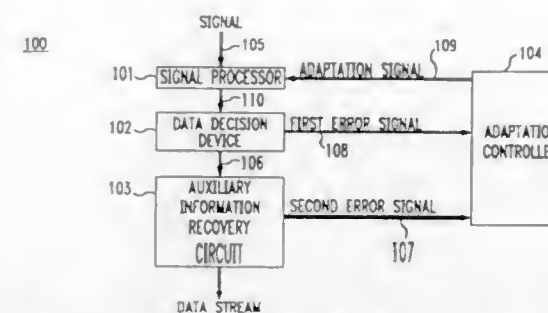
Filed Nov. 17, 1993, Ser. No. 154,197

Int. Cl.⁶ H04L 27/01; G06F 17/10; H04B 3/04; 7/005

U.S. Cl. 375—232

1 Claim

1. Apparatus for use in a communications system wherein a signal containing data is received from a communications channel, said apparatus comprising:



adaptive means for recovering the data from said received signal, said means having a transfer function which is varied from a first initial state in response to a first error signal; means for recovering auxiliary information from the recovered data, said auxiliary information recovering means providing a second error signal when it is unable to recover said auxiliary information;

said adaptive means reinitializing a variation of said transfer function from a second initial state in response to said error signal;

wherein said adaptive means is an adaptive equalizer having a plurality of multipliers, each multiplier being associated with a different coefficient, such that, in said first initial state, each coefficient in a set of coefficients is associated with a different one of said multipliers, and in said second initial state, each coefficient in a predetermined portion of said set is associated with a multiplier which is different from that in said first initial state.

5,511,093 METHOD FOR REDUCING DATA IN A MULTI- CHANNEL DATA TRANSMISSION

Bernd Edler, and Hendrik Fuchs, both of Hannover, Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

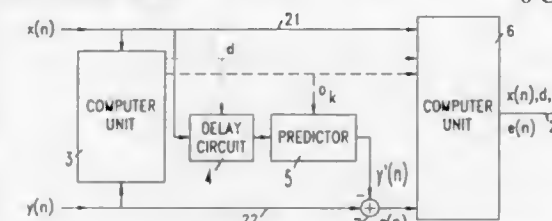
Filed May 4, 1994, Ser. No. 238,107

Claims priority, application Germany, Jun. 5, 1993, 43 18 763.3; Jun. 24, 1993, 43 20 990.4

Int. Cl.⁶ H04B 1/66; H04N 7/12

U.S. Cl. 375—240

8 Claims



1. A method for reducing data in a data transmission of at least first and second channels, comprising the steps of:

- dividing the first channel into a plurality of first spectral components and dividing the second channel into a plurality of second spectral components, the first and second channels using common coding;
- determining a statistical time-shifted cross-relation between at least one of the plurality of first spectral components and at least one of the plurality of second spectral components;
- determining at least one predictor coefficient and a transmit-time difference between the at least one first spectral component and the at least one second spectral component based upon the cross-relation;
- determining a prediction error, $e(n)$, as a function of one of the at least one first spectral component and the at least one second spectral component;
- transmitting the at least one first spectral component, the prediction error $e(n)$, the at least one predictor coefficient, and the transmit-time difference to a receiver; and
- reconstructing, at the receiver, the at least one second spectral component based upon the at least one first spectral component

ment, the prediction error, the at least one predictor coefficient, and the transmit-time difference.

5,511,094 SIGNAL PROCESSOR FOR A SUB-BAND CODING SYSTEM

Suk-jeong Lee, and Hyung-nam Byeon, both of Seoul, Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Kyungki, Rep. of Korea

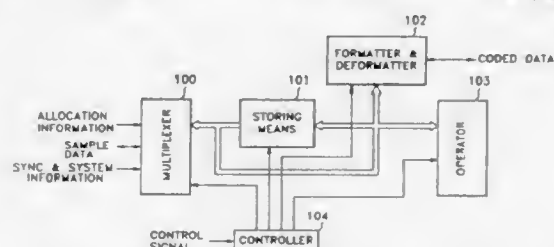
Filed Apr. 8, 1994, Ser. No. 224,968

Claims priority, application Rep. of Korea, Apr. 8, 1993, 1993-5900

Int. Cl.⁶ H04B 14/04

U.S. Cl. 375—243

10 Claims



1. A signal processor for a subband coding system comprising: selecting means receiving sample data, allocation information, and synchronization and system information during an encoding operation for changing said sample data to another form and thereby providing various data corresponding to said sample data, said allocation information and said synchronization and system information and for transforming said various data to said sample data during a decoding operation;

first storing means for temporarily storing said various data received from said selecting means during said encoding operation and provided to said selecting means during said decoding operation;

operating means for selectively scaling and quantizing unencoded sample data to thereby produce operated data during said encoding operation and dequantizing and descaling said operated data included in encoded data during said decoding operation;

classifying means for selectively providing said operated data, said allocation information input to said operating means, and said synchronization and system information in accordance with a frame format for a general subband coding system as said encoded data during said encoding operation, and for receiving said encoded data and classifying said encoded data into said synchronization and system information, said allocation information and said operated data during said decoding operation; and

control signal generating means for generating control signals for selectively controlling said encoding operation and said decoding operation performed by said selecting means, said storing means, said operating means and said classifying means.

5,511,095 AUDIO SIGNAL CODING AND DECODING DEVICE

Takeo Inoue, Hirakata; Hideharu Nishida, Habikino; Shozo Sugishita, Hirakata, and Akira Tsukihashi, Oizumi, all of Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Apr. 13, 1993, Ser. No. 45,426

Claims priority, application Japan, Apr. 15, 1992, 4-095363; Sep. 9, 1992, 4-240644

Int. Cl.⁶ H04B 14/06

U.S. Cl. 375—244

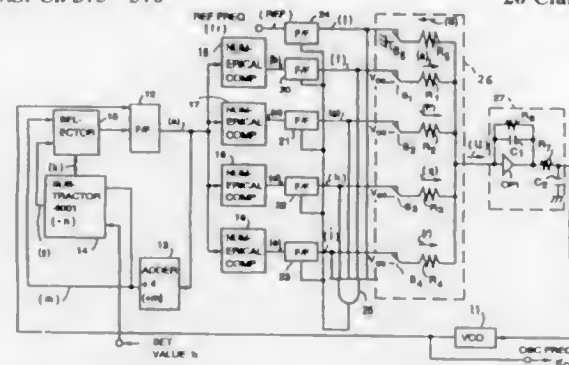
17 Claims

1. An audio signal coding and decoding device comprising: an adaptive differential pulse code modulation coding device for coding an audio signal;

5,511,101
PHASE-LOCKED LOOP SYNTHESIZER
Hidetoshi Hori, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Sep. 22, 1994, Ser. No. 310,843
Claims priority, application Japan, Sep. 22, 1993, 5-236088
Int. Cl.⁶ H03D 3/24

U.S. Cl. 375—376 26 Claims



1. A phase-locked loop (PLL) circuit for producing an oscillation frequency signal having an oscillation frequency that is phase-locked with a reference frequency signal having a predetermined reference frequency, comprising:

variable frequency oscillation means outputting the oscillation frequency signal (fo);

pulse train generating means receiving said oscillation frequency signal as a clock signal, said pulse train generating means converting a train of n clock signals to m pulses where n and m are positive integers, and generating sequential pulses produced by arranging part of the m pulses having non-uniform numbers of clocks, and outputting m periodical, sequential pulse trains so that timing of said m pulses produced by different numbers of clocks divided from said n clock signals are arranged non-uniformly;

phase comparing means outputting a phase error signal by determining said phase error signal between said reference frequency signal and said m sequential pulse trains, respectively, and by combining respective phase error signals; and filtering means filtering said phase error signal to produce a frequency control signal, and providing said frequency control signal to said variable frequency oscillation means.

5,511,102
APPARATUS FOR DRAINING LOWER DRYWELL POOL WATER INTO SUPPRESSION POOL IN BOILING WATER REACTOR

Douglas M. Glantz, San Jose, Calif., assignor to General Electric Company, San Jose, Calif.

Filed Mar. 15, 1995, Ser. No. 404,227
Int. Cl.⁶ G21C 15/18

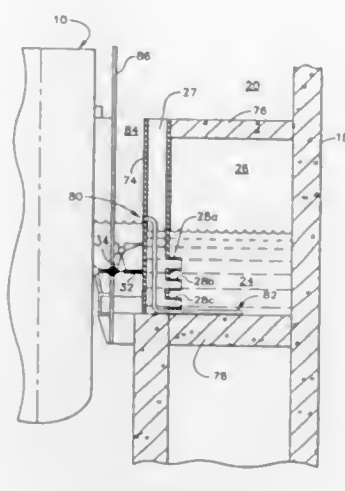
U.S. Cl. 376—283 14 Claims

1. A system for draining water from the drywell into the suppression pool in a boiling water reactor, comprising a conduit having a closed portion which follows a path in a vertical down-comer duct formed in an inner bounding wall of the suppression pool, said conduit comprising:

an inlet in flow communication with the drywell and an outlet in flow communication with the suppression pool, said inlet being at an elevation higher than the water level in the suppression pool and said outlet being near the bottom of the suppression pool, and said closed portion of said conduit comprising:

a downcoming first portion in flow communication with said inlet and

a generally horizontal second portion in flow communication with said first portion and said outlet, whereby the surface water in a lower drywell pool flows into the lowermost stratum of water in the suppression pool.



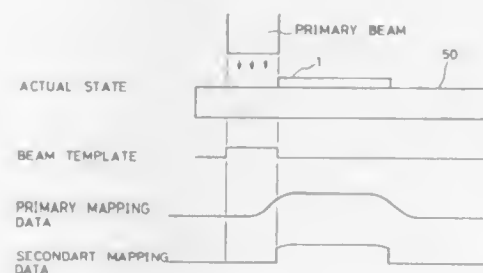
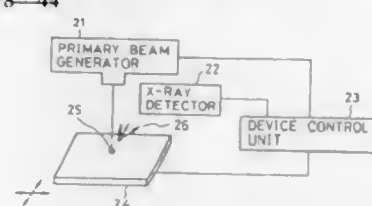
5,511,103

METHOD OF X-RAY MAPPING ANALYSIS

Kiyoshi Hasegawa, Chiba, Japan, assignor to Seiko Instruments Inc., Japan

Filed Oct. 19, 1994, Ser. No. 325,805
Int. Cl.⁶ G01N 23/223

U.S. Cl. 378—44 3 Claims



3. A method of X-ray mapping analysis in an X-ray mapping device comprising an excitation beam source which irradiates a sample with a primary beam to excite X-rays, a controllable sample stage movable in at least longitudinal and lateral axes, an X-ray detector which detects said X-rays from said samples and a data processor which processes data, said method comprising the steps of:

measuring a shape and a size of said primary beam in advance; scanning an element concerned of said sample in a grid pattern with a feed pitch finer than said primary beam size and detecting the X-ray intensity of said element concerned at each grid position;

finding positions where said X-ray intensity begins to become higher than said background intensity or said X-ray intensity begins to become equal to said background intensity; and obtaining information of said positions as data showing a boundary of said element concerned.

5,511,104

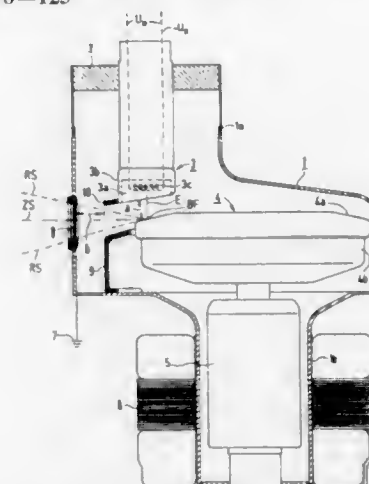
X-RAY TUBE

Werner Mueller, Wilhermsdorf; Herbert Bittl, Nuremberg; Rudolf Friedel, Mochendorf; Roland Schmidt, and Henrik Krogmann, both of Erlangen, all of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Feb. 21, 1995, Ser. No. 393,932
Claims priority, application Germany, Mar. 11, 1994, 44 08 288.6; Dec. 19, 1994, 44 45 259.4

Int. Cl.⁶ H01J 35/10

U.S. Cl. 378—125 15 Claims



1. An x-ray tube comprising: an evacuated housing having a beam exit window; a cathode assembly and an anode disposed in said housing; means for placing said anode and said cathode assembly at respective electrical potentials with the electrical potential of said anode being positive in comparison to the electrical potential of said cathode assembly for causing said anode to emit x-rays, and said anode also emitting secondary electrons, said anode being oriented so that said x-rays exit said housing through said beam exit window; and

first and second electrodes disposed opposite each other in said housing and means for placing said first and second electrodes at respective electrical potentials with the electrical potential of said first electrode being positive in comparison to the electrical potential of said second electrode, said first and second electrodes being oriented in said housing so that secondary electrons emanating from said anode must pass between said first and second electrodes before reaching said beam exit window, and said first and second electrodes and said means for placing said first and second electrodes at respective electrical potentials comprising, in combination, means for preventing substantially any of said secondary electrons from reaching said beam exit window.

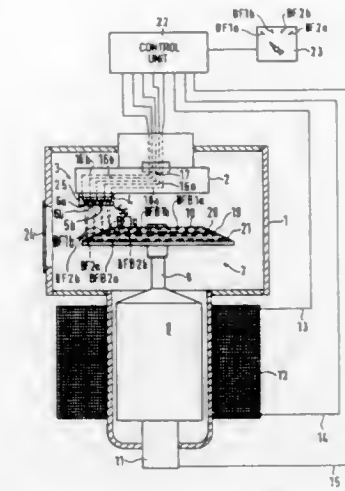
5,511,105
X-RAY TUBE WITH MULTIPLE DIFFERENTLY SIZED FOCAL SPOTS AND METHOD FOR OPERATING SAME
Willibald Knott, Eckental, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Mar. 3, 1994, Ser. No. 205,249
Claims priority, application Germany, Jul. 12, 1993, 43 23 298.1

Int. Cl.⁶ H01J 35/06

U.S. Cl. 378—134 14 Claims

1. An x-ray tube comprising: an anode having a target area divided into a plurality of regions, said regions respectively consisting of different materials; and electron emitter means for generating at least one focal spot in each of said region and a plurality of focal spots of respectively different sizes in at least one of said regions, said emitter means generating said focal spots in said different



regions and said focal spots of different sizes in said one region in close proximity for obtaining a focal position which is substantially the same for all of said focal spots.

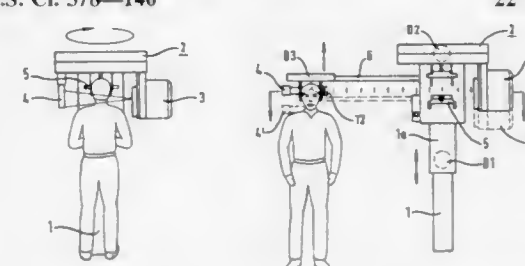
5,511,106
X-RAY DIAGNOSTICS INSTALLATION FOR PRODUCING X-RAY EXPOSURES OF BODY PARTS OF A PATIENT

Michael Doeber, Lorsch; Werner Guenther, Bensheim; Ulrich Schulze-Ganzlin, Lorsch; Joseph Ploetz, Bensheim; Erich Huebeck, Bensheim, and Manfred Franetzk, Bensheim, all of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Jun. 30, 1994, Ser. No. 269,058
Claims priority, application Germany, Jul. 6, 1993, 43 22 483.0; European Pat. Off., May 30, 1994, 94108334; Jun. 17, 1994, 94109424

Int. Cl.⁶ A61B 6/03

U.S. Cl. 378—146 22 Claims



1. An x-ray diagnostics installation for producing x-ray exposures of a body part, having a length and width, of a patient, said x-ray diagnostics installation comprising:

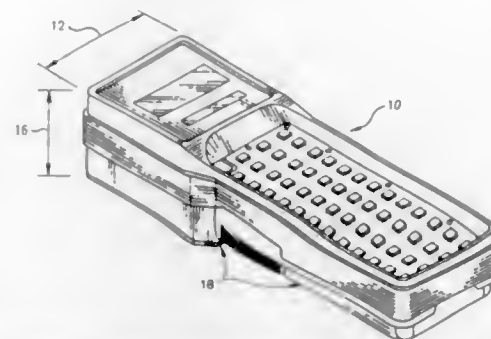
a line detector camera and a radiation source disposed diametrically opposite said line detector camera, and adapted to have said body part disposed between said radiation source and said line detector camera, said radiation source having a radiation diaphragm and emitting a fan beam of x-rays limited by said radiation diaphragm;

said line detector camera having a slot shaped opening for admitting x-rays from said radiation source, and containing an x-ray detector disposed behind said slot-shaped opening, said x-ray detector having a width matched to at least one of the width and the length of said body part;

means for producing a panorama tomogram of said body part of said patient;

means for producing a skull exposure of said patient; and adjustment means, to which said radiation source and said line detector camera are mounted, for adjusting said line detector camera relative to said body part for moving said slot opening along said body part and for moving said fan beam from said radiation source synchronously with said line detector camera.

said adjustment means including a stand having a height-adjustable carrier part, a rotary unit mounted on said stand carrying said radiation source and a first means for positioning and holding the head of said patient, a boom carrying a second means for holding and positioning said head, first and second holders for said line detector camera, said first and second holders being structurally identical, said first holder being disposed on said rotary unit, relative to said first means for holding and positioning said head, for orienting said line detector camera with said slot-shaped opening vertically oriented from moving said line detector camera around said head in common with said radiation source to produce said panorama tomogram, and said second holder being disposed for holding said line detector camera with said slot-shaped opening horizontally oriented for moving the line detector camera in a vertical plane relative to said radiation source to produce said skull exposure.



removably positioned between and separating said first and second cases, said test circuit housing being mated to said first and second cases to provide a single rigid device; and at least a first wire coupling said circuitry for testing with said computer for conveying at least a second electrical signal for control of said circuitry for testing; said computer being functional even if said test circuit housing is removed.

5,511,107

X-RAY PHANTOM APPARATUS

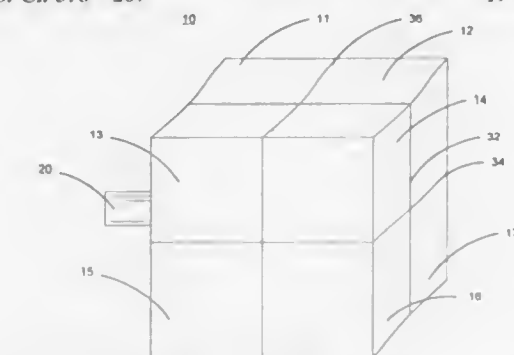
Alan P. Sisk, Lincoln, Mass., assignor to Photoelectron Corporation, Waltham, Mass.

Filed Aug. 5, 1994, Ser. No. 286,757

Int. Cl.⁶ G01D 18/08

U.S. Cl. 378—207

19 Claims



I. A phantom assembly comprising:
a tissue equivalent volume matrix bounded by a peripheral surface and having a radiation transmission characteristic substantially the same as a living tissue matrix, said volume matrix including at least two locations where radiation sensitive film can be inserted, exposed and then removed for imaging,
wherein two of said locations are each substantially planar and wherein said two locations are mutually non-parallel.

5,511,108

APPARATUS AND METHOD FOR PERFORMING AND CONTROLLING TESTING OF ELECTRICAL EQUIPMENT

David Severt, Spokane, Wash.; George Slegner, Post Falls; Daren Upchurch, Coeur D'Alene, both of Id.; William Erler, and James Anselmo, both of Spokane, Wash., assignors to Itronix Corporation, Spokane, Wash.

Continuation-in-part of Ser. No. 709,033, May 31, 1991. This application Dec. 4, 1992, Ser. No. 987,480

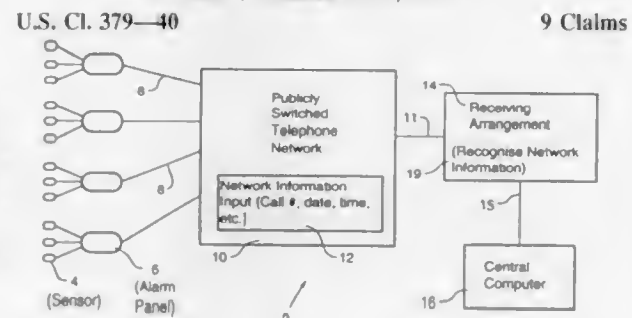
Int. Cl.⁶ H04M 1/24; 3/08; 3/22

U.S. Cl. 379—21

19 Claims

I. Apparatus for performing and controlling testing of electrical equipment, comprising:
a computer configured in matable, separable first and second cases with at least a first wire coupling said first and second cases for conveying at least a first electrical signal, said first and second cases being matable to provide a single rigid computer device;
a test circuit housing, containing circuitry for testing electrical equipment, said test circuit housing being selectively and

I. A security system comprising a host of alarm panels each of which receives signals from sensors indicating the presence of an alarm condition in a space being monitored, each alarm panel includes means to originate a telephone communication over a telephone network to a receiving arrangement and provide information signals thereto regarding an alarm condition, said receiving arrangement being connected to and providing said information to a central computer which processes the information signals and based thereon adopts an appropriate course of action, said receiving arrangement upon initiation of a telephone communication from any of said alarm panels also includes means for receiving telephone network information from the telephone network which telephone network information is particular to a telephone service used by the alarm panel to originate the telephone communication and subsequently receives the information alarm signal from the alarm panel; said receiving arrangement, upon receipt of a telephone communication from an alarm panel, includes means to combine the telephone network information with information from the alarm panel and provides this combined information in a data signal to the central computer for processing.



5,511,109

SECURITY SYSTEM USING CALL DISPLAY

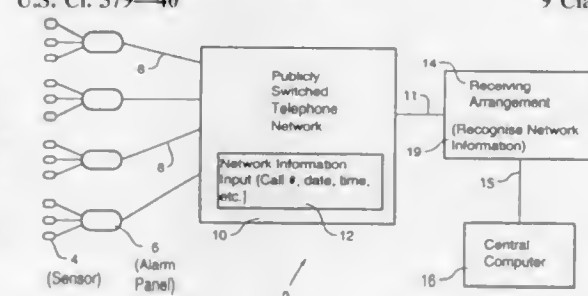
Douglas Hartley, Dollard-des-Ormeaux; Dnan N. Huan, Montreal North, and Sean Bailey, Point Claire, all of, Canada, assignors to Sur-Gard Security Systems Ltd., Downsview, Canada

Filed Oct. 1, 1993, Ser. No. 130,502

Int. Cl.⁶ H04M 11/00; 11/04

U.S. Cl. 379—40

9 Claims



5,511,110

CELLULAR PHONE PAGE SYSTEM USING SEQUENTIAL TRANSMISSIONS OF PAGES OVER A TIME-PARTITIONED FORWARD CONTROL CHANNEL

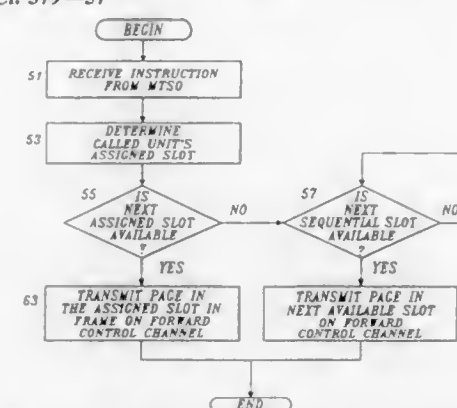
Elliott H. Drucker, Kirkland, Wash., assignor to U S WEST, Inc., Englewood, Colo.

Filed Nov. 9, 1994, Ser. No. 336,816

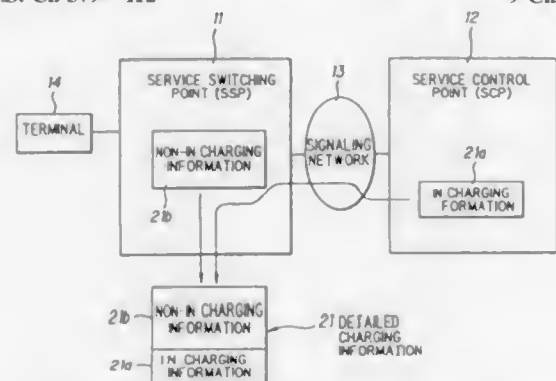
Int. Cl.⁶ H04M 11/00

U.S. Cl. 379—57

7 Claims



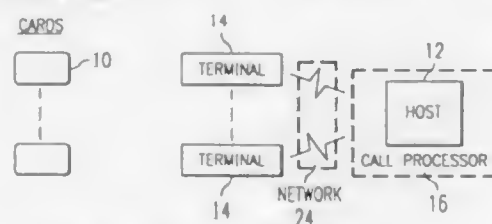
5,511,113
SERVICE SWITCHING POINT AND SYSTEM FOR CREATING DETAILED CHARGING INFORMATION
 Koji Tasaki, Takashi Hidaka, and Akira Orifu, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kanagawa, Japan
 Filed Feb. 2, 1994, Ser. No. 190,556
 Int. Cl.⁶ H04M 15/00; 3/42; 7/06; H04J 3/12
 U.S. Cl. 379—112



1. A service switching point equipped with a switching function and connected via a communication network to a service control point equipped with an additional service control function, the service switching point comprising:

- means for receiving, via the communication network, first charging information unique to the additional service from the service control point, the first charging information created by the service control point when the additional service has been requested by a subscriber;
- means for creating second charging information, including charging information different from the first charging information; and
- means for creating detailed charging information for the additional service by combining the first charging information, which is sent from said service control point, with the second charging information which is created in the service switching point.

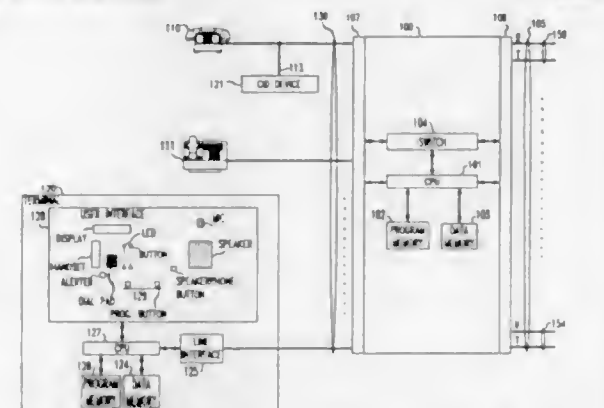
5,511,114
TELEPHONE PRE-PAID CALLING CARD SYSTEM AND METHOD
 Charles J. Stinson, and Brady S. Beshear, both of Garland, Tex., assignors to Call Processing, Inc., Dallas, Tex.
 Filed Jun. 6, 1994, Ser. No. 254,237
 Int. Cl.⁶ H04M 15/00; 17/00; G06K 5/00; G07D 7/00
 U.S. Cl. 379—114



7. A calling card system, comprising:
- a host computer having a database;
 - a plurality of data terminals connectable to the host computer, each data terminal identified by a data terminal identification code and including means for authorizing calling card security numbers in selectable call authorization amounts; and
 - a record stored in the database for each calling card security number authorized by a data terminal, at least one record including an initial call authorization amount and any recharge call authorization amount, and the data terminal identification codes identifying the data terminals at which the initial and any recharge call authorization amounts were

issued such that call authorization amounts for the calling card which are generated by multiple data terminals can be reconciled.

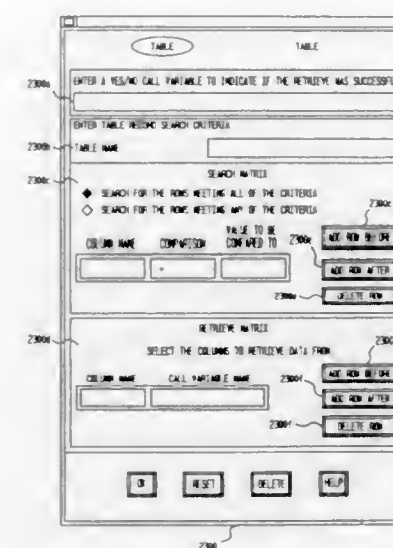
5,511,115
APPARATUS AND METHOD FOR PROGRAMMING A REPERTORY DIAL BUTTON OF A STATION TERMINAL
 Jeanne P. Bayerl, Red Bank; Duane Galensky, Eatontown, and David E. Jones, Holmdel, all of N.J., assignors to AT&T Corp., Murray Hill, N.J.
 Filed Mar. 8, 1993, Ser. No. 28,094
 Int. Cl.⁶ H04M 15/00; 3/00
 U.S. Cl. 379—142



1. A communication system, including a controller, for switchably controlling connections between a plurality of external communication lines and one or more station terminals which connect thereto over extension loops, said communication system comprising:
- memory means for receiving, during a silent interval between ringing signals, an incoming caller line identification (CID) number over one of said external communication lines, and means responsive to a programmable button depression signal received from a first one of said station terminals for identifying said CID number with a programmable button of said first one station terminal as the source of said programmable button depression signal and for storing said CID number in a memory associated with the identified programmable button and
 - at said first one station terminal
 - display means for displaying said CID number and
 - programmable button, responsive to a user depression while said CID number is being displayed, for generating said programmable button depression signal.

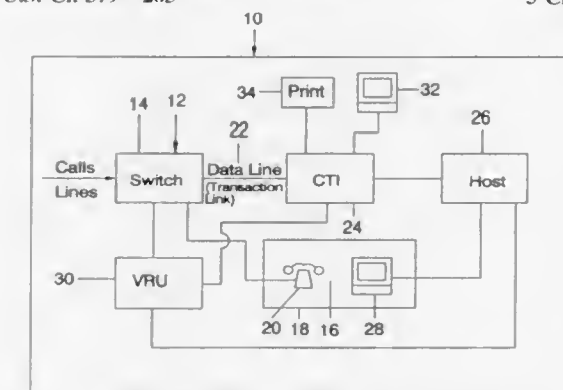
5,511,116
METHOD OF CREATING AND ACCESSING VALUE TABLES IN A TELECOMMUNICATION SERVICE CREATION AND EXECUTION ENVIRONMENT
 Subramanya K. Shastri, Middletown; Francis Y. Chu, Highland Park; Susan K. Man, Holmdel, and Zaher A. Nazif, High Bridge, all of N.J., assignors to Bell Communications Research Inc., Morristown, N.J.
 Continuation-in-part of Ser. No. 934,240, Aug. 25, 1992, abandoned. This application Nov. 6, 1992, Ser. No. 972,502
 Int. Cl.⁶ H04M 3/42; 11/00; 15/00; 7/00
 U.S. Cl. 379—201

1. A method of providing a requested service to one or more customers of a telecommunication network, the method comprising the steps, executed by a data processor of the telecommunication network, of:
- prompting an operator to create one or more call processing records each including a plurality of call processing procedures for execution by a call processing environment of the telecommunication network;



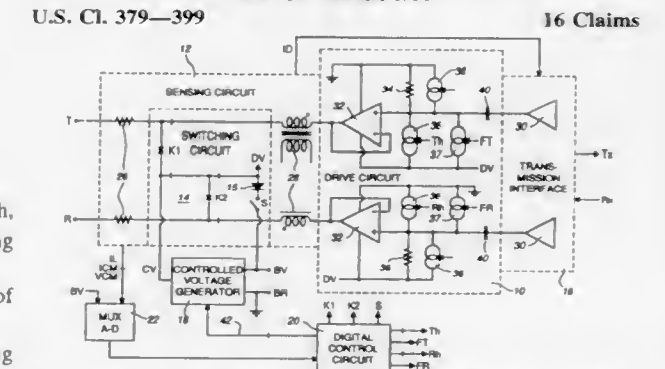
- prompting an operator to create a table of data associated with, but separate from, each of said one or more call processing records;
- storing said one or more call processing records and said table of data;
 - executing one of said processing records in the call processing environment; and
 - retrieving data from said table of data during the execution of said one of said call processing records.

5,511,117
INTEGRATED VOICE AND BUSINESS TRANSACTION REPORTING FOR TELEPHONE CALL CENTERS
 Andre C. Zazzera, 1465 S. Tyler Rd., St. Charles, Ill. 60174
 Filed Sep. 26, 1994, Ser. No. 312,347
 Int. Cl.⁶ H04M 15/00; 3/00
 U.S. Cl. 379—265



1. An integrated voice and data business transaction detail reporting for a call center of a telephone system, comprising:
- an automatic call distributor for directing incoming calls to a plurality of agents, and for generating information pertaining to the voice of the calls;
 - a host computer for supplying information to the agents, and for generating business transaction data pertaining to the incoming calls and the action of the agents; and
 - means for correlating the voice information and business transaction data in real time and for generating a written report containing the combined information and data in real time.

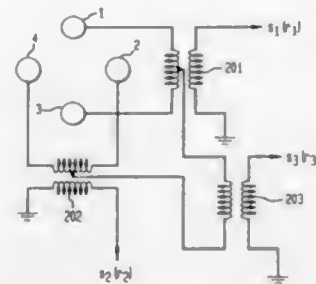
5,511,118
METHOD OF PROVIDING D.C. FEED TO A TELEPHONE LINE
 Stanley A. Gores, Kanata; Joseph F. M. Darveau, Aylmer; Francois Y. Tremblay, Hull; Stanley D. Rosenbaum, Ottawa, and Reinhard W. Rosch, Richmond, all of Canada, assignors to Northern Telecom Limited, Montreal, Canada
 Continuation of Ser. No. 10,244, Jan. 28, 1993, abandoned, which is a continuation-in-part of Ser. No. 868,893, Apr. 16, 1992, which is a continuation-in-part of Ser. No. 862,478, Apr. 2, 1992, Pat. No. 5,323,461, which is a continuation-in-part of Ser. No. 648,776, Jan. 31, 1991, Pat. No. 5,103,387. This application Apr. 21, 1995, Ser. No. 426,438
 Int. Cl.⁶ H04M 1/00



1. A method of providing d.c. feed to a two-wire telephone line, comprising the steps of:
- generating a supply voltage for a drive circuit including two amplifiers each having an output coupled to a respective wire of the line;
 - supplying an a.c. transmission signal to the line via the amplifiers of the drive circuit;
 - determining potentials at the amplifier outputs in dependence upon the supply voltage and headroom voltages required for operation of the amplifiers to supply the transmission signal to the line, a difference between the potentials at the outputs of the two amplifiers producing a loop current on the line;
 - monitoring the loop current on the line; and
 - digitally controlling the generated supply voltage in dependence upon the monitored loop current by the steps of, iteratively at each of a plurality of successive time instants:
 - determining a target value corresponding to a target voltage inversely dependent upon an amount by which the monitored loop current exceeds a predetermined value; and
 - adjusting the generated supply voltage towards the target voltage in dependence upon the target value;
 - whereby the target voltage and the generated supply voltage converge over said plurality of successive time instants.

5,511,119
METHOD AND SYSTEM FOR COMPENSATING FOR COUPLING BETWEEN CIRCUITS OF QUADED CABLE IN A TELECOMMUNICATION TRANSMISSION SYSTEM
 Joseph W. Lechleider, Mendham Township, Morris County, N.J., assignor to Bell Communications Research, Inc., Morristown, N.J.
 Continuation-in-part of Ser. No. 15,950, Feb. 10, 1993, abandoned. This application May 13, 1994, Ser. No. 242,577
 Int. Cl.⁶ H04M 3/34

1. In a telecommunication system including a cable having at least one quad having two side modes and one phantom mode, a method for compensating for coupling between the three modes of the quad, the method comprising the steps of:
- during a start up training period, separately and successively transmitting at a transmitting end of the cable known training signals on each of said three modes of the quad;



measuring at an opposite receiving end of the cable the signals received on each of said three modes of the quad whose terminations are available at the receiving end of the cable; in response to the separate successive known training signals; performing first estimations of the coupling between said three modes of the quad between the transmitting and the receiving ends of the cable from the measured training signals received on said three modes of the quad;

during transmission of data signals from the transmitting end on said three modes following the start up period modifying received data signals at the receiving end of the cable in accordance with the first estimations of the coupling between said three modes to produce estimated transmitted signals; storing at least one of the received data signals from each said mode for signals received on each said mode and at least one corresponding estimated transmitted data signal as modified by one of said first estimations for said each mode;

performing subsequent estimations of the coupling between said three modes during transmission of subsequent data signals as a function of the stored at least one received data signal from said each mode and the stored at least one corresponding modified transmitted data signal for said each mode; and modifying said subsequent data signals received at the receiving end of the cable after performing said subsequent estimations of the coupling in accordance with said subsequent estimations of coupling between said three modes.

5,511,120

PORTABLE TELEPHONE SET WITH AN EARPHONE
Masaru Hirata, and Satoshi Tatsumi, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Apr. 15, 1994, Ser. No. 228,428

Claims priority, application Japan, Apr. 16, 1993, 5-113926; May 18, 1993, 5-139407

Int. Cl.⁶ H04M 1/00

U.S. Cl. 379-433

8 Claims

1. A portable telephone set with an earphone, comprising: a main body containing telephone communication circuit including a sound generating circuit therein and having operation keys, and a microphone thereon;

an antenna for receiving and transmitting telephone communication signals;

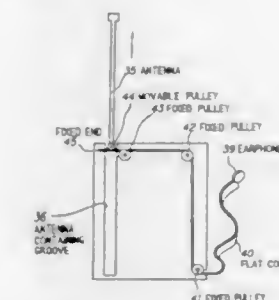
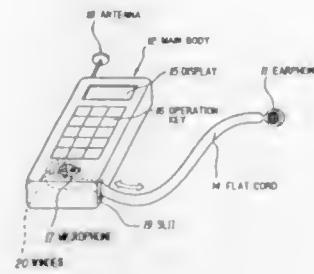
an earphone cord for connecting said earphone to said sound generating circuit, said earphone cord being a flat cord; and means for retracting said flat cord into said main body and for extracting said flat cord from said main body,

wherein said antenna is vertically movable to be extended out of said main body in an operational state and to be contained in said main body in a non-operational state,

said retracting means for allowing said flat cord to be pulled out of said main body in said operational state and for retracting said flat cord so as to be contained in said main body in said non-operational state, and

said means for retracting including means for correlating movements between said antenna and said flat cord,

wherein when one of said antenna and said flat cord is extended out of said main body, a remaining one of said antenna and said flat cord is extended out of said main body by said correlating means, and when said one is contained in said



main body, said remaining one is contained in said main body by said correlating means.

5,511,121

EFFICIENT ELECTRONIC MONEY

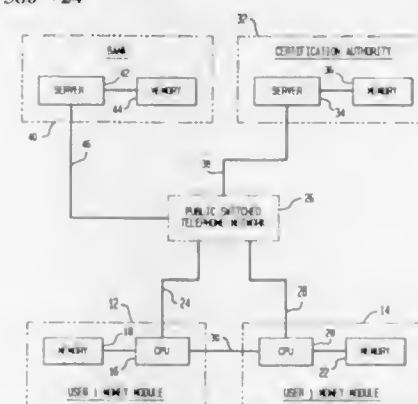
Yacov Yacobi, Berkeley Heights, N.J., assignor to Bell Communications Research, Inc., Morristown, N.J.

Continuation-in-part of Ser. No. 201,106, Feb. 23, 1994. This application Sep. 8, 1994, Ser. No. 303,048

Int. Cl.⁶ H04K 1/00

U.S. Cl. 380-24

51 Claims



1. A method for performing an electronic cash transaction comprising the step of

transmitting via a communications link from a first electronic coin processing unit to a second electronic coin processing unit an electronic coin comprising a linkage of a public key of a party and a random element, said linkage being signed using a secret operation of a public key cryptographic system, wherein said public key has the form

$$P_i = \alpha^{S_i} \text{ mod } p$$

where P_i is a public El Gamal Key of a party i , S_i is a secret El Gamal Key of the party i which includes an identity I_i of the party i , and p and α are publicly known numbers, and wherein said random element has the form $u = \alpha^r \text{ mod } p$, where r is a random number chosen by the party i .

5,511,122

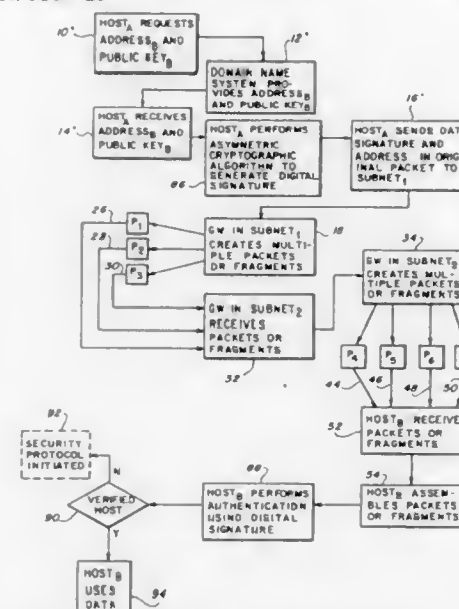
INTERMEDIATE NETWORK AUTHENTICATION
Randall Atkinson, Annandale, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 3, 1994, Ser. No. 254,087

Int. Cl.⁶ H04K 1/00

U.S. Cl. 380-25

14 Claims



1. A method for authenticating an originating host at a receiving host, said method comprising the steps of:

- obtaining a network address and a public key of said receiving host;
- utilizing said public key from said receiving host in combination with a private key from said sending host to generate a cryptographic signature;
- transmitting said cryptographic signature along with data through a first subnetwork in at least one packet;
- receiving said at least one packet at said receiving host; and
- said receiving host utilizing a private key of said receiving host and a public key of said originating host to verify said cryptographic signature.

5,511,123

SYMMETRIC CRYPTOGRAPHIC SYSTEM FOR DATA ENCRYPTION

Carlisle M. Adams, Ottawa, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed Aug. 4, 1994, Ser. No. 285,678

Int. Cl.⁶ H04L 9/06

U.S. Cl. 380-29

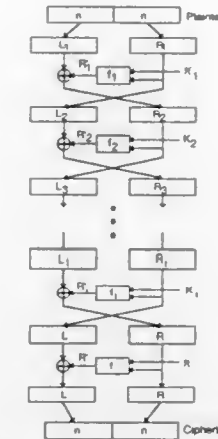
16 Claims

1. In a data encryption method of cryptographically transforming plaintext into ciphertext in data blocks of a predetermined bitlength comprising a plurality of consecutive transformation rounds of half of each data block, each consecutive transformation round comprising steps of:

- selecting an internal key of a specific bit combination from key bits;
- processing the internal key by a $(m \times n)$ substitution box to generate a modified internal key, where m and n are positive even integers, $m < n$, and

$$m < \log \left(\frac{n}{2} \right);$$

XORing half of each data block with the modified internal key to generate a first modified half data block;



processing the first modified half data block by a plurality of $(m \times n)$ mutually different substitution boxes to generate a second modified half data block; and XORing the second modified half data block with the remaining half of the data block to generate a transformed half data block of a transformation round.

5,511,124

CRYPTOGRAPHIC EQUIPMENT

Peter Bergner, Oberschleissheim, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

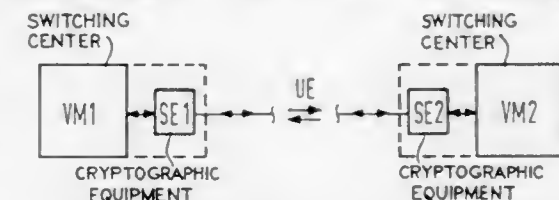
Filed Jul. 19, 1990, Ser. No. 566,818

Claims priority, application Germany, Jul. 20, 1989, 39 24 144.0

Int. Cl.⁶ H04L 9/02; H04K 1/00

U.S. Cl. 380-48

5 Claims



1. Crypto equipment constructed in accordance with CMOS technology, comprising:

an encoder device at a transmitting side and a decoder device at a receiving side for bit-by-bit encoding and decoding of a bit stream having a high bit rate representing a binary signal; said encoder device comprising n encoders and said decoding device comprising n decoders;

a first demultiplexer for receiving the bit stream connected to n decoders for dividing the bit stream into n bit streams;

a first multiplexer connected to said n encoders for combining the encoded bit streams for transmission;

a second demultiplexer for receiving the encoded bit stream, said second demultiplexer being connected to said n decoders and operating to divide the encoded bit stream into n encoder bit streams;

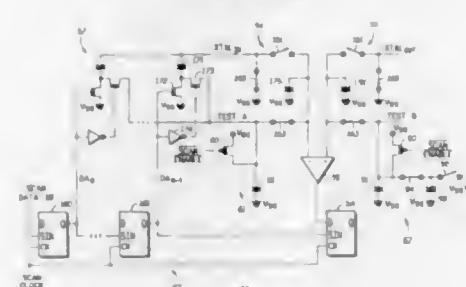
a second multiplexer connected to said n decoders for combining the n decoder bit streams; and

synchronization means at the transmitting end receiving sides connected to said n encoders and n decoders for individual, synchronization thereof;

said synchronizing means including first means at said receiving station operable to activate said decoders of said receiving station to transmit a synchronization request signal to said transmitting station;

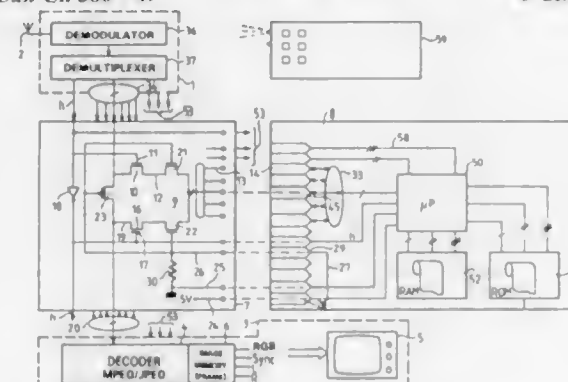
second means in said transmitting station for receiving the synchronization request signal and activating said encoders thereof to transmit a synchronization signal that is specific for each encoder, and which can be received and decoded by said decoders of said receiving station;

23 Claims



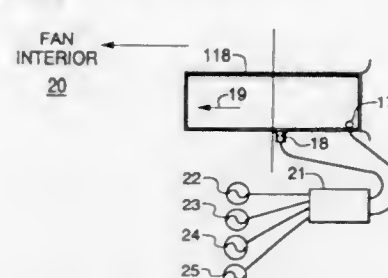
comparator is in a second logic state at said end of said test period.

8 Claims



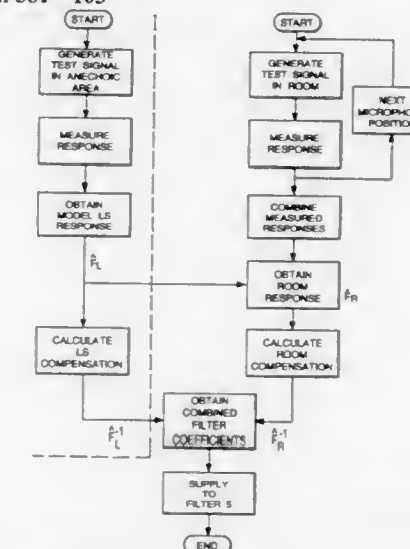
a third switch circuit establishing a direct transmission channel between the receiver and the utilization device for the first and second half-cycles of the clock signal, the direct transmission channel being inactive when the first and second transmission channels are active.

17 Claims



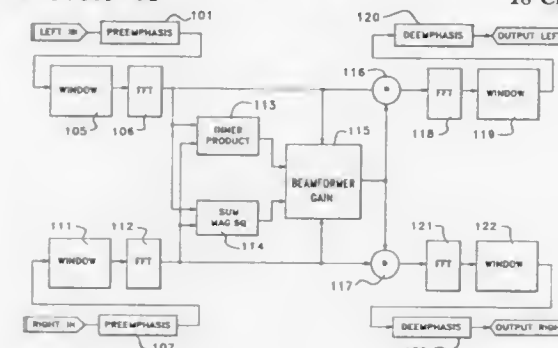
1. An active noise control system for reducing noise of a fan located in a housing comprising duct means related to the housing for directing fluid through the housing, the duct being no greater in length than about 2 wavelengths of the nominal blade passage frequency of the fan operative under essentially steady state conditions, input transducer means for sensing the noise in the duct, cancellation means for attenuating the noise in the duct and an electronic controller means having embedded frequencies, said controller means being responsive to the input transducer means for providing a cancellation signal to the cancellation means.

U.S. Cl. 381-103



(c) deriving subsequently said filter parameters from said first and said second data.

18 Claims

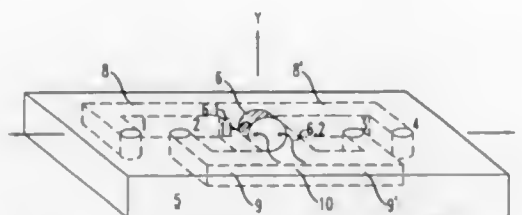


monitoring means for monitoring a plurality of the signals and determining a signal strength for the plurality of signals and enabling means responsive to the signal strength for enabling said beamforming means when the signal strength is high and for inhibiting said beamforming means when the signal strength is low.

Int. Cl.⁶ H04R 25/00

10 Claims

c) defined within the housing, a front cavity adjacent the front side of the diaphragm, and a rear cavity adjacent the rear side of the diaphragm;



- d) a first and a second front conduit for conducting acoustic energy from respective first and second front ports to the front cavity; and
- e) a first and a second rear conduit for conducting acoustic energy from respective first and second rear ports to the rear cavity, wherein:
- f) each of said ports has equivalent cross-sectional area, each of said cavities has equivalent volume, and each of said conduits has equivalent length and cross-sectional area and meets its respective cavity in an acoustically equivalent manner, such that each of said conduits has an equivalent acoustic transfer function from its respective port to the diaphragm; CHARACTERIZED IN THAT
- g) the cavity volume, the conduit length and cross-sectional area, and the port cross-sectional area are adapted such that the acoustical system consisting of the microphone, cavities, conduits, and ports has no more than one acoustic resonant frequency less than 3500 Hz, and no Helmholtz resonant frequency less than 3500 Hz;
- h) the first and second front ports and the first and second rear ports are all substantially collinear along an axis to be referred to as the minor axis; and
- i) said ports are arranged such that the rear ports are intermediate the front ports or the front ports are intermediate the rear ports, and each front port is separated an equal distance from the adjacent rear port, whereby the microphone response will be approximately proportional to the second spatial derivative, along the minor axis, of a sampled acoustic pressure field.

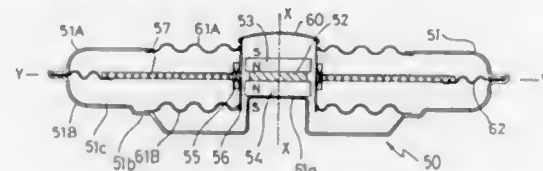
5,511,131 LOUDSPEAKER

Rintaro Kohara, Takeshi Yoshimura, and Hidetoshi Shirakawa, all of Akishima, Japan, assignors to Foster Electric Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 68,180, May 28, 1993, Pat. No. 5,371,806. This application Jul. 20, 1994, Ser. No. 277,968
Claims priority, application Japan, Feb. 3, 1993, 5-39320;
Feb. 3, 1993, 5-39321

U.S. Cl. 381—192 Int. Cl. H04R 25/00

2 Claims



1. A flat-type loudspeaker comprising:
- a magnetic drive means including
- a pair of disk-shaped magnets disposed to be mutually repulsive for forming a peripheral repulsion magnetic field in a yokeless manner about an axial line of the magnets,
- a cylindrical coil bobbin disposed coaxially closely about an outer periphery of said magnets, and
- voice coils wound on an outer periphery of said coil bobbin to be disposed within said peripheral repulsion magnetic field;
- a planar diaphragm spread on a plane perpendicular to said axial line of said magnets, said diaphragm having a central aperture providing an inner peripheral edge and coupled at said inner

peripheral edge substantially to the center of the outer periphery of said voice coil on said cylindrical bobbin;

a frame generally flat-shaped member for supporting at the center said magnets of said magnetic drive means and including an outer peripheral support part and first and second inner support edges, disposed above and below first and second surfaces of said diaphragm, respectively, the outer peripheral support supporting through an annular outer edge damper an outer peripheral edge of said planar diaphragm; and

means for supporting said coil bobbin carrying said voice coils of said magnetic drive means, said supporting means including

first and second annular dampers respectively spread on both sides of said diaphragm to be coaxial with said magnetic drive means and in a plane symmetrical with respect to said plane of the diaphragm, said first and second annular dampers being coupled at their inner peripheral edge to said outer periphery of said cylindrical coil bobbin at first and second axial ends of said cylindrical bobbin, respectively, and at their outer peripheral edge to the first and second inner support edges of said frame.

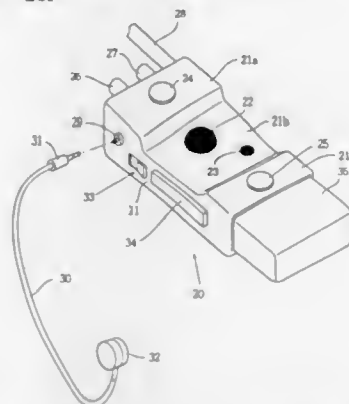
5,511,132 COMMUNICATION DEVICE HAVING AIR-BORNE AND SOLID-BORNE TRANSMITTING AND RECEIVING DEVICES

Toshikazu Yoshimi, Saitama, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Continuation of Ser. No. 94,987, Jul. 22, 1993, abandoned.
This application Oct. 5, 1994, Ser. No. 318,518
Claims priority, application Japan, Aug. 31, 1992, 4-066746

U.S. Cl. 381—205 Int. Cl. H04R 25/00

2 Claims



1. A transceiver communication device comprising:
- a case containing a transmitter means and a receiver means;
- a first converting means mounted in a front surface of said case including air-borne converting means having a first loudspeaker for converting an electrical signal into an audible air-borne sound and a first microphone for converting air-borne sound into an electrical signal;
- a second converting means in said case including solid-borne converting means having a second loudspeaker for converting an electrical signal into solid-borne sound and a second microphone for converting solid-borne sound into an electrical signal, said solid borne converting means having a vibrating member projecting from said front surface of the case of the transceiver; a distance between the second loudspeaker and the second microphone being determined such that when the second loudspeaker is applied to an ear of an operator, the second microphone is in contact with the operator's cheek; and
- a switch mounted in said case for selectively connecting one of the first and second converting means to the transmitter means and receiver means to cause the transceiver to operate in either one of an air-borne mode and a solid-borne mode.

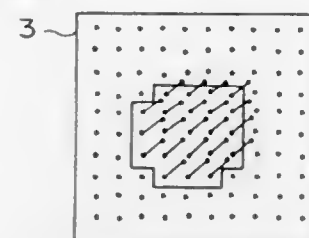
5,511,133 METHOD AND APPARATUS OF RECOGNIZING A MOVING OBJECT

Masako Shimizu, and Ken-ichi Tanaka, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 807,452, Dec. 13, 1991, abandoned.
This application Dec. 28, 1993, Ser. No. 174,622
Claims priority, application Japan, Jan. 24, 1991, 3-022743
Int. Cl. G06K 9/62

U.S. Cl. 382—156

43 Claims



1. A method for recognizing a moving three-dimensional object and for computing a description of motion of the object, said method comprising the steps of:
- detecting a physical property of the object to produce two-dimensional input image data;
- applying the input image data to a bi-directional neural network comprising (i) pairs of velocity neurons for respectively obtaining x-and-y components of said optical flow and (ii) edge detecting line processes, each taking a value from a range between a high value and a low value in accordance with a function of the x and y components of optical flow and which is continuous within said range, interposed between said pairs of velocity neurons; and
- obtaining an optical flow at respective points of said object based on the values taken by the line processes which optical flow provides the description of the motion of the object.

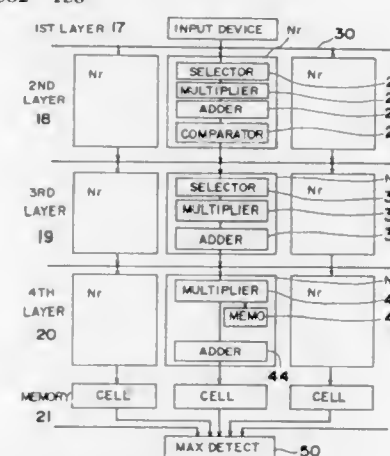
5,511,134 IMAGE RECOGNITION DEVICE AND IMAGE RECOGNITION METHOD

Yasunori Kuratomi, Suita, and Hisahito Ogawa, Nara, both of, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Apr. 28, 1992, Ser. No. 875,086
Claims priority, application Japan, May 1, 1991, 3-100036;
Oct. 2, 1991, 3-255027

U.S. Cl. 382—158 Int. Cl. G06K 9/62

14 Claims



1. An image recognition device for recognizing an input image by a neural network system, comprising:
- input means for inputting an image;

a first layer having a plurality of neurons aligned in a plane for receiving said image on said first layer;

a second layer having a line component sensitive section divided into subsections, each of which contains a plurality of line sensing neurons:

- (1) each sensitive to line components of said image extending in a single direction, and
- (2) comprising:
- (i) receiving means for receiving signals from at least three neurons in said first layer, said three neurons from which signals are received being aligned only in said single direction,
- (ii) multiplier means for multiplying predetermined non-negative synapse weights by the signals received from said at least three neurons, respectively, to produce at least three non-negative products,
- (iii) adder means for adding said products to produce a sum, and
- (iv) comparator means for comparing said sum with a predetermined threshold, and for producing no output signal when said sum is less than said predetermined threshold and producing an output signal relative to said sum when said sum is greater than said predetermined threshold;
- a third layer having a plurality of neurons, each sensitive to a group of neurons contained in said subsections;
- a fourth layer having a plurality of neurons, each sensitive to all said neurons in third layer; and
- a maximum detecting means for detecting a maximum from said neurons in said fourth layer.

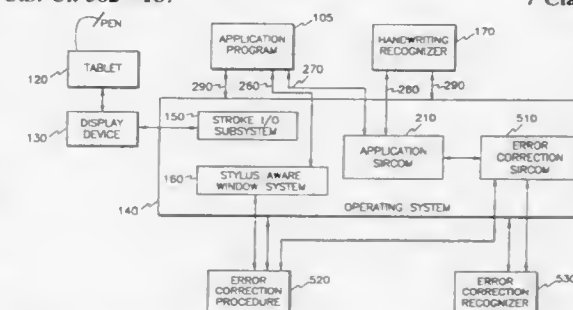
5,511,135 STYLUS-INPUT RECOGNITION CORRECTION MANAGER

James R. Rhyne, New Canaan, Conn.; Nicos J. Anthony, Purdys, N.Y.; Stephen E. Levy, Valhalla, N.Y., and Catherine G. Wolf, Katonah, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 29, 1993, Ser. No. 159,008
Int. Cl. G06K 9/03

U.S. Cl. 382—187

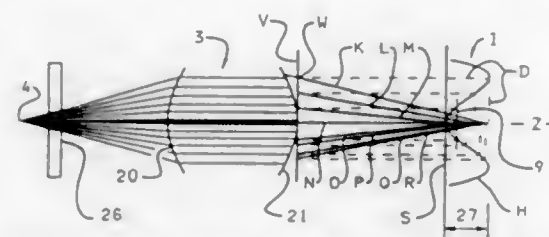
7 Claims



1. A computer-based system referred to as a stylus-input recognition correction manager comprising:

- (a) a stroke router for receiving strokes from an application program, said stroke router having a first and a second mode of operation;
- (b) a recognition manager, connected to said stroke router, for storing said received strokes, for passing said received strokes to a handwriting recognizer for recognition, and for relaying said recognized strokes from said handwriting recognizer back to said application program; and
- (c) a mediator for implementing a protocol between said application program and an error correction module, said protocol having means for facilitating retrieval of said recognized strokes by said error correction module from said application program;
- wherein said first mode of operation of said stroke router routes said received strokes to said recognition manager, and wherein said second mode of operation of said stroke router routes said received strokes to said error correction module through an auxiliary stylus-input recognition correction man-

1. The process of specification for fabrication, of a lens for use in the transfer of signals between an optical fiber and an optoelectronic converter, in which the fabricated lens produces a focus, of



the rays of light that pass through said lens, in a range along a common axis through said lens, by introducing longitudinal spherical aberration, in image space,

wherein said longitudinal spherical aberration has a functional dependence on radial position from said common axis, said radial position being in the exit plane perpendicular to said common axis,

said exit plane being tangent to the exit surface, from which light emerges, of said lens, at the point where said exit surface intersects said common axis, and

and wherein said functional dependence is serpentine in form, comprising the steps of:

establishing an initial set of lens specifications,

including at least the members of the group of:

the light conversion characteristics of said optoelectronic converter,

the light responsive characteristics of said optical fiber,

the tolerance ranges of the characteristics, and,

the desired range of light power coupling efficiency and,

iteratively determining, from said initial set of lens specifications and an initial set of values for adjustable parameters describing said longitudinal spherical aberration in image space, an optimized set of said adjustable parameters which are used to produce a set of machine parameters to which a lens surface shaping machine can respond, thereby forming a lens substantially satisfying said lens specification parameters.

5,511,141

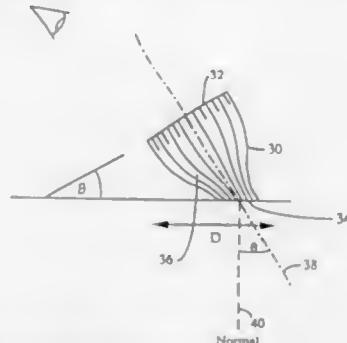
FIBER OPTIC READING MAGNIFIERS

Ellezer Peli, 32 Kendall Rd., Newton, Mass. 02159

Filed Apr. 15, 1994, Ser. No. 228,209

Int. Cl.⁶ G02B 6/06

U.S. Cl. 385—116



1. A reading magnifier comprising:

a bundle of juxtaposed longitudinally tapered optical fibers having a large end and a flat small end, said optical fibers each having a larger diameter at the large end than proximate the flat small end, said bundle of optical fibers being coherently aligned along an orientation direction defined by a longitudinal axis through a straight centrally located optical fiber in said bundle, wherein a line normal to the flat small end forms an acute angle with the orientation direction.

5,511,142

RIB OPTICAL WAVEGUIDE AND METHOD OF MANUFACTURING THE SAME

Noriyoshi Horie, Moriyama; Hayami Hosokawa, Yawata; Masami Tada, Takatsuki; Tsukasa Yamashita, Nara; Tatsuo Ohgaki, Takatsuki, and Hironobu Kiyomoto, Nara, all of Japan, assignors to Omron Corporation, Kyoto, Japan

Division of Ser. No. 588,332, Sep. 26, 1990, Pat. No. 5,138,687.

This application Aug. 6, 1992, Ser. No. 925,613

Claims priority, application Japan, Sep. 26, 1989, 1-248107;

Nov. 29, 1989, 1-307757; Nov. 29, 1989, 1-307758; Nov. 29,

1989, 1-307759; Nov. 29, 1989, 1-307760; Dec. 15, 1989,

1-323805; Dec. 28, 1989, 1-338702; Dec. 28, 1989, 1-338704;

Feb. 27, 1990, 2-044527; May 18, 1990, 2-126943; Jul. 12, 1990,

2-186646; Jul. 18, 1990, 2-191669; Jul. 26, 1990, 2-196262; Jul.

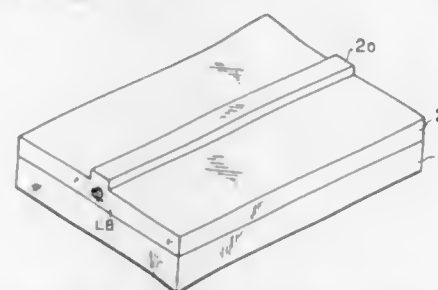
26, 1990, 2-196263; Aug. 9, 1990, 2-209261; Aug. 22, 1990,

2-219009

Int. Cl.⁶ G02B 6/10

U.S. Cl. 385—129

9 Claims



1. A method of manufacturing an optical waveguide device comprising the steps of:

preparing a stamper including a contour associated with a contour of a waveguide layer to be manufactured;

forming an optical wave control electrode on a predetermined substrate;

injecting, between the stamper and a surface of the substrate in which the optical wave control electrode has therefor been formed, a liquid material which is solidified under an energy irradiation;

irradiating an energy onto the liquid material for solidification thereof to form a waveguide layer; and

removing thereafter the stamper.

5,511,143

MAKING POLYMER THIN FILMS FOR OPTICAL USES

Denise D. Denton, 4913 Regent St., Madison, Wis. 53705, and

Jeffrey A. Tobin, 2604 Arbor Dr., Madison, Wis. 53711

Continuation of Ser. No. 934,588, Aug. 24, 1992, abandoned, which is a division of Ser. No. 765,077, Sep. 24, 1991, Pat. No.

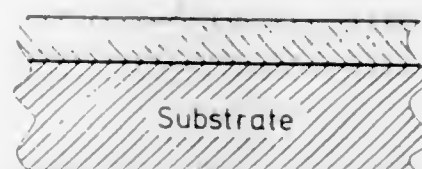
5,217,749. This application Feb. 14, 1994, Ser. No. 195,742

Int. Cl.⁶ G02B 6/10

U.S. Cl. 385—130

2 Claims

Plasma Deposited Film



1. A thin film optical wave guide comprising a plasma polymerized film of organic monomer deposited as a film on a substrate, the film having an index of refraction which varies through the film in relation to distance from the substrate and which varies to a peak in the interior of the film so as to tend to retain and guide a light beam transmitted into the interior thereof.

5,511,144

OPTICAL DISTRIBUTION FRAME

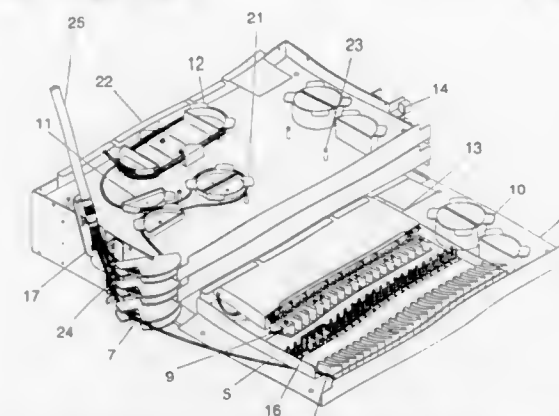
Paul D. Hawkins, Arlington, Tex.; Dulip Ekanayake, Hickory, N.C.; Daniel S. McGranahan, Fort Worth, and Harley J. Staber, Coppell, both of Tex., assignors to Siecor Corporation, Hickory, N.C.

Filed Jun. 13, 1994, Ser. No. 259,236

Int. Cl.⁶ G02B 6/36

U.S. Cl. 385—135

5 Claims



1. A distributing frame including slideable drawers for optical fibers, comprising:

apparatus for retaining a cable holding a buffer tube containing a plurality of optical fibers;

a column of vertically spaced apart horizontally slideable drawers, at least one drawer having storage means for storing a length of the optical fiber buffer tube along a floor of the drawer and support means holding a removable splice tray and a removable connector shelf in vertically spaced apart relation to said floor of the drawer; and,

a linear row of retainer slides mounted to the connector shelf, at least one of said retainer slides allowing a fiber optic connector sleeve retainer housed in said retainer slide a limited sliding range of motion orthogonal to a line containing the row of retainer slides, such range of motion including an extended position in which a portion of the retainer is not enclosed by the slide.

5,511,145

PORTABLE ELECTRIC HEATER OR FLOOR LAMP

Ralph E. Bailey, 5 F. Lockhart Cir., and Thomas P. Jeffords, Sr.,

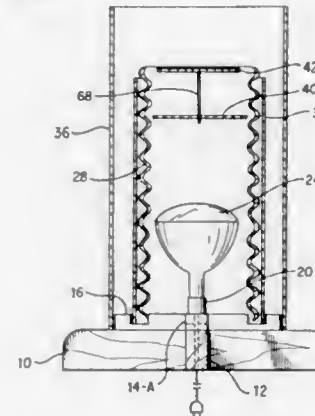
2243 Rocks Spring Rd., both of Forest Hill, Md. 21050

Filed Nov. 16, 1993, Ser. No. 152,689

Int. Cl.⁶ F24H 1/00

U.S. Cl. 392—355

5 Claims



1. A combination portable electric heater and floor lamp comprising: a hollow heat conductive cylindrical casing of refractory materials having openings of equal cross sectional dimensions at each end of said cylindrical casing allowing air circulation therein,

said casing having an inner surface of composition, density and configuration providing for the absorption and reflection of radiant energy, and having physical dimensions sized to contain a replaceable radiant energy source, a subassembly of manually detachable heat conductive discs and heat conductive air outlet diffusers of refractory materials being located at an upper portion of said casing,

said replaceable radiant energy source having a bulb shape and being electrically connected to an upright base positioned in a lower region of said casing, said radiant energy source being positioned a close spacial distance to an inner surface of said casing to provide therein a thermally controlled one way air check valve, the radiant energy emitted from said radiant energy source being incident upon said subassembly and said inner surface of said casing, a support member having mounting means for said upright base and for an electrical line cord, a thermally pressurized air chamber being located in said casing between said radiant energy source and said subassembly, said subassembly having composition, density and configuration providing for the absorption and reflection of radiant energy from said radiant energy source, said subassembly having an adjustable lower disc whereby physical spacing between said radiant energy source and said lower disc may be varied to provide an optimum focus position for direct and reflected radiant energy, said subassembly including a lower air outlet air diffuser having a lower surface which provide mounting means for a middle disc and an upper air diffuser having a lower surface which provides mounting means for an upper disc, said subassembly providing substantial containment within said casing of radiant energy emitted from said radiant energy source, said subassembly having partially restricted openings which direct heated air to the center of said upper air outlet diffuser,

said subassembly lower disc, middle disc and air outlet air diffusers having a center anchoring means attached to a threaded rod, said threaded rod having anchoring means attached to a knob,

said support member having mounting means for an inlet air diffuser, said air inlet diffuser having a spatial distance between a lower end of said casing which regulates the volume of dense cool air entering the said casing,

said subassembly air outlet diffusers, said middle disc, and said upper disc having air openings and spacing which regulate the volume of heated air exiting said casing, with the total air outlet opening cross sectional area being greater than the total air inlet opening cross sectional area,

whereby total absorption of direct and reflected radiant energy from said radiant energy source is transformed ultra efficiently into molecular heat energy and is convected into said air chamber, and the air temperature, air volume, air thermal conductivity and air pressure in said air chamber increases as the air density decreases, causing said heated air to be communicated with increased velocity through said subassembly air outlet diffusers into the atmosphere.

5,511,146

EXCITORY AND INHIBITORY CELLULAR AUTOMATA FOR COMPUTATIONAL NETWORKS

Laurence R. Simar, Jr., Richmond, Tex., assignor to Texas

Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 721,750, Jun. 26, 1991, abandoned.

This application Jun. 14, 1994, Ser. No. 259,373

Int. Cl.⁶ G06F 7/38

U.S. Cl. 395—24

17 Claims

1. A graph-search network assembled from cellular automata, comprising:

a graph-search network configured from appropriately inter-coupled D-node cellular automata arranged to be isomorphic to a preselected graph structure;

said D-node cellular automata being configured from cellular automata that are an excitory E-Cell and inhibitory I-Cell;

5,511,151

METHOD AND APPARATUS FOR UNWINDING IMAGE DATA

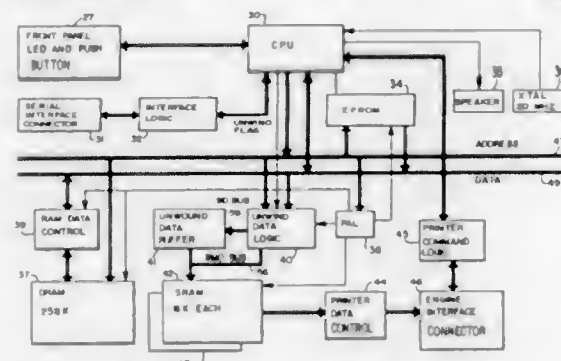
William C. Russell, Laguna Hills; H. Brad Emerson, Costa Mesa, and Tony K. Ip, Lake Forest, all of Calif., assignors to Canon Information Systems, Inc., Costa Mesa, Calif.

Filed Jun. 10, 1992, Ser. No. 896,367

Int. Cl.⁶ H04N 7/01

U.S. Cl. 395—114

19 Claims



1. Apparatus for reforming image data comprising:
 - a memory partitioned into at least a first address space which corresponds to physical memory for storing image data having one of a row format and a column format, a second address space which does not correspond to physical memory and a third address space which corresponds to physical memory for storing reformatted image data;
 - writing means for writing a predetermined $N \times N$ block of the image data having one of the row format and the column format from the first address space to the second address space so as to initiate conversion of the predetermined $N \times N$ block of image data to the other of the row format and the column format, and for subsequently writing the predetermined $N \times N$ block of image data to the third address space;
 - converting means which, in response to the image data being written to the second address space, converts the predetermined $N \times N$ block of image data from the one of the row format and the column format into the other of the row format and the column format; and
 - outputting means responsive to said writing means writing to the third address space, for storing the predetermined $N \times N$ block of image data which has been converted by said converting means into the other of the row format and the column format, to said memory at the third address space.

5,511,152

MEMORY SUBSYSTEM FOR BITMAP PRINTER DATA CONTROLLER

Charles C. Lai, Marlboro, and Wayne R. Bortman, Westford, both of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

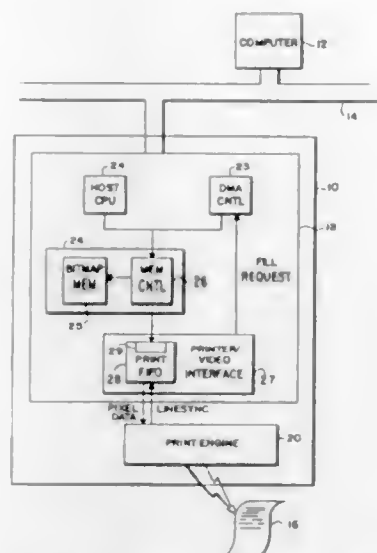
Filed Sep. 20, 1993, Ser. No. 124,177

Int. Cl.⁶ G06K 15/00

U.S. Cl. 395—115

5 Claims

3. A printer comprising:
 - a DRAM memory;
 - a host CPU for providing a system clock and a state signal representing a CPU internal state, the CPU initiating data transfers to the memory for filling the memory with a bitmap image to be printed, the CPU initiated data transfers being initiated synchronously to the system clock;
 - a print engine for receiving bitmap data and producing therefrom a printed page line by line, the print engine generating a line sync signal at the start of each line to be printed on the page;
 - a print fifo for providing the bitmap data to the print engine in response to the line sync signal;
 - a DMA controller for initiating data transfers between the memory and the print fifo when the print fifo has emptied



beyond a certain predetermined point, the DMA controller initiated transfers being initiated asynchronously to the system clock;

- a memory controller comprising:
 - a first sequencer for providing first timing signals in response to data transfers initiated by the CPU, the first sequencer comprising a synchronous state machine using the system clock;
 - a second sequencer for providing second timing signals in response to data transfers initiated by the DMA controller, the second sequencer comprising a synchronous state machine using the system clock;
 - a refresh request generator for generating a refresh request signal which is asynchronous to the system clock;
 - a third sequencer for providing third timing signals in response to the refresh request signal, the third sequencer comprising a synchronous state machine using the system clock, the third sequencer also providing arbitration between the first, second, and third sequencers; and
 - a signal generator for providing DRAM control signals in response to the first timing signals, second timing signals, and third timing signals.

5,511,153

METHOD AND APPARATUS FOR THREE-DIMENSIONAL, TEXTURED MODELS FROM PLURAL VIDEO IMAGES

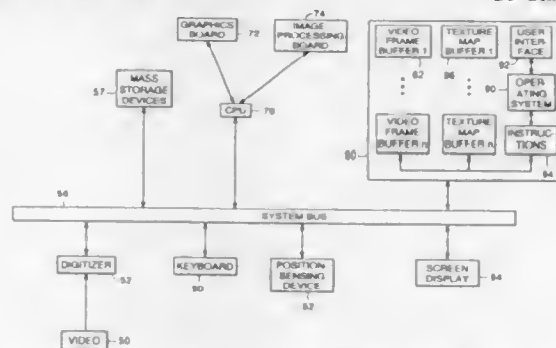
All Azarbayejani; Tinsley Galyean, and Alex Pentland, all of Cambridge, Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Jan. 18, 1994, Ser. No. 183,142

Int. Cl.⁶ G06F 15/00

U.S. Cl. 395—119

26 Claims



1. A method of generating, from a multiple-frame video recording of an object, geometrically specified digital pixelmaps that collectively represent a three-dimensional model of the object, the method comprising the steps of:
 - a. digitizing each frame of the video recording into a pixelmap;
 - b. selecting at least seven object features from a first digitized video frame;
 - c. tracking the features among a plurality of digitized video frames to determine changes in the relative distances therebetween;
 - d. based on changes in the relative distances, recursively estimating a plurality of unknown parameters including camera focal length, camera translation, camera rotation, and spatial locations of the tracked features;
 - e. based on the estimated parameters, defining spatial vectors that specify the spatial locations of object details depicted by each pixel of a plurality of digitized video frames; and
 - f. based on the spatial vectors, mapping each pixel from the plurality of digitized video frames to pixel locations within a plurality of final pixelmaps that collectively define a digital representation of the object.

5,511,155

METHOD AND DEVICE FOR SYNTHESIZING ALL-OBJECTS-IN-FOCUS IMAGES

Hirohisa Yamaguchi, Ibaraki, Japan, assignor to Texas Instruments Incorporated, Dallas, Tex.

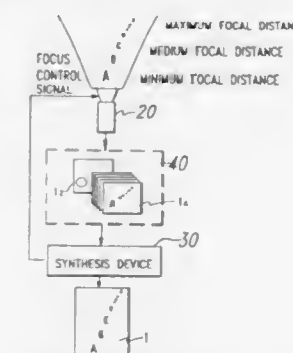
Filed Jan. 27, 1994, Ser. No. 187,269

Claims priority, application Japan, Jan. 27, 1993, 5-011837

Int. Cl.⁶ G06T 5/00

U.S. Cl. 395—133

3 Claims



5,511,154

METHOD AND APPARATUS FOR MANAGING CONCURRENT ACCESS TO MULTIPLE MEMORIES

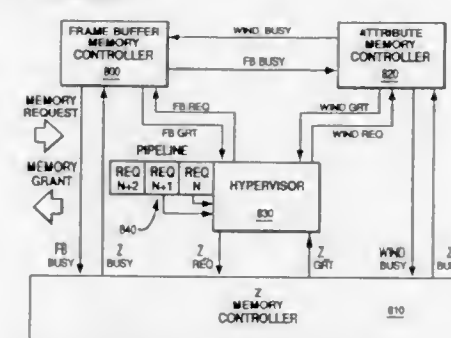
Lee E. Johnson, Jr., Round Rock; Daryl J. Kokoszka, and Steven P. Larky, both of Austin, all of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 78,950, Jun. 16, 1993, which is a continuation of Ser. No. 614,355, Nov. 15, 1990. This application Sep. 27, 1994, Ser. No. 313,668

Int. Cl.⁶ G06T 15/40

U.S. Cl. 395—122

18 Claims



1. A data processing apparatus comprising:
 - a plurality of processing means;
 - storage means for receiving and serially storing a plurality of instructions from said plurality of processing means;
 - a plurality of buffer memories, each buffer memory storing different types of data;
 - a plurality of buffer control means, each of said buffer control means coupled to a corresponding one of said buffer memories for regulating access to that corresponding buffer memory for any of said plurality of processing means;
 - memory management means, connected to each of said buffer control means and to said storage means, for accessing a first instruction from a first one of said processing means and a second one of said plurality of instructions from said storage means from a second one of said processing means, and
 - for obtaining from one or more of said buffer control means access to at least one first corresponding buffer memory in response to said first accessed instruction from said first processing means and updating at least one of said first corresponding buffer memory dependent upon a value previously stored in at least one of the accessed first corresponding buffer memory
- while, in response to said second instruction from said second processing means, concurrently obtaining from at least one buffer control means not currently accessed, access to at least one second corresponding buffer memory not currently accessed and updating at least one of said second correspond-

3. A device for synthesizing an all-objects-in-focus two dimensional image of a scene of N objects ($O_1, O_2, O_3, \dots, O_N$) positioned at various corresponding object distances ($d_1, d_2, d_3, \dots, d_N$), comprising:
 - a camera for capturing for each object a corresponding two dimensional original pixel image ($I_1, I_2, I_3, \dots, I_N$) of the scene focused at its object distance;
 - a first filter for transforming each original pixel image by wavelet transformation into a corresponding multi-resolution representation comprising a set of stored coefficients ($A_{ij}^{(1)}, A_{ij}^{(2)}, A_{ij}^{(3)}, \dots, A_{ij}^{(N)}$) corresponding to image positions (i, j) and spacial frequencies;
 - a comparator for selecting for each image position (i, j) from among the N multi-resolution representations the coefficient of maximum spectral amplitude;
 - a synthesizer circuit for combining the selected multi-resolution coefficients into a synthesized multi-resolution representation $A_{ij}^{(MAX)}$; and
 - a second filter for reverse-transforming the synthesized multi-resolution representation by a reverse multiple-resolution transformation to create a synthesized optimally focused image.

5,511,156

INTERPRETER FOR EXECUTING RASTERIZE PROCESSING TO OBTAIN PRINTING PICTURE ELEMENT INFORMATION

Fumio Nagasaka, Suwa, Japan, assignor to Seiko Epson Corporation, Tokyo, Japan

Continuation of Ser. No. 777,386, Dec. 4, 1991, Pat. No.

5,333,246. This application May 9, 1994, Ser. No. 239,998

Claims priority, application Japan, Apr. 5, 1990, 2-90728

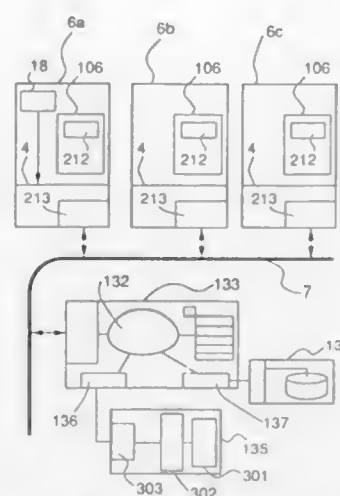
The portion of the term of this patent subsequent to Jul. 26, 2011, has been disclaimed.

Int. Cl.⁶ G06T 1/00

U.S. Cl. 395—133

25 Claims

1. An interpreter for executing rasterize processing to obtain printing picture element information from a source file, in a plurality of information processing units connected with each other via a network, each of the information processing units having an independent memory which is not shared with another information



processing unit of the network for independently processing an assigned task in a parallel processing system, the interpreter comprising:

- means for dividing the source file or an intermediate codefile converted from the source file into plural partial files each of which can be rasterized independently;
- means for distributing the plural partial files to at least two information processing units of the network;
- means provided for each of the at least two information processing units, for obtaining partial picture element information by rasterizing the distributed partial files; and
- means for collecting the partial picture element information obtained by the at least two information processing units and for combining the collected partial picture into entire picture element information.

5,511,157

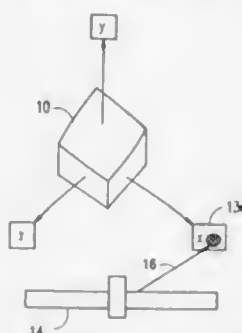
CONNECTION OF SLIDERS TO 3D OBJECTS TO ALLOW EASY USER MANIPULATION AND VIEWING OF OBJECTS

John S. Wang, Travis County, Tex., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Dec. 13, 1993, Ser. No. 165,994

Int. Cl.⁶ G06T 15/10

U.S. Cl. 395—137

2 Claims



2. An apparatus for enabling a user to precisely control the rotation of a computer displayed three dimensional (3D) object about mutually perpendicular axes on a computer display screen comprising:

- selection means for responding to a user selection of a displayed 3D object using a cursor control device, said selection means providing a visual feedback to the user upon selection of the 3D object and further responding to a user activation of a selection of three mutually perpendicular display axes by calling a procedure which defines a "hot spot" for each axis, a "hot spot" being a displayed object at an end of the one axis and the slider object permitting the user to precisely control rotation of the displayed object;

a toolbox database from which a user may select a slider object and drag and drop the slider on the display screen using the cursor control device, the user repeating this procedure three times so that each slider object is displayed at a different location in an application window on the display screen where the slider object is dropped by the user, a "hot spot" on an axis facilitating a user connection of the axis to a corresponding slider object;

command means for responding to a user activation of a connection procedure by generating a rubber banding line from a slider object to a pointing cursor moved by the user using the cursor control device, said rubber banding line when dropped on a hot spot being changed to an arrow to show that a connection has been made from the slider object to an axis corresponding to the hot spot; and

calculation means responding to a movement of each of the three slider objects by the user for calling a redisplay method in the displayed 3D object to rotate the display of the displayed 3D object corresponding to new viewing angles controlled by the slider objects.

5,511,158

SYSTEM AND METHOD FOR CREATING AND EVOLVING DIRECTED GRAPHS

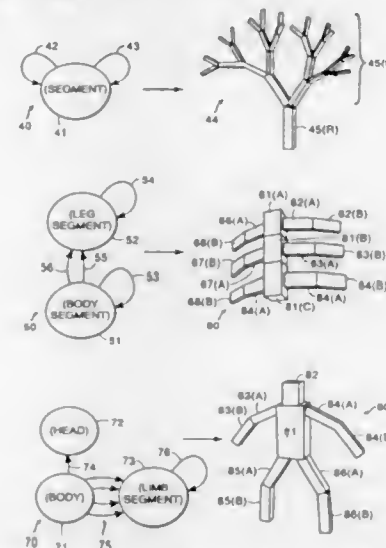
Karl P. Sims, Somerville, Mass., assignor to Thinking Machines Corporation, Bedford, Mass.

Filed Aug. 4, 1994, Ser. No. 286,149

Int. Cl.⁶ G06T 17/00

U.S. Cl. 395—140

16 Claims



1. A system for processing directed graphs, each directed graph comprising a plurality of nodes interconnected by directional links defining a directional relationship among said nodes, each node defining a selected attribute, said system comprising:

- A. an initial population means for providing an initial population of directed graphs, said initial population of directed graphs comprising an initial current generation during an initial iteration;
- B. a subsequent generation population generating means for generating, from selected ones of said directed graphs in each of a plurality of current genres, modified directed graphs comprising a subsequent generation for use as directed graphs in a current generation during a subsequent iteration, said subsequent generation population generating means (i) selecting ones of the directed graphs in each current generation in response to ranking information, and (ii) processing said selected directed graphs in relation to mutation operations selected from a set of selected types of mutation operations to generate modified directed graphs;
- C. competition simulation means for performing a processing operation in connection with attributes of said nodes of said

graphs to simulate a competition among said current generation of directed graphs in connection with a selected goal, to develop said ranking information for use by the subsequent generation population generating means; and

D. iteration control means for controlling the operations of the initial population means, said subsequent generation population generating means and said competition simulation means through a series of iterations.

5,511,159

METHOD OF IDENTIFYING PARAMETERIZED MATCHES IN A STRING

Brenda S. Baker, Berkeley Heights, N.J., and Raffaele Giancarlo, New York, N.Y., assignors to AT&T Corp., Murray Hill, N.J.

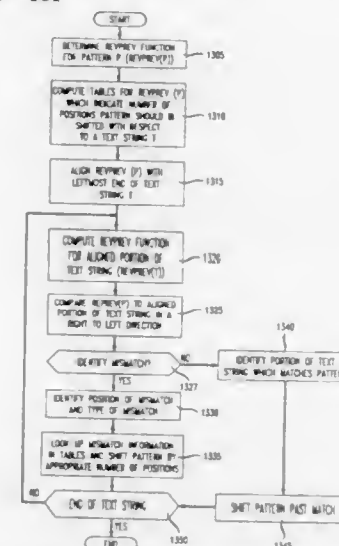
Continuation-in-part of Ser. No. 61,782, May 14, 1993, which is a continuation-in-part of Ser. No. 853,459, Mar. 18, 1992.

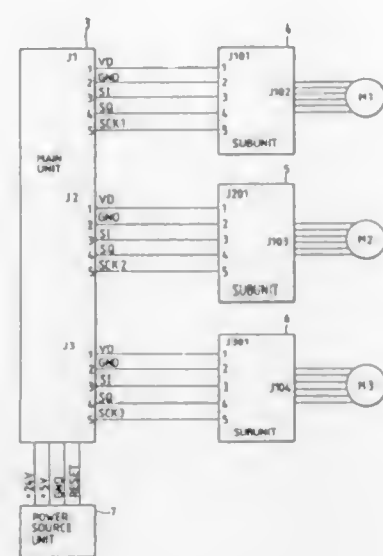
This application May 13, 1994, Ser. No. 242,385

Int. Cl.⁶ G06F 3/00

U.S. Cl. 395—161

6 Claims





5,511,162

AUTOMATIC LSI TESTING APPARATUS USING EXPERT SYSTEM

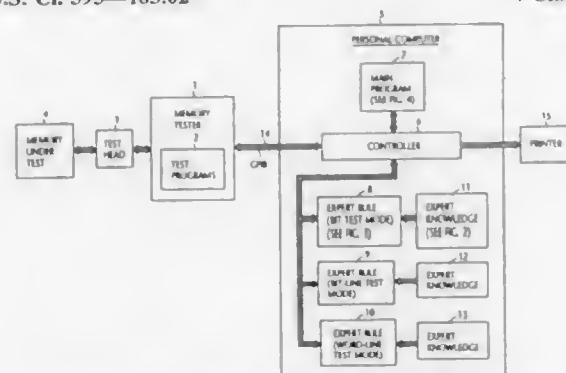
Hiroyuki Hamada; Tohru Tsujide, and Masaaki Sugimoto, all of Tokyo, Japan, assignors to NEC Corporation, Japan
Filed Jun. 24, 1993, Ser. No. 82,289

Claims priority, application Japan, Jun. 26, 1992, 4-169054

Int. Cl.⁶ G01R 31/28; G06F 11/00

U.S. Cl. 395—183.02

4 Claims



3. An apparatus for testing an LSI (large scale integration) chip, comprising:

testing means for applying a test signal to an LSI chip and deriving therefrom an output signal;

a plurality of expert knowledge tables associated respectively with a plurality of failure categories, each of the expert knowledge tables mapping relationships between a plurality of test patterns and a plurality of fault modes;

a plurality of expert rule memories associated respectively with said expert knowledge tables, each of the expert rule memories defining a tree of successively traceable nodes interconnected by decision branches leading to the fault modes of the associated expert knowledge table, each of said nodes defining one of said test patterns of the associated expert knowledge table and an expected value; and

control means for analyzing the output signal of said testing means and identifying the output signal as one of said failure categories, selecting one of said expert rule memories according to the identified failure category, specifying one of the nodes of the selected expert rule memory corresponding to a chip failure, causing said testing means to apply said test signal according to the test pattern defined by the specified node, comparing the output signal of said testing means with the expected value defined by the specified node in order to produce a first comparison result, tracing the tree of the selected expert rule memory according to the first comparison

result to a subsequent node, causing said testing means to apply said test signal according to the test pattern defined by the subsequent node, comparing the output signal of said testing means with the expected value defined by said subsequent node to produce a second comparison result, and tracing said tree toward one of said fault modes according to the second comparison result.

5,511,163

NETWORK ADAPTOR CONNECTED TO A COMPUTER FOR VIRUS SIGNATURE RECOGNITION IN ALL FILES ON A NETWORK

Michael Lerche, Charlottenlund, and Carsten Howitz, Rungsted Kyst, both of, Denmark, assignors to Multi-Info A/S, Denmark

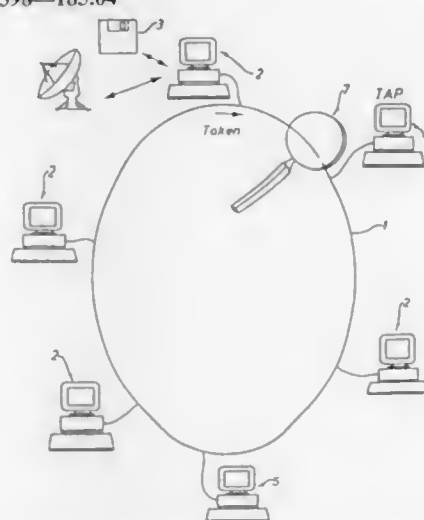
Filed Dec. 19, 1994, Ser. No. 325,466

Claims priority, application Denmark, Apr. 28, 1992, 550/92; Oct. 15, 1992, 1264/92

Int. Cl.⁶ G06F 11/00

U.S. Cl. 398—183.04

6 Claims



1. A data processing system comprising a plurality of computers interconnected through a local network in the form of a ring network, said network being connected to a network adaptor which is able to receive all information on the network, characterized in that the network adaptor (7) is connected to a computer (8), which together with the adaptor (7) can perform an assembling and scanning of substantially all files on the network (1) and carry out a recognition of virus signatures, if any, in the files, the computer (8) being adapted to provide information on the place of origin of infected data, if any, as well as on the position to which said infected data has been transmitted, and comprising a neural network having program means for recognizing the usual interchange of data on the local network (1) and for activating an alarm if an unusual interchange of data resembling a virus, such as an unknown virus signature, is recognized.

5,511,164

METHOD AND APPARATUS FOR DETERMINING THE SOURCE AND NATURE OF AN ERROR WITHIN A COMPUTER SYSTEM

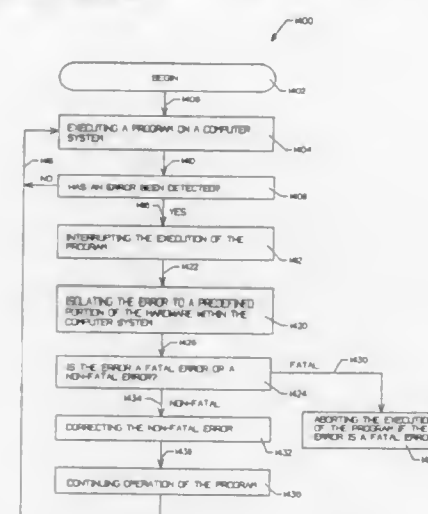
Terry J. Brunmeier, Shoreview; Larry L. Byers, Apple Valley; John A. Miller, Shoreview, and Gary R. Robeck, Albertville, all of Minn., assignors to Unisys Corporation, Blue Bell, Pa.

Filed Mar. 1, 1995, Ser. No. 396,952

Int. Cl.⁶ C06F 11/00

U.S. Cl. 395—185.06

27 Claims



27. A data processing system having a memory module, the memory module having a number of address locations wherein a number of data elements are stored in the number of address locations, comprising:

a. at least one primary power source coupled to the data processing system for providing power to the data processing system;

b. a detecting circuit coupled to said at least one primary power source for detecting a degradation in any of said at least one primary power source;

c. at least one secondary power source coupled to the data processing system and further coupled to said detecting circuit for providing power to the data processing system when said detecting circuit detects a degradation in any of said at least one primary power source;

d. at least one disk drive coupled to said at least one primary power source and further coupled to said at least one secondary power source, said at least one disk drive capable of storing a number of data elements;

e. interface means coupled to the memory module and further coupled to said at least one disk drive for providing an interface between the memory module and said at least one disk drive, said data processing system performing a downloading operation thereby downloading the number of data elements stored in the number of address locations in the memory to said at least one disk drive via said interface means, when said detecting circuit detects a degradation in any of said at least one primary power source;

f. error detecting means coupled to the memory for detecting an error within the number of data elements that are downloaded to said at least one disk drive during said downloading operation;

g. storing means coupled to said error detecting means for storing a corresponding one of the number of address locations which corresponds to the data element that has said error therein;

h. interrupting means coupled to said error detecting means and further coupled to the data processing system for temporarily interrupting the execution of the downloading operation when said error detecting means detects said error;

i. testing means coupled to said error detecting means for writing and reading a predetermined number of test patterns to the corresponding one of the number of address locations

stored by said storing means, thereby determining whether said error is a fatal error;

j. reloading means coupled said testing means and further coupled to said interrupting means for reloading a correct copy of the data element containing said error into the corresponding one of the number of address locations stored by said storing means, if said error is not a fatal error;

k. enabling means coupled to said testing means and further coupled to the data processing system for enabling the downloading operation if said testing means determines that said error is not a fatal error; and

l. aborting means coupled to said testing means for aborting the execution of the downloading operation if said testing means determines that said error is a fatal error.

5,511,165

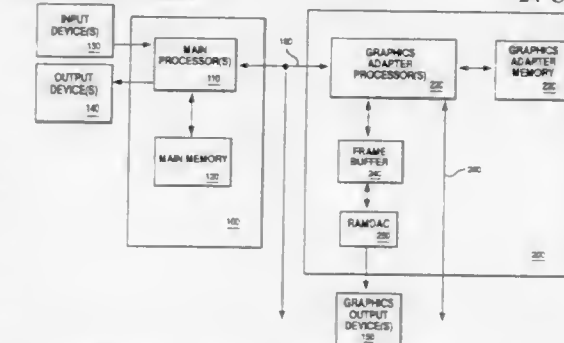
METHOD AND APPARATUS FOR COMMUNICATING DATA ACROSS A BUS BRIDGE UPON REQUEST

Michael S. Brady, Pflugerville; Alexander G. MacInnis, and Vernon T. Powell, both of Austin, all of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Oct. 23, 1992, Ser. No. 967,488

Int. Cl.⁶ G06F 13/00

U.S. Cl. 395—200.01

24 Claims



1. A method of a processor communicating data across a first bus and a bus bridge to a processing means on a second bus comprising steps of:

a) storing the data into a processor memory;

b) notifying the bus bridge, coupled to the processor and the first bus and the second bus, that the data is in the processor memory;

c) reading the data from the processor memory across the first bus upon request of the bus bridge; and

d) forwarding the data from the bus bridge to the processing means across the second bus upon request of the processing means.

5,511,166

METHOD AND APPARATUS FOR RECEIVE FRAME SORTING IN A MEDIA ACCESS CONTROL/HOST SYSTEM INTERFACE UNIT

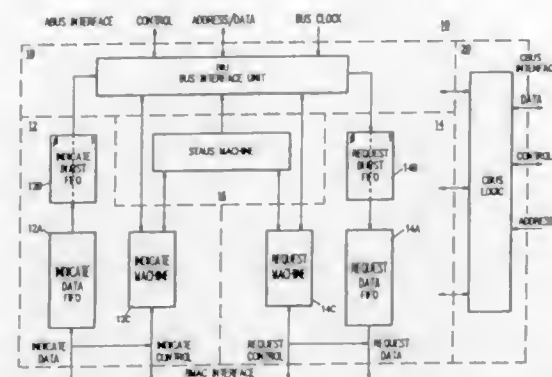
Mark A. Travaglio, Scarborough, Me.; Desmond W. Young, Campbell, Calif.; James R. Hamstra, Shorewood, Minn., and David C. Brief, Brookline, Mass., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Continuation of Ser. No. 146,730, Oct. 29, 1993, abandoned, which is a division of Ser. No. 989,942, Dec. 10, 1992, abandoned, which is a continuation of Ser. No. 516,245, Apr. 27, 1990, abandoned. This application Aug. 8, 1995, Ser. No. 512,562

Int. Cl.⁶ G06F 15/173; H04L 12/46; H04J 3/24
U.S. Cl. 395—200.2

1 Claim

1. An interface system connected between a local area network communications medium and a network station for transferring



information between the communications medium and a memory system associated with the network station, the interface system comprising:

- a bus interface unit connectable to the network station for transferring information between the interface system and the memory system;
- an indicate mechanism connected to the bus interface unit for transferring information received by the interface system from the communications medium to the memory system via the bus interface unit;
- a request mechanism connected to the bus interface unit for transferring information received by the interface system from the memory system via the bus interface unit to the communications medium;
- a management mechanism, connected to the indicate mechanism, that manages the allocation of storage space in the memory system for information transferred between the communications medium and the interface system;
- a plurality of receive channels for connection between the bus interface unit and the memory system;
- for each receive channel, an associated pool space descriptor queue connected to said receive channel for storing destination information that indicates where frame data information transferred from the communications medium to the memory system via said receive channel is to be stored in the memory system; and
- for each receive channel, an associated status queue connected to said receive channel for storing status information related to information transferred from the communications medium to the memory system via said receive channel.

5,511,167

PROGRAM PROCESSING METHOD AND APPARATUS FOR PRODUCING A DATA FLOW TYPE PROGRAM

Katsumi Kawano, Kawasaki; Kinji Mori, Machida; Yasuo Suzuki, Ebina; Masayuki Orimo, Kawasaki; Hirokazu Kasashima, Hitachi, and Kozo Nakai, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 14, 1991, Ser. No. 655,145

Claims priority, application Japan, Feb. 15, 1990, 2-34712; Mar. 19, 1990, 2-69424

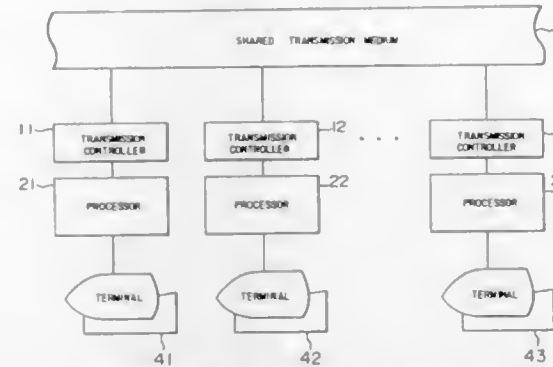
Int. Cl.⁶ G06F 15/16; 9/445

U.S. Cl. 395—200.03

12 Claims

1. A program processing method in a distributed processing system including a transmission medium and a plurality of processors connected thereto in which a sequence of processing is executed in a distributed manner and in which programs executing the sequence of processing are distributed to and stored in said plurality of processors, each of said processors transmits messages to said transmission medium to communicate with other processors, each of the messages including an information field and a content code field which identifies the contents of a corresponding information field, said method comprising the steps of:

- reading a program in which program codes are described;
- detecting an input processing section and an output processing section in said read program;



setting input auxiliary variables corresponding to input variables used in said input processing section of said read program and output auxiliary variables corresponding to output variables used in said output processing section of said read program; rewriting said input processing section of said read program such that values of said input auxiliary variables are substituted for said input variables and said output processing section of said read program such that values of said output auxiliary variables are substituted for said output variables; producing auxiliary input and output processing sections for said input and output auxiliary variables based on said input and output processing sections, respectively, and arranging said auxiliary input processing section before other processing sections of said read program and said auxiliary output processing section after the other processing sections of said read program thereof to produce a new program; and

storing said new program in one of said processors so that said one of said processors accepts messages transmitted through said transmission medium when the content field code in the message indicates a predetermined content code, and that said new program starts executing when data of said input variables is entirely accepted into said one of said processors.

5,511,168

VIRTUAL CIRCUIT MANAGER FOR MULTICAST MESSAGING

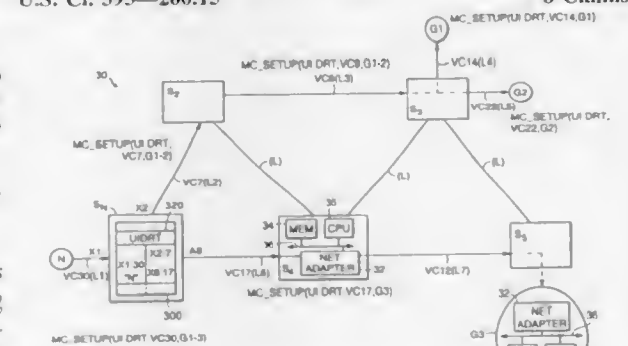
Radia J. Perlman, Acton, and William R. Hawe, Pepperell, both of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Jul. 1, 1993, Ser. No. 86,593

Int. Cl.⁶ H04L 12/46; 12/56; H04Q 7/22; G06F 13/00

U.S. Cl. 395—200.15

8 Claims



1. A method for establishing a multicast virtual circuit in an arbitrary-topology network between a source node and a group of destination nodes, said method comprising the steps of:

- creating a multicast setup packet at the source node for transfer to the group destination nodes, said multicast setup packet containing a multicast identifier field for storing a unique multicast identifier value, a virtual circuit field and a destination field identifying the group of destination nodes receiving said multicast setup packet;

allocating selected switches and interconnecting links of said network as elements of said multicast virtual circuits for receiving said multicast setup packet through generating entries of a forwarding table located within an allocated switch, said entries containing routing information pertaining to the outgoing ports associated with the group of destination nodes contained within said destination field of said multicast setup packet to open said multicast virtual circuit.

5,511,169

DATA TRANSMISSION APPARATUS AND A COMMUNICATION PATH MANAGEMENT METHOD THEREFOR

Eiichi Suda, Aichi, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

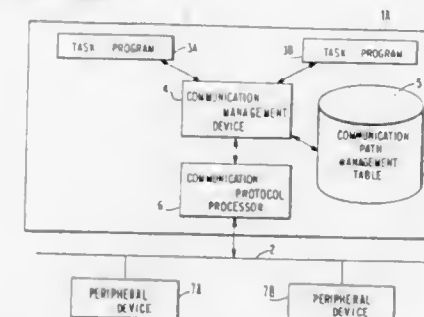
Filed Jan. 25, 1993, Ser. No. 8,748

Claims priority, application Japan, Mar. 2, 1992, 4-044734

Int. Cl.⁶ G06F 13/00

U.S. Cl. 395—280

19 Claims



1. A data transmission apparatus for transmitting data from task program devices to peripheral devices over a plurality of communication paths, the data transmission apparatus comprising:

- a communication path management table for storing management data corresponding to each communication path established between said task program devices and said peripheral devices;
- a communication path management device for retrieving said management data from said communication path management table to select a communication path in response to a request from a requesting task program device to establish a communication path to a specified peripheral device; and
- a communication protocol processor, responsive to an output of said communication path management device, for controlling communications between said task program devices and peripheral devices by establishing said selected communication path between said requesting task program device and said specified peripheral device.

5,511,170

DIGITAL BUS DATA RETENTION

David G. Abdo, Fountain Hills, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

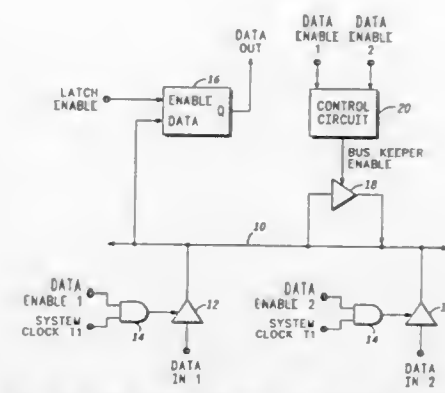
Filed Aug. 2, 1993, Ser. No. 100,815

Int. Cl.⁶ H01J 13/00

U.S. Cl. 395—280

6 Claims

- 1. A digital bus, comprising:
 - a plurality of data drivers each having an input coupled for receiving a data signal, an enable input coupled for receiving an enable signal, and an output coupled to the digital bus;
 - a buffer having an input, an output, and an enable input, said input being coupled to the digital bus, said output being coupled to the digital bus for retaining the data signal on the digital bus; and
 - a control circuit providing a second enable signal to said enable input of said buffer where said second enable signal is activated during an activate state of one of said enable signals of said plurality of data drivers, said control circuit including:



- (a) an OR gate having inputs coupled for receiving said enable signals for said plurality of data drivers, and
- (b) a NAND gate having first and second inputs and an output, said first input being coupled to an output of said OR gate, said second input receiving a system clock signal, said output being coupled to said enable input of said buffer.

5,511,171

APPARATUS FOR LIVE BUS INSERTION OF ADD-ON DEVICES

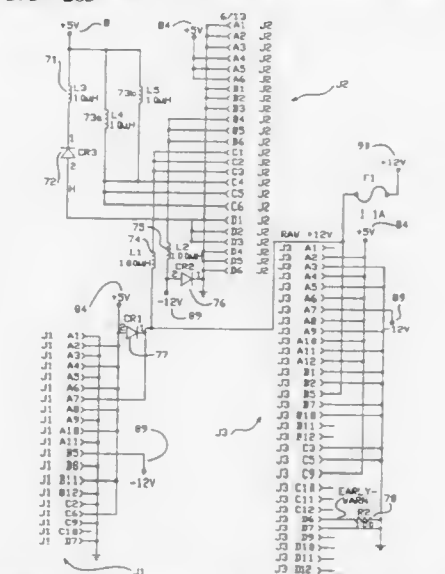
Michael H. Bowman, Palo Alto, Calif., assignor to 3Com Corporation, Santa Clara, Calif.

Filed Feb. 26, 1993, Ser. No. 24,189

Int. Cl.⁶ G06F 13/00; H01R 9/09; 13/02; 13/642

U.S. Cl. 395—283

5 Claims



1. An apparatus for connecting at least two devices to a plurality of bus slots on a live bus comprising:

- a power supply generating at least one supply voltage;
- a primary power line coupled to the power supply for supplying power to the at least two devices;
- one or more signal lines connected to each bus slot for transferring signals between the at least two devices;
- a device removal warning line connected to each bus slot, the device removal warning line forming a device removal signal when a device is removed from a bus slot, the device removal signal being communicated to the other devices on the bus; and
- an input-output module at each bus slot for connecting a device to the respective bus slot, the input-output module including a first primary power line pin for connecting the device to the primary power line, a second set of pins for connecting the device to the one or more signal lines, and

an early warning connection pin having a length shorter than the first primary power line pin and the second set of pins so that the early warning connection pin disengages first from the device as the device is removed from the bus slot, disengagement of the early warning connection pin causing the formation of the device removal signal by the device removal warning line.

5,511,172

SPECULATIVE EXECUTION PROCESSOR

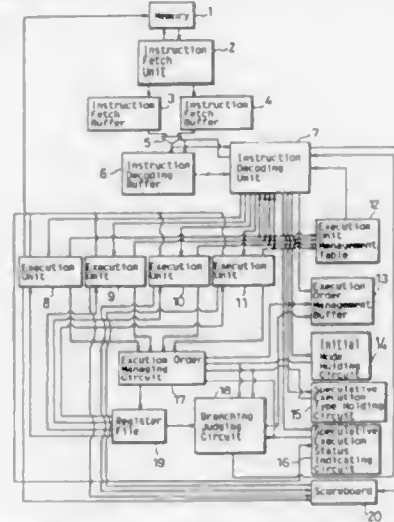
Kozo Kimura, Osaka; Kosuki Yoshioka, Katano, and Tokuzo Kiyohara, Osaka, all of Japan, assignors to Matsushita Electric Co. Ltd., Osaka, Japan

Filed Nov. 16, 1992, Ser. No. 977,238

Claims priority, application Japan, Nov. 15, 1991, 3-300126
Int. Cl. G06F 9/30; 9/38

U.S. Cl. 395—375

28 Claims



16. A processor including a plurality of executing units for processing in parallel a plurality of instructions in an instruction sequence stored in its memory, the processor comprising:

instruction type distinguishing means for distinguishing a type of a conditional branch instruction included in the unexecuted instruction sequence, the condition of the conditional branch instruction depending on another instruction;

instruction parallel-issuing means for issuing in parallel to executing units a first instruction sequence comprising an instruction sequence to be executed following the conditional branch instruction and/or a second instruction sequence comprising an instruction sequence to be executed after the branching before a decision whether or not to branch is determined, a choice between the first and/or the second instruction sequence depending on the type of the conditional branch instruction, the instruction parallel-issuing means comprising:

a plurality of decoding means for decoding the instructions and thence generating control signals outputted to the executing units;

transfer controlling means for transferring the instructions in the first instruction fetch buffer and the second instruction fetch buffer to the plurality of decoding means, one instruction to one decoding means;

mode adding means for adding a mode to each instruction transferred by the transfer controlling means, the mode indicating which instruction sequence the instruction belongs to by adding one mode to the instructions of the first instruction sequence and another mode to the instructions of the second instruction sequence;

branching determining means for determining whether to branch when the other instruction is executed;

execution result managing means for identifying whether the execution results of the instruction sequences are valid based on the results of the branching determining means;

a first instruction fetch buffer for temporarily storing the first instruction sequence;

a second instruction fetch buffer for temporarily storing the second instruction sequence; and
instruction fetching means for fetching instructions stored in the memory and selectively writing them into the first instruction fetch buffer and the second instruction fetch buffer.

5,511,173

PROGRAMMABLE LOGIC ARRAY AND DATA PROCESSING UNIT USING THE SAME

Shinichi Yamaura, Takarazuka; Takashi Yasui, Toyonaka, and Keiichi Yoshioka, Sando, all of Japan, assignors to Ricoh Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 608,202, Nov. 2, 1990, abandoned.

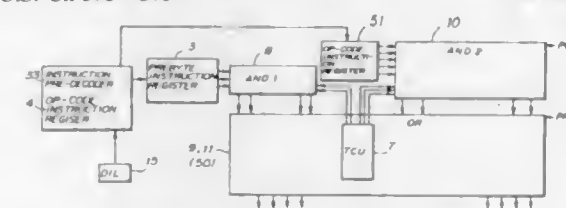
This application Jan. 5, 1994, Ser. No. 177,794

Claims priority, application Japan, Nov. 8, 1989, 1-290667

Int. Cl. G06F 9/30

U.S. Cl. 395—375

24 Claims



1. A programmable logic array comprising:

a plurality of AND planes, wherein each of said plurality of AND planes is activated by a respectively different precharge signal functioning as an enable signal to execute an AND logic operation, and has input terminals receiving respectively different code input signals than the other AND planes and output terminals; and

a single OR plane, to which the plurality of AND planes are connected, provided in common for said plurality of AND planes and executing an OR logic operation, said single OR plane having input terminals coupled to said output terminals of said plurality of AND planes and output terminals.

5,511,174

METHOD FOR CONTROLLING THE OPERATION OF A COMPUTER IMPLEMENTED APPARATUS TO SELECTIVELY EXECUTE INSTRUCTIONS OF DIFFERENT BIT LENGTHS

Gary D. Hicok, Mesa, Ariz.; Thomas Alexander, Hillsboro, Oreg.; Yong J. Lim, and Yongmin Kim, both of Seattle, Wash., assignors to VLSI Technology, Inc., San Jose, Calif.

Continuation of Ser. No. 40,803, Mar. 31, 1993, abandoned.

This application Aug. 5, 1994, Ser. No. 286,662

Int. Cl. G06F 12/00

U.S. Cl. 395—375

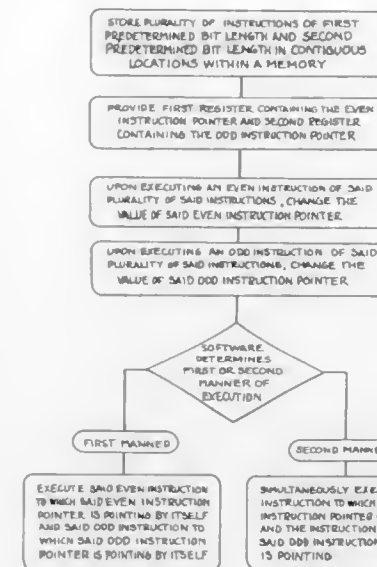
5 Claims

1. A method for selectively controlling the operation of a computer-implemented apparatus including means within said computer-implemented apparatus such that a software program when executed by a computer enables said computer to selectively execute instructions of a first predetermined bit length and instructions of a second predetermined bit length comprising the steps of:

storing a plurality of said instructions of at least one of said first predetermined bit length and said second predetermined bit length in contiguous locations within a memory;

providing first register means containing an even instruction execution pointer having a value pointing at a first one of said plurality of said instructions;

providing second register means containing an odd instruction execution pointer at one of said plurality of said instructions that is adjacent to said first one of said plurality of said instructions;



said computer executing said first one of said plurality of said instructions and changing the value of said even instruction execution pointer by some amount in order to point said even instruction execution pointer to another one of said plurality of said instructions and executing said one instruction adjacent to said first one of said plurality of said instructions and changing the value of said odd instruction execution pointer by said amount in order to point said odd instruction execution pointer to yet another one of said plurality of said instructions, said changing the value of said even instruction execution pointer alternating with said changing the value of said odd instruction execution pointer in order to cause said computer to execute each of said plurality of said instructions in at least one of a first and a second manner;

said first manner of executing occurring when one of said even and said odd instruction execution pointers point to an instruction having a portion therein that signals said first manner of execution to said computer, said first manner of execution causing said computer to execute said instruction by itself, said instruction having said first predetermined bit length; and

said second manner of execution occurring when one of said even and said odd instruction execution pointers point to an instruction having a portion therein that signals said second manner of execution to said computer, said second manner of execution causing said computer to simultaneously execute the instruction to which said even instruction execution pointer is pointing and the instruction to which said odd instruction execution pointer is pointing, said simultaneous execution of instructions corresponding to said execution of said instruction of said second predetermined bit length.

5,511,175

METHOD AN APPARATUS FOR STORE-INTO-INSTRUCTION-STREAM DETECTION AND MAINTAINING BRANCH PREDICTION CACHE CONSISTENCY

John G. Favor, San Jose; Korbin Van Dyke, and David R. Stiles, Sunnyvale, all of Calif., assignors to NexGen, Inc., Milpitas, Calif.

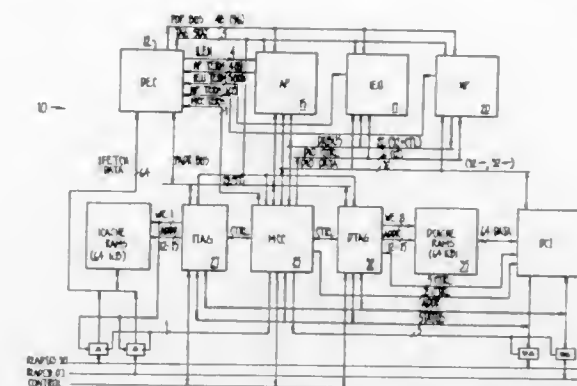
Continuation of Ser. No. 42,298, Apr. 2, 1993, abandoned, and Ser. No. 485,312, Feb. 26, 1990, Pat. No. 5,226,130. This application Oct. 20, 1994, Ser. No. 326,409

Int. Cl. G06F 9/38; 9/42

U.S. Cl. 395—375

11 Claims

3. An apparatus comprising:
a system bus;



an instruction cache, coupled to said system bus, including, for each entry, an instruction address tag, instruction data, and an instruction cache entry validity bit for indicating whether an entry is valid;

means for detecting when a store signal on said system bus matches an instruction address tag for an entry in said instruction cache;

means for setting said instruction cache entry validity bit for an entry in said instruction cache to invalid when said means for detecting detects a store signal on said system bus which matches the instruction address tag for that entry;

a randomly addressable branch prediction cache including, for each entry, a branch instruction address tag, a branch target address, branch target instruction data and a branch prediction cache entry validity bit;

means for comparing an instruction address tag of an instruction cache entry to said branch prediction, cache branch target addresses;

control means for writing target instructions into said branch prediction cache only if said instructions are also written into said instruction cache and for removing target instructions from said branch prediction cache whenever said instructions are removed from said instruction cache; and

means for setting said branch prediction cache entry validity bit for a branch prediction cache entry to invalid when the branch target address matches the address of an instruction cache entry with said instruction cache entry validity bit in an invalid state;

such that a store-into-instruction-stream will be detected by said instruction cache and will result in the invalidation of any corresponding entries in both said instruction cache and said branch prediction cache.

5,511,176

MICROCOMPUTER CAPABLE OF ACCESSING TO AN EXTERNAL MEMORY WITH LEAST POSSIBLE WAIT

Tomoko Tsuha, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Sep. 30, 1991, Ser. No. 767,784

Claims priority, application Japan, Oct. 1, 1990, 2-264351

Int. Cl. G06F 12/02

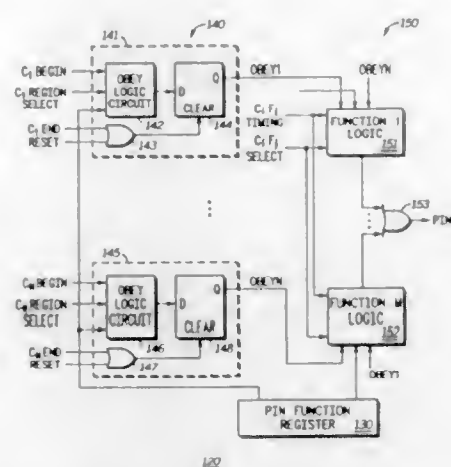
U.S. Cl. 395—433

2 Claims

1. A microcomputer coupled to an external memory unit having a first memory address area and a second memory address area, said first memory address area comprising a memory device requiring a refresh operation to retain data stored therein and said second memory address area requiring no refresh operation, said microcomputer comprising:

access means for performing a memory access operation on said external memory unit to read or write data from or into said external memory unit by supplying said external memory unit with a memory address and a read/write control signal,

detection means responsive to said memory address, for detecting whether said memory address designates said first memory address area or said second memory address area each time said access means performs said memory access operation and for producing a detection signal which takes a



a plurality of pin function logic circuits each associated with a corresponding one of said plurality of chip select pin functions;

each pin function logic circuit having first and second control inputs respectively receiving said first and second obey signals, first and second timing inputs receiving first and second timing signals, corresponding to first and second memory access cycles, respectively, and associated with said selected chip select pin function, and an output providing a function output signal;

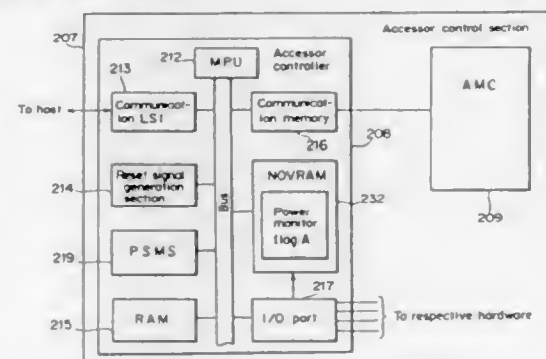
each pin function logic circuit activating said function output signal thereof in response to said first timing signal when said first obey signal is active and to said second timing signal when said second obey signal is active, when said first bit field selects said corresponding one of said plurality of chip select pin functions; and

an output circuit having a plurality of inputs for receiving said function output signal from each of said plurality of pin function logic circuits, and an output for providing the chip select signal, said output circuit activating the chip select signal in response to an activation of said function output signal of one of said plurality of pin function logic circuits.

14 Claims

Claims priority, application Japan, May 21, 1992, 4-118793;
May 21, 1992, 4-128813; Feb. 26, 1993, 5-037863; Mar. 1, 1993,
5-039747; Mar. 15, 1993, 5-053535

U.S. Cl. 395—182.12 2 Claims



first program executing means for executing the first program when the system is turned on and prior to loading said boot program, said first program comprising:

- vector generating means for generating a second plurality of interrupt vectors;
- vector comparing means for comparing said first plurality of interrupt vectors to said second plurality of interrupt vectors; and
- signaling means for generating a first signal if said first plurality of interrupt vectors is equivalent to said second plurality of interrupt vectors, and for generating a second signal if said first plurality of interrupt vectors is not equivalent to said second plurality of interrupt vectors;

boot program executing means for executing the boot program after the first program executing means executes the first program and only upon receipt of said first signal;

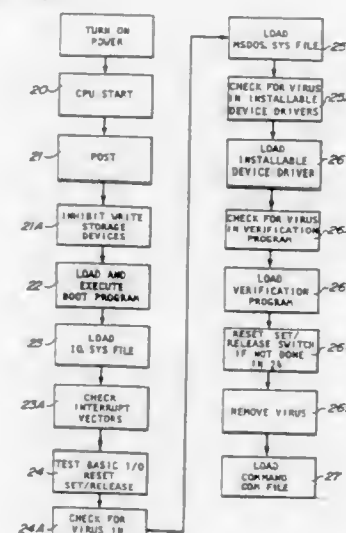
- vector generating means for generating a third plurality of interrupt vectors;
- vector comparing means for comparing said first plurality of interrupt vectors to said third plurality of interrupt vectors;
- signalling means for generating a third signal if said first plurality of interrupt vectors is equivalent to said third plurality of interrupt vectors, and for generating a fourth signal if said first plurality of interrupt vectors is not equivalent to said third plurality of interrupt vectors; and

write control means for controlling writes into the storage means, the write control means including write preventing means for preventing writes to the storage means until said third signal is received.

This application Oct. 22, 1993, Ser. No. 141,436
Int. Cl.⁶ G06F 11/00

U.S. Cl. 395—734

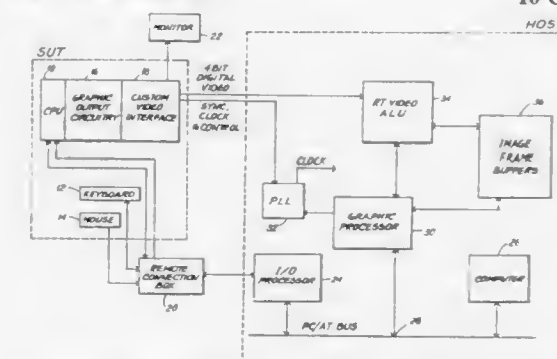
10 Claims



David Weinbaum, Tel Aviv; Daniel Bar-On, Kiryat Ono, and Yoav Tamir, Ra'anana, all of Israel, assignors to Mercury Interactive Corporation, Los Altos Hills, Calif.
Continuation of Ser. No. 690,878, Apr. 23, 1991, abandoned, which is a continuation-in-part of Ser. No. 618,742, Nov. 27, 1990, abandoned. This application Aug. 30, 1994, Ser. No.

Int. Cl.⁶ G06F 11/00

10 Claims



3. A system for automatic testing of computer software comprising:

interface means communicating with a system under test loaded with software to be tested;

memory means for storing inputs to the system under test and expected outputs of the system under test in response to said inputs;

testing means, operative during a replay session, for supplying said inputs to and for receiving actual outputs, in response to said inputs, from said system under test; and

comparison means for determining differences between said expected outputs and actual outputs.

said columns including at least group column and zero or more data columns, said method comprising the steps of:

- (1) reading a row of said relational database table, said row comprising a identifier from said at least one group column and zero or more data fields to said zero or more data columns;
- (2) applying a hash function to said group identifier to generate a hashed group value, said hashed group value serving as an index into a memory-resident hash table, said hash table mapping hashed group values into corresponding memory-resident group table entries, each group table entry including group data fields that store for a single group aggregated raw data from said data fields, a group identifier and housekeeping data;
- (3) determining from contents of said hash table whether a matching group table entry exists for a group defined by said group identifier;
- (4) when said matching group table entry exists, aggregating contents of said data fields into corresponding group data fields of said group table entry and updating said housekeeping data;
- (5) when said matching group table entry does not exist and available memory meets predefined memory availability criteria, allocating an additional group table entry, writing into said additional group table entry said group identifier and said data fields, and initializing said housekeeping data;
- (6) when said matching group table entry does not exist and available memory does not meet said predefined memory availability criteria, applying an overflow procedure to said row wherein contents of said row are used to update an overflow file;
- (7) repeating steps (1) through (6) until all rows of said table have been read;
- (8) reporting said group table entries;
- (9) when at least one of said rows were written to said overflow file, repeating steps (1) through (8), except in step (1) reading said overflow file rather than said relational database table.

5,511,191

STATUS MONITORING ARRANGEMENT FOR A DATA PROCESSING SYSTEM COMPRISING A NUMBER OF MANAGED OBJECTS

Marcus J. de Leeuw van Weenen, Salford; Kevin Glynn, Manchester, and Gareth I. Jenkins, Bracknell, all of England, assignors to International Computers Limited, London, England

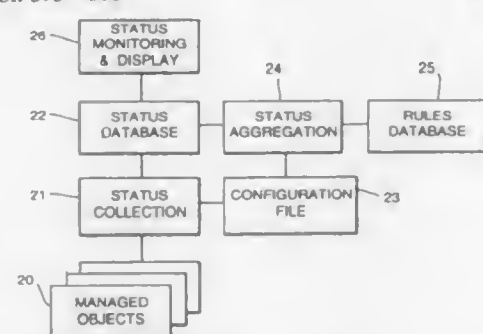
Continuation of Ser. No. 189,042, Jan. 31, 1994, abandoned.

This application May 23, 1995, Ser. No. 447,835

Claims priority, application United Kingdom, Feb. 5, 1993, 9302225

Int. Cl. G06F 11/32

U.S. Cl. 395-600



1. A data processing system comprising:
 - (a) a plurality of managed objects;
 - (b) means for defining at least one composite managed object, said composite managed object being defined as a combination of a plurality of said managed objects;
 - (c) a status database for holding a plurality of status values;

(d) status collection means, coupled to said managed objects, for collecting status values from said managed objects and recording said status values in said status database;

(e) counting means, coupled to said status database, for forming a count value indicating how many of said managed objects within said composite managed object have a predetermined status value;

(f) comparing means, coupled to said counting means, for comparing said count value with a threshold value and, when said count value exceeds said threshold value, for assigning a predetermined composite status value to said composite managed object and recording said composite status value in said status database; and

(g) display means, coupled to said status database, for displaying said status values for said managed objects and said composite status value for said composite managed object.

5,511,192

METHOD AND APPARATUS FOR MANAGING THREAD PRIVATE DATA IN A PARALLEL PROCESSING COMPUTER

Toshio Shirakihara, Kanagawa, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

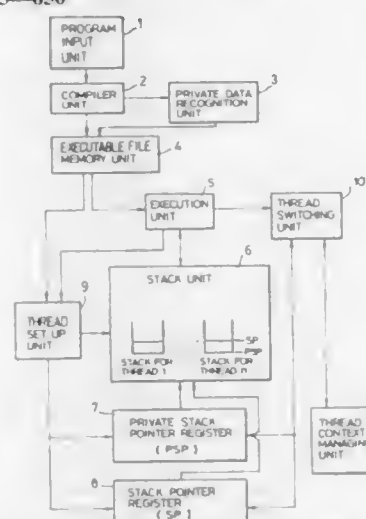
Filed Nov. 30, 1992, Ser. No. 983,407

Claims priority, application Japan, Nov. 30, 1991, 3-339572; Mar. 24, 1992, 4-065772

Int. Cl. G06F 9/46

U.S. Cl. 395-650

20 Claims



1. A method of managing thread private data in a computer, for a program to be executed by using multiple threads provided with respect to a single task defining address space, where each one of the multiple threads is associated with a different stack for managing local data of said each one of the multiple threads, the method comprising the steps of:

detecting the thread private data used in the program, the thread private data being globally accessible from the multiple threads and managed separately by each one of the multiple threads;

separately allocating a thread private data region for managing the thread private data detected at the detecting step in the stack for each one of the multiple threads;

separately registering a pointer to specify a base address of the thread private data region allocated in the stack for each one of the multiple threads, in a private stack pointer register; and making accesses to the thread private data during an execution of one of the multiple threads, by making accesses to the thread private data region in the stack for said one of the multiple threads according to the base address specified by the pointer registered in the private stack pointer register for said one of the multiple threads.

5,511,193

TEXT SERVICES MANAGER PROVIDING MULTIPLE INSTANCES OF INPUT METHODS FOR TEXT LANGUAGE PROCESSING AND AUTOMATIC SYNCHRONIZATION BETWEEN METHODS

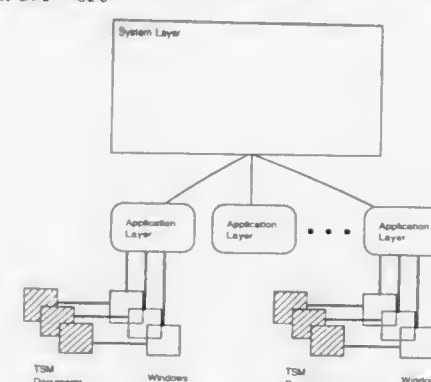
Kenny S. C. Tung, San Jose, Calif.; John Harvey, Philadelphia, Pa.; Yasuo Kida, Tokyo, Japan; Christopher S. Derossi, San Jose, Calif.; Keisuke Hara, Yokohama, and Nobuhiro Miyatake, Fuchu, both of Japan, assignors to Apple Computer, Inc., Cupertino, Calif.

Filed Feb. 19, 1993, Ser. No. 19,744

Int. Cl. G06F 9/44

U.S. Cl. 395-650

28 Claims



1. A system for managing and maintaining communication between an application and a plurality of input methods via a component manager, said system comprising:

a memory means for storing a plurality of Text Services Manager (TSM) documents, each of the TSM documents identifying a corresponding application, and an instance of a corresponding input method; and

a dispatcher for receiving and transmitting signals between the application and the component manager, the dispatcher coupled to receive signals from and transmit signals to the application, the dispatcher coupled to receive signals from and transmit signals to the component manager, the dispatcher also coupled to the memory means to access the plurality of TSM documents to determine the input method that is to receive signals sent from the application, and to determine the application that is to receive signals sent from an input method through the component manager to the dispatcher.

5,511,194

PROCESSING SYSTEM AND PROCESSING METHOD CAPABLE OF DYNAMICALLY REPLACING JOB ENVIRONMENT

Yoko Shirakata, and Noriko Kozu, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Aug. 25, 1993, Ser. No. 112,755

Claims priority, application Japan, Aug. 28, 1992, 4-230195

Int. Cl. G06F 9/40

U.S. Cl. 395-650

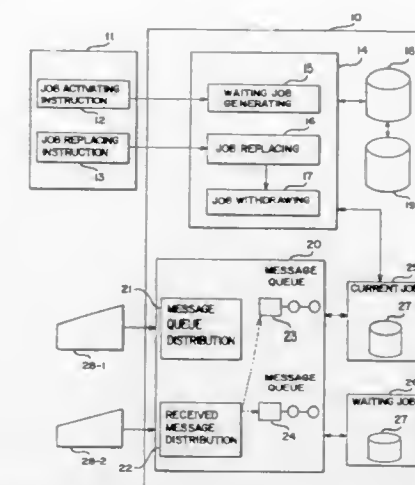
3 Claims

1. A processing system in which a currently executed job uses resources of a first environment, the processing system comprising:
 - job activating instruction means for outputting an activation instruction to activate a new job for execution within a second environment;

job generation means, coupled to said job activating instruction means, for generating the new job and for assigning a waiting attribute to the new job so that the new job is in a waiting condition, in response to the activation instruction from said job activating instruction means;

job replacing instruction means for outputting a replacement instruction to replace the current job with the new job being in the waiting condition;

job replacement means, coupled to said job replacing instruction means, for selecting resources to be used in the new job from the resources used in the currently executed job, for assigning



the selected resources to the new job, and for releasing the new job from the waiting condition, in response to the replacement instruction from said job replacing instruction means; and currently executed job withdrawing means, coupled to said job replacement means, for withdrawing the currently executed job from said processing system after operations of said job replacement means are completed.

5,511,195

DRIVER, COMPUTER-IMPLEMENTED PROCESS, AND COMPUTER SYSTEM FOR PROCESSING DATA USING LOADABLE MICROCODE RUNNING ON A PROGRAMMABLE PROCESSOR

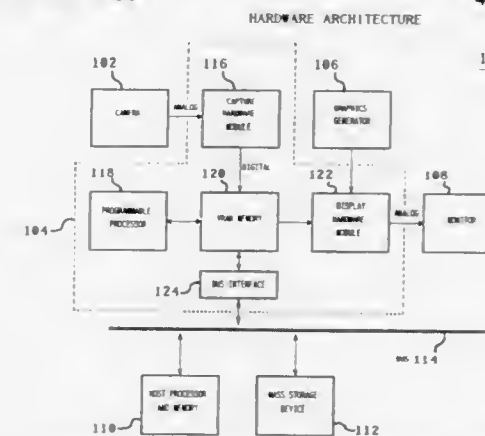
Howard J. Kennedy, Jr., Hamilton Sq., N.J.; Terry Downs, Forest Grove, and Josh Herman, Beaverton, both of Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Filed Nov. 12, 1993, Ser. No. 152,348

Int. Cl. G06F 9/22

U.S. Cl. 395-650

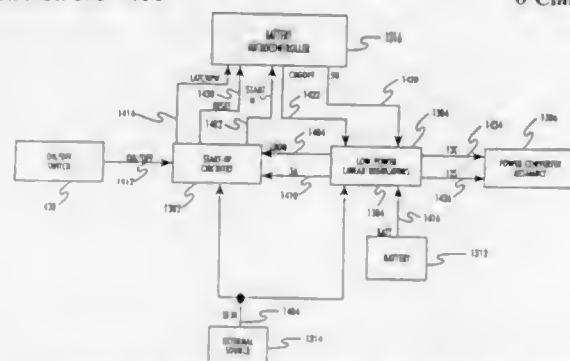
40 Claims



1. A computer-implemented process, comprising the steps of:
 - (a) loading a first microcode program of a first application program onto memory in an Intel® i750™ Pixel Processor, wherein the first application program runs on a host processor;
 - (b) running the first microcode program on the Intel® i750™ Pixel Processor;
 - (c) unloading the first microcode program from the memory of the Intel® i750™ Pixel Processor;
 - (d) loading a second microcode program of a second application program onto the memory in the Intel® i750™ Pixel Processor, wherein the second application program runs on the host processor;
 - (e) running the second microcode program on the Intel® i750™ Pixel Processor;

communications circuitry, coupled to said input/output unit, to transfer a message containing said interrupt vector,

5,511,205
SYSTEM FOR DISTRIBUTED POWER MANAGEMENT IN PORTABLE COMPUTERS
 Krishnamurthi Kannan, Yorktown Heights, N.Y.; Christopher D. Jones, Georgetown, Ky.; Nathan J. Lee, New City, N.Y.; Kyriakos Leontiadis, Boca Raton, Fla.; Frank P. Novak, Park Ridge, N.J., and Vikram Sharma, Pleasantville, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
 Division of Ser. No. 870,124, Apr. 15, 1992, Pat. No. 5,423,045.
 This application Dec. 8, 1994, Ser. No. 355,205
 Int. Cl. G06F 1/32
 U.S. Cl. 395—750 6 Claims

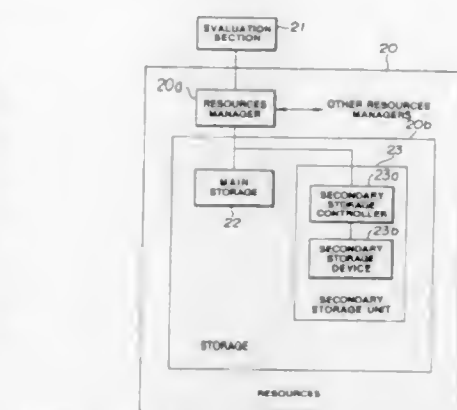


1. A method for monitoring, collecting and acting upon power-related data in a portable computer including a main processor having a first set of multiple operational states, said main processor controlling a plurality of independently controllable power planes, a service processor coupled to the main processor, said service processor having a second set of multiple operational states and configured to manage peripheral devices, and a battery microcontroller coupled to the service processor, said battery microcontroller having a third set of multiple operational states and configured to manage power input from one or more power sources, the method comprising the steps of:

- determining power consumption for each of the plurality of independently controllable power planes for each of said first set of multiple operational states;
- transitioning the main processor from a first zero power state to a first normal power state upon user activation of an on/off switch;
- immediately transitioning the main processor to a first idle power state when the main processor has completed all necessary processing functions which require the main processor to remain fully powered and operational;
- transitioning the main processor to a first standby power state when there is no processing activity for a first time duration while the main processor is in said first idle power state; and
- transitioning the main processor to a first zero power state upon expiration of a second time duration while the main processor is in a first standby power state, thereby removing power from the portable computer except for the battery microcontroller.

5,511,206
MICROPROCESSOR BASED COMPUTER WITH VIRTUAL MEMORY SPACE IN OVERWRITABLE MEMORY
 Hiroyuki Yasuda, Tokyo; Yoshiaki Sawada, and Hirotoshi Mae-gawa, both of Kanagawa, all of Japan, assignors to Sony Corporation, Tokyo, Japan
 Continuation of Ser. No. 643,130, Jan. 18, 1991, abandoned.
 This application Feb. 25, 1994, Ser. No. 202,696
 Claims priority, application Japan, Jan. 14, 1990, 2-14062; Jan. 14, 1990, 2-14063
 Int. Cl. G06F 12/00
 U.S. Cl. 395—775 3 Claims

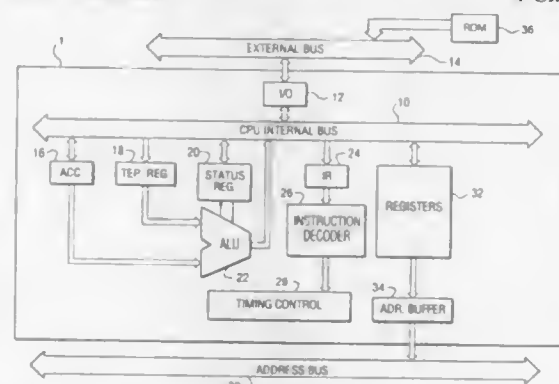
1. An information processing apparatus comprising:



holding means including storage means for storing resources including data and calculation units relating to an execution model of a program to be performed, memory supervision, or other system functions including device supervision, process supervision, task supervision, or communication functions, and processing means for controlling and managing the resources; and

evaluating means for executing evaluations of the resources as a dynamic behavior of the resources stored within said holding means on the execution model, issuing commands to said holding means to acquire the data and the calculation units stored by said storage means, to initiate storage of new resources by said storage means, and to initiate communication with an external device, respectively, said processing means independently managing and controlling the calculation units in accordance with a command from said evaluating means such that said evaluating means becomes available to perform other processing upon commencement of processing of the command by said processing means and the processing by said processing means in response to the command is transparent to said evaluating means.

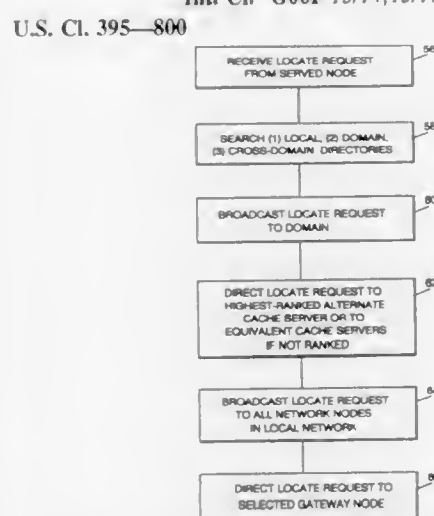
5,511,207
PROGRAM CONTROL CIRCUIT DETERMINING THE DESIGNATED NUMBER OF TIMES A SEQUENCE OF INSTRUCTIONS IS REPETITIVELY EXECUTED TO PREVENT FURTHER EXECUTION OF A JUMP INSTRUCTION
 Yuko Ohde; Hideo Tanaka, and Ichiro Kuroda, all of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan
 Continuation of Ser. No. 258,082, Oct. 14, 1988, Pat. No. 5,056,004, which is a continuation of Ser. No. 10,499, Feb. 3, 1987, abandoned. This application May 1, 1991, Ser. No. 694,065
 Claims priority, application Japan, Feb. 3, 1986, 61-22267
 Int. Cl. G06F 9/26; 9/32; 9/42
 U.S. Cl. 395—800 4 Claims



1. A microcomputer comprising:
 memory means for storing a plurality of instructions including at least a sequence of instructions for a program operation to be

repeatedly executed, a last instruction included in said sequence of instructions including a jump instruction for reading a leading instruction included in said sequence of instructions so that if said last instruction is executed, said sequence of instructions is repeatedly executed;
 execution means for executing an instruction read out from said memory means;
 means for counting a number of executions of said sequence of instructions and for generating a detection signal when said number of executions reaches a given number of times to be executed; and
 means, receiving said instruction read out from said memory means for supplying said instruction read out to said execution means and responding to said detection signal for converting said last instruction included in said sequence of instructions into a different instruction and for supplying said different instruction to said execution means,
 said execution means receiving and executing said different instruction whereby said leading instruction included in said sequence of instructions will not be further read out and another instruction will be executed.

5,511,208
LOCATING RESOURCES IN COMPUTER NETWORKS HAVING CACHE SERVER NODES
 Ray W. Boyles, Apex; Michael E. Gierlach, Raleigh, both of N.C.; Prabhendran M. Gopal, Wayne, N.J.; Robert Sultan, Richterswil, Switzerland, and Gary M. Vacek, Raleigh, N.C., assignors to International Business Machines Corporation, Armonk, N.Y.
 Filed Mar. 23, 1993, Ser. No. 35,852
 Int. Cl. G06F 13/14; 15/173
 U.S. Cl. 395—800 7 Claims



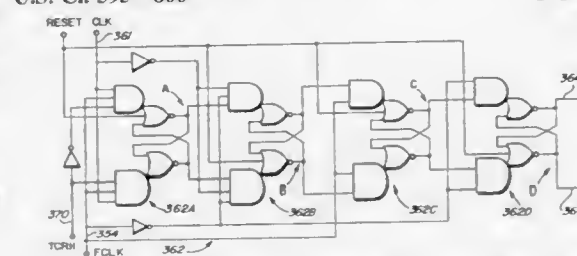
1. In a computer network which includes a plurality of nodes, two or more of which are cache server nodes which store entries representing the location and characteristics of certain network resources, each of the plurality of nodes either being served by a cache server node or being a cache server node, all nodes served by a particular cache server node being defined as being within the domain of that cache server node, a method of locating a target resource in response to a locate request from one of the nodes, the method being performed at the cache server node which serves the requesting node and comprising the steps of:

- searching resource directories maintained at the cache server node for an acceptable entry defining the location and characteristics of the target resource;
- if no acceptable entry is found in the Cache server node resource directories, broadcasting the locate request to all nodes within the cache server node's domain;
- if no acceptable entry is found in the directories of nodes within the cache server node's domain, directing the locate request to one or more alternate cache server nodes in the network, said directing step further comprising the steps of

determining whether alternate cache server nodes are categorized by levels of capabilities in maintaining resource records,
 if the alternate cache server nodes are so categorized, directing the locate request to the cache server node determined to have the highest level of capability,
 if the alternate cache server nodes are not so categorized, then directing the locate request to all of the cache server nodes simultaneously; and
 (d) if no acceptable reply is returned from the cache server nodes to which the locate request was directed, then broadcasting the locate request to all other nodes in the network to determine if any of said nodes include a record of the target resource.

5,511,209
PROGRAMMABLE MICROCOMPUTER OSCILLATOR CIRCUITRY WITH SYNCHRONIZED FAST AND SLOW CLOCK OUTPUT SIGNAL

William D. Mensch, Jr., 1924 E. Hope St., Mesa, Ariz. 85203
 Continuation of Ser. No. 848,743, Mar. 10, 1992, abandoned, which is a division of Ser. No. 368,826, Jun. 20, 1989, Pat. No. 5,123,107. This application Apr. 16, 1993, Ser. No. 48,933
 Int. Cl. G06F 13/372; 13/40; 1/06; 1/12
 U.S. Cl. 395—800 2 Claims



1. An on-line processing system capable of automatically suppressing overloads of buffer regions, the on-line processing system comprising:

a plurality of work processing means for carrying out work processes based on application programs;
 a plurality of buffer pools having the buffer regions;
 buffer control means, coupled to said work processing means and said buffer pools, for allocating the buffer regions of said buffer pools for use by each of said work processing means;
 threshold value control means, coupled to said buffer control means, for detecting a dangerous state of the buffer regions when said buffer control means acquires the buffer regions from said buffer pools by comparing predetermined information related to an amount of buffer regions used and a predetermined threshold value, said dangerous state indicating a possibility of a buffer overload due to lack of storage regions provided by the buffer regions;
 work supervision control means, coupled to said buffer control means, for automatically detecting a work processing means having a priority which is lower than a predetermined priority value out of said plurality of work processing means, and for suppressing said detected work processing means, so that the overload of the buffer regions is avoided; and
 a work control table storing first information and second information related to each of said plurality of work processing means, said first information indicating a most recent time of use of each buffer region by each work processing means, said second information indicating a number of times each buffer region is used by each work processing means,
 said buffer control means allocating the buffer regions of said buffer pools for use by each of said work processing parts based on said work control table.

5,511,215

DEBUGGING SYSTEM FOR THE LOADING AND EXECUTION OF DATA FLOW PROGRAMS

Toshiaki Terasaka; Tsuyoshi Muramatsu, both of Tenri; Souichi Miyata, Nara; Tatsuyuki Kuwabara, Mitaka; Masaharu Tomita, Mitaka; Kiyotaka Nagamura, Mitaka, and Takao Nakamura, Mitaka, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, and Japan Radio Co., Ltd., Tokyo, both of Japan

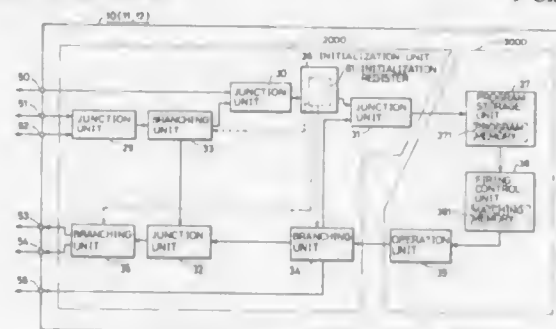
Filed Oct. 26, 1993, Ser. No. 141,210

Claims priority, application Japan, Oct. 27, 1992, 4-288729

Int. Cl.⁶ G06F 9/00; 15/82

U.S. Cl. 395—800

9 Claims



1. A data processing system comprising:
 a data driven type information processor including
 a plurality of input ports to receive in parallel a data packet supplied to each of said plurality of input ports and for carrying out a plurality of different information processing in parallel, respectively, using said received data packets,
 an information processing unit for carrying out information processing using said received data packets, and for providing each processed result as a data packet,
 an input and output control unit for receiving a data packet supplied to each of said plurality of input ports or a data packet provided from said information processing unit, and for providing its received packets to one of an external source of said data driven type information processor and said information processing unit according to a first branching condition;

a control device for receiving in parallel a plurality of data packets and for providing in parallel, to said plurality of input ports of said data driven type information processor, said received data packets, respectively;
 a plurality of von Neumann type information processors for providing different types of data packets to said control device; and
 an output medium shared by said data driven type information processor and said plurality of von Neumann type information processors,
 wherein said information processing unit carries out in parallel a predetermined information processing and a monitor processing of providing, sequentially via contents of a data packet, a progress state of said predetermined information processing using one of said received data packets,
 wherein said input and output control unit further comprises means for receiving a data packet provided by said monitor processing and for providing the same to said output medium, wherein each of said plurality of von Neumann type information processors further comprises:
 analyzing means for analyzing in real-time the progress state of said predetermined information processing according to the contents of the data packet provided to said output medium by the monitor processing, during performance of the predetermined information processor.

5,511,216

MULTIPROCESSOR DATA MEMORY SHARING SYSTEM IN WHICH ACCESS TO THE DATA MEMORY IS DETERMINED BY THE CONTROL PROCESSOR'S ACCESS TO THE PROGRAM MEMORY

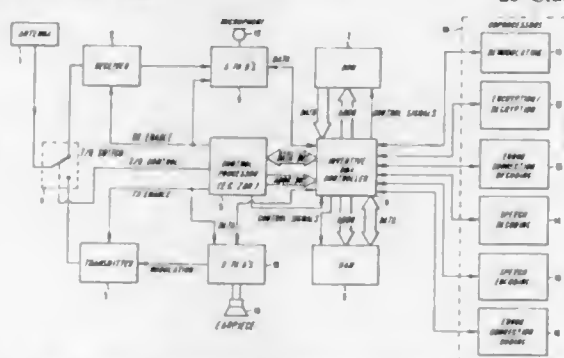
Paul W. Dent, Stehag, and Alf J. P. Larsson, Bjärred, both of, Sweden, assignors to Ericsson GE Mobile Communications Inc., Research Triangle Park, N.C.

Filed Nov. 1, 1993, Ser. No. 143,640

Int. Cl.⁶ G06F 13/28

U.S. Cl. 395—800

25 Claims



1. In a system including a control processor, a coprocessor, a program memory and a data memory, said control processor accessing said program memory during an instruction fetch cycle and said data memory during an instruction execution cycle, an apparatus for controlling access to said data memory, said apparatus comprising:
 control processor interface means for coupling to said control processor;
 coprocessor interface means for coupling to said coprocessor;
 detection means, coupled to said control processor interface means, for detecting when said control processor requests access to said program memory and generating a first access control signal in response thereto;
 scheduling means, coupled to said coprocessor interface means, for detecting when said coprocessor requests access to said data memory and generating a second access control signal in response thereto;
 a switch, having a switch control input means, a first interface means for coupling to memory address, memory data and memory control signals associated with said control processor, a second interface means for coupling to memory address,

memory data and memory control signals associated with said coprocessor, and a data memory interface means for coupling to said data memory, wherein said switch alternatively couples said first interface means or said second interface means to said data memory interface means in response to a switch control signal received from said control input; and
 arbitration means, coupled to said detection means, said scheduling means, and said switch, for generating a switch control signal only in response to said first and second access control signals,
 wherein said instruction fetch and instruction execution cycles are mutually exclusive.

5,511,217

COMPUTER SYSTEM OF VIRTUAL MACHINES SHARING A VECTOR PROCESSOR

Atsushi Nakajima, Fujisawa, and Yaoko Nakagawa, Hadano, both of, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

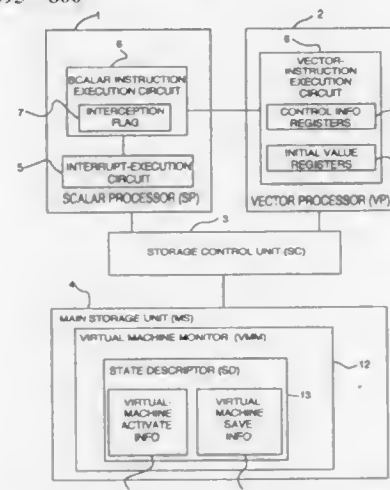
Filed Nov. 30, 1993, Ser. No. 159,237

Claims priority, application Japan, Nov. 30, 1992, 4-319755

Int. Cl.⁶ G06F 9/38; 9/40; 15/16

U.S. Cl. 395—800

25 Claims



1. For use in a computer system having a scalar processor, a vector processor, a plurality of operating systems, and a virtual environment for running the plurality of operating systems on the scalar processor as virtual machines under control of a virtual machine monitor, a virtual environment operating method, comprising the steps of:

running the operating systems selectively on the scalar processor as virtual machines to share the scalar processor with the operating systems;
 controlling said vector processor and said scalar processor, for assigning vector processing tasks from any of said virtual machines to said vector processor for sharing the vector processor among the operating systems running on said scalar processor;
 running a first operating system on the scalar processor so that said running of the first operating system on the scalar processor thereby requests the vector processor to execute a first vector processing job;
 sending a notice of vector processing end by the vector processor to the first operating system and intercepting the notice of the vector processing end by the virtual machine monitor; wherein said intercepting includes setting an interception flag; and
 thereafter running the first operating system on the scalar processor, checking the interception flag and receiving an end of vector processing report by the first operating system.

5,511,218

CONNECTIONIST ARCHITECTURE FOR WEAPONS ASSIGNMENT

Patrick F. Castelaz, Yorba Linda, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

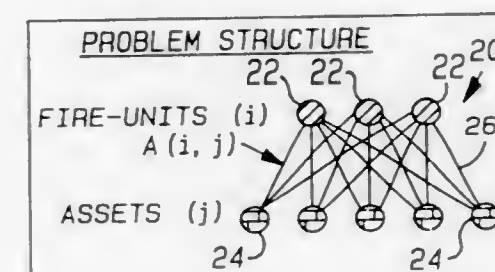
Continuation of Ser. No. 660,363, Feb. 13, 1991, abandoned.

This application Mar. 30, 1994, Ser. No. 220,413

Int. Cl.⁶ G06F 12/02; 15/50; F41G 9/02

U.S. Cl. 395—800

15 Claims



1. A system for assigning a plurality of fire units to defend a plurality of assets from a plurality of threats to said assets, each of said assets having a relative value and being located in a defined geographic area, each of said fire units having an initial number of weapons and each fire unit having a coverage area wherein said weapons are effective in protecting said assets, said system comprising:

a plurality of first processing elements representing said plurality of assets;
 a plurality of second processing elements representing said plurality of fire units;
 a plurality of interconnections connecting each of said plurality of first processing elements with each of said plurality of second processing elements, each of said interconnections having a strength that is a function of a random noise factor, the number of weapons in a particular fire unit represented by a particular second processing element, a Boolean 1 or 0 depending on whether a particular asset is inside or outside of a coverage area for the particular fire unit, respectively, represented by a particular first processing element;
 means for adjusting the strength of said interconnections as a function of the relative value of the particular asset represented by the particular first processing element to which said interconnection is made;
 means for determining a particular interconnection having a greatest strength;
 means for assigning a weapon from said particular fire unit represented by said particular second processing unit connected by said particular interconnection having the greatest strength to defend said particular asset connected by said particular interconnection having the greatest strength; and
 means for determining if the greatest strength of the particular interconnection is less than the number of said fire units times the number of said assets after a weapon from said particular fire unit is assigned to defend said particular asset; and
 means for resetting the interconnection strength of each interconnection when the greatest strength of the particular interconnection is less than the number of said fire units times the number of said assets.

5,511,219

MECHANISM FOR IMPLEMENTING VECTOR ADDRESS POINTER REGISTERS IN SYSTEM HAVING PARALLEL, ON-CHIP DSP MODULE AND CPU CORE

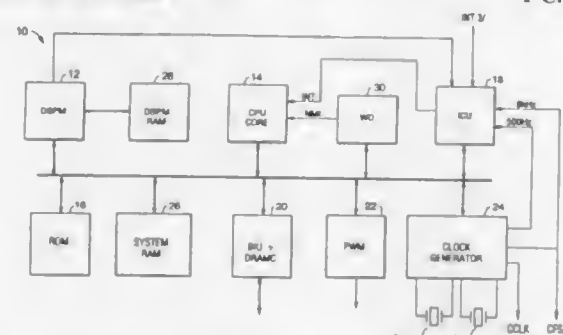
Ilan Shlmony, Ramat-Gan, and Zvi Greenfeld, Kfar Saba, both of, Israel, assignors to National Semiconductor Corporation, Santa Clara, Calif.

Continuation of Ser. No. 79,097, Jun. 17, 1993, abandoned, which is a division of Ser. No. 806,082, Dec. 6, 1991, abandoned. This application Jul. 13, 1994, Ser. No. 274,589

Int. Cl. G06F 13/00

U.S. Cl. 395-800

1 Claim



1. An integrated circuit data processing system comprising:
 - a shared internal bus for transferring both data and instructions;
 - a shared bus interface unit connected to the shared internal bus and connectable via a shared external bus to a shared external memory array such that instructions and data held in the shared external memory array are transferable to the shared internal bus via the shared bus interface unit;
 - a general purpose (GP) central processing unit (CPU) connected to the shared internal bus for retrieving GP instructions, the GP CPU including means for executing GP instructions to process data retrieved by the GP CPU from the shared internal bus;
 - a digital signal processor (DSP) module connected to the shared internal bus, the DSP module including means for processing an externally-provided digital signal received by the DSP module by executing DSP command-list instructions, execution of DSP command-list code instructions by the DSP module being independent of and in parallel with execution of GP instructions by the GP CPU; and
 - a DSP memory element for holding both vector DSP command-list code instructions and vector operand data for utilization by the DSP module, the DSP memory element connected to the DSP module by a dedicated DSP bus, but not connected to the shared internal bus; and
- wherein the DSP module includes at least one vector address pointer register that includes an address field that identifies an address of vector operand data that can be retrieved from the DSP memory element by the DSP module via the DSP bus for use by the DSP module in executing vector DSP command-list code instructions, an address wrap-around field that facilitates wrap-around of the address field, and an increment field that is used for incrementing the address field.

5,511,220

MULTI-USER COMPUTER SYSTEM WITH A CLOCK DRIVEN BATCH DISPATCHING MECHANISM

Noah Perlman, 311 Netanyahu Street, Or Yehuda 60376, Israel

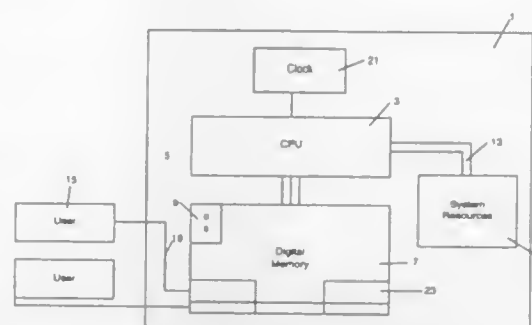
Filed Sep. 1, 1994, Ser. No. 299,700

Int. Cl. G06F 9/00

U.S. Cl. 395-800

25 Claims

1. A computer system having a hardware timer clock for executing tasks requested by multiple users at random times, said computer system having
 - a central processor connected by a bus to
 - a digital memory containing memory locations for signals received at random times from said users, said central processor connected by data lines to



predetermined system resources and controlled by an operating system stored in said digital memory, having means to trigger wait means in said operating system in response to signals from said users, said wait means comprising means to postpone execution of tasks associated with said signals, said tasks comprising operating system calls on routines that send signals on said data lines to said system resources, said computer system having within said digital memory dynamic task batching means called by said means to trigger wait means, said dynamic task batching means comprising a dynamic batch calculation mechanism for building a wait list in a managed wait table in a portion of said digital memory, a computer clock based work related timer for storing time values in said managed wait table, said managed wait table residing in a portion of said digital memory shared by both said dynamic batch calculation mechanism and said computer clock based work related timer, said dynamic task batching means determining the conditions when a wait list should be enlarged or timed out.

5,511,221

PARALLEL PROCESSOR SYSTEM FOR DETECTING THE END OF DATA TRANSMISSION

Katsuyuki Kaneko, Osaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 913,358, Jul. 15, 1992, abandoned.

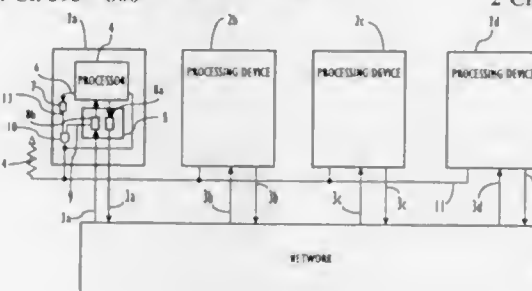
This application Dec. 29, 1994, Ser. No. 366,378

Claims priority, application Japan, Jul. 16, 1991, 3-175419; Jul. 15, 1992, 7-913358

Int. Cl. G06F 15/16

U.S. Cl. 395-800

2 Claims



1. A parallel processor system comprising:
 - a plurality of processing devices;
 - a data network, having a plurality of inputs and a plurality of outputs, for connecting said processing devices to one another and for exchanging messages generated by said processing devices among said processing devices; and
 - a control network, having a plurality of inputs for connecting said control network to said processing devices and an output, said control network for performing a logical AND operation on all said control network inputs and for providing the result of said logical AND operation to said control network output, wherein each of said processing devices includes:
 - a router having a send buffer for transmitting messages stored in said send buffer to other processing devices through said

data network, a receive buffer for receiving and storing messages transmitted by send buffers of other processing devices through said data network, said receive buffer having an output for providing a signal that indicates when said receive buffer is empty,

a processor for receiving messages from said receive buffer of said router and for transmitting messages to said send buffer of said router, said processor having an output for providing a signal that indicates when said processor has completed the transmission of messages to said send buffer, a latch for storing said message transmission completion signal from said processor and for outputting a transmit termination signal, and

an AND-gate means for receiving said transmit termination signal from said latch and said empty buffer signal from said receive buffer, and for outputting to one of said plurality of inputs of said control network a transmit completion signal in response to AND operation of said transmit termination signal from said latch and said empty buffer signal from said receive buffer,

wherein said output of said control network is connected to each of said processors for providing a signal to each of said processors indicating that each processing device has completed processing messages and that each processor can simultaneously resume a subsequent processing function.

5,511,222

PRIORITY ENCODER

Masue Shiba, Tokyo, and Shigeharu Nakata, Fujisawa, both of, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

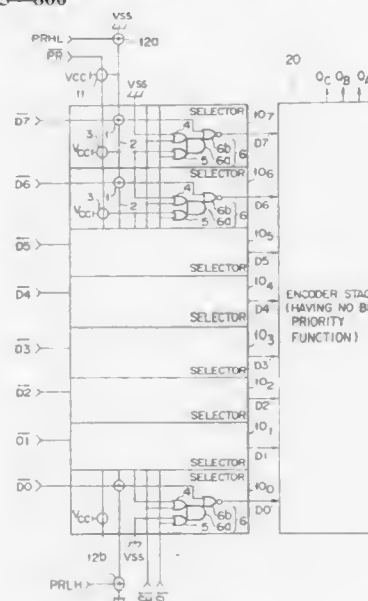
Continuation of Ser. No. 188,114, Jan. 28, 1994, abandoned, which is a continuation of Ser. No. 647,936, Jan. 30, 1991, abandoned. This application Jan. 18, 1995, Ser. No. 375,009

Claims priority, application Japan, Jan. 31, 1990, 2-18918

Int. Cl. G06F 15/00

U.S. Cl. 395-800

10 Claims



5. A priority encoder, which detects an active bit located nearest to a most significant bit (MSB) or nearest to a least significant bit (LSB) among 2n bits of input data and converts the input data into n bits of coded output data, said priority encoder comprising:
 - a first discharge circuit, controlled by a first discharge signal, for outputting a first potential;
 - a second discharge circuit, controlled by a second discharge signal, for outputting the first potential;

2n switch circuits connected in series between the first and second discharge circuits, each of the switch circuits being controlled by a predetermined bit among 2n bits of the input data;

a plurality of precharge circuits for outputting a second potential, the precharge circuits being controlled by a precharge signal, and each connected to connection points between switch circuits, between the first discharge circuit and the 2n switch circuits, and between the second discharge circuit and the 2n switch circuits;

2n detectors each respectively connected to a respective pair of different points in the 2n switch circuits to detect and output an active bit when the two different points have different potentials;

an encoder stage for converting 2n bits of the data output from 2n of the detectors to n bits of coded data.

5,511,223

DIVERSE PROCESSOR ELECTRONIC PROTECTION AND CONTROL MODULE

James Seccina, Forest; John G. Hinant, and David P. Gerhard, both of Lynchburg, all of Va., assignors to The B&W Nuclear Service Company, New Orleans, La.

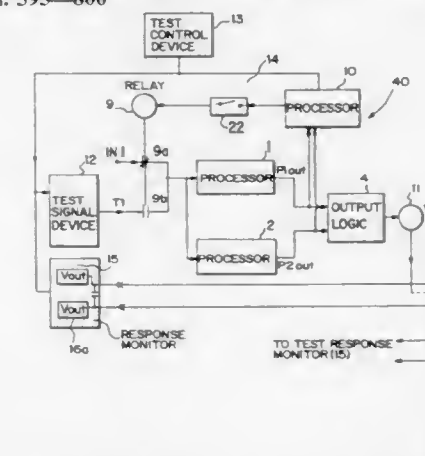
Continuation of Ser. No. 981,578, Nov. 25, 1992, abandoned.

This application Feb. 27, 1995, Ser. No. 394,921

Int. Cl. G06F 11/00

U.S. Cl. 395-800

6 Claims



1. An improved control system for receiving input signals and for outputting output signals for use in one of process control, protection and indication, comprising:

at least one digital module, each of the at least one digital modules having a signal input stage, two diverse processors, and an output logic stage, said signal input stage receiving an input signal from a process and outputting a digital signal to said two diverse processors, said two diverse processors being of different design for computing a protection function and each connected to said signal input stage for receiving the same digital signal therefrom, each processor subjecting the digital signal to its own algorithm to create an output signal indicative of an operable processor, said output logic stage connected to said two diverse processors for receiving said two diverse processor output signals and for outputting an output signal, said output logic stage having logic means for generating the output logic stage output signal based upon a difference between said two diverse processor output signals and sending the output logic stage output signal to a plurality of trip output contacts connected in a trip string, one of said trip output contacts being constructed to place the at least one digital module in a desired state if one of said two diverse processors fail;

means for switching between the input signal from the process and a test signal, said switching means including relay means for allowing the input signal from the process to be connected to the at least one digital module and interlocking means for

permitting a test signal to be read by the at least one digital module when disconnecting the input signal from the process from the at least one digital module;

test signal generating means connected to the two diverse processors for generating the test signal and sending the test signal to each of the two diverse processors;

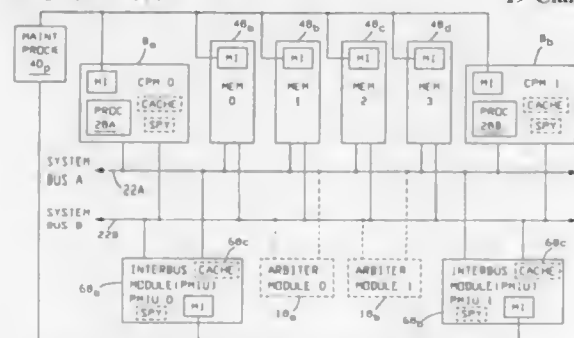
test control means connected to the test signal generating means for checking a response from the two diverse processors; and response monitoring means for measuring a voltage of one of the trip output contacts in the trip string for monitoring the response of the at least one digital module trip output contact.

5,511,224 CONFIGURABLE NETWORK USING DUAL SYSTEM BUSSES WITH COMMON PROTOCOL COMPATIBLE FOR STORE-THROUGH AND NON-STORE-THROUGH CACHE MEMORIES

Dan T. Tran; Paul B. Ricci, both of Laguna Niguel; Jayesh V. Sheth, Mission Viejo; Theodore C. White, Tustin, and Richard A. Cowgill, Lake Forest, all of Calif., assignors to Unisys Corporation, Blue Bell, Pa.

Continuation of Ser. No. 19,003, Feb. 18, 1993. This application Mar. 16, 1995, Ser. No. 406,811
Int. Cl. G06F 11/16

U.S. Cl. 395-800 19 Claims



1. A dual bus system operations network comprising:

(a) a plurality of digital modules having means for sending commands and data as a sending requestor module or receiving commands and data as a receiving module and wherein each said module is connected to each bus means of a pair of dual system bus means, and, wherein one or more of said digital modules includes a first central processing module using a store-through cache memory and one or more of said digital modules includes a second central processing module using a non-store-through cache memory, and wherein each of said digital modules includes:

(a1) means to request access to each bus means of said pair of system bus means;

(b) said pair of dual system bus means including:

(b1) a first system bus means using a synchronous transmission protocol compatible for both said store-through and non-store-through central processing modules;

(b2) a second system bus means replicating said first system bus means and using said compatible synchronous transmission protocol;

(b3) connection means for connecting each of said digital modules to each of said first and second system bus means;

(c) said first central processing module including a first processor unit and a first store-through cache memory connected to said connection means;

(d) said second central processing module including a second processor unit and a second non-store-through cache memory connected to said connection means;

(e) wherein said plurality of digital modules further includes:

(e1) a plurality of interface modules for interfacing said pair of system bus means to peripheral units;

(e2) a memory module for holding data accessible by said first and second processor units;

(f) maintenance processor means for configuring said network for exclusive use of said one or more second processing modules having said second Non-Store-Through (NST) cache memories.

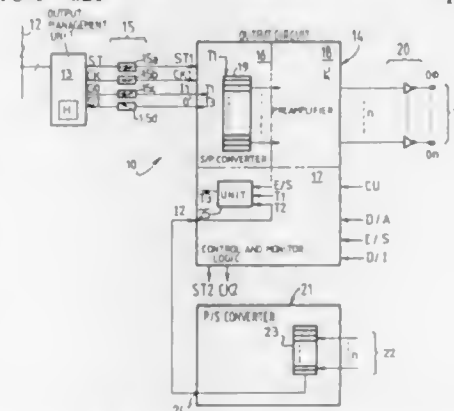
5,511,225 PROGRAMMABLE CONTROLLER FOR CONTROLLING OUTPUT OF CONTROL SYSTEM BY HAVING CONFIGURATION CIRCUIT COOPERATING WITH MONITOR LOGIC TO SELECTIVELY TRANSMIT RETURN OUTPUT FRAME

Pierre Gohl, La Colle Sur Lo; Gerard Gomez, Carro; Pergent Jacky, Carros Le Neuf, and Daniel Wojerz, Antibes, all of, France, assignors to AEG Schneider Automation, France
Division of Ser. No. 859,687, Jun. 11, 1992, Pat. No. 5,423,005.
This application Dec. 22, 1994, Ser. No. 362,823

Claims priority, application France, Oct. 11, 1990, 90 12542
Int. Cl. G06F 15/02

U.S. Cl. 395-821

19 Claims



1. A local or remote output management device for controlling outputs of a programmable control system, which determines the state of output channels from the state of input channels according to a predetermined program, said device comprising:

an output management unit connected to outputs of said programmable control system,

an output circuit comprising a control and monitor logic having a first serial input, a serial to parallel converter having a second serial input connected to a serial output of the output management unit and parallel outputs connected respectively to said output channels, the output circuit further comprising at least one serial return output connected to the output management unit and to an output of the control and monitor logic, said second serial input being connected to an input of the control and monitor logic,

an input circuit connected to said first serial input of the output circuit,

the output circuit receiving from said output management unit on said second serial input a down frame comprising at least a control bit and data bits determining the state of the outputs channels,

the output circuit further receiving from said input circuit on said first serial input an up input frame comprising at least data bits and a control bit, said data bits comprising bits indicative of electrical faults, and

the output circuit sending to said output management unit on the serial return output an up output frame produced by the control and monitor logic from the up input frame and the down frame, wherein the output circuit is associated with configuration means for configuring an operating mode of said circuit and said configuration means cooperate with the control and monitor logic to transmit selectively to the return output an up output frame which is produced either from the down frame or from the up input frame.

5,511,226 SYSTEM FOR GENERATING SNOOP ADDRESSES AND CONDITIONALLY GENERATING SOURCE ADDRESSES WHENEVER THERE IS NO SNOOP HIT, THE SOURCE ADDRESSES LAGGING BEHIND THE CORRESPONDING SNOOP ADDRESSES

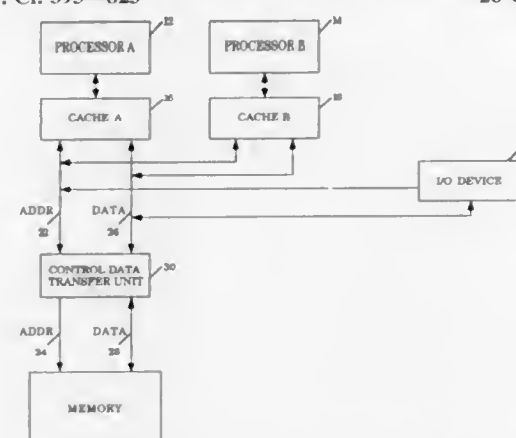
Anthony M. Zilka, Portland, Oreg., assignor to Intel Corporation, Santa Clara, Calif.

Filed Aug. 25, 1992, Ser. No. 935,035

Int. Cl. G06F 12/00; 12/06; 12/10

U.S. Cl. 395-823

26 Claims



1. In a multiprocessor system having a first and a second processor, a first and a second corresponding private cache, a shared memory, and an input/output (I/O) device, wherein cache coherency is maintained on a basis of a predetermined size (S), and I/O data stored in said shared memory are cacheable in said private caches, an apparatus for transferring I/O data between said shared memory and said I/O device and maintaining cache coherency, said apparatus comprising:

a) address generation and control circuitry coupled to said I/O device for receiving from said I/O device a first read parameter denoting a starting memory location of a plurality of contiguous memory locations of said shared memory from which a plurality of read I/O data having a read I/O size (R) in integer multiple(s) of S are to be transferred to said I/O device in one or more transfers with each transfer transferring one cache coherency basis (CCB) of read I/O data,

said address generation and control circuitry being also coupled to said private caches, and used for generating a plurality of read snoop addresses using said received first read parameter and S, outputting for said private caches said generated read snoop addresses to snoop said private caches, one read snoop address at a time,

said address generation and control circuitry being also coupled to said shared memory, and concurrently used for conditionally generating a plurality of read source addresses using said output read snoop addresses whenever said output read snoop addresses do not result in read snoop hit, and outputting for said shared memory said conditionally generated read source addresses to access said shared memory, one read source address at a time with the read source addresses lagging behind the corresponding read snoop addresses in a predetermined manner;

b) a buffer coupled to said shared memory and said I/O device for receiving from said shared memory non-cached ones of said read I/O data, storing said received non-cached ones of said read I/O data, and outputting for said I/O device said stored non-cached ones of said read I/O data, one CCB of non-cached read I/O data at a time and synchronized to said generating and outputting of read source addresses.

5,511,227 METHOD FOR CONFIGURING A COMPOSITE DRIVE FOR A DISK DRIVE ARRAY CONTROLLER

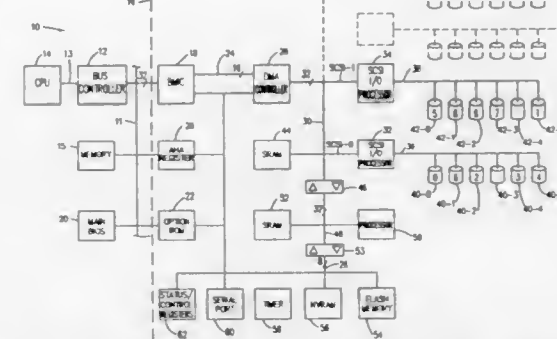
Craig S. Jones, Austin, Tex., assignor to Dell USA, L.P., Austin, Tex.

Filed Sep. 30, 1993, Ser. No. 130,055

Int. Cl. G06F 13/10

U.S. Cl. 395-829

12 Claims



8. A method for configuring a composite drive for a disk drive array controller within a computer system comprising the steps of: installing a plurality of disk drives in a first physical arrangement on a bus of said computer system, each of said disk drives having a user data region, a first portion of which includes a first subset of information indicative of a total number of physical disk drives included as part of said composite drive and a second portion including a second subset of information comprised of a logical position of said each of said plurality of disk drives within said composite drive;

reading said first subset of information and said second subset of information from said each of said plurality of disk drives;

mapping said each of said plurality of disk drives within said composite drive according to said logical position indicated by said second subset of information read from said each of said plurality of disk drives;

re-installing said plurality of disk drives in a second physical arrangement different from said first physical arrangement; re-reading said first subset of information and said second subset of information from said each of said plurality of disk drives; and

re-mapping said each of said plurality of disk drives within said composite drive according to said logical position indicated by said second subset of information re-read from said each of said plurality of disk drives.

5,511,228 APPARATUS AND METHOD FOR EMPLOYING A HOST MODE SETTING COMMAND TO TURN-OFF OR LEAVE- ON A LASER IN AN OPTICAL DISK DRIVE

John E. Kulakowski; Rodney J. Means, and Gary R. Stephens, all of Tucson, Ariz., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 882,731, May 14, 1992, abandoned, which is a continuation of Ser. No. 591,320, Oct. 1, 1990, abandoned. This application Mar. 8, 1993, Ser. No. 29,313

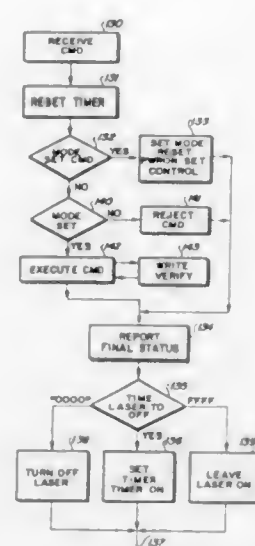
Int. Cl. G11B 7/00; 7/08

U.S. Cl. 395-834

6 Claims

4. A method of operating an optical disk drive that has means for receiving and supporting an optical disk in a play position of the optical disk drive, a laser that can be turned on and off for emitting a laser beam to the optical disk in the play position and attachment means for receiving host-processor issued commands, some of said host-processor issued commands actuating said optical disk drive to write data to or read data from the optical disk, including the steps:

detecting and indicating that the disk is in the play position;



responding to said indicating that the disk is in the play position for turning the laser on;

leaving the laser on continuously;

receiving a mode-setting host-processor issued command that commands turning the laser off each time after completing execution of any one of said received host-processor issued commands;

responding to the mode-setting host-processor issued command to set a laser control bit in the optical disk drive for indicating that the laser is to be turned off upon completing execution of any said host-processor issued command that reads data from or writes data to said optical disk; and

upon completing execution of each received host-processor issued command to sense the laser control bit for responding to the laser control bit being set to turn the laser off after each said completing execution of a host-processor issued command that read data from or wrote data to said optical disk.

5,511,229

DATA PROCESSING SYSTEM HAVING A SWITCHING NETWORK CONNECTING MULTIPLE PERIPHERAL DEVICES USING DATA PATHS CAPABLE OF DIFFERENT DATA BUS WIDTHS

Talzo Tsujimoto, Fujiidera, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

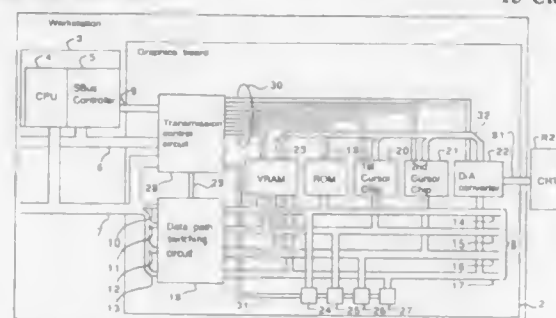
Filed Sep. 14, 1992, Ser. No. 944,442

Claims priority, application Japan, Sep. 13, 1991, 3-234580

Int. Cl. G06F 13/00

U.S. Cl. 395-851

13 Claims



I. A data processing apparatus comprising:
a first (k×m)-bit data bus for transmitting data of (k×m)-bits in parallel wherein k and m are an integer larger than one;
at least one (k×m)-bit I/O peripheral device connected to said first (k×m)-bit data bus;

a first m-bit data bus group consisting of first to k-th m-bit data buses obtained by dividing said first (k×m)-bit data bus into k data buses having an equal width of data bus;

a plurality of m-bit I/O peripheral devices each of which is connected to one m-bit data bus belonging to said first m-bit data bus group;

a second (k×m)-bit data bus;

a (k×m)-bit I/O central processing unit connected to said second (k×m)-bit data bus;

a second m-bit data bus group consisting of (k+1)-th to k-th m-bit data buses obtained by dividing said second (k×m)-bit data bus into k data buses having an equal width of data bus;

a transmission control means for generating control signals responsive to a demand of data transmission from said CPU; and

a data path switching means connected between said first m-bit data bus group and second m-bit data bus group which forms a data transmission path between an arbitrary two of said plurality of m-bit I/O peripheral devices, said at least one (k×m)-bit I/O peripheral device and said CPU in response to a control signal output from said transmission control means.

5,511,230

COMMUNICATION SYSTEM BETWEEN MASTER SYSTEM AND MULTIPLE SLAVE SYSTEMS IN TIME DIVISION MODE WHERE A NEXT SLAVE IS SERVICED UPON RECEIPT OF FINAL ACKNOWLEDGEMENT

Sang-Shin Ryu, Seoul, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

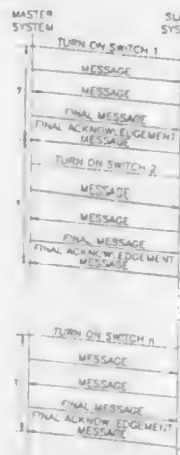
Filed Jun. 16, 1992, Ser. No. 899,304

Claims priority, application Rep. of Korea, Jun. 24, 1991, 1991-10502

Int. Cl. G06F 9/00

U.S. Cl. 395-865

20 Claims



I. A data communication method in a decentralized node exchange system for enabling communication between a master system having a serial input/output interface operable in a time division mode and multiple slave systems connected to a communication path selector comprising a plurality of switches, said method comprising:

a master system communicating process for connecting a communication path between the master system and a first slave system by switching to a first switch of said communication path selector, assigning a communication time for communication between said master system and said first slave system, transmitting messages to said first slave system and simultaneously receiving a message from said first slave system via said serial input/output interface, when said communication time has elapsed transmitting a final message to said first slave system via said serial input/output interface after transmission of said messages, and executing service for a next slave system for communication between said master system and said next slave system by switching to a second and

successive switch of said communication path selector when a final acknowledgment message is received from said first slave system; and

a slave system communicating process of said first slave system for receiving messages transmitted by said communication path of said master system communicating process upon switching to said first switch of said communication path selector and simultaneously transmitting a message to said master system via said serial input/output interface, and transmitting the final acknowledgment message to said master system via said serial input/output interface when the final message is received from said master system.

5,511,231

SELECTIVE CALLING RECEIVER CAPABLE OF STOPPING A NOTIFYING OPERATION BY TOUCHING A CHAIN CLIP

Hiroshi Ono, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

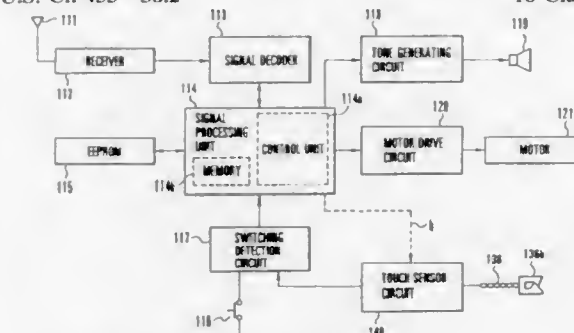
Filed Jun. 21, 1994, Ser. No. 262,932

Claims priority, application Japan, Jun. 21, 1993, 5-173747

Int. Cl. H04B 1/08

U.S. Cl. 455-38.2

18 Claims



1. A selective calling receiver comprising:

a selective calling receiver main body having notification means for performing a notifying operation when a numerical signal is received;

a chain clip comprising a conductive metal chain and a clip coupled thereto, said chain having a first end connected to said selective calling receiver main body and a second end connected to said clip;

detection means, located in said selective calling receiver main body and electrically connected to said chain clip, for detecting contact between a user and said chain clip; and

control means, located in said selective calling receiver main body, for stopping the notifying operation when a predetermined output is generated by said detection means.

5,511,232

METHOD FOR PROVIDING AUTONOMOUS RADIO TALK GROUP CONFIGURATION

Robert J. O'Dea, Ft. Lauderdale, and Jimmy W. Cadd, Coral Springs, both of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 2, 1994, Ser. No. 348,529

Int. Cl. H04B 7/26; H04Q 7/20

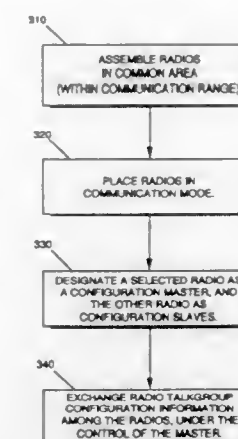
U.S. Cl. 455-54.1

18 Claims

I. A method of providing autonomous radio talk group configuration, comprising the steps of:

providing a plurality of radio transceivers each supporting a radio talk group configuration mode operable on a particular communication channel;

placing the plurality of radio transceivers in radio talk group configuration mode;



dividing the plurality of radio transceivers into a configuration master transceiver and at least one configuration slave transceiver;

at the configuration master transceiver: transmitting radio talk group identification information on the particular communication channel;

at the at least one configuration slave transceiver: receiving the radio talk group identification information; and storing the radio talk group identification information for use in radio talk group communications.

5,511,233

SYSTEM AND METHOD FOR MOBILE COMMUNICATIONS IN COEXISTENCE WITH ESTABLISHED COMMUNICATIONS SYSTEMS

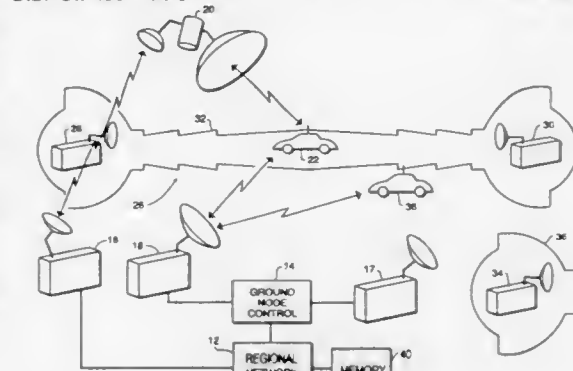
David D. Otten, Redondo Beach, Calif., assignor to Celsat America, Inc., Torrance, Calif.

Filed Apr. 5, 1994, Ser. No. 223,437

Int. Cl. H04B 1/00; 7/00

U.S. Cl. 455-56.1

26 Claims

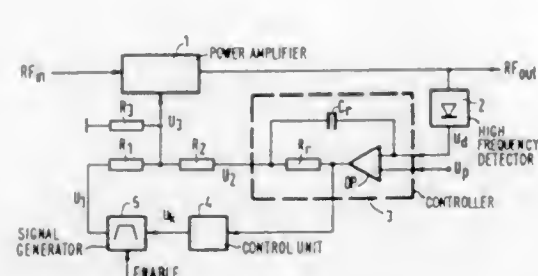


1. A communications system for providing communications with a mobile user in a frequency band and in the geographic vicinity of a different communications service that operates in at least one sub-band that uses some but not all of the frequency band, while avoiding mutual interference between the mobile user and the different communications service, the communications system comprising:

a mobile communication device used by the mobile user, the communication device being responsive to a frequency control signal to select the frequency sub-band in which it operates; and

a control center for communicating the frequency control signal to the mobile communication device, the control center comprising:

a memory in which is stored a geographic and frequency description of the different communications service thereby defining an interference zone for the different communications service;



used for forming the power amplifier output signal, the first control signal having rising and falling edges, and further includes means for deriving a signal generator control signal, the signal generator control signal for terminating the rising edges of the first control signal and further being derived from a comparison of the detector signal with a reference value.

5,511,240
RADIO TELEPHONE SYSTEM CAPABLE OF
TRANSMITTING DATA COMMUNICATION THROUGH A
BATTERY CHARGER

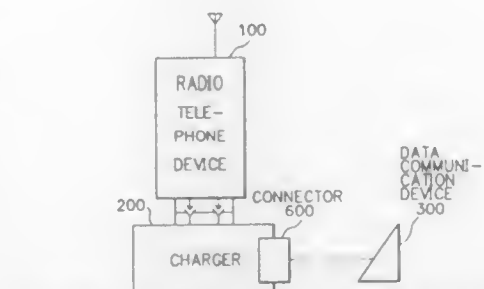
Kohji Nishiyama, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Nov. 5, 1992, Ser. No. 971,592
Claims priority, application Japan, Nov. 5, 1991, 3-315207
Int. Cl.⁶ H04B 3/54

U.S. Cl. 455—127

8 Claims

1. A radio telephone system comprising:
a radio telephone device for transmitting and receiving an audio communication signal and a data communication signal, said radio telephone device comprising:
a radio circuit for transmission and reception of said audio communication and data communication signals;



- a baseband circuit for conversion between said audio communication signal and a baseband signal, and between said data communication signal and a baseband signal;
a first data interface for conversion between one of said baseband signals, corresponding to said data communication signal, and an analog signal;
a controller for controlling said radio circuit, said base band circuit and said first data interface;
a first power supplier for energizing said radio telephone device;
a first charging terminal connected to said first power supplier and said first data interface;
a charger for supplying charging power to said first power supplier, said charger comprising:
a second power supplier for supplying said charging power of said first power supplier;
a second data interface for conversion between said analog signal and said data communication signal;
a connector for interconnection between said second data interface and a data communication device responsive to said data communication signal;
a second charging terminal connected to said second power supplier and said second data interface;
said second charging terminal being connectable with said first charging terminal for transmitting said charging power and said analog signal.

DESIGNS

APRIL 23, 1996

369,011

CANDY

Sung A. Ahn, 1-303, Jangmi 3rd Apartment, Sincheon-dong, David M. Hoff, 329 Fairfield Ave., Hartford, Conn. 06114
Songpa-ku, Seoul, Rep. of Korea

Filed May 9, 1995, Ser. No. 38,663

Claims priority, application Rep. of Korea, Jan. 20, 1995, U.S. Cl. D2—717
1995-793

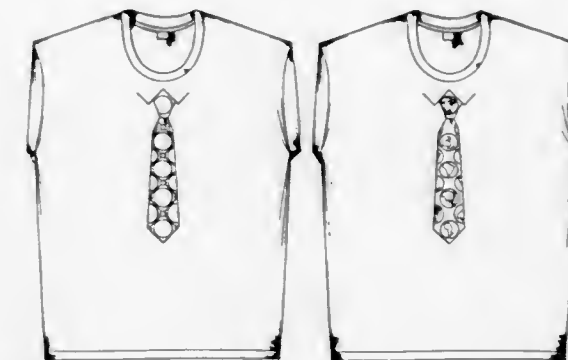
Term of patent 14 years

U.S. Cl. D1—109



369,013

TEE SHIRT



369,014

BASEBALL CAP WIG

Susie N. Lucas, 28958 Eton, Westland, Mich. 48185

Filed May 2, 1994, Ser. No. 22,115

Term of patent 14 years

U.S. Cl. D2—866

369,012

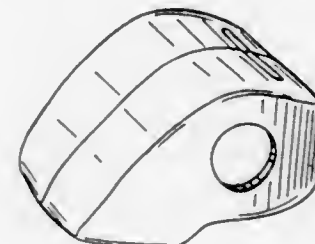
SEAT BELT RETRACTOR HOUSING

Richard E. Cone, II, Athens, Ohio, assignor to Cosco, Inc., Columbus, Ind.

Filed Nov. 4, 1994, Ser. No. 30,684

Term of patent 14 years

U.S. Cl. D2—639



369,015
HAT

Charles L. Griffin, Jr., 515-A Chestnut St., Chattanooga, Tenn. 37402

Filed May 17, 1995, Ser. No. 38,976
Term of patent 14 years

U.S. Cl. D2—869



369,017

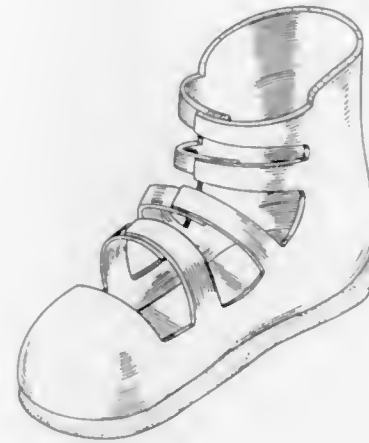
PROTECTIVE COVER FOR SHOES

Barry H. Watts, 4317 Cypress Dr., Prince George, Va. 23875

Filed Mar. 7, 1995, Ser. No. 35,832

Term of patent 14 years

U.S. Cl. D2—911



369,016
BOOT

Pamela A. Parker, San Carlos, Calif., assignor to Ariat International, Inc., San Carlos, Calif.

Filed Sep. 27, 1994, Ser. No. 28,990

Term of patent 14 years

U.S. Cl. D2—911



369,018

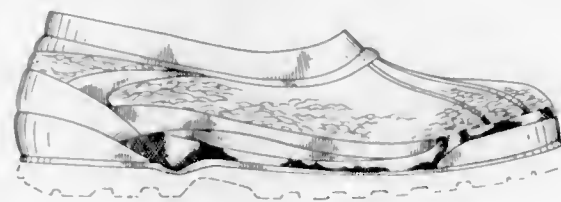
SHOE UPPER

Mike Brooks, Nelsonville; Edgar H. Simpson; Theodore A. Kastner, both of Lancaster, and Diana A. Wurfbain, Athens, all of Ohio, assignors to Rocky Shoes & Boots, Inc., Nelsonville, Ohio

Filed Mar. 2, 1995, Ser. No. 35,559

Term of patent 14 years

U.S. Cl. D2—969



369,019
SHOE UPPER

Mike Brooks, Nelsonville; Edgar H. Simpson; Theodore A. Kastner, Lancaster, and Diana A. Wurfbain, Athens, all of Ohio, assignors to Rocky Shoes & Boots, Inc., Nelsonville, Ohio

Filed Mar. 2, 1995, Ser. No. 35,560

Term of patent 14 years

U.S. Cl. D2—970



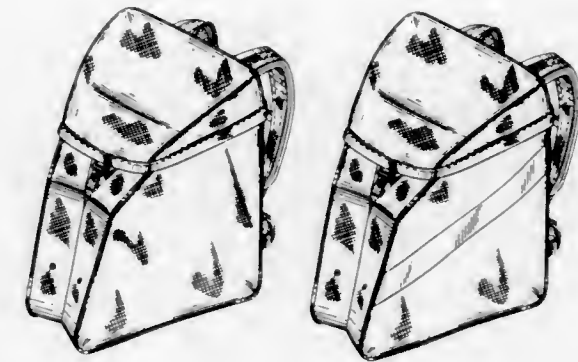
369,021
BACKPACK

Eugene Kliot, New York, N.Y., assignor to Visual Impact Films Corporation, New York, N.Y.

Filed Jan. 9, 1995, Ser. No. 33,266

Term of patent 14 years

U.S. Cl. D3—217



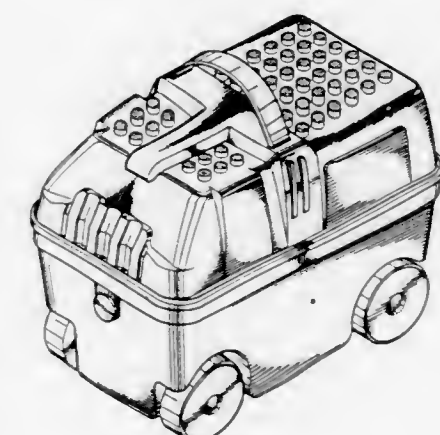
369,022
TOY CONTAINER

Jin R. Sun, Taipei Hsien, Taiwan, assignor to Youfu Kou Chao Industrial Co., Ltd., Taipei Hsien, Taiwan

Filed Aug. 16, 1994, Ser. No. 27,213

Term of patent 14 years

U.S. Cl. D3—271



369,020

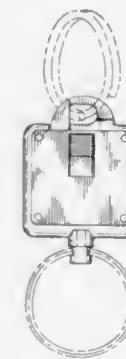
CLAW TYPE KEY HOLDER

Samner MacDonald, 44 Ballou Blvd., Bristol, R.I. 02809

Filed Jan. 17, 1995, Ser. No. 33,628

Term of patent 14 years

U.S. Cl. D3—207



369,023

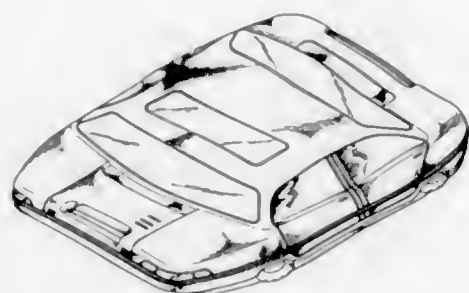
TOOL BOX

Liu L. Cheng, Taichung Hsien, Taiwan, assignor to Chao Li Smeltion Co., Ltd., Taichung Hsien, Taiwan

Filed Jan. 19, 1995, Ser. No. 33,740

Term of patent 14 years

U.S. Cl. D3—271



369,025

TRAVEL ORGANIZER

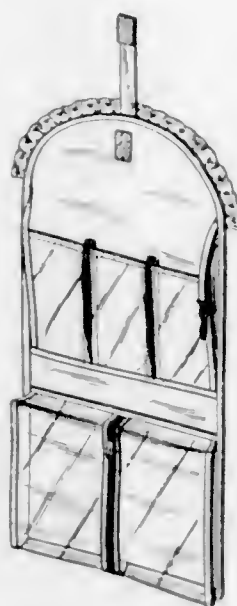
Christopher J. Miller, and Judy A. Miller, both of 619 Kitloun Ct., Holland, Ohio 43528

Continuation-in-part of Ser. No. 7,370, Apr. 20, 1993, Pat. No.

Des. 351,730. This application Oct. 21, 1994, Ser. No. 30,035

Term of patent 14 years

U.S. Cl. D3—299



369,024

LUGGAGE CASE

William L. King, and Terry Oltrogge, both of Denver, Colo., assignors to Samsonite Corporation, Denver, Colo.

Filed Feb. 8, 1994, Ser. No. 18,499

Term of patent 14 years

U.S. Cl. D3—283



369,026

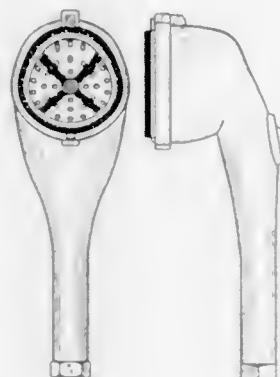
COMBINED SHOWER HEAD AND BRUSH

Warren S. Furbert, and Alyta G. Furbert, both of #3 Riviera Road, Southampton, Bermuda

Filed Oct. 24, 1994, Ser. No. 30,208

Term of patent 14 years

U.S. Cl. D4—115



369,027

PAINT ROLLER FRAME

Ilan Zigelboim, and Virginia B. Hagan, both of 4955 NW. 82nd Ter., Lauderhill, Fla. 33351

Filed Apr. 3, 1995, Ser. No. 37,008

Term of patent 14 years

U.S. Cl. D4—122



369,029

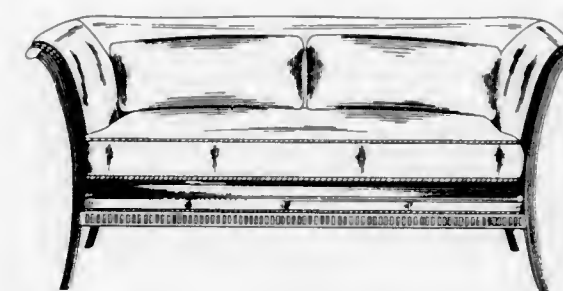
SETTEE

Sally S. Lewis, 8727 Melrose Ave., Los Angeles, Calif. 90069-5086

Filed Mar. 28, 1994, Ser. No. 20,477

Term of patent 14 years

U.S. Cl. D6—381



369,028

CHAIR

Harald Jaeger, Frankfurt, Germany, assignor to Kusch & Co. Sitzmobelwerke KG, Hallenberg, Germany

Filed Mar. 27, 1995, Ser. No. 36,709

Claims priority, application Germany, Sep. 29, 1994, M 94 07 606.5

Term of patent 14 years

U.S. Cl. D6—366



369,030

CENTER AREA DISPLAY

Paul R. Lechleiter, Powell, and Mark B. Artus, Beechwood, both of Ohio, assignors to Blockbuster Entertainment Corporation, Ft. Lauderdale, Fla.

Filed Dec. 6, 1994, Ser. No. 31,799

Term of patent 14 years

U.S. Cl. D6—396



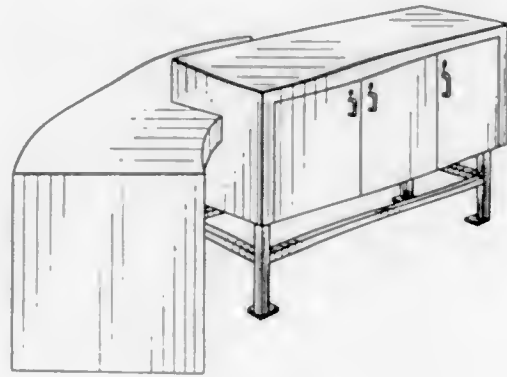
369,031

COMBINED CURVED COUNTER AND CABINET

Paul R. Lechleiter, Powell, and Mark B. Artus, Beechwood, both of Ohio, assignors to Blockbuster Entertainment Inc., Ft. Lauderdale, Fla.

Filed Mar. 16, 1995, Ser. No. 36,247
Term of patent 14 years

U.S. Cl. D6—397



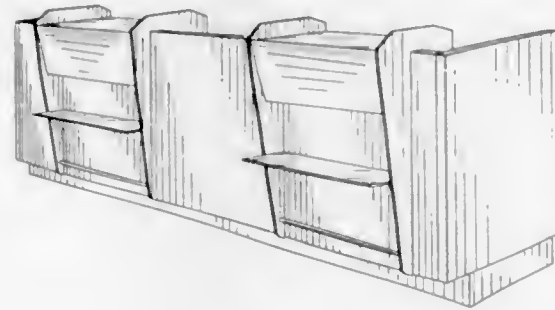
369,033

COUNTER AREA

Paul R. Lechleiter, Powell, and Mark B. Artus, Beechwood, both of Ohio, assignors to Blockbuster Entertainment Corporation, Ft. Lauderdale, Fla.

Filed Dec. 6, 1994, Ser. No. 31,800
Term of patent 14 years

U.S. Cl. D6—449



369,032

CLOTHESHORSE

Tso-Chi Huang, and Yu-Chi Huang, both of No. 100-5, Shioh-Tsuoh St., Shioh-Tsuoh Village, Fwu-Shing Country, Jang-Huah Shiann, Taiwan

Filed Mar. 10, 1995, Ser. No. 35,959
Term of patent 14 years

U.S. Cl. D6—412



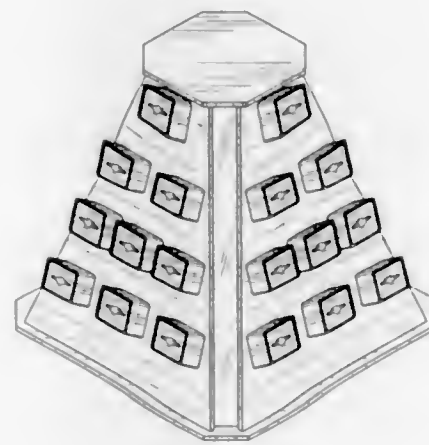
369,034

JEWELRY DISPLAY FIXTURE

Peter A. Davet, 14250 Sweetbriar La., Novelty, Ohio 44072
Filed Jan. 17, 1995, Ser. No. 33,592

Term of patent 14 years

U.S. Cl. D6—457



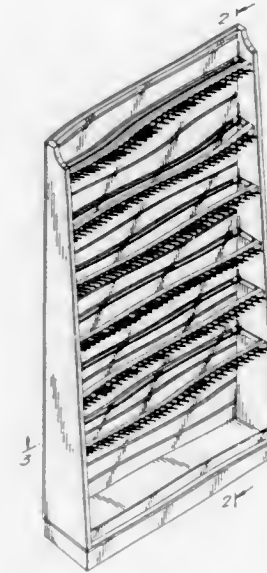
369,035

DISPLAY UNIT FOR TIES

Andrew J. Polter, London, United Kingdom, assignor to Tie Rack Trading Limited, Brentford, United Kingdom
Filed Apr. 3, 1995, Ser. No. 37,045

Term of patent 14 years

U.S. Cl. D6—464



369,037

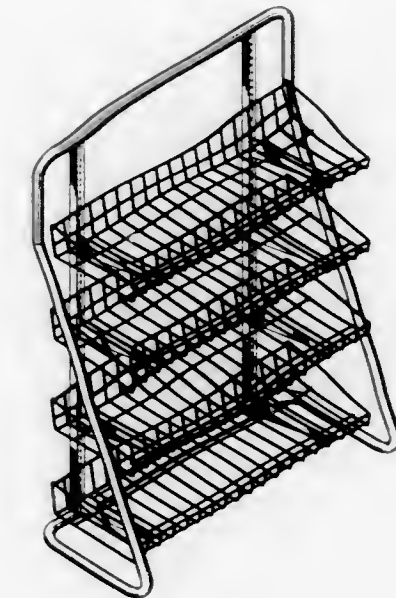
MERCHANDISING DISPLAY RACK

Philip D. Wyatt, Neosho, Mo., and Jeffery M. Talbot, Austin, Tex., assignors to L&P Property Management Company, Chicago, Ill.

Filed May 15, 1995, Ser. No. 38,901

Term of patent 14 years

U.S. Cl. D6—465



369,036

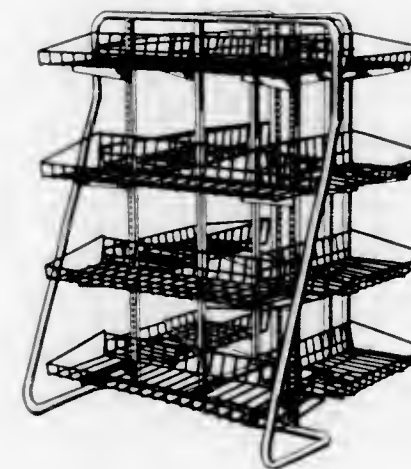
MERCHANDISING DISPLAY RACK

Philip D. Wyatt, Neosho, Mo., and Jeffery M. Talbot, Austin, Tex., assignors to L&P Property Management Company, Chicago, Ill.

Filed May 15, 1995, Ser. No. 38,880

Term of patent 14 years

U.S. Cl. D6—465



369,038

CYLINDER DISPLAY STAND

Paul R. Lechleiter, Powell, and Mark B. Artus, Beechwood, both of Ohio, assignors to Blockbuster Entertainment Corporation, Ft. Lauderdale, Fla.

Filed Dec. 6, 1994, Ser. No. 31,787

Term of patent 14 years

U.S. Cl. D6—466



369,039

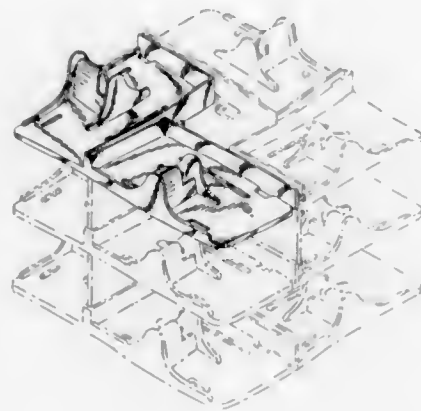
MODULAR EYEGLASS DISPLAY STAND UNIT

Michael J. Guccione, Sarasota, Fla., assignor to Solar-Mates, Inc., Sarasota, Fla.

Filed Dec. 30, 1994, Ser. No. 32,892

Term of patent 14 years

U.S. Cl. D6—466



369,041

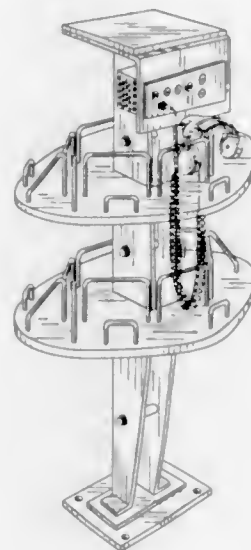
DISPLAY STAND

Paul R. Lechleiter, Powell, and Mark B. Artus, Beechwood, both of Ohio, assignors to Blockbuster Entertainment Corporation, Ft. Lauderdale, Fla.

Filed Aug. 29, 1994, Ser. No. 27,700

Term of patent 14 years

U.S. Cl. D6—470



369,042

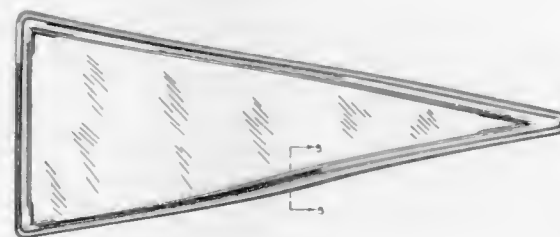
PENNANT DISPLAY CASE

Douglas J. Kinart, Wind Lake, Wis., assignor to Kinart Enterprises, Muskego, Wis.

Filed Apr. 12, 1995, Ser. No. 37,446

Term of patent 14 years

U.S. Cl. D6—470



369,040

DISPLAY STAND

Paul R. Lechleiter, Powell, and Mark B. Artus, Beechwood, both of Ohio, assignors to Blockbuster Entertainment Corporation, Ft. Lauderdale, Fla.

Filed Dec. 6, 1994, Ser. No. 31,784

Term of patent 14 years

U.S. Cl. D6—468

369,043

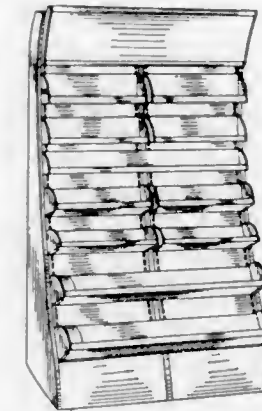
DISPLAY STAND

Nigel Parker, Much Hadham, England, assignor to PPE Limited, England

Filed Sep. 6, 1994, Ser. No. 28,065

Term of patent 14 years

U.S. Cl. D6—476



369,045

TABLE

Bob Mitchell, Lenoir, N.C., assignor to Master Design Furniture, Inc., Greensboro, N.C.

Filed Jul. 1, 1994, Ser. No. 25,449

Term of patent 14 years

U.S. Cl. D6—488



369,044

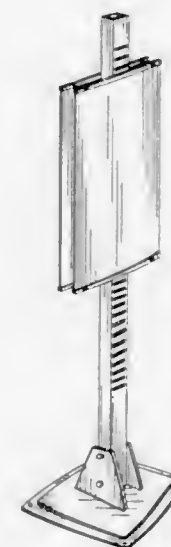
DISPLAY POST

Paul R. Lechleiter, Powell, and Mark B. Artus, Beechwood, both of Ohio, assignors to Blockbuster Entertainment Corporation, Ft. Lauderdale, Fla.

Filed Dec. 6, 1994, Ser. No. 31,786

Term of patent 14 years

U.S. Cl. D6—476



369,046

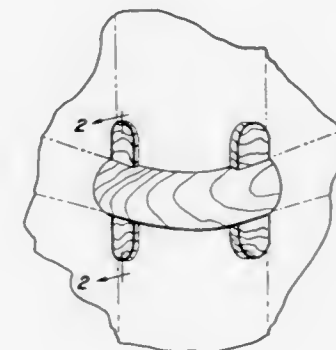
FURNITURE ORNAMENTATION

Michael J. Paus, High Point, N.C., assignor to Universal Furniture Industries, Inc., High Point, N.C.

Filed Mar. 25, 1994, Ser. No. 20,427

Term of patent 14 years

U.S. Cl. D6—491



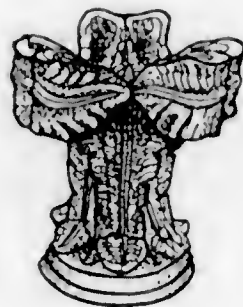
369,047

FLORAL PEDESTAL FOR A TABLE TOP

Anthony Ramirez, P.O. Box 1458, Lockeford, Calif. 95237
Filed Sep. 14, 1994, Ser. No. 28,406

Term of patent 14 years

U.S. Cl. D6—497



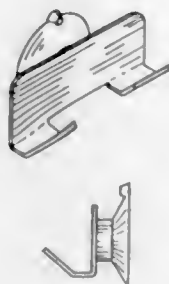
369,049

RAZOR HOLDER WITH SUCTION CUP MOUNTING

William Scaglione, One Karen Dr., Bedford, Mass. 01730
Filed Apr. 21, 1995, Ser. No. 37,853

Term of patent 14 years

U.S. Cl. D6—526



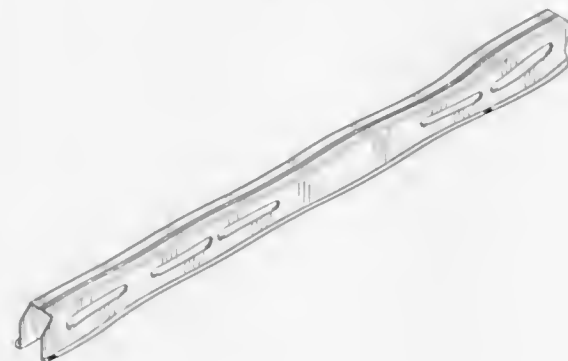
369,048

DOMED CHANNEL FOR A BED FRAME

Eugen Constantinescu, Westlake, Ohio, assignor to Ohio Mattress Company Licensing and Components Group, Cleveland, Ohio

Filed Dec. 16, 1994, Ser. No. 32,335
Term of patent 14 years

U.S. Cl. D6—503



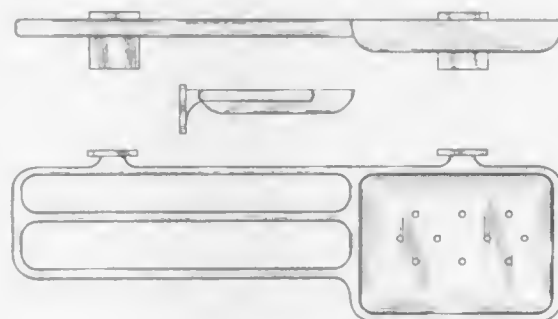
369,050

SOAP DISH AND WASHCLOTH HOLDER

Raymond M. Sargent, 2210 Wilshire Blvd. #976, Santa Monica, Calif. 90403, and Johanne Sargent, 12 Burns Close, Eastleigh, Hampshire, England

Filed Feb. 9, 1995, Ser. No. 34,686
Term of patent 14 years

U.S. Cl. D6—527



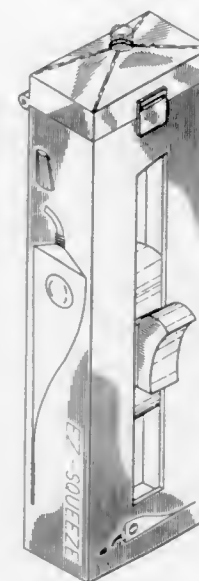
369,051

DISPENSER FOR PREPARATIONS IN TUBES

Richard I. Marcoux, 2425 Kalama, Royal Oak, Mich. 48067
Filed Apr. 20, 1995, Ser. No. 37,784

Term of patent 14 years

U.S. Cl. D6—541



369,053

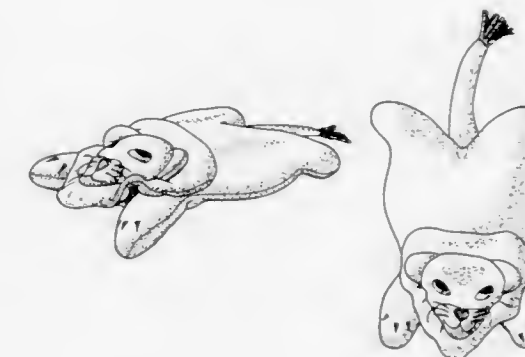
ORNAMENTAL CHILD'S PILLOW IN THE FANCIFUL FORM OF A LION

Karen Keller, Seattle, Wash., assignor to KKH Corp., Beverly Hills, Calif.

Filed May 30, 1995, Ser. No. 39,555

Term of patent 14 years

U.S. Cl. D6—598



369,052

POT LID HOLDER

Peter C. Mele, P.O. Box 533, Crown Point, N.Y. 12928
Filed Nov. 18, 1994, Ser. No. 31,136

Term of patent 14 years

U.S. Cl. D6—566



369,054

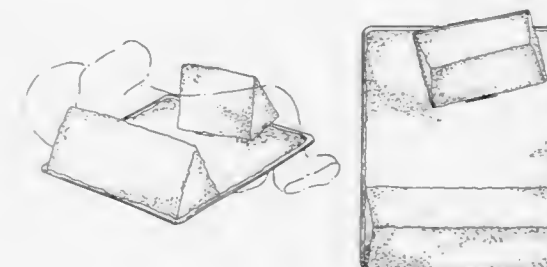
INFANT SUPPORT PILLOW

Mariann C. Straub, 636 S. Belmont, and Mark H. Greenwood, 702 S. Mitchell, both of Arlington Heights, Ill. 60005

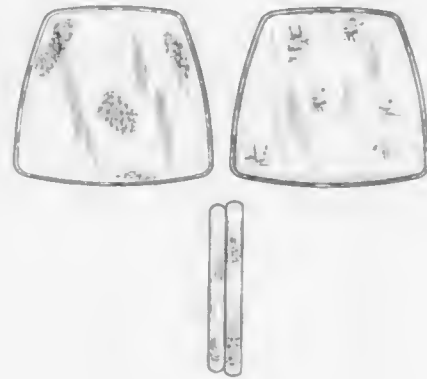
Continuation-in-part of Ser. No. 8,056, May 6, 1993. This application Aug. 24, 1993, Ser. No. 12,143

Term of patent 14 years

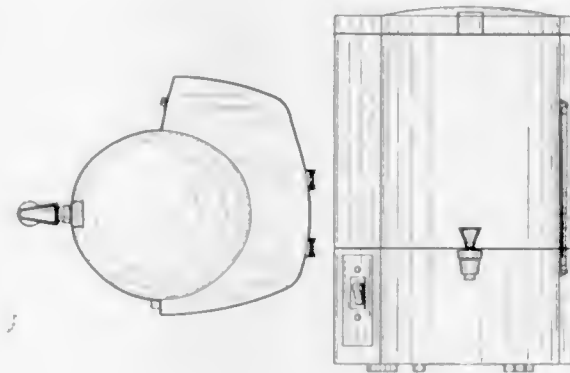
U.S. Cl. D6—601



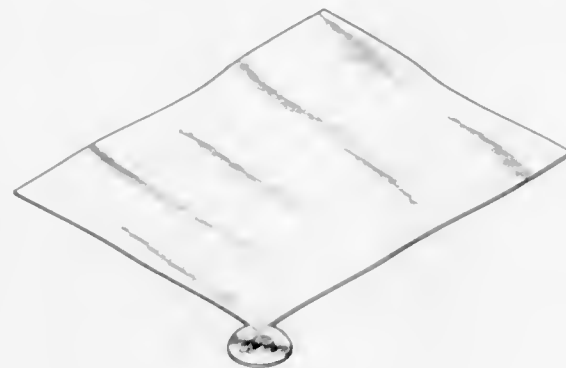
369,055
COMBINED TWO PART SEAT CUSHION
 Marian L. Bode, 28 Clayton Rd., Howell, N.J. 07731
 Filed Mar. 3, 1994, Ser. No. 19,458
 Term of patent 14 years
 U.S. Cl. D6—601



369,057
BEVERAGE URN
 Todd M. Bradford, Orrville, Ohio, assignor to Healthometer, Inc., Bedford Heights, Ohio
 Filed Nov. 15, 1994, Ser. No. 31,007
 Term of patent 14 years
 U.S. Cl. D7—313



369,056
PRE-MOISTENED TOWLETTE
 Michael T. Rinaldo, 103 Emerald Dr. #203, Minden, La. 71055
 Filed Feb. 7, 1995, Ser. No. 34,547
 Term of patent 14 years
 U.S. Cl. D6—608



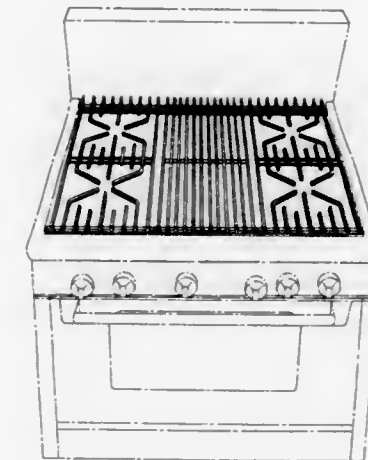
369,058
CARAFE
 Sean H. Simmons, Sea Cliff, N.Y., assignor to Sunbeam Products, Inc., Fort Lauderdale, Fla.
 Filed Jan. 13, 1995, Ser. No. 33,466
 Term of patent 14 years
 U.S. Cl. D7—319



369,059
ELECTRIC GRILL FOR DOMESTIC USE
 Roberto Carnovali, Rescaldina, Italy, assignor to Robert Krups GmbH & Co. KG, Solingen, Germany
 Filed Oct. 21, 1994, Ser. No. 30,177
 Claims priority, application France, Apr. 21, 1994, 942342
 Term of patent 14 years
 U.S. Cl. D7—362



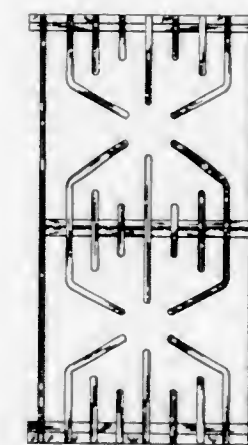
369,061
GRATE
 Richard M. Holbrook, Jr., Pasadena, Calif., assignor to Thermador Corporation, Los Angeles, Calif.
 Filed Jan. 24, 1995, Ser. No. 33,966
 Term of patent 14 years
 U.S. Cl. D7—408



369,060
FOOD PREPARING MACHINE
 Carl-Gustaf Frisell, Stockholm, Sweden, assignor to Aktiebolaget Electrolux, Stockholm, Sweden
 Filed Apr. 13, 1995, Ser. No. 37,481
 Claims priority, application Sweden, Oct. 18, 1994, 942071
 Term of patent 14 years
 U.S. Cl. D7—379



369,062
GRATE
 Richard M. Holbrook, Jr., Pasadena, Calif., assignor to Thermador Corporation, Los Angeles, Calif.
 Filed Jan. 24, 1995, Ser. No. 33,970
 Term of patent 14 years
 U.S. Cl. D7—408



369,063

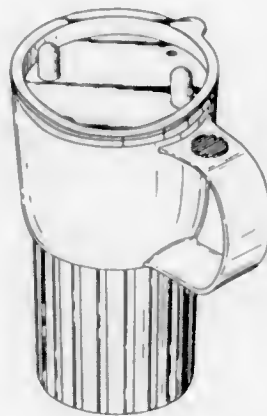
AUTO MUG

Edward H. Melsner, Short Hills, N.J., assignor to Eagle Affiliates, Inc., Harrison, N.J.

Filed Dec. 27, 1994, Ser. No. 32,754

Term of patent 14 years

U.S. Cl. D7—533



369,065

COOLER FOR A GOLF BAG

Clifford Sylvestre, and David Sylvestre, both of Canterbury, Conn., assignors to Vanderbilt, L.L.C., West Hartford, Conn.

Filed Apr. 17, 1995, Ser. No. 37,572

Term of patent 14 years

U.S. Cl. D7—605



369,064

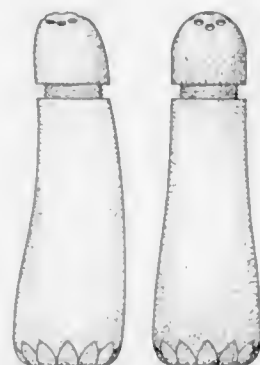
SALSA CONTAINER

Donald J. Hand, 3003 NW. Loop 410, San Antonio, Tex. 78230

Filed Sep. 7, 1994, Ser. No. 28,117

Term of patent 14 years

U.S. Cl. D7—591



369,066

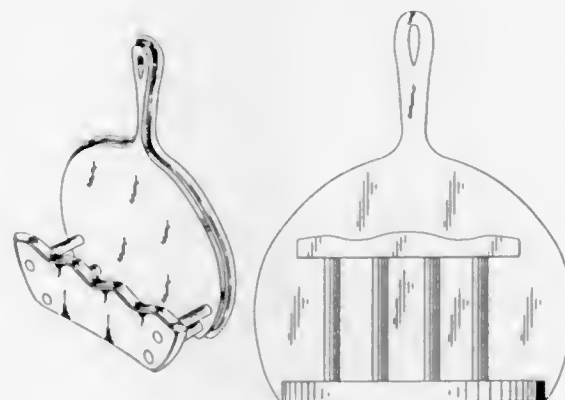
COMBINED PAPER PLATE AND NAPKIN HOLDER

Phillip L. Johnson, P.O. Box 1559, Elizabethtown, N.C. 28337

Filed May 10, 1995, Ser. No. 38,682

Term of patent 14 years

U.S. Cl. D7—632



369,067

PEPPERMILL

Wayne Husted, 415 Main St., Sausalito, Calif. 94965

Filed Feb. 24, 1995, Ser. No. 35,286

Term of patent 14 years

U.S. Cl. D7—679



369,069

PEPPERMILL

Wayne Husted, 415 Main St., Sausalito, Calif. 94965

Filed Feb. 24, 1995, Ser. No. 35,371

Term of patent 14 years

U.S. Cl. D7—679



369,068

PEPPERMILL

Wayne Husted, 415 Main St., Sausalito, Calif. 94965

Filed Feb. 24, 1995, Ser. No. 35,301

Term of patent 14 years

U.S. Cl. D7—679



369,070

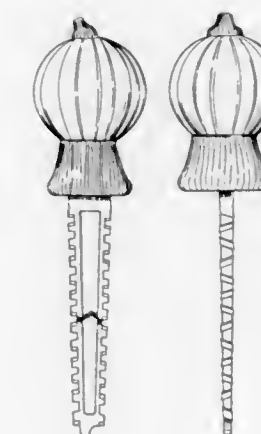
PUMPKIN CARVER

Michael Hahn, 3340 SE. Federal Hwy., Suite 232, Stuart, Fla. 34997

Filed Mar. 23, 1995, Ser. No. 36,584

Term of patent 14 years

U.S. Cl. D7—696

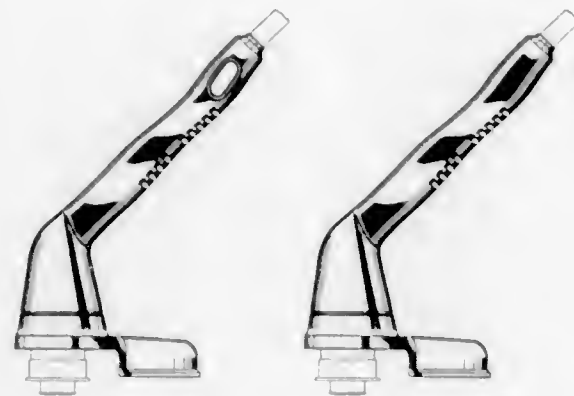


369,071

LOWER MOTOR HOUSING FOR A LAWN TRIMMER
Lloyd H. Tuggle, Shreveport; Ron Brant, Haughton, and Michael S. Houge, Shreveport, all of La., assignors to WCI Outdoors Products, Inc., Cleveland, Ohio

Filed May 12, 1995, Ser. No. 38,840
Term of patent 14 years

U.S. Cl. D8—8



369,073

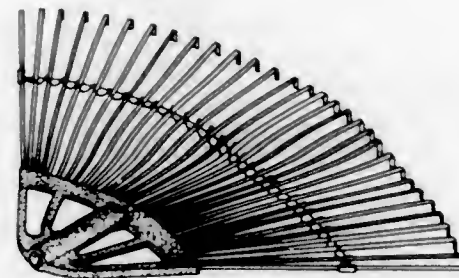
HARROW

Han-Chin Sun, No. 53, Lane 45, Tung An Road, Tien Chung Town, Changhua, Taiwan

Filed Jan. 10, 1995, Ser. No. 33,340

Term of patent 14 years

U.S. Cl. D8—13



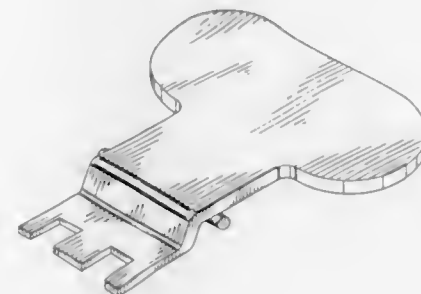
369,074

LEVER ARM FOR REMOVING ELECTRICAL PLUGS
Gerald P. Durand, 46 Nimitz Rd., East Providence, R.I. 02916

Filed Jan. 9, 1995, Ser. No. 33,299

Term of patent 14 years

U.S. Cl. D8—14



369,072

LANDSCAPING EQUIPMENT HANDLE

Yin C. Huang, No. 56, Lane 344, Chung Cheng S. Rd., Yung Kang City, Tainan Hsien, Taiwan

Filed Aug. 3, 1994, Ser. No. 26,672

Term of patent 14 years

U.S. Cl. D8—13



369,075

MAGNETIC KEEPER FOR WRENCH SOCKETS

Richard A. Vasichuk, Brockton; Robert J. Vasichuk, Michigan; Dean S. Somerville, Rural Binford, and Mitchel D. Trostad, Aneta, all of N. Dak., assignors to Vasichuk Enterprises LLC, Brockton, N. Dak.

Filed Jan. 25, 1995, Ser. No. 34,012

Term of patent 14 years

U.S. Cl. D8—14



369,076

ADJUSTABLE STRAP WRENCH

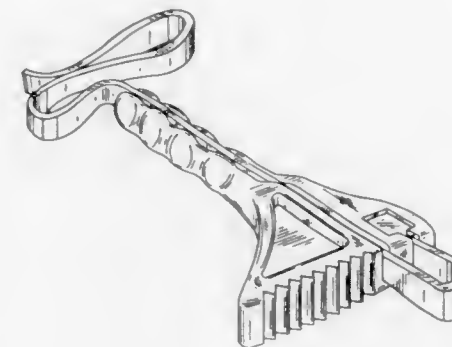
Carl E. Alexander, 25 Kohu Road, Titirangi, Auckland, New Zealand

Filed Apr. 25, 1994, Ser. No. 21,865

Claims priority, application New Zealand, Nov. 4, 1993, 25545

Term of patent 14 years

U.S. Cl. D8—22



369,078

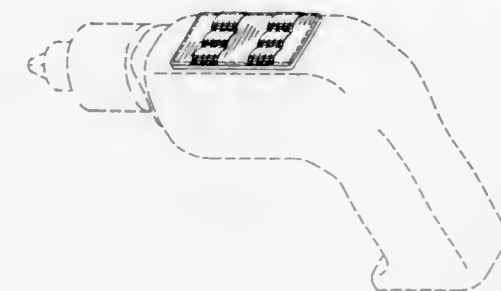
HOLSTER FOR DRILL AND/OR SCREWDRIVER BITS

Steven P. Anderson, 6660 Reseda Blvd., No. 112, Reseda, Calif. 91335

Filed Oct. 6, 1994, Ser. No. 29,464

Term of patent 14 years

U.S. Cl. D8—71



369,077

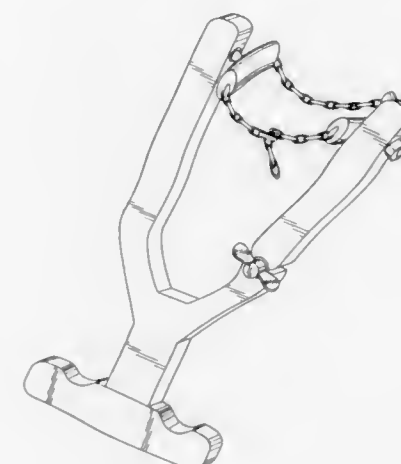
ADJUSTABLE OIL FILTER WRENCH

Jose H. Batista, 89 Greenwich St., Providence, R.I. 02907

Filed Feb. 24, 1995, Ser. No. 35,323

Term of patent 14 years

U.S. Cl. D8—22



369,079

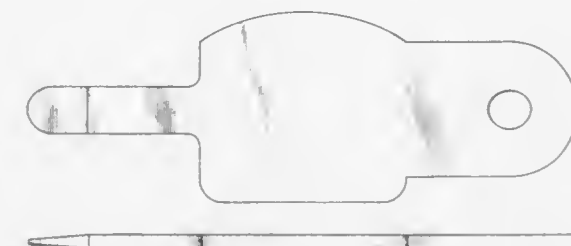
BATTERY REMOVAL TOOL

Robert A. Lisser, 333 S. Mock Rd. #86, Albany, Ga. 31705

Filed Nov. 17, 1994, Ser. No. 31,088

Term of patent 14 years

U.S. Cl. D8—88



369,080

LOCKING SWIVEL HEAD SANDING POLE

Salvatore N. Tollis, 1142 Rebel Ridge Dr., Marietta, Ga. 30062
 Filed May 24, 1995, Ser. No. 39,213

Term of patent 14 years

U.S. Cl. D8—90



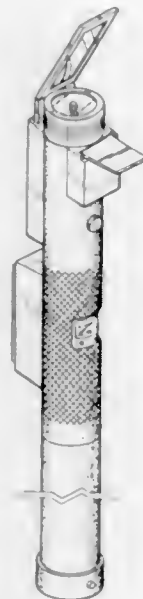
369,082

TOOL FOR TRUCK AND BUS DRIVERS

Cedric H. Fells, 1815 Garfield Dr., Little Rock, Ark. 72204, and
 Roy G. Burnley, 7205 Woodson Rd., Little Rock, Ark. 72209
 Filed Oct. 4, 1994, Ser. No. 29,398

Term of patent 14 years

U.S. Cl. D8—105



369,081

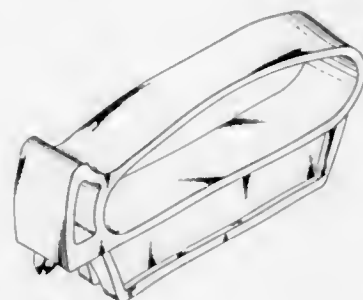
SHARPENING AND DEBURRING TOOL

Gary L. Byers, and Timothy W. Byers, both of P.O. Box 550,
 Whitefish, Mont. 59937

Filed Aug. 4, 1994, Ser. No. 26,739

Term of patent 14 years

U.S. Cl. D8—91



369,083

CAM ACTION HANDLE

Ronald Tallman, Dingmans Ferry, Pa., assignor to Transistor
 Devices Incorporated, Cedar Knolls, N.J.

Filed Aug. 29, 1994, Ser. No. 27,699

Term of patent 14 years

U.S. Cl. D8—300



369,084

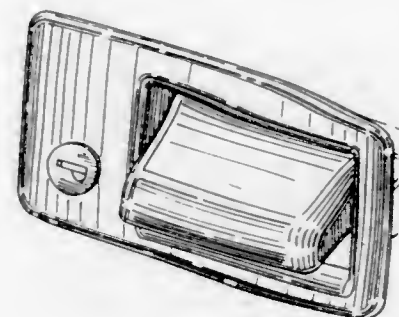
FRONT PORTION OF A PADDLE HANDLE ASSEMBLY

Kenneth L. McConnell; Mark B. Brown, both of New Hamp-
 ton, Iowa, and Bruce A. Bennett, Granger, Ind., assignors to
 Tri/Mark Corp., New Hampton, Iowa

Filed Feb. 23, 1994, Ser. No. 19,077

Term of patent 14 years

U.S. Cl. D8—302



369,086

LEVER DOORKNOB ADAPTOR

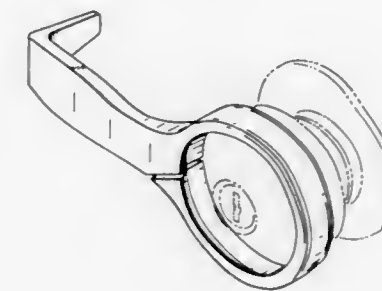
Rodney F. Bergen, Moorhead, Minn., assignor to Extend Incor-
 porated, Moorhead, Minn.

Continuation of Ser. No. 6,372, Mar. 25, 1993, abandoned.

This application Nov. 30, 1994, Ser. No. 32,191

Term of patent 14 years

U.S. Cl. D8—308



369,085

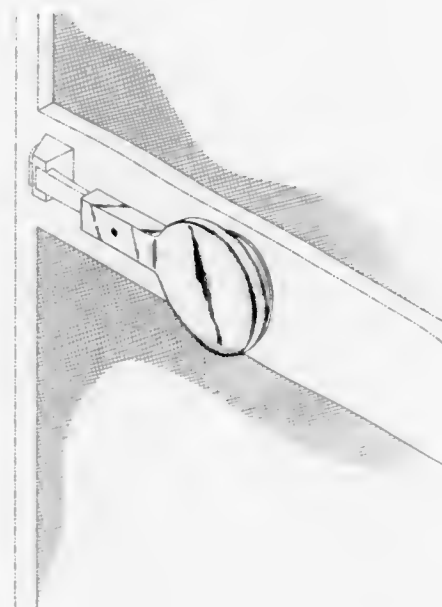
DOOR LATCH EXTENSION

Robert E. Barnett, 7803 Horn Tavern Rd., Fairview, Tenn.
 37062

Filed Sep. 28, 1994, Ser. No. 29,056

Term of patent 14 years

U.S. Cl. D8—307



369,087

SLIDE TYPE HANDLE

Giorgio Decursu, and Alberto Bertani, both of Milan, Italy,
 assignors to Eles S.p.A., Milan, Italy

Filed Jan. 25, 1995, Ser. No. 34,028

Claims priority, application WIPO, Aug. 8, 1994, DM/030
 369

Term of patent 14 years

U.S. Cl. D8—314

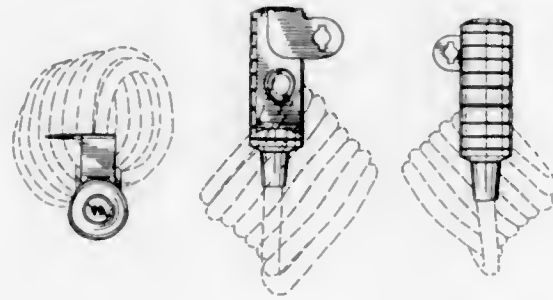


369,088

BICYCLE LOCK

Fred Brendel, München, Germany, assignor to EASEC-Schloss-Production GmbH & Co. KG, Telgte, Germany
Division of Ser. No. 21,105, Apr. 8, 1994. This application
Jun. 7, 1995, Ser. No. 39,959
Term of patent 14 years

U.S. Cl. D8—333

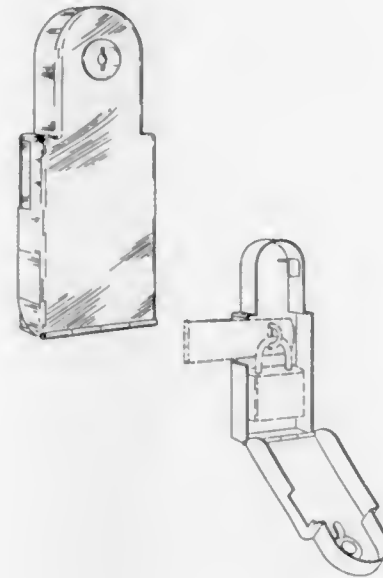


369,090

PADLOCK CASING

Roland Santos, 201 N. Circle Mauka St., Wahiawa, HI. 96766,
and Eduardo E. Miranda, 91-593 Kullolua Pl., Apt. Z-2,
Ewa Beach, HI. 96706
Filed Aug. 10, 1995, Ser. No. 42,451
Term of patent 14 years

U.S. Cl. D8—346

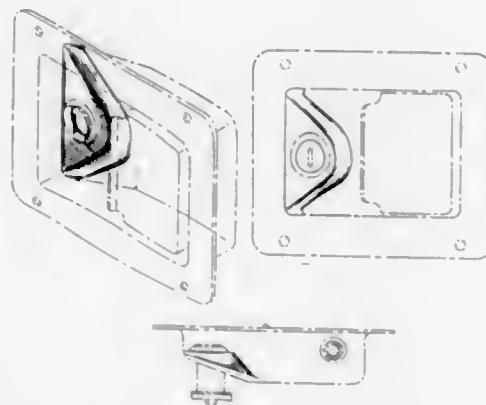


369,089

PORTION SURROUNDING THE KEYWAY IN THE
RECESSED PART OF A PADDLE LATCH

Christopher R. Zenner, Alta Vista, Iowa, assignor to Tri/Mark
Corporation, New Hampton, Iowa
Filed Mar. 31, 1995, Ser. No. 36,976
Term of patent 14 years

U.S. Cl. D8—343

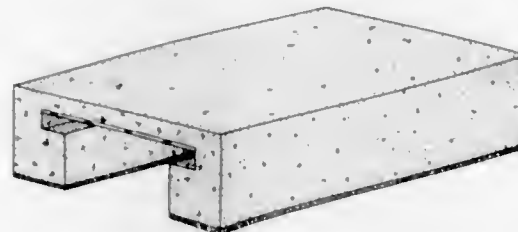


369,091

GASOLINE PUMP NOZZLE TRIGGER HOLDER

David Cooper, 1015 N. Akron, Ohio 44320
Filed Feb. 25, 1994, Ser. No. 19,211
Term of patent 14 years

U.S. Cl. D8—349

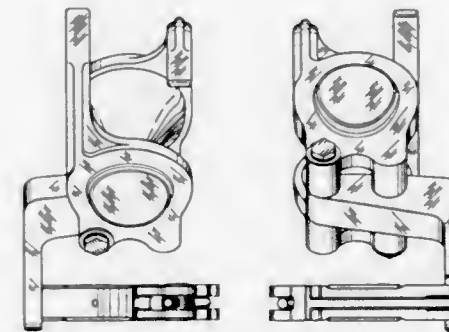


369,092

INSULATOR MOUNTABLE CABLE STRINGING
ROLLER

Charles J. Sauber, 10 N. Sauber Rd., Virgil, Ill. 60182
Filed Apr. 10, 1995, Ser. No. 37,304
Term of patent 14 years

U.S. Cl. D8—356

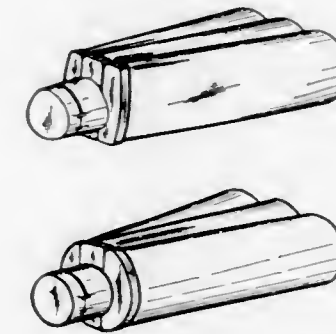


369,094

TUBE

Hans Linner, Jutnabbevagen 15, S-392 36 Kalmar, Sweden
Division of Ser. No. 12,177, Aug. 25, 1993. This application
May 25, 1995, Ser. No. 39,339
Claims priority, application Sweden, Feb. 26, 1993, 93-0499
Term of patent 14 years

U.S. Cl. D9—302

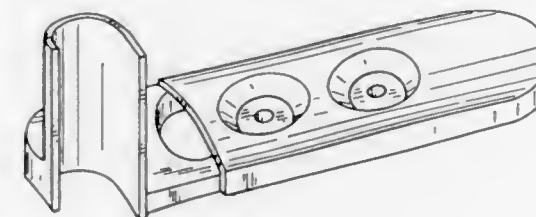


369,093

EXTENSIBLE SUPPORT FOR HANGING FOLDERS

Michelangelo Chiodaroli, Milan, Italy, assignor to I.M.L.
Industria Meccanica Lombarda S.R.L., Offanengo, Italy
Filed Dec. 22, 1993, Ser. No. 16,699
Claims priority, application Hague Agreement, Jul. 6, 1993,
DM/026630

U.S. Cl. D8—373

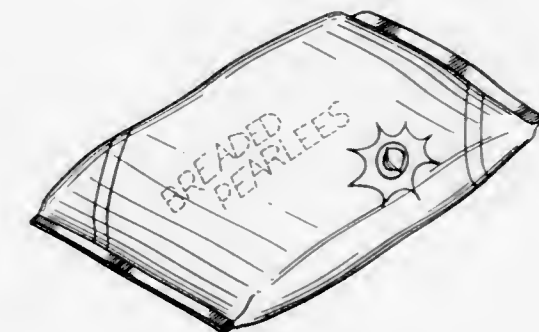


369,095

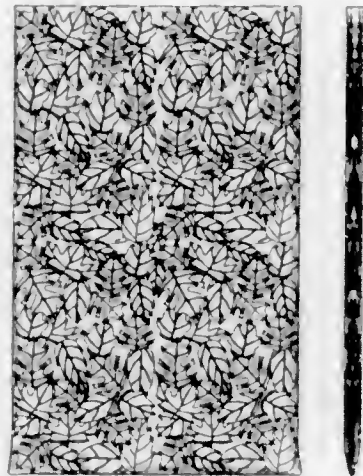
PACKAGE

Sid Shelburne, 57 Guy Copper Rd., Pendergrass, Ga. 30567
Filed Sep. 12, 1994, Ser. No. 28,264
Term of patent 14 years

U.S. Cl. D9—305



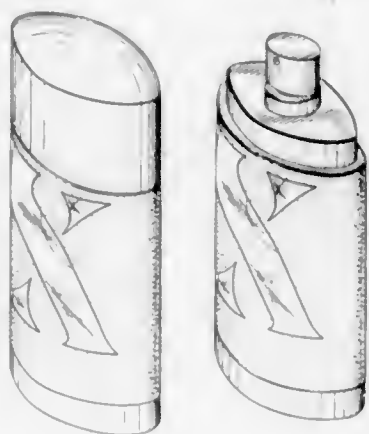
369,096
BAG FOR LEAVES
Constance L. Perrin, and Ralph Stoklosa, both of 721 Whalers Cove Ct., Leeds Point, N.J. 08220
Filed Jan. 19, 1995, Ser. No. 33,751
Term of patent 14 years
U.S. Cl. D9—305



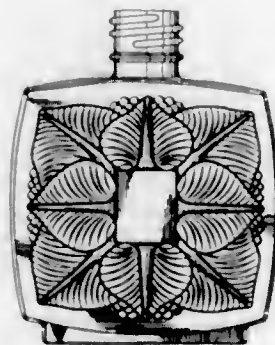
369,098
ATOMIZER BOTTLE
Pierre F. Dinand, Levallois Perret, France, assignor to Paco Rabanne Parfums, Neuilly Sur Seine, France
Filed Jan. 31, 1995, Ser. No. 34,240
Term of patent 14 years
U.S. Cl. D9—332



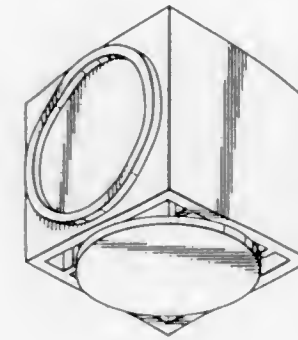
369,097
COMBINED SPRAY BOTTLE AND CAP
Pierre F. Dinand, Levallois Perret, France, assignor to Paco Rabanne Parfums, Neuilly Sur Seine, France
Filed Jan. 31, 1995, Ser. No. 34,239
Term of patent 14 years
U.S. Cl. D9—332



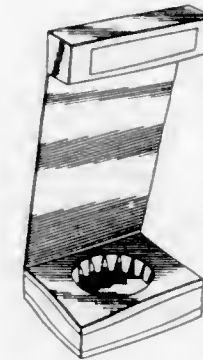
369,099
BOTTLE
René Barre, la Varenne St Hilaire, France, assignor to Verre-ries Brosse & Compagnie, Paris, France
Filed May 26, 1994, Ser. No. 23,549
Term of patent 14 years
U.S. Cl. D9—335



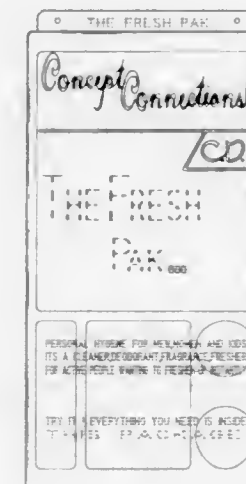
369,100
COMBINED CONFECTIONERY CONTAINER AND TOY BUILDING BRICK
William N. H. Johnson, St. Peter Port, Channel Islands, assignor to Durand Limited, Guernsey, Channel Islands
Filed Dec. 19, 1994, Ser. No. 32,495
Term of patent 14 years
U.S. Cl. D9—337



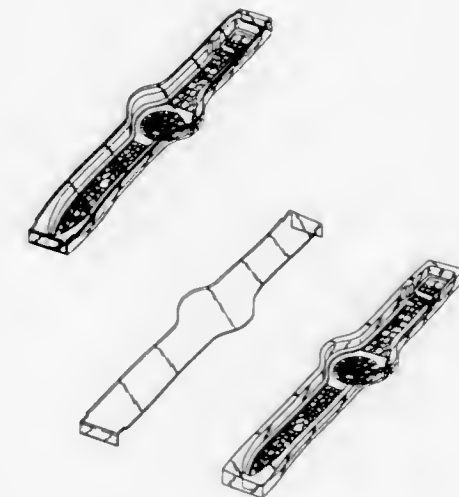
369,102
DISPLAY PACKAGING
Michelle Paré, Montreal; Natalie Bergeron, Saint-Laurent, and Marcel Langlois, Duvernay, all of, Canada, assignors to Hurteau & Associes Inc., Candiac, Canada
Filed Mar. 29, 1995, Ser. No. 36,849
Claims priority, application Canada, Mar. 8, 1995, 1995-0534
Term of patent 14 years
U.S. Cl. D9—415



369,101
FRESH PAK
Louis C. Cravens, 8521 Mammoth Ave., Panorama City, Calif. 91402
Filed Sep. 27, 1994, Ser. No. 29,036
Term of patent 14 years
U.S. Cl. D9—415



369,103
WATCH CASE
Stephane Plassier, Paris, France, assignor to Swatch, S.A., Bienne, Switzerland
Filed Feb. 25, 1994, Ser. No. 19,197
Claims priority, application WIPO, Aug. 27, 1993, DM/027115
Term of patent 14 years
U.S. Cl. D9—418

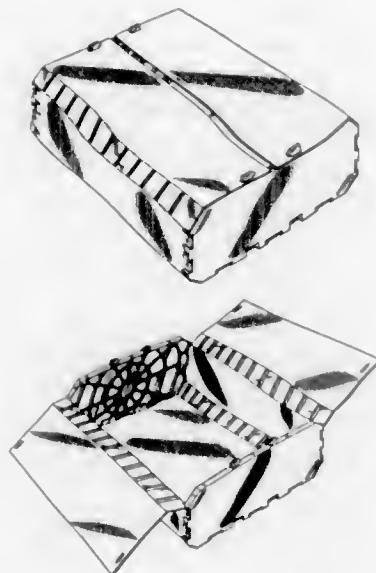


369,104
COMBINED FRUIT SHIPPING AND STORAGE
CONTAINER

Ronald E. Heiskell, 51 Wimbledon La., Tracy, Calif. 95376, and
Ezra E. Theys, 3706 Kenwood Ave., San Mateo, Calif. 94403
Filed Oct. 21, 1994, Ser. No. 30,174

Term of patent 14 years

U.S. Cl. D9—431



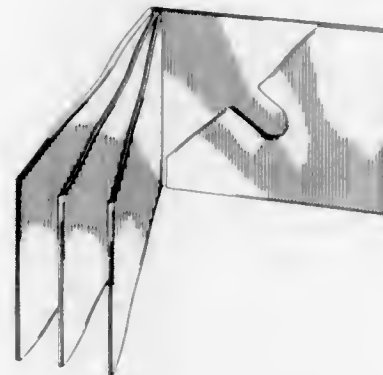
369,106
PACKAGE FOR COMPACT DISK

Mark P. Baker, Fort Wayne, Ind.; Allen M. Brandenburger,
Clarkston, Ga.; Richard E. House, St. Charles, Ill., and
William H. Perkins, Oxford, Ohio, assignors to Jefferson
Smarfit Corporation, Clayton, Mo.

Filed May 30, 1995, Ser. No. 39,491

Term of patent 14 years

U.S. Cl. D9—433



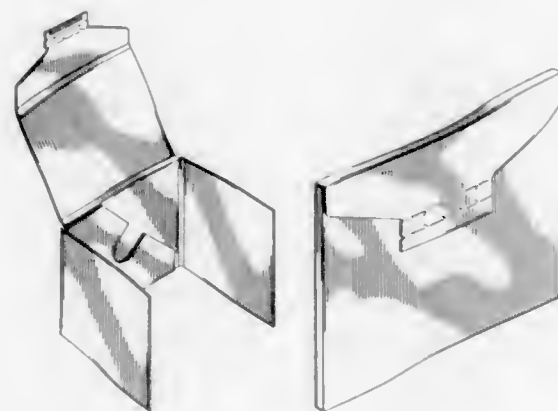
369,105
PACKAGE FOR COMPACT DISK

Mark P. Baker, Fort Wayne, Ind.; Allen M. Brandenburger,
Clarkston, Ga.; Richard E. House, St. Charles, Ill., and
William H. Perkins, Oxford, Ohio, assignors to Jefferson
Smarfit Corporation, Clayton, Mo.

Filed May 30, 1995, Ser. No. 39,436

Term of patent 14 years

U.S. Cl. D9—433



369,107
LID WITH PARTIALLY REMOVABLE GRIPPING
FLANGE

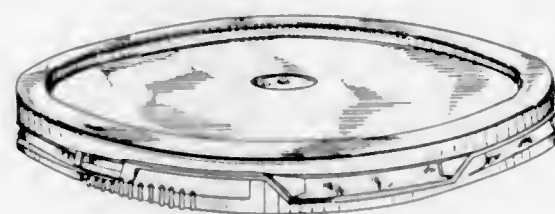
H. Richard Landis, Oak Lawn, Ill., assignor to Landis Plastics,
Inc., Chicago Ridge, Ill.

Continuation of Ser. No. 703,332, May 21, 1991, abandoned.

This application Dec. 13, 1994, Ser. No. 32,166

Term of patent 14 years

U.S. Cl. D9—438

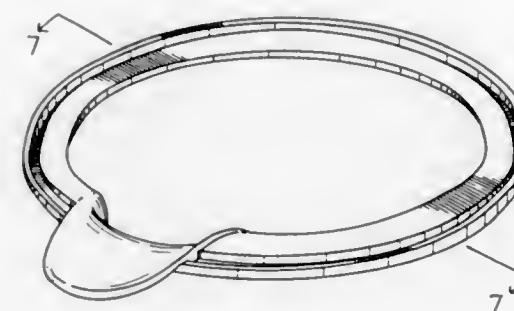


369,108
PAINT CAN POURER

Joel M. Haske, 192 E. Woodward, Rogers City, Mich. 49779
Filed Aug. 22, 1994, Ser. No. 28,604

Term of patent 14 years

U.S. Cl. D9—447



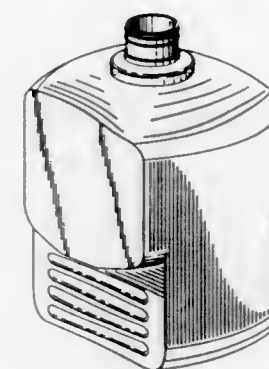
369,110
BOTTLE

John J. Dyer, Shoreview, Minn., assignor to Minnesota Mining
and Manufacturing Company, St. Paul, Minn.

Filed Apr. 20, 1993, Ser. No. 7,345

Term of patent 14 years

U.S. Cl. D9—520



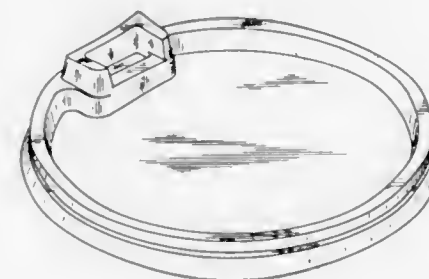
369,109
TEMPERATURE LIMITING CAP FOR CONTAINERS

Mary-Elizabeth Proshan, Ste. 194, 301 N. Harrison St., Prince-
ton, N.J. 08540

Filed Feb. 28, 1995, Ser. No. 35,505

Term of patent 14 years

U.S. Cl. D9—447



369,111
SPRAYER CONTAINER

Richard Brass, Reinbeck, Iowa; Raymond F. Cracauer, Ply-
mouth; Roland D. Beihl, Invergrove Heights, both of Minn.,
and Robert C. Hudson, Jr., Northbrook, Ill., assignors to H.
D. Hudson Manufacturing Company, Chicago, Ill.

Filed Mar. 28, 1995, Ser. No. 36,802

Term of patent 14 years

U.S. Cl. D9—524



369,112

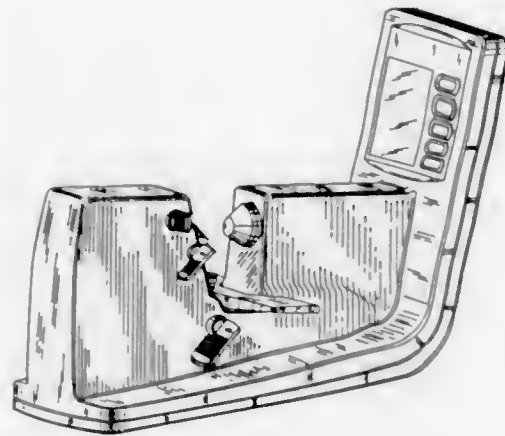
LENSMETER

David A. Luce, Clarence Center; Christopher J. Percival, Williamsville, and Paul J. Klock, Rochester, all of N.Y., assignors to Lelca Inc., Depew, N.Y.

Filed Dec. 9, 1994, Ser. No. 31,945

Term of patent 14 years

U.S. Cl. D10—46



369,114

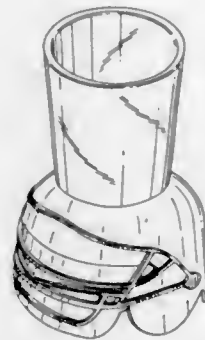
HELMET SHOT GLASS

Theodore Davidov, 2101 Connecticut Ave., NW., Washington, D.C. 20008

Filed Mar. 20, 1995, Ser. No. 36,399

Term of patent 14 years

U.S. Cl. D10—46.2



369,113

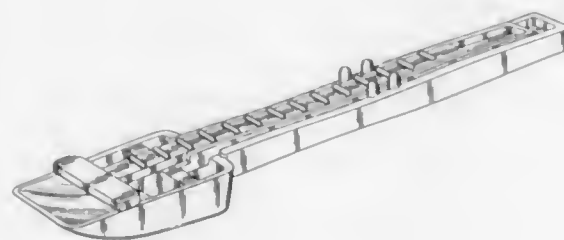
MEASURING SPOON

Sarah Goldman, 701 Bayside Dr., Newport Beach, Calif. 92661, and Dave Behoteguy, 209 Viking Ave., Brea, Calif. 92621

Filed Mar. 3, 1995, Ser. No. 35,632

Term of patent 14 years

U.S. Cl. D10—46.2



369,115

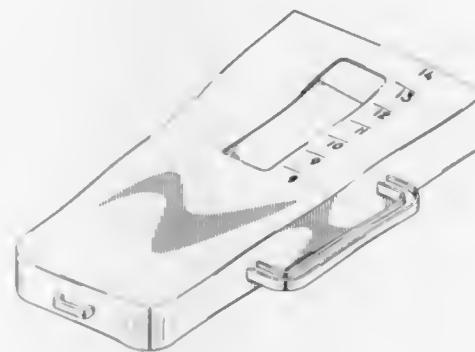
FISH MEASURING CONTAINER

Norman Mitchell, Rte. 1, Box 167A, Fouke, Ark. 71837

Filed Dec. 16, 1994, Ser. No. 32,341

Term of patent 14 years

U.S. Cl. D10—70



369,116

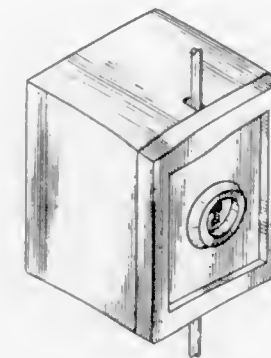
ANTI-THEFT VALVE FOR PREVENTING THE FLOW OF
GASOLINE TO THE CARBURETOR IN A VEHICLE

George Martins, 387 King St., Fall River, Mass. 02724

Filed Apr. 3, 1995, Ser. No. 37,085

Term of patent 14 years

U.S. Cl. D10—106



369,118

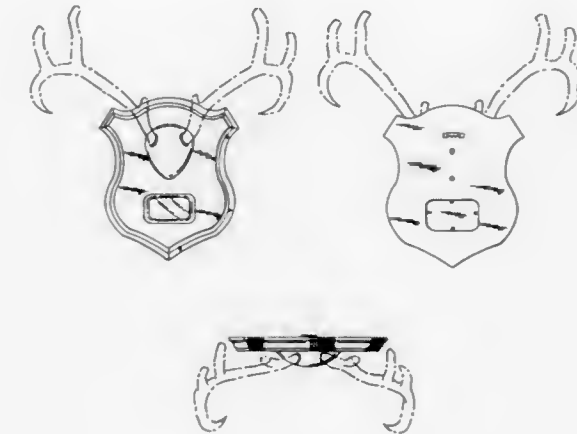
DECORATIVE PLAQUE

Francis M. Bourcy, P.O. Box 107, Dexter, N.Y. 13634

Filed Mar. 9, 1994, Ser. No. 19,722

Term of patent 14 years

U.S. Cl. D11—132



369,117

WATCH BRACELET

Caroline Scheufele, Les Mèlèzes, ch. de Trembley 30, 1197 Prangins, Switzerland

Filed Jan. 20, 1995, Ser. No. 33,808

Claims priority, application Switzerland, Sep. 22, 1994, DMA/002640

Term of patent 14 years

U.S. Cl. D11—22



369,119

TROPHY PANEL

Brent A. Taylor, 1102 Broad St., Evansville, Ill. 62242

Filed Feb. 13, 1995, Ser. No. 34,792

Term of patent 14 years

U.S. Cl. D11—132



369,120
PLANTER

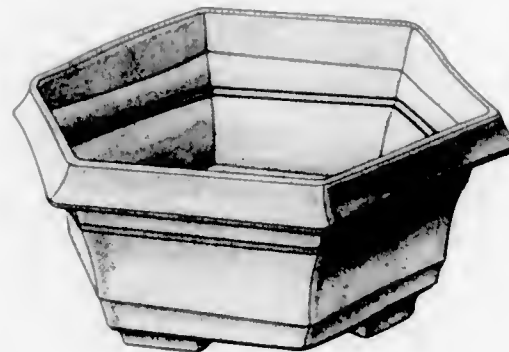
R. J. Desien, Zwanenburg, Netherlands, assignor to Ypma International B.V., Zwanenburg, Netherlands

Filed Feb. 17, 1995, Ser. No. 35,036

Claims priority, application WIPO, Aug. 17, 1994, DM/030 433

Term of patent 14 years

U.S. Cl. D11—143



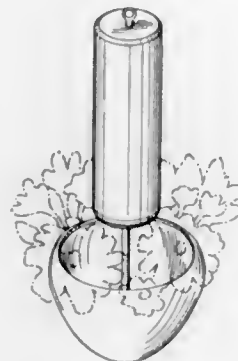
369,122
HANGING PLANTER

Fred W. Lowe, Jr., 3279 Ivy St., Denver, Colo. 80207

Filed Aug. 8, 1994, Ser. No. 26,866

Term of patent 14 years

U.S. Cl. D11—148



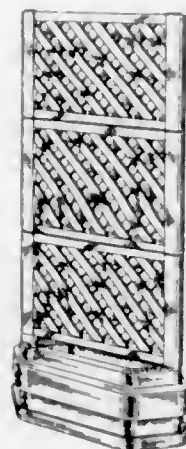
369,121
STAND FOR PLANTS

André Morin, 400 Autoroute 2-20, Pointe-Claire, Québec, Canada

Filed May 4, 1995, Ser. No. 38,380

Term of patent 14 years

U.S. Cl. D11—144



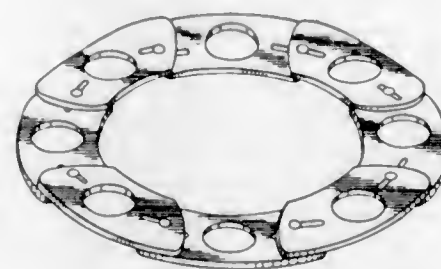
369,123
TREE PLANTER

Frank R. D'Alessandro, Holtsville, N.Y., assignor to Framali Planters, Inc., Holtsville, N.Y.

Filed Nov. 8, 1994, Ser. No. 30,148

Term of patent 14 years

U.S. Cl. D11—148



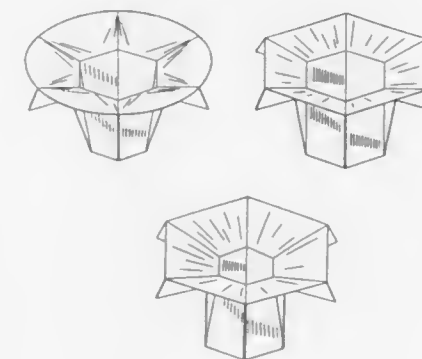
369,124
FLOWER POT COVER

Donald E. Weder, and Joseph G. Straeter, both of Highland, Ill., assignors to Highland Supply Corporation, Highland, Ill. Continuation-in-part of Ser. No. 781,453, Oct. 21, 1991, Pat. No. Des. 348,634, which is a continuation-in-part of Ser. No. 617,454, Nov. 21, 1990, abandoned, Ser. No. 411,249, Sep. 22, 1989, Pat. No. Des. 358,113, Ser. No. 411,247, Sep. 22, 1989, and Ser. No. 411,245, Sep. 22, 1989. This application Oct. 20, 1992, Ser. No. 694

The portion of the term of this patent subsequent to Nov. 21, 2010, has been disclaimed.

Term of patent 14 years

U.S. Cl. D11—164



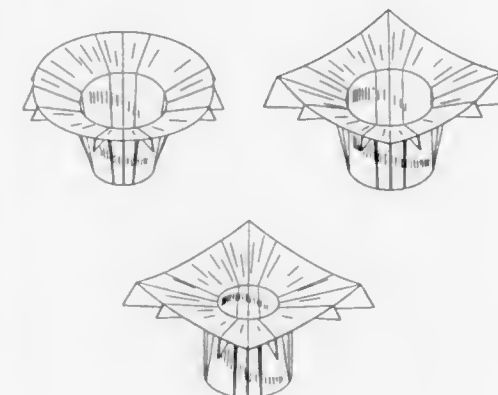
369,125
FLOWER POT COVER

Donald E. Weder, and Joseph G. Straeter, both of Highland, Ill., assignors to Highland Supply Corporation, Highland, Ill. Continuation-in-part of Ser. No. 781,453, Oct. 21, 1991, Pat. No. Des. 348,634, which is a continuation-in-part of Ser. No. 617,454, Nov. 21, 1990, abandoned, Ser. No. 411,249, Sep. 22, 1989, Pat. No. Des. 358,113, Ser. No. 411,247, Sep. 22, 1989, and Ser. No. 411,245, Sep. 22, 1989. This application Nov. 9, 1992, Ser. No. 1,292

The portion of the term of this patent subsequent to Nov. 21, 2009, has been disclaimed.

Term of patent 14 years

U.S. Cl. D11—164



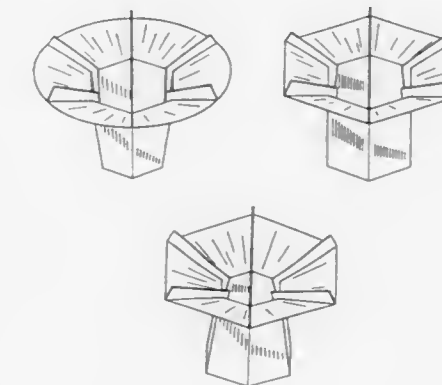
369,126
FLOWER POT COVER

Donald E. Weder, and Joseph G. Straeter, both of Highland, Ill., assignors to Highland Supply Corporation, Highland, Ill. Continuation-in-part of Ser. No. 782,237, Oct. 18, 1991, Pat. No. Des. 349,076, which is a continuation-in-part of Ser. No. 617,454, Nov. 21, 1990, abandoned, Ser. No. 411,249, Sep. 22, 1989, Pat. No. Des. 358,113, Ser. No. 411,247, Sep. 22, 1989, and Ser. No. 411,245, Sep. 22, 1989. This application Mar. 19, 1993, Ser. No. 6,099

The portion of the term of this patent subsequent to Nov. 14, 2009, has been disclaimed.

Term of patent 14 years

U.S. Cl. D11—164



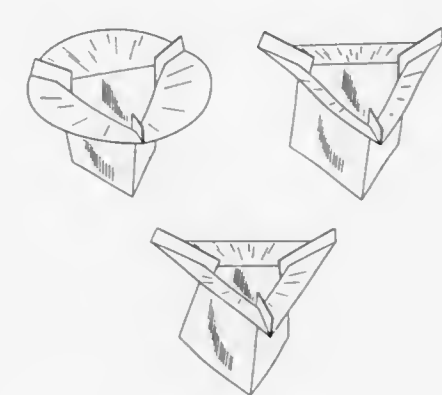
369,127
FLOWER POT COVER

Donald E. Weder, and Joseph G. Straeter, both of Highland, Ill., assignors to Highland Supply Corporation, Highland, Ill. Continuation-in-part of Ser. No. 782,237, Oct. 18, 1991, Pat. No. Des. 349,076, which is a continuation-in-part of Ser. No. 617,454, Nov. 21, 1990, abandoned, Ser. No. 411,249, Sep. 22, 1989, Pat. No. Des. 358,113, Ser. No. 411,247, Sep. 22, 1989, and Ser. No. 411,245, Sep. 22, 1989. This application Mar. 11, 1993, Ser. No. 7,351

The portion of the term of this patent subsequent to Nov. 14, 2009, has been disclaimed.

Term of patent 14 years

U.S. Cl. D11—164



369,128

FLOWER POT COVER

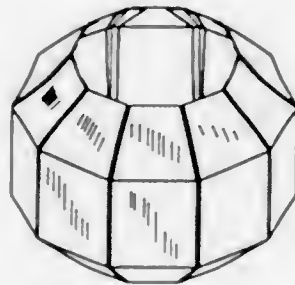
Jon S. Shryock, Bethany, Okla., assignor to Highland Supply Corporation, Highland, Ill.

Filed Jun. 11, 1993, Ser. No. 9,454

The portion of the term of this patent subsequent to Mar. 26, 2010, has been disclaimed.

Term of patent 14 years

U.S. Cl. D11—164



369,130

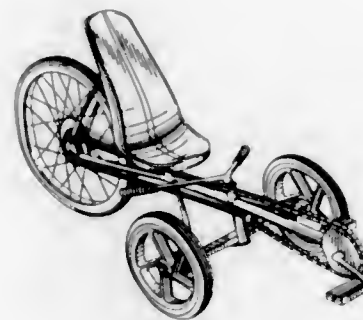
TRICYCLE

Darold B. Cummings, 5320 W. 124th Pl., Hawthorne, Calif. 90250

Filed Dec. 15, 1994, Ser. No. 32,309

Term of patent 14 years

U.S. Cl. D12—112



369,131

BICYCLE RACK

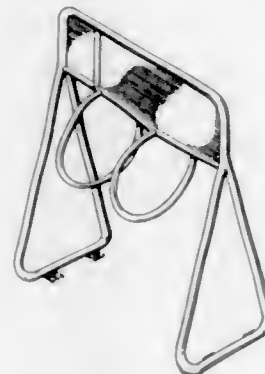
Terrance R. Smith, 13 Bateman Drive, Nepean, Ontario, Canada

Filed Feb. 18, 1994, Ser. No. 18,957

Claims priority, application Canada, Aug. 24, 1993, 24-08-93-1

Term of patent 14 years

U.S. Cl. D12—115



369,129

MATERNITY BRASSIERE CLOSURE

Gerhard Fildan, Wohnpark Alte Erlaa, Anton Baumgartner Str. 44, C 4 17 01, A-1232 Vienna, Austria

Filed Jan. 24, 1995, Ser. No. 33,949

Term of patent 14 years

U.S. Cl. D11—210

369,132

TIRE

Patrick J. Buresh, Piedmont, and Robin B. Faulk, Gray Court, both of S.C., assignors to Michelin Recherche et Technique S.A., Granges-Paccot

Filed Dec. 29, 1994, Ser. No. 32,806

Term of patent 14 years

U.S. Cl. D12—147



369,134

TIRE

Karl E. Koenigstein, Greenville, S.C., assignor to Michelin Recherche et Technique S.A., Granges-Paccot, Switzerland

Filed Dec. 29, 1994, Ser. No. 32,808

Term of patent 14 years

U.S. Cl. D12—147



369,133

TIRE

David P. Van Emburg, Mauldin, S.C., assignor to Michelin Recherche et Technique S.A., Granges-Paccot

Filed Dec. 29, 1994, Ser. No. 32,807

Term of patent 14 years

U.S. Cl. D12—147



369,135

TIRE

Eileen A. McKisson, Richfield, Ohio, assignor to Michelin Recherche et Technique S.A., Granges-Paccot, Switzerland

Filed Dec. 29, 1994, Ser. No. 32,809

Term of patent 14 years

U.S. Cl. D12—147



369,136

STEERING WHEEL

Stephen A. Harding, Chandler, Ariz., assignor to Cragar Industries, Inc., Phoenix, Ariz.

Filed Oct. 28, 1994, Ser. No. 30,438

Term of patent 14 years

U.S. Cl. D12—176



369,138

LUGGAGE CARRIER FOR TWO-WHEELED VEHICLES

Beat Götschl, Marthalen, Switzerland, assignor to Gebrüder Pletscher AG, Marthalen, Switzerland

Filed Nov. 14, 1994, Ser. No. 31,225

Claims priority, application Switzerland, Jul. 20, 1994, 121573

Term of patent 14 years

U.S. Cl. D12—407



369,137

HULL FOR A MOTORBOAT

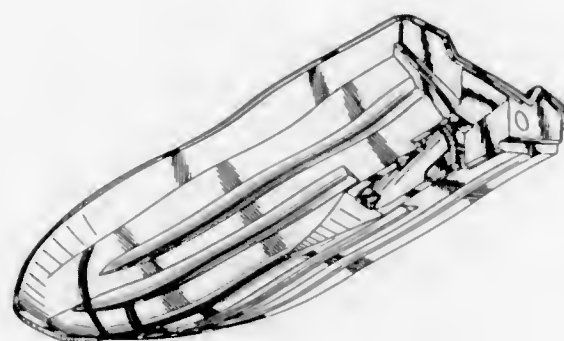
Haruyoshi Maruyama, Kakogawa; Shin Ogata, Kobe, and Yoshinori Tsumiyama, Miki, all of Japan, assignors to Kawasaki Jukogyo Kabushiki Kaisha, Kobe, Japan

Filed Mar. 30, 1995, Ser. No. 36,915

Claims priority, application Japan, Oct. 3, 1994, 6-30192

Term of patent 14 years

U.S. Cl. D12—310



369,139

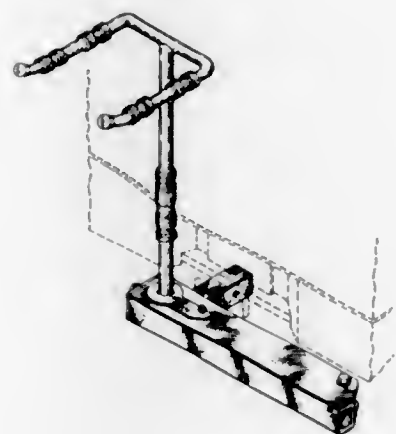
BICYCLE RACK

Brian K. Joder, 120 Ore St., Folsom, Calif. 95630

Filed Nov. 14, 1994, Ser. No. 30,953

Term of patent 14 years

U.S. Cl. D12—408



369,140

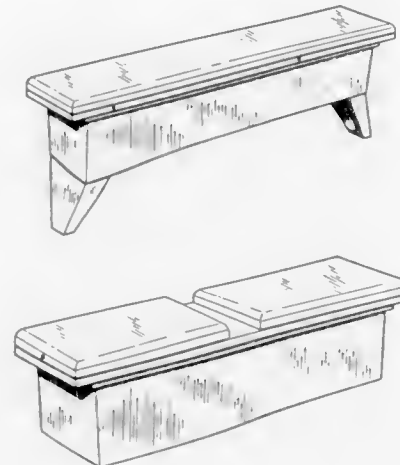
VEHICLE TOOL BOX

Robert L. Sills, Story City, Iowa, assignor to Putco, Inc., Story City, Iowa

Filed Jan. 24, 1995, Ser. No. 33,955

Term of patent 14 years

U.S. Cl. D12—423



369,142

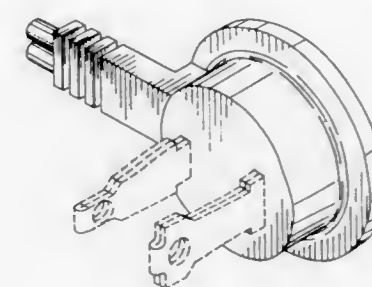
ELECTRICAL PLUG BODY

Paul A. Hedrick, West Greenwich, R.I., assignor to General Cable Industries, Inc., Highland Heights, Ky.

Filed Aug. 13, 1993, Ser. No. 11,728

Term of patent 14 years

U.S. Cl. D13—138



369,141

APPARATUS FOR WIRING CONNECTION ON PRINTED WIRING BOARD

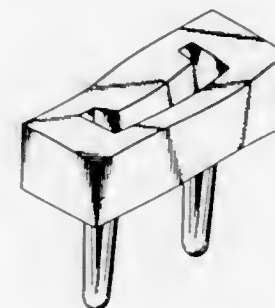
Akihiko Hayashi, Kawasaki, Japan, assignor to Mac Eight Co., Ltd., Yokohama, Japan

Filed Mar. 6, 1995, Ser. No. 35,711

Claims priority, application Japan, Dec. 7, 1994, 6-37397

Term of patent 14 years

U.S. Cl. D13—133



369,143

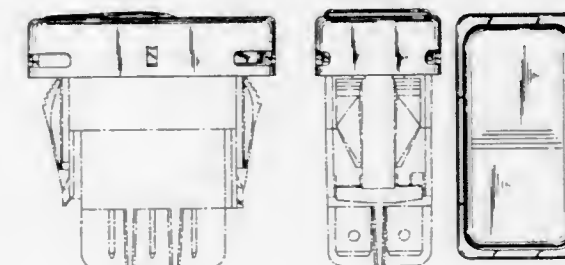
ROCKER SWITCH BEZEL AND ACTUATOR

Richard W. Sorenson, Stuart, Fla., assignor to Carlingswitch, Inc., Plainville, Conn.

Filed Jun. 7, 1994, Ser. No. 24,056

Term of patent 14 years

U.S. Cl. D13—169



369,144

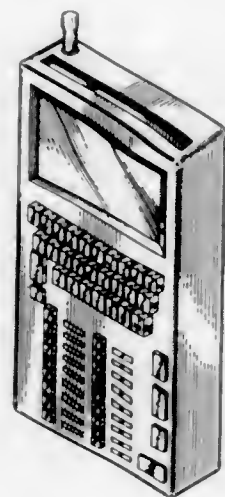
PARKING TICKET COMPUTER

Nicholas J. Carios, 142-30 Sanford Ave., Flushing, N.Y. 11355,
and Guy J. Salvatore, 2044 Shaw Dr., North Merrick, N.Y.
11566

Filed Jan. 30, 1995, Ser. No. 34,175

Term of patent 14 years

U.S. Cl. D14—100



369,146

ELECTRONIC COMPUTER

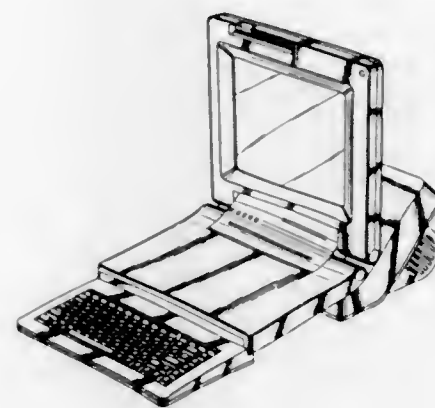
Hiroshi Onoda, Tokyo, and Takaharu Ando, Ibaragi, both of,
Japan, assignors to Kabushiki Kaisha Toshiba, Kanagawa,
Japan

Filed Jan. 25, 1995, Ser. No. 34,010

Claims priority, application Japan, Aug. 5, 1994, 6-23534

Term of patent 14 years

U.S. Cl. D14—106



369,147

ELECTRONIC COMPUTER

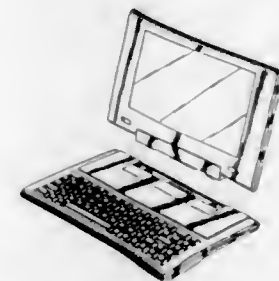
Masaaki Iino, Yokohama, and Tooru Okuyama, Kanagawa,
both of, Japan, assignors to Kabushiki Kaisha Toshiba,
Kanagawa, Japan

Filed Jan. 25, 1995, Ser. No. 34,011

Claims priority, application Japan, Jul. 25, 1994, 6-21918

Term of patent 14 years

U.S. Cl. D14—106



369,145

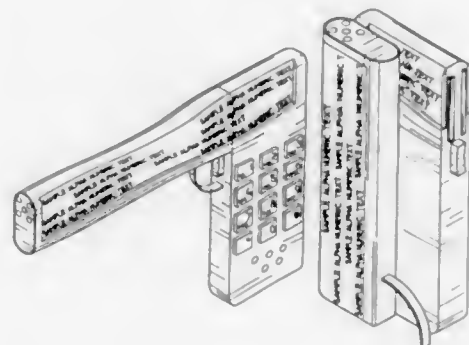
GUN-SHAPED COMPUTER

Peter J. Tsakanikas, 3080 N. Course Dr., Bldg. 51, #108 Palm-
Alre Country Club of Florida, Pompano Beach, Fla. 33069

Filed Apr. 24, 1995, Ser. No. 37,884

Term of patent 14 years

U.S. Cl. D14—100



369,148

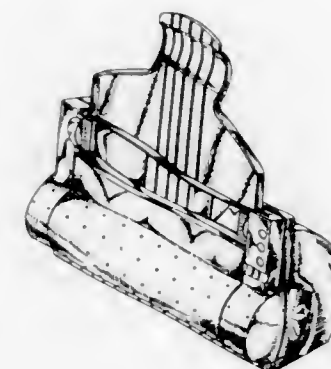
ROLLER TYPE GRAY SCALE SCANNER

Tony Chen, and Thomas Chang, both of Hsinchu, Taiwan,
assignors to Umax Data System Inc., Hsinchu, Taiwan

Filed May 5, 1995, Ser. No. 38,443

Term of patent 14 years

U.S. Cl. D14—107



369,150

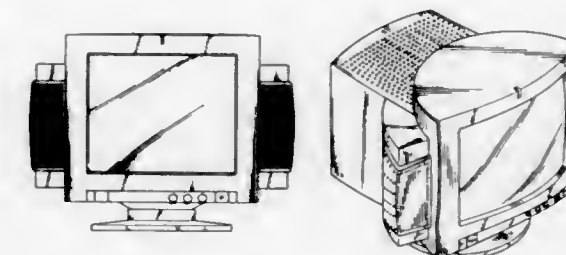
MONITOR WITH DETACHABLE SPEAKERS

Sohrab Vossoughi, Portland, Oreg., assignor to Taiwan Video
& Monitor Corporation, Taipei, Taiwan

Filed Jun. 1, 1995, Ser. No. 39,672

Term of patent 14 years

U.S. Cl. D14—113



369,151

OPTICAL DISC CARTRIDGE

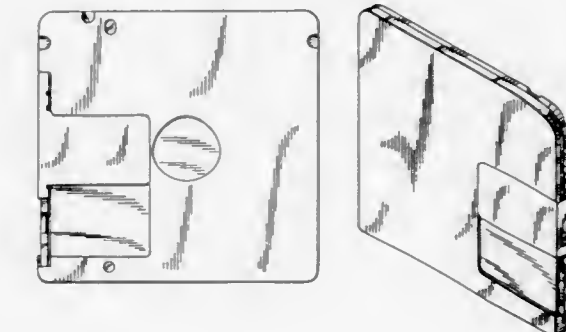
Hirofushi Fujisawa, Tokyo, Japan, assignor to Sony Corpora-
tion, Tokyo, Japan

Filed Sep. 25, 1991, Ser. No. 765,099

Claims priority, application Japan, Apr. 27, 1991, 3-12633
The portion of the term of this patent subsequent to Feb. 27,
2010, has been disclaimed.

Term of patent 14 years

U.S. Cl. D14—114



369,149

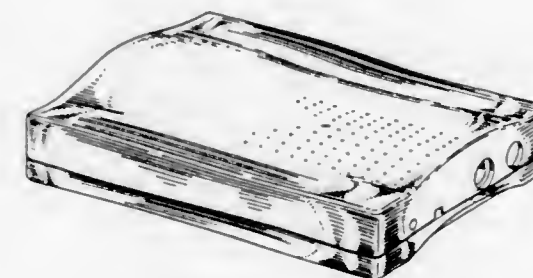
COMPUTER VIDEO INFORMATION CONVERTER

Thomas Chang, and Tony Chen, both of Hsinchu, Taiwan,
assignors to Umax Data System Inc., Hsinchu, Taiwan

Filed Apr. 4, 1995, Ser. No. 38,674

Term of patent 14 years

U.S. Cl. D14—107



369,152

OPTICAL DISC CARTRIDGE

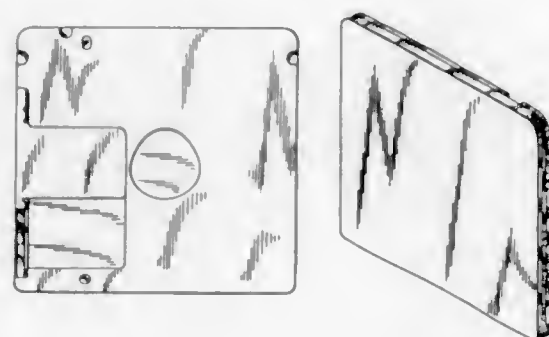
Hirotsoshi Fujisawa, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Sep. 25, 1991, Ser. No. 765,102

Claims priority, application Japan, Apr. 27, 1991, 3-12634

Term of patent 14 years

U.S. Cl. D14—114



369,154

COMPUTER MOUSE

Scott A. Powell, 8139 Rankin Apt. B, Humble, Tex. 77396

Filed Jan. 5, 1995, Ser. No. 33,100

Term of patent 14 years

U.S. Cl. D14—114



369,155

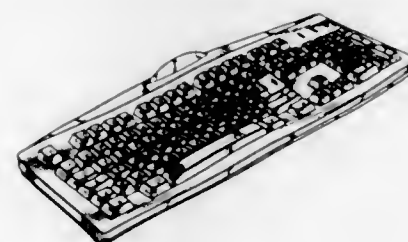
STANDARD KEYBOARD

Sohrab Vossoughi, Portland, Oreg., assignor to Monterey International Corp., Taipei Hsien, Taiwan

Filed Jun. 1, 1995, Ser. No. 39,669

Term of patent 14 years

U.S. Cl. D14—115



369,153

OPTICAL DISC CARTRIDGE

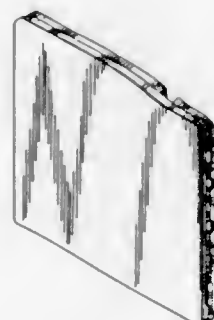
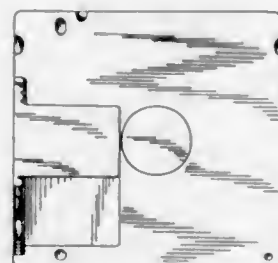
Hirotsoshi Fujisawa, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Feb. 6, 1992, Ser. No. 831,327

Claims priority, application Japan, Sep. 10, 1991, 3-27325

Term of patent 14 years

U.S. Cl. D14—114



369,156

IC CARD

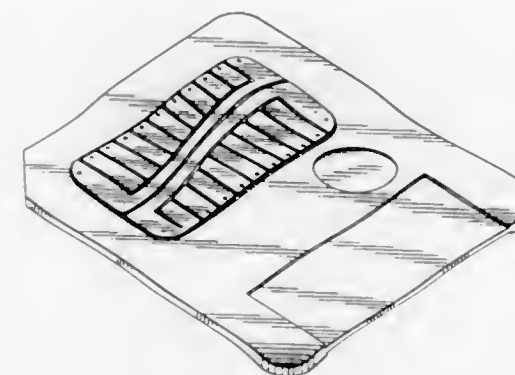
Jun Ohmori, Tokyo, and Hiroshi Iwasaki, Yokohama, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 16, 1995, Ser. No. 36,252

Claims priority, application Japan, Sep. 20, 1994, 6-28536

Term of patent 14 years

U.S. Cl. D14—117



369,158

FACSIMILE

Chang H. Park, Seoul, Rep. of Korea, assignor to Goldstar Co., Ltd., Seoul, Rep. of Korea

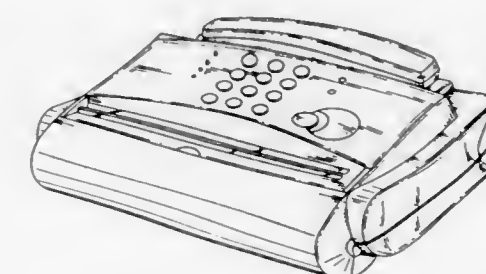
Filed Jun. 13, 1994, Ser. No. 24,379

Claims priority, application Rep. of Korea, Jan. 21, 1994, 1166/1994

The portion of the term of this patent subsequent to Apr. 16, 2010, has been disclaimed.

Term of patent 14 years

U.S. Cl. D14—118



369,157

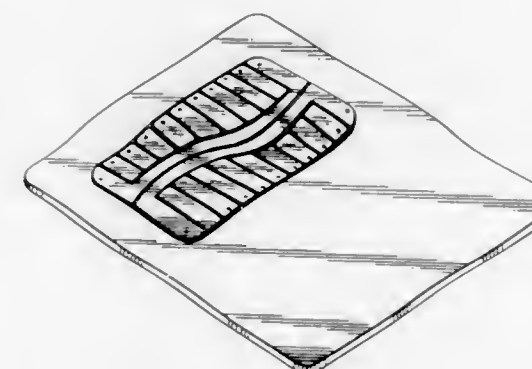
IC CARD

Jun Ohmori, Tokyo, and Hiroshi Iwasaki, Yokohama, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 16, 1995, Ser. No. 36,253

Term of patent 14 years

U.S. Cl. D14—117



369,159

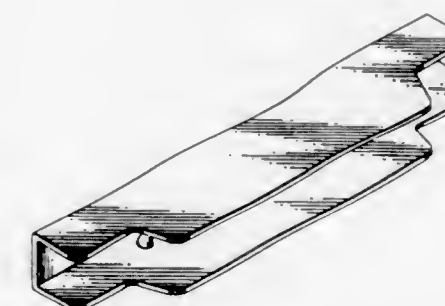
TAPE CASSETTE PROTECTIVE COVER

K. Gary Ghiaey, 1174 Amherst Ave. Apt. 207, Brentwood, Calif. 90047

Filed Jan. 10, 1995, Ser. No. 33,318

Term of patent 14 years

U.S. Cl. D14—121



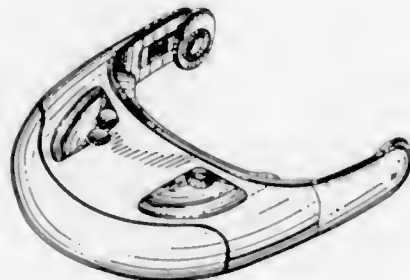
369,160

COMBINED OPTICAL MAGNETIC DISC PLAYER WITH
A DISPLAY MONITORTeliyu Gotoh, Saltama, and Giusuke Ohta, Tokyo, both of
Japan, assignors to Sony Corporation, Tokyo, Japan
Filed Apr. 5, 1994, Ser. No. 20,946

Claims priority, application Japan, Oct. 21, 1993, 5-32022

Term of patent 14 years

U.S. Cl. D14—124



369,162

PORTABLE TELEPHONE

Albert L. Nagele, Wilmette; Ross Goodwin, Chicago, and Dale
G. Johnson, Lake Zurich, all of Ill., assignors to Motorola,
Inc., Schaumburg, Ill.

Filed Nov. 17, 1993, Ser. No. 15,458

The portion of the term of this patent subsequent to Jul. 25,
2009, has been disclaimed.

Term of patent 14 years

U.S. Cl. D14—138



369,161

TELEVISION SET

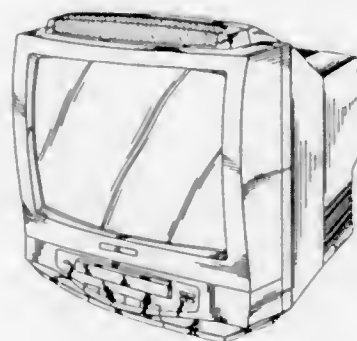
Sii H. Park, Seoul, Rep. of Korea, assignor to Goldstar Co.,
Ltd., Rep. of Korea

Filed Aug. 26, 1994, Ser. No. 27,688

Claims priority, application Rep. of Korea, Mar. 5, 1994,
1994-4130

Term of patent 14 years

U.S. Cl. D14—126



369,163

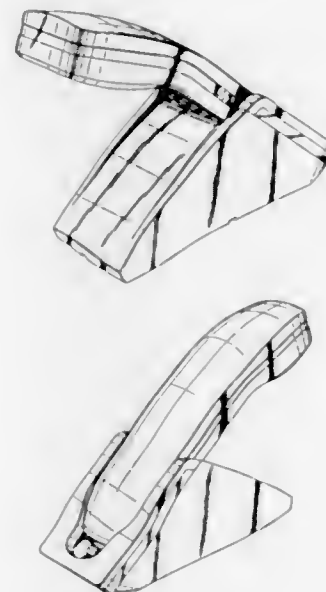
TELEPHONE SET

Pak Y. Leung, and Daniel C. F. Leung, both of Hong Kong,
Hong Kong, assignors to Victory Concept Industries Ltd.,
Hong Kong, Hong Kong

Filed Jun. 23, 1995, Ser. No. 40,650

Term of patent 14 years

U.S. Cl. D14—150



369,164

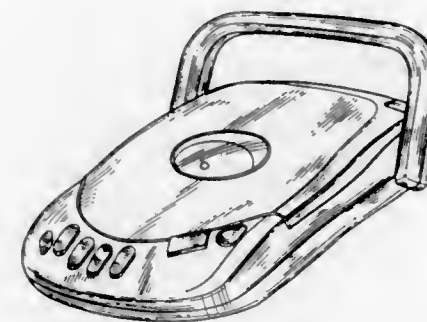
MUSIC PLAYER

Wei-Hsuan Hsu, North Point, Hong Kong, assignor to Kwong
Fei Expectation Electronic Co Ltd, Hong Kong, Hong Kong

Filed Sep. 29, 1994, Ser. No. 29,164

Term of patent 14 years

U.S. Cl. D14—156



369,166

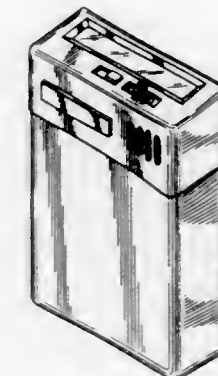
PAGER HAVING DIALING CAPABILITIES

Issac Jones, 11093 College, Detroit, Mich. 48205

Filed Feb. 7, 1995, Ser. No. 34,551

Term of patent 14 years

U.S. Cl. D14—191



369,165

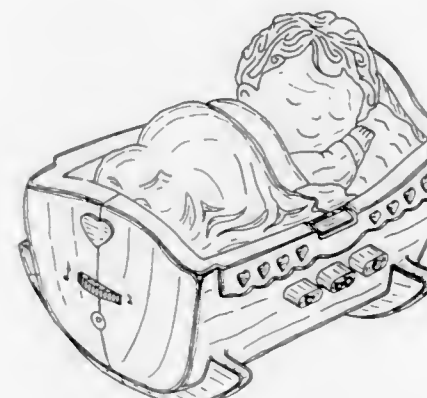
CRADLE CASSETTE PLAYER

Nina J. Mattikow, Greenwich, Conn., assignor to Great Ameri-
can Audio Corp., New Rochelle, N.Y.

Filed Jun. 20, 1994, Ser. No. 24,658

Term of patent 14 years

U.S. Cl. D14—164



369,167

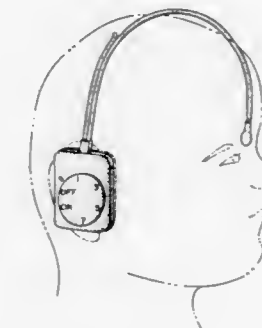
DISPOSABLE RADIO HEADSET

Wayne H. Hanson, and Cheryl M. Hanson, both of R.R. 1, Box
1B, Strathcona, Minn. 56759

Filed Mar. 25, 1994, Ser. No. 20,376

Term of patent 14 years

U.S. Cl. D14—192



369,168

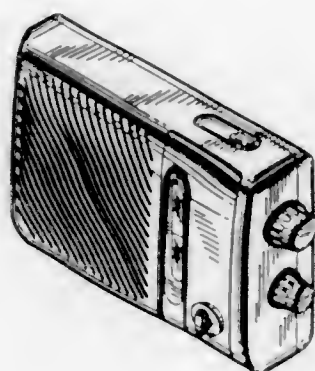
RADIO RECEIVER

Ken Yano, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Sep. 28, 1994, Ser. No. 29,075

Term of patent 14 years

U.S. Cl. D14—194



369,170

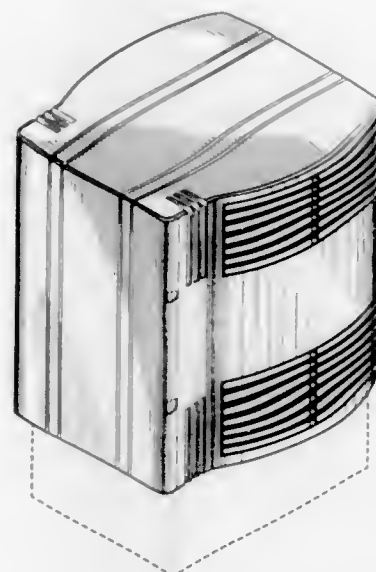
HOUSING FOR A CELLULAR BASE UNIT

Thomas G. Beaumont, Bedford, and Alfred D. Meyers, Arlington, both of Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 14, 1994, Ser. No. 30,994

Term of patent 14 years

U.S. Cl. D14—240



369,169

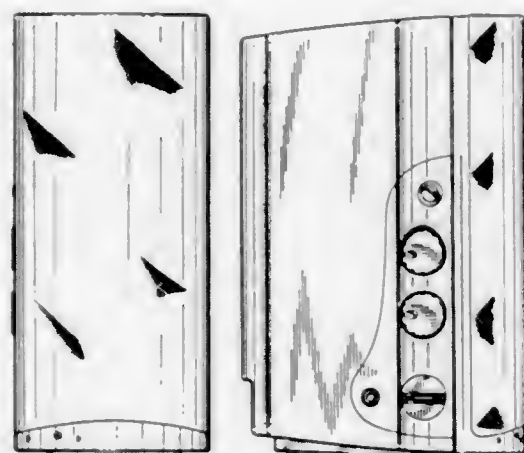
LOUDSPEAKER FOR COMPUTER

James Wicks, Tarrytown, N.Y., and Haruo Hayashi, Tokyo, Japan, assignors to Sony Corporation of America, Park Ridge, N.J.

Filed Mar. 22, 1995, Ser. No. 36,524

Term of patent 14 years

U.S. Cl. D14—214



369,171

EMBROIDERING UNIT FOR SEWING MACHINE

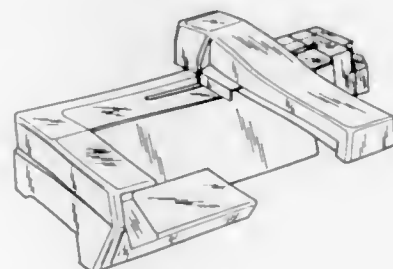
Åke B. Jönson, Jönköping, Sweden, assignor to Aktiebolaget Electrolux, Stockholm, Sweden

Filed Sep. 27, 1994, Ser. No. 29,015

Claims priority, application Sweden, Apr. 12, 1994, 940835

Term of patent 14 years

U.S. Cl. D15—72



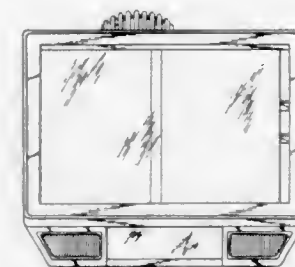
369,172

TRADING CARD VIEWING DEVICE

Thomas L. Byers, 5480 Stewart Dr., Mustang, Okla. 73064
Filed Jan. 9, 1995, Ser. No. 33,276

Term of patent 14 years

U.S. Cl. D16—135



369,174

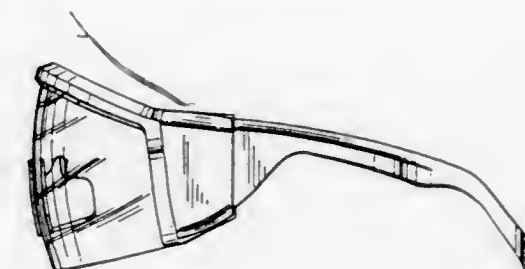
PROTECTIVE EYEGLASSES

James M. Cooper, Countryside; Donald L. Rohrs, Overland Park, and David D. McCormick, Prairie Village, all of Kans., assignors to Parmelee Industries, Inc., Lenexa, Kans.

Filed Feb. 4, 1994, Ser. No. 18,347

Term of patent 14 years

U.S. Cl. D16—314



369,173

DATA IMPRINTING DEVICE FOR A CAMERA

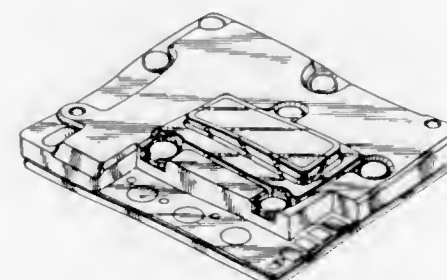
Masao Akaiwa, Suwa, Japan, assignor to Seiko Epson Corporation, Tokyo, Japan

Filed Feb. 21, 1995, Ser. No. 35,120

Claims priority, application Japan, Sep. 2, 1994, 6-26679; Sep. 2, 1994, 6-26681

Term of patent 14 years

U.S. Cl. D16—219



369,175

ELECTRONIC KEYBOARD MUSICAL INSTRUMENT

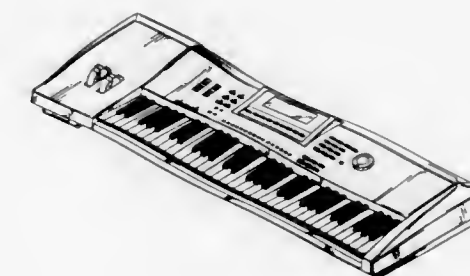
Tsutomu Nakada, Shizuoka, Japan, assignor to Yamaha Corporation, Japan

Filed Jan. 20, 1995, Ser. No. 33,797

Claims priority, application Japan, Jul. 20, 1994, 6-21761

Term of patent 14 years

U.S. Cl. D17—1



369,176

CASH REGISTER

Takuro Masuda, Yokohama, Japan, assignor to Kahushiki Kaisha TEC, Shizuoka, Japan

Filed Feb. 17, 1995, Ser. No. 35,027

Claims priority, application Japan, Aug. 19, 1994, 6-25036
Term of patent 14 years

U.S. Cl. D18—4



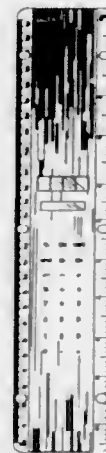
369,178

NOTEBOOK CALCULATOR

Mark A. Bedol, 3423 Yankton Ave., Claremont, Calif. 91711
Division of Ser. No. 653,803, Feb. 8, 1991, abandoned. This
application Jan. 31, 1994, Ser. No. 18,169

Term of patent 14 years

U.S. Cl. D18—6



369,179

COMBINED BINDING MACHINE AND PUNCH

Klaus Botta, and Thomas Klüber, both of Offenbach, Germany, assignors to Ibico AG, Zurich, Switzerland

Filed Apr. 25, 1995, Ser. No. 37,999

Claims priority, application Switzerland, Oct. 27, 1994,
121,814

Term of patent 14 years

U.S. Cl. D18—34

369,177

PRINTER AND COMPUTER

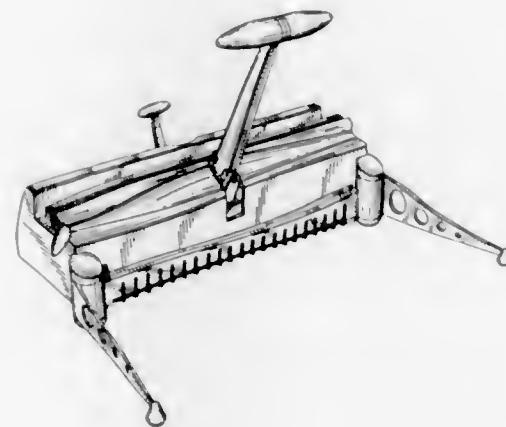
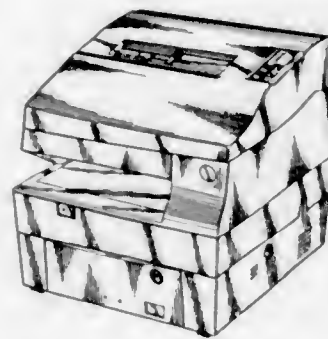
Kazuaki Kasai; Yoshiki Kinoshita, and Shoichi Ishizawa, all of
Suwa, Japan, assignors to Seiko Epson Corporation, Tokyo,
Japan

Filed Mar. 14, 1995, Ser. No. 36,168

Claims priority, application Japan, Sep. 19, 1994, 6-28341

Term of patent 14 years

U.S. Cl. D18—4



369,180

PRINTER

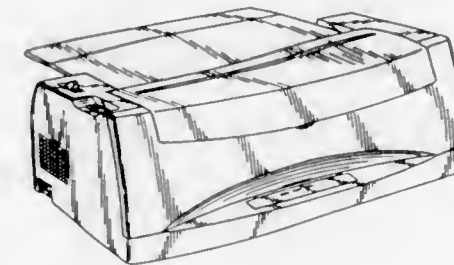
Masako Fukaya; Koji Kimura; Makoto Tsuchida, all of
Kawasaki, and Susumu Iida, Inagi, all of, Japan, assignors to
Fujitsu Limited, Kawasaki, and Fujitsu Isotec Limited,
Tokyo, both of, Japan

Filed Dec. 19, 1994, Ser. No. 32,415

Claims priority, application Japan, Jun. 17, 1994, 6-17880

Term of patent 14 years

U.S. Cl. D18—50



369,182

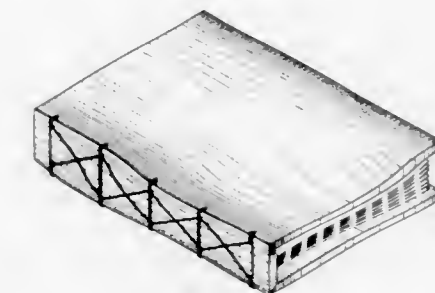
COMBINED BOOKCOVER AND BINDER THEREFOR

Charles R. Walli, Jr., 918 Meadowlark Ln., Laguna Beach,
Calif. 92651

Filed Feb. 16, 1994, Ser. No. 18,846

Term of patent 14 years

U.S. Cl. D19—26



369,183

FELT PEN

Shusaku Yoshida, Nagoya, Japan, assignor to Schachihata Inc.,
Aichi, Japan

Filed Jun. 5, 1995, Ser. No. 39,729

Claims priority, application Japan, Dec. 26, 1994, 6-39808

Term of patent 14 years

U.S. Cl. D19—49

369,181

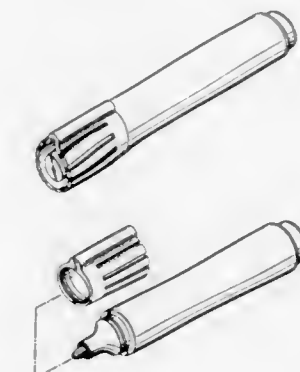
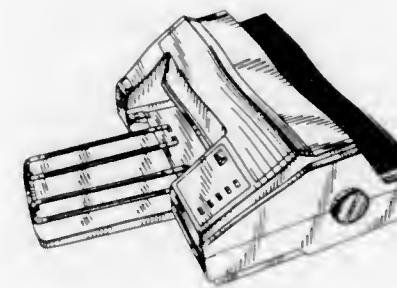
PRINTER FOR ELECTRONIC COMPUTER

Makoto Kobayashi, Suwa, Japan, assignor to Seiko Epson
Corporation, Tokyo, Japan

Filed Jun. 3, 1994, Ser. No. 23,930

Term of patent 14 years

U.S. Cl. D18—55



369,184

WRITING IMPLEMENT

Steven J. Collins, 68 Fox Run, Cranston, R.I. 02921
 Filed Jul. 10, 1995, Ser. No. 41,205

Term of patent 14 years

U.S. Cl. D19—51



369,186

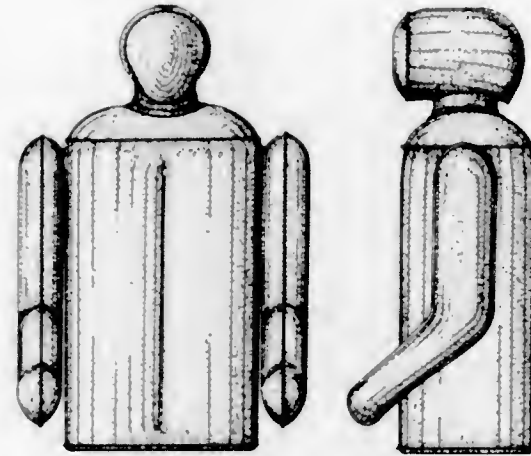
INFLATABLE MANNEQUIN

Denis Hann, 858 - 16th St., Santa Monica, Calif. 90403, and
 Gary Smith, 3433 Las Palmas Ave., Glendale, Calif. 91208

Filed Jul. 28, 1994, Ser. No. 26,444

Term of patent 14 years

U.S. Cl. D20—31



369,187

GRAVITY ACCELERATED BALL GUIDE

R. Forrest Simpkins, 5903 S. Lee, Apt. 101, Oklahoma City,
 Okla. 73109

Filed Mar. 6, 1995, Ser. No. 35,669

Term of patent 14 years

U.S. Cl. D21—3

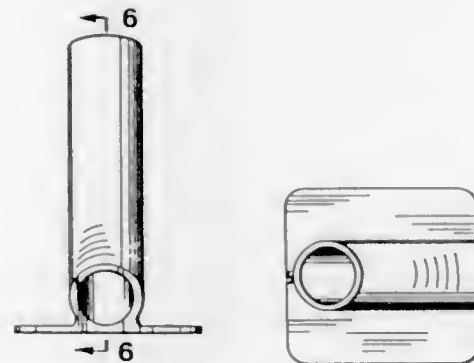
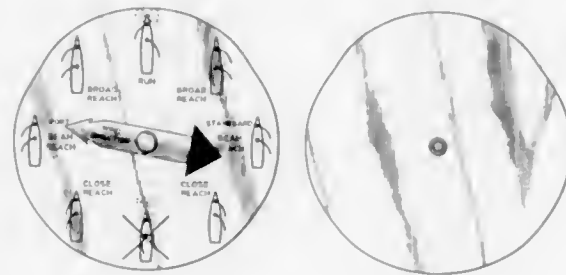
369,185

INSTRUCTIONAL WINDSURFING GAUGE

Harold R. Steele, 6874 Crown Point Dr., Hamilton, Ohio 45011
 Filed Mar. 13, 1995, Ser. No. 36,095

Term of patent 14 years

U.S. Cl. D19—64



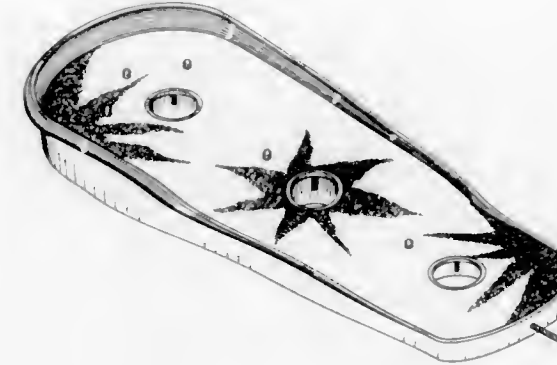
369,188

PITCH AND TOSS GAME

Charles Briggs, 3879 Andes Dr., Redding, Calif. 96001-2986
 Filed Apr. 4, 1995, Ser. No. 37,102

Term of patent 14 years

U.S. Cl. D21—8



369,190

ELECTRONIC GAME

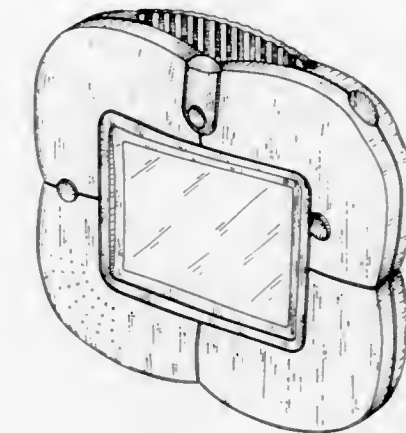
Khodayar Feiz, Geldrop, Netherlands, assignor to U.S. Philips
 Corporation, New York, N.Y.

Filed Feb. 17, 1995, Ser. No. 35,070

Claims priority, application Hague Agreement, Sep. 16, 1994, DMA-002 631

Term of patent 14 years

U.S. Cl. D21—13



369,191

FLYING DISC

David B. Dunipace, Fontana, Calif., assignor to Innova Cham-
 pion Discs, Inc., Ontario, Calif.

Filed Feb. 16, 1994, Ser. No. 18,864

Term of patent 14 years

U.S. Cl. D21—86

369,189

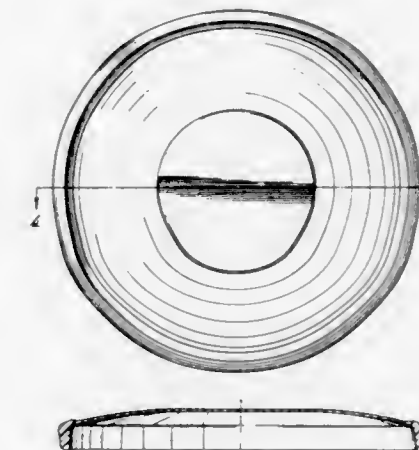
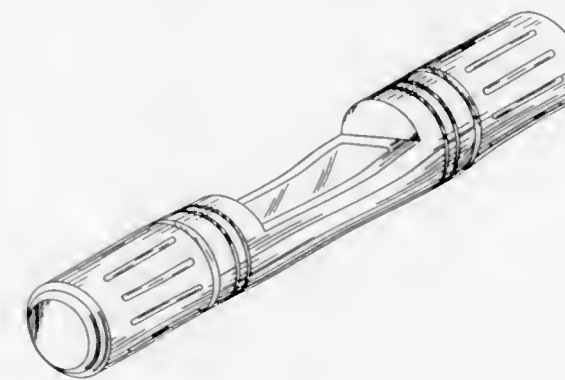
HAND-HELD ELECTRONIC GAME HOUSING

Zarko Stambolic, Oak Park; Shari L. Smith, Chicago, and
 Howard J. Morrison, Riverwoods, all of Ill., assignors to
 Tiger Electronics, Inc., Vernon Hills, Ill.

Filed Nov. 23, 1994, Ser. No. 31,365

Term of patent 14 years

U.S. Cl. D21—13



369,192

SOCCER BALL

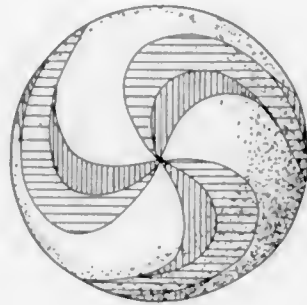
Theodore W. Imswiler, Penfield, N.Y., assignor to Volt Sports, Inc., Carlsbad, Calif.

Continuation of Ser. No. 20,794, Apr. 1, 1994, abandoned.

This application Mar. 3, 1995, Ser. No. 35,821

Term of patent 14 years

U.S. Cl. D21—204



369,194

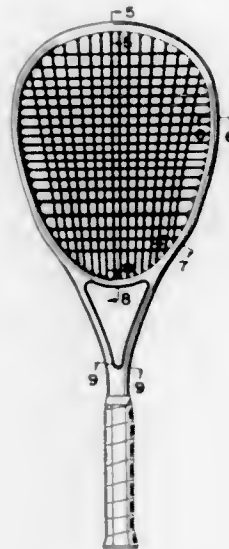
TENNIS RACQUET

William D. Severa, West Chicago, Ill., assignor to Wilson Sporting Goods Co., Chicago, Ill.

Filed Oct. 13, 1994, Ser. No. 29,532

Term of patent 14 years

U.S. Cl. D21—212



369,195

PUTTER SHAFT

W. Jake Jaekel, 6120-107 Country Club Way, Sarasota, Fla. 34243

Filed Aug. 15, 1994, Ser. No. 27,138

Term of patent 14 years

U.S. Cl. D21—221



369,193

VOLLEYBALL

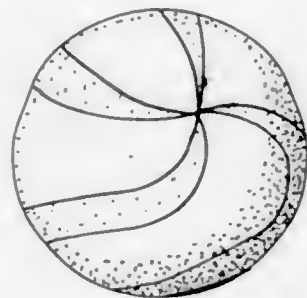
Theodore W. Imswiler, Penfield, N.Y., assignor to Volt Sports, Inc., Carlsbad, Calif.

Continuation of Ser. No. 20,793, Apr. 1, 1994, abandoned.

This application Mar. 3, 1995, Ser. No. 35,822

Term of patent 14 years

U.S. Cl. D21—204



369,196

STOWING DEVICE FOR BOMBS

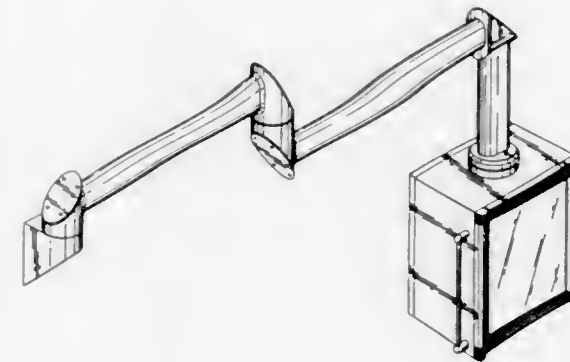
Udo Münch, Sinn, and Markus Neuhof, Ehringshausen-Niederlemp, both of, Germany, assignors to Rittal-Werk Rudolf Loh GmbH & Co. KG

Filed Mar. 11, 1994, Ser. No. 19,895

Claims priority, application Germany, Sep. 14, 1993, M9307212.0

Term of patent 14 years

U.S. Cl. D22—112



369,198

COMBINED FLY SWATTER AND VACUUM

Edward R. Hickman, P.O. Box 606, Bayard, N.M. 88023-0606

Filed Jan. 30, 1995, Ser. No. 34,180

Term of patent 14 years

U.S. Cl. D22—124



369,199

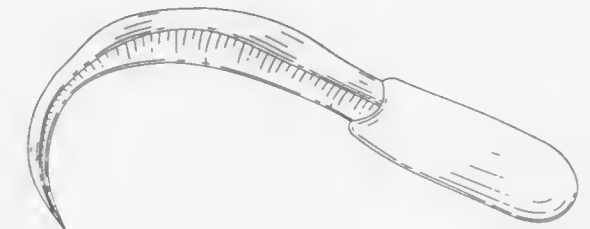
FISHING LURE

Fred H. Coggins, Brookland, Ark., assignor to Southern Pro Lures, Brookland, Ark.

Filed Apr. 24, 1995, Ser. No. 37,907

Term of patent 14 years

U.S. Cl. D22—127



369,197

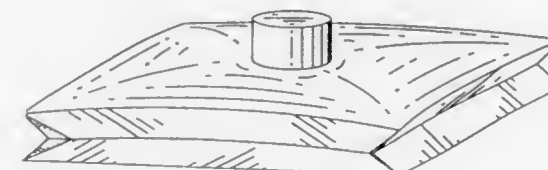
FUMIGATION POUCH

Rajnikant D. Shroff, 40 Pali Hill, Bandra Bombay, 400 050, Ind.

Filed Feb. 24, 1995, Ser. No. 35,313

Term of patent 14 years

U.S. Cl. D22—120



369,200

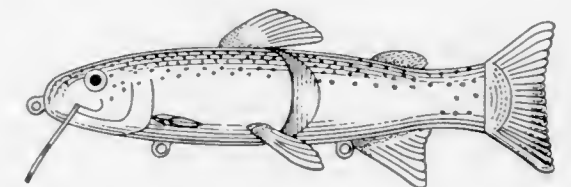
FISH LURE

Samuel M. Huddleston, 545 E. Cypress, Unit D, Burbank, Calif. 91501, and Chomp G. Josephite, 900 N. Hamond, #236, West Hollywood, Calif. 90069

Filed Oct. 24, 1994, Ser. No. 30,195

Term of patent 14 years

U.S. Cl. D22—133



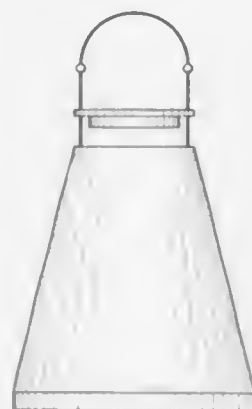
369,201
BAIT BUCKET

Robert J. Salvo, R.R. 1 Box 37 Rozelle Rd., West Pittston, Pa. 18643; Mark Stankus, 701 N. Main St., Pittston, Pa. 18640, and David A. Molenda, 40 Caverton Rd., Trucksville, Pa. 18708

Filed Jan. 19, 1995, Ser. No. 33,758

Term of patent 14 years

U.S. Cl. D22—136



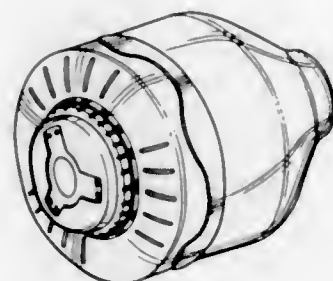
369,203
SHOWER HEAD

Leonard C. Andrus, W. Bloomfield, Mich., assignor to Brass Craft Manufacturing Company, Novi, Mich.

Filed Aug. 9, 1994, Ser. No. 27,252

Term of patent 14 years

U.S. Cl. D23—213



369,204

HAND HELD SHOWER HEAD

Leonard C. Andrus, W. Bloomfield, Mich., assignor to Brass Craft Manufacturing Company, Novi, Mich.

Filed Aug. 9, 1994, Ser. No. 26,909

Term of patent 14 years

U.S. Cl. D23—223



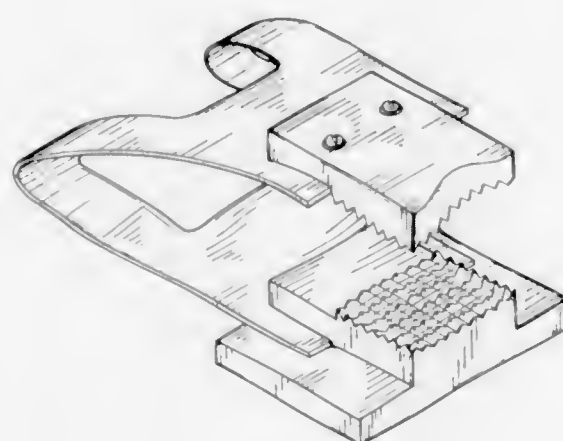
369,202
SQUIRREL SKINNER

George Jackson, R.D. 4, Box 175, Moundsville, W. Va. 26041

Filed Jan. 11, 1995, Ser. No. 33,355

Term of patent 14 years

U.S. Cl. D22—149



369,205

HAND HELD SHOWER HEAD

Leonard C. Andrus, W. Bloomfield, Mich., assignor to Brass Craft Manufacturing Company, Novi, Mich.

Filed Aug. 9, 1994, Ser. No. 26,932

Term of patent 14 years

U.S. Cl. D23—223



369,207

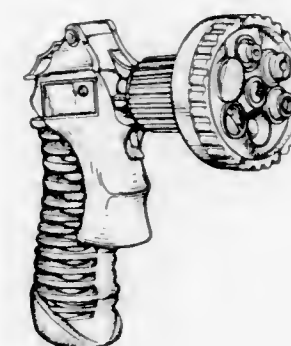
WATER SPRAYER

Po-Hsiung Wang, No. 91, Kuo Tai Rd., Chu Nan Chen, Miao Li Hsien, Taiwan

Filed Apr. 18, 1995, Ser. No. 37,691

Term of patent 14 years

U.S. Cl. D23—223



369,206

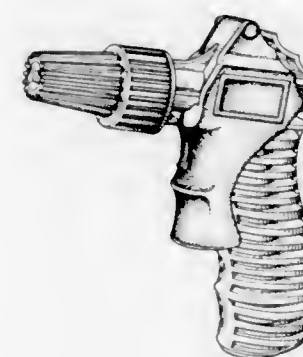
WATER SPRAYER

Po-Hsiung Wang, No. 91, Kuo Tai Rd., Chu Nan Chen, Miao Li Hsien, Taiwan

Filed Apr. 18, 1995, Ser. No. 37,690

Term of patent 14 years

U.S. Cl. D23—223



369,208

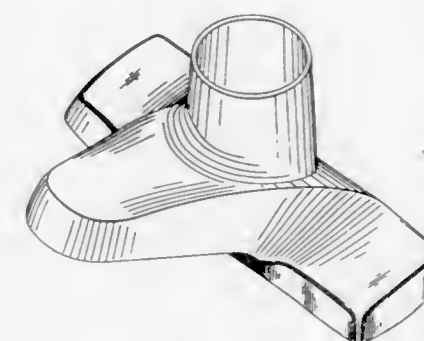
FAUCET BODY

Frederic C. Doughty, S. Pasadena, and Darren M. Mark, Castaic, both of Calif., assignors to Emhart Inc., Newark, Del.

Filed Nov. 15, 1994, Ser. No. 31,234

Term of patent 14 years

U.S. Cl. D23—238



369,209

HUMIDIFIER

Chih-Tsai Chiang, 2 Fl., No. 87, Sec. 2, Hsin-Sheng N. Rd., Taipei, Taiwan

Filed Jun. 26, 1995, Ser. No. 40,716

Term of patent 14 years

U.S. Cl. D23—356



369,211

COMBINED EYEDROPPER BOTTLE AND OVERCAP

Gerhard H. Weiler, South Barrington, Ill., assignor to Automatic Liquid Packaging, Inc., Woodstock, Ill.

Filed Jun. 2, 1994, Ser. No. 23,862

Term of patent 14 years

U.S. Cl. D24—110

369,212
AMPOULE

Dorothy J. Snell, Boronia, Australia, assignor to Glaxo Australia Pty., Ltd., Boronia, Australia

Filed Apr. 20, 1995, Ser. No. 37,731

Claims priority, application United Kingdom, Oct. 21, 1994, 2042710

Term of patent 14 years

U.S. Cl. D24—117



369,210

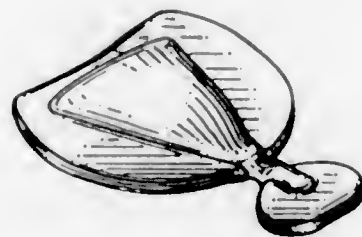
SOFTGEL CAPSULE

Gregory A. Schurig, Clearwater, and David G. Williams, Palm Harbor, both of Fla., assignors to R. P. Scherer Corporation, St. Petersburg, Fla.

Filed Apr. 21, 1995, Ser. No. 37,984

Term of patent 14 years

U.S. Cl. D24—104



369,213

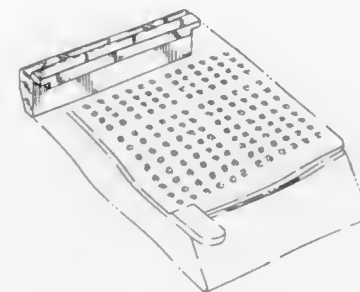
HISTOLOGY CASSETTE HINGE

Johnson N. S. Wong, Rolling Hills, Calif., assignor to Evergreen Industries, Inc., Los Angeles, Calif.

Filed Feb. 16, 1994, Ser. No. 18,863

Term of patent 14 years

U.S. Cl. D24—127



369,215

THORACOSCOPIC TISSUE FORCEP

Kenneth R. Blake, Brooklyn Park, Minn., assignor to Scanlan International, St. Paul, Minn.

Filed Apr. 22, 1994, Ser. No. 21,766

Term of patent 14 years

U.S. Cl. D24—143



369,214

PLUNGER FOR SPECIMEN FILTRATION DEVICE

Frederic L. Nason, 941 Avenida Acaso, Camarillo, Calif. 93010

Filed Dec. 2, 1994, Ser. No. 31,703

Term of patent 14 years

U.S. Cl. D24—130



369,216

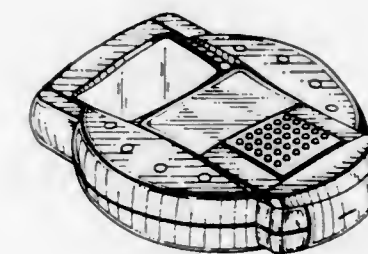
BIOLOGICAL FLUID ANALYZER

Russell J. Micinski, South Bend, Ind., and Hans H. Peterson, Cambridge, England, assignors to Bayer Corporation, Elkhart, Ind.

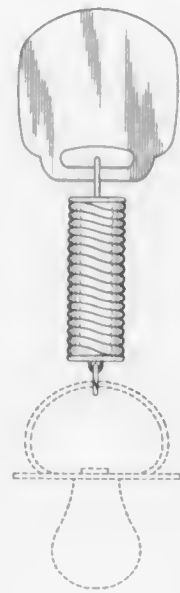
Filed Sep. 23, 1994, Ser. No. 28,830

Term of patent 14 years

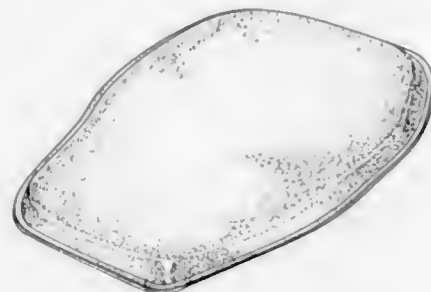
U.S. Cl. D24—169



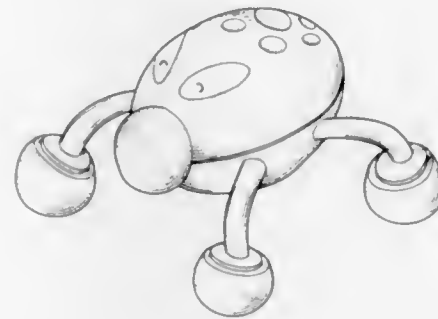
369,217
COMBINED SPRING AND CLIP PACIFIER HOLDER
 Valeria C. Mitchell, P.O. Box 247, and Laura B. Bolt, P.O. Box 1145, both of Gladewater, Tex. 75647
 Filed Jun. 20, 1995, Ser. No. 40,503
 Term of patent 14 years
 U.S. Cl. D24—193



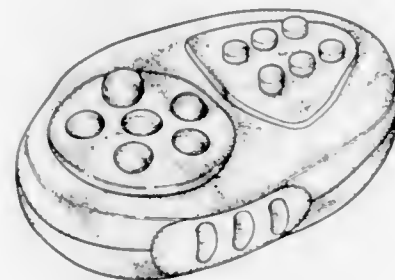
369,218
HEAT PACK
 Rudy Vandenberg, Ottawa, Canada, assignor to Headwaters Research & Development Inc., Ontario, Canada
 Filed Oct. 4, 1994, Ser. No. 29,393
 Term of patent 14 years
 U.S. Cl. D24—206



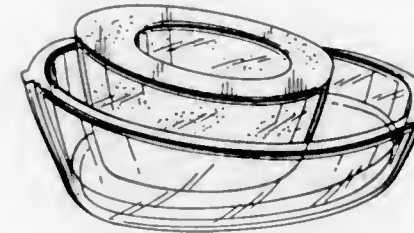
369,219
MASSAGER
 Chien-Ming Huang, 11-1 Fl. No. 23, Sec. 2, Keelung Rd., Taipei, Taiwan
 Filed May 12, 1995, Ser. No. 38,864
 Term of patent 14 years
 U.S. Cl. D24—211



369,220
MASSAGER
 Chien-Ming Huang, 11-1 Fl. No. 23, Sec. 2, Keelung Rd., Taipei, Taiwan
 Filed May 12, 1995, Ser. No. 38,863
 Term of patent 14 years
 U.S. Cl. D24—215



369,221
CANDLE HOLDER
 David F. Linderman, Champaign, Ill., assignor to Design Ideas, Ltd., Springfield, Ill.
 Filed Jan. 10, 1995, Ser. No. 33,329
 Term of patent 14 years
 U.S. Cl. D26—9



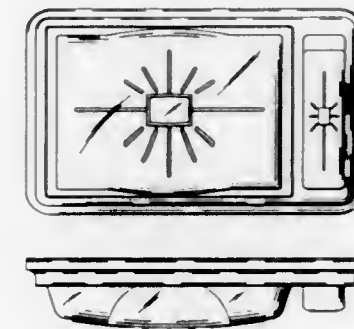
369,222
CANDLE HOLDER BASE
 Christopher Hardy, Springfield, Ill., assignor to Design Ideas, Ltd., Springfield, Ill.
 Filed Jan. 10, 1995, Ser. No. 33,332
 Term of patent 14 years
 U.S. Cl. D26—16



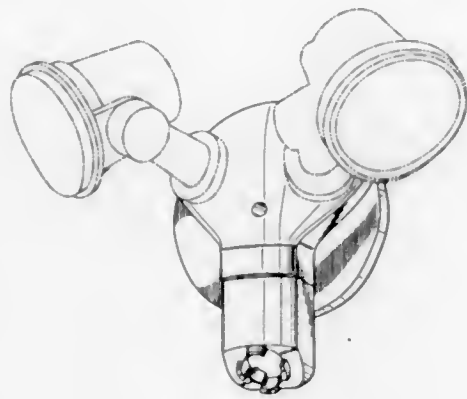
369,223
EMERGENCY LIGHT
 Robert L. Happer, Jr., 611 Huntly Dr., Chesapeake, Va. 23320, and George M. Happer, Jr., 3153 Eason Rd., Chesapeake, Va. 23322
 Filed Mar. 28, 1995, Ser. No. 36,817
 Term of patent 14 years
 U.S. Cl. D26—28



369,224
RECREATIONAL VEHICLE LIGHT FIXTURE
 Lawrence Karlo, Battle Creek; Jeffrey L. Cornell, Coldwater; Eugene L. Kilbourn, Marshall, and Thomas H. Philipot, Jackson, all of Mich., assignors to Progressive Dynamics, Inc., Marshall, Mich.
 Filed May 18, 1995, Ser. No. 38,986
 Term of patent 14 years
 U.S. Cl. D26—28



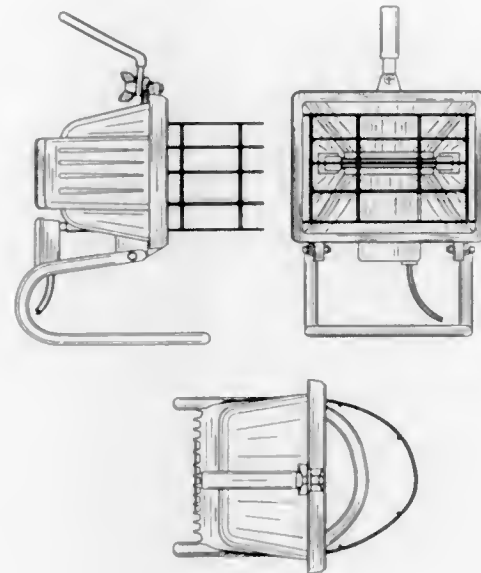
369,225
**MOUNTING PLATE FOR A PASSIVE INFRARED
 MOTION DETECTOR WITH LIGHT FIXTURE**
 Donald R. Sandell, San Jose, Calif., assignor to Larry C. Y.
 Lee, Hayward, Calif.
 Filed May 15, 1995, Ser. No. 38,883
 Term of patent 14 years
 U.S. Cl. D26—51



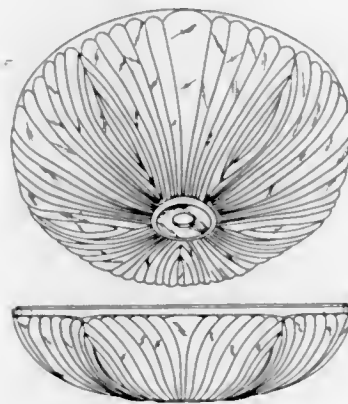
369,226
COMBINATION LAMP WITH RADIO
 Se Kit Yuen, Kowloon, Hong Kong, assignor to John Manufac-
 turing Limited, Kowloon, Hong Kong
 Filed Mar. 22, 1995, Ser. No. 36,504
 Claims priority, application United Kingdom, Nov. 14, 1994,
 2043261
 Term of patent 14 years
 U.S. Cl. D26—52



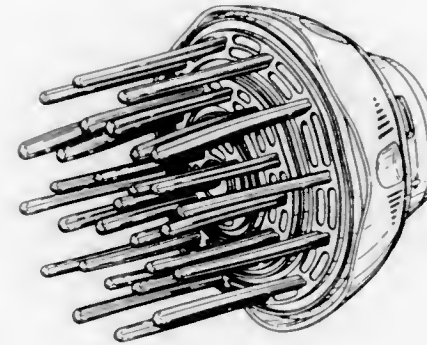
369,227
PORTABLE LIGHTING FIXTURE
 Suleyman O. Sumer, Chapel Hill, N.C., assignor to Regent
 Lighting Corporation, Burlington, N.C.
 Filed Jan. 25, 1995, Ser. No. 34,030
 Term of patent 14 years
 U.S. Cl. D26—63



369,228
GLASS SHADE FOR A LIGHTING FIXTURE
 Pasquale Miranda, Briarcliff Manor, N.Y., assignor to Murray
 Felss Import Corp., Bronx, N.Y.
 Filed Jul. 19, 1994, Ser. No. 26,186
 Term of patent 14 years
 U.S. Cl. D26—134



369,229
HAIR FORMING ATTACHMENT FOR A HAIR DRYER
 Robert Oberheim, Liederbach, Germany, assignor to Braun
 Aktiengesellschaft, Frankfurt, Germany
 Filed Feb. 16, 1995, Ser. No. 35,229
 Claims priority, application WIPO, Oct. 10, 1994, DM/030
 932
 Term of patent 14 years
 U.S. Cl. D28—18



369,230
HAIR TRIMMER
 Martin Bone, Groningen, Netherlands, assignor to U.S. Philips
 Corporation, New York, N.Y.
 Filed Jan. 10, 1995, Ser. No. 33,305
 Claims priority, application Switzerland, Oct. 19, 1994,
 DMA/002675
 Term of patent 14 years
 U.S. Cl. D28—53



LIST OF PATENTEEES

TO WHOM

PATENTS WERE ISSUED ON THE 23rd DAY OF APRIL, 1996

NOTE— Arranged in accordance with the first significant character or word of the name
(in accordance with city and telephone directory practice).

- A. Ahlstrom Corporation: *See—*
Kuosio, Marjo; and Nikkanen, Samuli, 5,509,997, Cl. 162-16.000.
- A. E. Bishop Research Pty. Limited: *See—*
Wallis, Anthony B.; and Thomas, Andrew D., 5,509,386, Cl. 123-190.170.
- A.W.A.X. Progettazione e Ricerca S.r.l.: *See—*
Cappi, Angelo; and Rimondi, Renato, 5,509,253, Cl. 53-441.000.
- AB Innomatic: *See—*
Eriksson, Rune, 5,510,702, Cl. 324-71.100.
- AB Volvo Penta: *See—*
Hallensvedt, Oddbjörn; Skogman, Kaj; and Kristiansson, Bo, 5,509,323, Cl. 74-378.000.
Månsson, Staffan; and Hedlund, Benny, 5,509,863, Cl. 475-273.000.
Rodsier, Christian, 5,509,833, Cl. 440-53.000.
Rodsier, Christian, 5,509,834, Cl. 440-57.000.
- Abate, Kenneth, to Micro-Pak, Inc. Entrapment vehicle and method. 5,510,117, Cl. 424-489.000.
- ABB Lummus Crest Inc.: *See—*
Gartside, Robert J.; Ercan, Cemal; and Sundaram, Kandasamy M., 5,510,557, Cl. 585-654.000.
- ABB Patent GmbH: *See—*
Gentsch, Dietmar; and Lipperts, Joseph H. F. G., 5,510,592, Cl. 218-134.000.
- Abbe, Robert C.; Poduje, Noel S.; Goodall, Randal K.; and Domenicali, Peter, to ADE Corporation. Wafer handling and processing system. 5,511,005, Cl. 364-552.000.
- Abbott, John S.: *See—*
Lau, Robert G.; Abbott, John S.; and Swan, David A., 5,509,703, Cl. 292-1.000.
- Abbott Laboratories: *See—*
Marshall, Paul N., 5,510,267, Cl. 436-63.000.
- Abdel-Malek, Karim, to UTI Corporation. Graphical interface for robot. 5,511,147, Cl. 395-99.000.
- Abdoo, David G., to Motorola, Inc. Digital bus data retention. 5,511,170, Cl. 395-280.000.
- Abdow, David A., to United States of America, Navy. Hydrostatic sealing sleeve for spliced wire connections. 5,509,202, Cl. 29-871.000.
- Abdulally, Iqbal F., to Foster Wheeler Energy Corporation. Fluidized bed reactor including a stripper-cooler and method of operating same. 5,510,085, Cl. 422-142.000.
- Abdullayev, Enver A., to Merpro Azgaz Limited. Pipe liquid/gas separator having vane sets. 5,510,017, Cl. 210-86.000.
- Abe, Haruo: *See—*
Motoshima, Kuniaki; Kitayama, Tadayoshi; Yamashita, Junichiro; Nakagawa, Eiichi; Akiba, Shigeyuki; Suzuki, Masatoshi; Goto, Koji; Abe, Haruo; and Norimatsu, Naoki, 5,510,930, Cl. 359-341.000.
- Abe, Makoto: *See—*
Sato, Kaoru; Itoh, Toshiyuki; Okazawa, Kazuhiko; Kimizuka, Junichi; Kusano, Akihisa; Abe, Makoto; and Inuyama, Toshihiko, 5,511,161, Cl. 395-182.210.
- Abe, Minoru: *See—*
Fukutake, Heiji; Abe, Minoru; and Fujii, Toru, 5,509,676, Cl. 280-276.000.
- Abe, Shinji: *See—*
Tan, Shoji; Shigemura, Yukimasa; Abe, Shinji; and Narita, Junichi, 5,510,565, Cl. 585-823.000.
- Abe, Takeshi: *See—*
Takahashi, Koji; Hieda, Teruo; Kyuma, Kenji; Nakatani, Yoshihiro; Suzuki, Koichi; Abe, Takeshi; and Ishikawa, Yoshifumi, 5,510,901, Cl. 358-335.000.
- Abe, Tetsuo: *See—*
Ito, Seiya; Hirao, Motoaki; Shiraha, Michihiro; Nozoe, Shunpei; Kawamura, Kazuyoshi; Fujii, Kenichi; Harada, Eiichi; Ino, Tatsuo; Uozumi, Masahiro; and Abe, Tetsuo, 5,509,264, Cl. 60-39.120.
- Abe, Tomoaki: *See—*
Hosono, Satoru; Abe, Tomoaki; Yonekubo, Shuji; Kitahara, Tsuyoshi; and Katakura, Takahiro, 5,510,816, Cl. 347-10.000.
- Abe, Yuichi: *See—*
Itayama, Taketoshi; Abe, Yuichi; and Yamaguchi, Masao, 5,510,724, Cl. 324-760.000.
- Abkowitz, Martin A.: *See—*
Facci, John S.; Lewis, Richard B.; Stofka, Milan; Abkowitz, Martin A.; Levy, Michael J.; Mammino, Joseph; and Shahin, Michael M., 5,510,879, Cl. 355-219.000.
- Abraham, Charles; and Janky, James M., to Trimble Navigation Limited. Provision of SPS timing signals. 5,510,797, Cl. 342-352.000.
- Abraham, Dennis J.; and Mims, Steve A., to SKF USA Inc. Protected seal assembly and protective filter unit therefor. 5,509,666, Cl. 277-23.000.
- Abraham, Kuzhikalail M.; and Jiang, Zhiping, to EIC Laboratories, Inc. Solid polymer electrolyte-based oxygen batteries. 5,510,209, Cl. 429-192.000.
- Abusleme, Julio A.; and Kirsch, Sheldon J., to Ausimont S.p.A. Process for preparing thermoplastic hydrogen-containing fluoropolymers. 5,510,435, Cl. 526-207.000.
- Abuyama, Yasuo: *See—*
Watanabe, Yoshio; and Abuyama, Yasuo, 5,510,908, Cl. 358-448.000.
- Acer Incorporated: *See—*
Lin, Pei-Hu, 5,511,184, Cl. 395-734.000.
- Achter, Eugene K.; Lieb, David; Beatty, John S.; Klotzsch, Helmut W.; Thompson, Craig D.; and Bosworth, Jonathan, to Thermedics Detection, Inc. Detection of turbid or foaming contaminants in containers. 5,510,620, Cl. 250-339.120.
- Acken, Alfred D., to Pacesetter, Inc. Internally supported self-sealing septum. 5,509,928, Cl. 607-037.000.
- Ackermann, Emil, to Optrel AG. Electrically controllable optical filter element. 5,510,609, Cl. 250-201.100.
- Actel Corporation: *See—*
El Gamal, Abbas; and Chiang, Steve S. S., 5,510,730, Cl. 326-41.000.
Forouhi, Abdul R.; and Wang, Iton, 5,510,646, Cl. 257-530.000.
- Adachi, Etsushi: *See—*
Fujiki, Noriaki; Harada, Shigeru; Adachi, Hiroshi; and Adachi, Etsushi, 5,510,653, Cl. 257-759.000.
- Adachi, Hiroshi: *See—*
Fujiki, Noriaki; Harada, Shigeru; Adachi, Hiroshi; and Adachi, Etsushi, 5,510,653, Cl. 257-759.000.
- Adams, Carlisle M., to Northern Telecom Limited. Symmetric cryptographic system for data encryption. 5,511,123, Cl. 380-29.000.
- Adams, Charles L. Portable weight lifting device. 5,509,877, Cl. 482-108.000.
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- Adams, Mark A.: *See—*
McQuade, William F.; Starnes, Keith E.; and Adams, Mark A., 5,509,466, Cl. 165-113.000.
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- Yokoyama, Shotaro; Amano, Akira; and Matsuzaki, Kazuo, 5,509,309, Cl. 73-514.090.
- Fuji, Kazunori: See—
- Nakamura, Nobuyuki; and Fuji, Kazunori, 5,509,794, Cl. 425-3.000.
- Fuji Photo Film Co., Ltd.: See—
- Arai, Kenji; Terashima, Masaaki; and Doi, Yoshiyuki, 5,510,082, Cl. 422-64.000.
- Masuyama, Kenichi; Kato, Kazuo; and Araki, Hiroaki, 5,510,177, Cl. 428-323.000.
- Nakanishi, Ken; Takehana, Tadashi; Tamaki, Hiroyuki; and Nishikawa, Sumio, 5,510,233, Cl. 430-535.000.
- Fuji Xerox Co., Ltd.: See—
- Agata, Takeshi; and Imai, Takashi, 5,510,219, Cl. 430-106.000.
- Hongo, Kazuya; Nukada, Katsumi; Iijima, Masakazu; Takahashi, Nori-yoshi; Suwabe, Masaaki; and Takimoto, Hitoshi, 5,510,217, Cl. 430-58.000.
- Kimura, Tsutomu; Fukuhara, Masaaki; Takahashi, Yasuhito; and Isosu, Toru, 5,510,883, Cl. 355-245.000.
- Mori, Hirotaka; and Ando, Ryo, 5,510,885, Cl. 355-271.000.
- Ota, Takeshi, 5,510,920, Cl. 359-121.000.
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- Fujii, Kenichi: See—
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- Fujii, Noboru: See—
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- Fujii, Toru: See—
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- Fujiki, Noriaki; Harada, Shigeru; Adachi, Hiroshi; and Adachi, Etsushi, to Mitsubishi Denki Kabushiki Kaisha. Semiconductor device including silicon ladder resin layer. 5,510,653, Cl. 257-759.000.
- Fujikura Kasei Co., Ltd.: See—
- Edamura, Kazuya; and Otsubo, Yasufumi, 5,510,058, Cl. 252-570.000.
- Fujimoto, Hiroshi: See—
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- Fujimura, Tohru: See—
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- Fujinami, Yasushi; and Yonemitsu, Jun, to Sony Corporation. Apparatus and method for producing downwards compatible video signals with increased vertical resolution, and apparatus for reproducing and displaying same. 5,510,902, Cl. 358-335.000.
- Fujioka, Yasushi: See—
- Matsuyama, Jinsho; Kariya, Toshimitsu; Fujioka, Yasushi; Takei, Tet-suya; Nakagawa, Katsumi; Kanai, Masahiro; and Echizen, Hiroshi, 5,510,151, Cl. 427-509.000.
- Fujisawa, Eiji; Shono, Hiroaki; Yodate, Kozo; and Fujishima, Ichiro, to Nitto Boseki Co., Ltd. Carbon fiber chopped strands and coating dispersion used for producing same. 5,510,185, Cl. 428-368.000.
- Fujishima, Ichiro: See—
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- Fujita, Nobuhide: See—
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- Fujita, Suguru; Takahashi, Kazuaki; Sagawa, Morikazu; Sakai, Hiroyuki; Ota, Yoritomo; and Inoue, Kaoru, to Matsushita Electric Industrial Co., Ltd. Multilayer microstrip wiring board with a semiconductor device mounted thereon via bumps. 5,510,758, Cl. 333-247.000.
- Fujitsu Limited: See—
- Hamano, Hiroshi; Amemiya, Izumi; Yamamoto, Takuji; Kitagami, Hiroo; and Ihara, Takeshi, 5,510,745, Cl. 327-333.000.
- Hamano, Takashi; Sakai, Kiyoshi; and Matsuda, Kiichi, 5,510,839, Cl. 348-402.000.
- Hayashi, Hiromi, 5,510,292, Cl. 437-187.000.
- Hotta, Kohichiro, 5,511,198, Cl. 395-700.000.

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 Morioka, Tetsuya, 5,510,973, Cl. 364-134.000.
 Naito, Takao, 5,510,922, Cl. 359-124.000.
 Ohmido, Tatsuya, 5,511,183, Cl. 395-182.120.
 Okada, Yoshiyuki, 5,511,137, Cl. 382-298.000.
 Saitoh, Minoru, 5,511,011, Cl. 364-578.000.
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 Shirakata, Yoko; and Kozu, Noriko, 5,511,194, Cl. 395-650.000.
 Suyama, Masuo, 5,510,931, Cl. 359-341.000.
 Suzuki, Katsuo; and Yoshimura, Junichi, 5,510,925, Cl. 359-177.000.
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 Tasaki, Koji; Hidaka, Takashi; and Orita, Akira, 5,511,113, Cl. 379-112.000.
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 Fukami, Tetsuji. Clinical thermometer with pulsimeter, 5,509,422, Cl. 128-670.000.
 Fukatani, Takao: See—
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 Fukuda, Kyoko: See—
 Ohia, Masashi; Kobayashi, Hiroshi; Sekiya, Tsuneo; Hamada, Toshimichi; Fukuda, Kyoko; and Iijima, Koji, 5,510,830, Cl. 348-36.000.
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 Fukunaga, Masanori, to Mitsubishi Denki Kabushiki Kaisha. Control circuit for power device and level shifting circuit and semiconductor integrated circuit device, 5,510,943, Cl. 361-18.000.
 Fukushima, Kiyoko; Iijima, Sadafumi; and Tsunoda, Motoyuki, to TDK Corporation. Magnetic recording medium having at least two layers wherein the uppermost layer contains alumina particles which contain specified oxides, 5,510,179, Cl. 428-323.000.
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 Eifert, Charles D.; Fullenkamp, Patrick H.; and Brademeyer, Douglas M., 5,509,749, Cl. 403-144.000.
 Fuller, Jesse: See—
 Rechsteiner, Steven A.; and Fuller, Jesse, 5,509,242, Cl. 52-270.000.
 Fullwood, James, to Duraframe Window Shutter Systems, Inc. Storm shutter window frame system, 5,509,239, Cl. 52-202.000.
 Fulmer, John W.; Griaiznov, Andrei K.; Kight, William D.; and Zakoshansky, Vladimir M., to General Electric Company. Removal and neutralization of acid catalyst from products of cumene hydroperoxide cleavage, 5,510,543, Cl. 568-754.000.
 Funai Electric Co., Ltd.: See—
 Ichihara, Kazuo; and Izuta, Shingo, 5,511,001, Cl. 364-514.00R.
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 Seymour, Sydney K.; McConnell, Bain C.; Deal, Philip A.; Funn, Wayne M.; Henderson, Calvin W.; Jarvis, William R.; and Lassiter, Wallace R., 5,510,616, Cl. 250-308.000.
 Furman, Arthur R.: See—
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 Terui, Nobuo; Ohnishi, Takafumi; and Furuta, Kenji, 5,510,924, Cl. 359-143.000.
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 Dauer, Richard R.; DiMichele, Lisa; Futran, Mauricio; and Kieczykowski, Gerard R., 5,510,517, Cl. 562-13.000.

G.D. Searle & Co.: See—
 Talley, John J.; Getman, Daniel P.; DeCrescenzo, Gary A.; Lin, Ko-Chung; Vazquez, Michael L.; Mueller, Richard A.; Reed, Kathryn L.; Heintz, Robert M.; Clare, Michael; Freskos, John N.; and Sun, Eric T., 5,510,349, Cl. 514-237.500.
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 Talley, John J.; Penning, Thomas D.; Collins, Paul W.; Malecha, James W.; Bertenshaw, Stephen R.; and Graneto, Matthew J., 5,510,496, Cl. 548-365.700.
 Vazquez, Michael L.; Mueller, Richard A.; Talley, John J.; Getman, Daniel; DeCrescenzo, Gary A.; and Freskos, John N., 5,510,388, Cl. 514-604.000.
 G-E Leblanc Inc.: See—
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 G. Rau GmbH & Co.: See—
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 Gabriel, Steven M.; Glassco, Thomas H.; Ambuter, Hal; and Fitch, Edward P., to Procter & Gamble Company. The Process for preparing thixotropic liquid detergent compositions, 5,510,047, Cl. 252-89.100.
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 Gadkaree, Kishor P.; and Tyndell, Brian P., to Corning Incorporated. Electrically heatable activated carbon monolith for adsorption and desorption applications, 5,510,599, Cl. 219-553.000.
 Gaertner, Franz. Coupling device, 5,509,547, Cl. 213-75.00R.
 Gagnon, André: See—
 Harman, Robert K.; and Gagnon, André, 5,510,766, Cl. 340-552.000.
 Gagnon, Eugene G.; and Lisi, Daniel J., to General Motors Corporation. Method of preparing electrodes for lead-acid electrode battery, 5,510,213, Cl. 429-225.000.
 Gagon, Paul R., to BBE Sound Inc. Low input signal bandwidth compressor and amplifier control circuit, 5,510,752, Cl. 330-126.000.
 Gainand, Yves F. G., to Societe Nouvelle Technigaz. Machine for automatic in situ welding according to a curvilinear section profile and having programmable extrapolation control, 5,510,595, Cl. 219-124.340.
 Galder, John. Apparatus and method for connected forming and controlled stacking of material, 5,510,135, Cl. 426-512.000.
 Galensky, Duane: See—
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 Gallaher, Daniel D.: See—
 Graves, Frederic A.; and Gallaher, Daniel D., 5,510,551, Cl. 585-351.000.
 Gallo, Anthony J., Jr., to ConAgra, Inc. Method for cooking a food item in microwave heating package having end flaps for elevating and venting the package, 5,510,132, Cl. 426-234.000.
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 Benetti, Cristiano; and Gallon, Denis, 5,509,180, Cl. 24-68.05K.
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 Garden, Dale J., to Anderson-Cook, Inc. Method of conditioning the surface of a spline forming rack, 5,509,287, Cl. 72-88.000.
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 Steger, Rudolph; Slabinski, Chester J.; and Garfinkel, Michael, 5,509,505, Cl. 187-394.000.
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 Garland, Carl S.; Giles, Martin F.; Poole, Andrew D.; and Sunley, John G., to BP Chemicals Limited. Process for the production of a carboxylic acid, 5,510,524, Cl. 562-519.000.
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Ware, Frederick A.; Dillon, John B.; Barth, Richard M.; Garrett, Billy W., Jr.; Atwood, John G., Jr.; and Farmwald, Michael P., 5,511,024, Cl. 365-189.040.
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- Goto, Koji: See—
Motoshima, Kuniaki; Kitayama, Tadayoshi; Yamashita, Junichiro; Nakagawa, Eiichi; Akiba, Shigeyuki; Suzuki, Masatoshi; Goto, Koji; Abe, Haruo; and Norimatsu, Naoki, 5,510,930, Cl. 359-341,000.
- Gotou, Makoto: See—
Sakakibara, Yoshio; Gotou, Makoto; and Isaka, Haruo, 5,510,938, Cl. 360-77,140.
- Gottlieb Guhring KG: See—
Reinauer, Josef; Effenberger, Wolfgang; and Friedl, Franz, 5,509,763, Cl. 409-233,000.
- Gottschalk, Donald A., Jr.: See—
Pascucci, Gregory A.; Rasmussen, David E.; Decious, Gaylon M.; Garbe, James R.; Hyzer, Susan M.; Woest, Karen L.; Vairavan, Vairavan; Koch, David L.; Gottschalk, Donald A., Jr.; Burkhardt, Dennis E.; Standish, Darrell E.; Madaus, Paul W.; Spacek, Dan J.; Nesler, Clay G.; Stark, James K.; Mageland, Otto M.; Singers, Robert R.; and Wagner, Michael E., 5,511,188, Cl. 395-600,000.
- Gouldson, Stanley F.; and Harmer, Roland G., to Spotless Plastics Pty. Ltd., Garment hanger, 5,509,587, Cl. 223-91,000.
- Gowing, Scott, to United States of America, Navy, Apparatus for determining amount of gases dissolved in liquids, 5,509,294, Cl. 73-19,050.
- GPT Limited: See—
Langrish, Michael D., 5,510,705, Cl. 324-158,100.
- Graafland, Teunis: See—
Rosenqvist, John I. R.; Graafland, Teunis; and Vermeire, Hans F., 5,510,072, Cl. 264-184,000.
- Graen, Lawrence J., to Houston Well Screen Company, Method and apparatus for anchoring a well screen on a perforated mandrel of stainless steel, 5,509,483, Cl. 166-382,000.
- Graham, Donald W.; Aster, Susan D.; and Tolman, Richard L., to Merck & Co., Inc., Delta-17 and delta-20 olefinic and saturated 17 beta-substituted 4-aza-5 alpha-androstan-ones as 5 alpha reductase inhibitors useful in the prevention and treatment of hyperandrogenic disorders, 5,510,351, Cl. 514-253,000.
- Graham, Donald W.; Aster, Susan D.; Hagmann, William; and Tolman, Richard L., to Merck & Co., Inc., 17-ester, amide, and ketone derivatives of 3-oxo-4-azasteroids as 5A-reductase inhibitors, 5,510,485, Cl. 544-336,000.
- Gramer, Michael J.: See—
Goochee, Charles F.; and Gramer, Michael J., 5,510,261, Cl. 435-240,200.
- Grande, Michael L.: See—
Matalevich, Joseph R.; Lundy, Douglas A.; Cortash, Michael J.; and Grande, Michael L., 5,510,221, Cl. 430-106,600.
- Grandle, J. Arthur: See—
Cathers, Frederick R.; Fowler, Glenn D.; Grandle, J. Arthur; and Hartung, Ronald, 5,511,092, Cl. 375-232,000.
- Graneto, Matthew J.: See—
Talley, John J.; Penning, Thomas D.; Collins, Paul W.; Malecha, James W.; Bertenshaw, Stephen R.; and Graneto, Matthew J., 5,510,496, Cl. 548-365,700.
- Granier, François: See—
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- Grannis, Vaughn B.: See—
Japuntich, Daniel A.; Grannis, Vaughn B.; Seppala, Harold J.; and Ferguson, Anthony B., 5,509,436, Cl. 137-15,000.
- Grant, Jaret E., Device for repairing a broken reciprocating saw blade, 5,509,339, Cl. 83-862,000.
- Grant, Peter D.: See—
Sullivan, Brian T.; Li, Li; Dobrowski, Jerzy A.; and Grant, Peter D., 5,510,163, Cl. 428-64,100.
- Grasselli, Giorgio, Electric motor control based on conductive contact of machine component with operator for injury prevention, 5,510,685, Cl. 318-434,000.
- Graves, Bjarné: See—
Due, Jorgen; Graves, Bjarné; and Bak, Henning, 5,510,184, Cl. 428-365,000.
- Graves, Deborah D., to Rohm and Haas Company, Process for alkylation with triazoles, 5,510,493, Cl. 548-267,400.
- Graves, Frederic A.; and Gallaher, Daniel D., to Humanetics Corporation, Extraction of carotenoids from natural sources, 5,510,551, Cl. 585-351,000.
- Graves, Howard T.: See—
Blecha, Bill A.; Coty, Thomas; Curry, John J.; Graves, Howard T.; Guckian, Robert C.; Hall, John M.; McDowell, Samuel B.; Nguyen, Steve H.; Samuels, Raemon N.; Smith, Thomas E.; Wiedmann, Joseph J.; and Wright, Richard A., 5,510,618, Cl. 250-332,000.
- Grawe, John, Abatement process for contaminants, 5,509,969, Cl. 134-2,000.
- Gray, Nancy M., to Sepracor, Inc., Methods of using (+) doxazosin for the treatment of hypertension, 5,510,352, Cl. 514-254,000.
- Greczyna, James A.; and Tseng, Chi-Ming, to Minnesota Mining and Manufacturing Company, Magnetic recording medium with backside coating containing polymeric particles, 5,510,169, Cl. 428-147,000.
- Green, Alan H.: See—
Shirai, Takeshi; Pawlak, Andrzej M.; and Green, Alan H., 5,510,708, Cl. 324-174,000.
- Green, David T.; Bolanos, Henry; Ratcliff, Keith; Heaton, Lisa W.; and Viola, Frank J., to United States Surgical Corporation, Apparatus for applying surgical fasteners, 5,509,596, Cl. 227-176,100.
- Green, Jerry M.: See—
Taylor, Harold L.; and Green, Jerry M., 5,510,945, Cl. 361-45,000.
- Greenfield, Zvi: See—
Shimony, Ilan; and Greenfield, Zvi, 5,511,219, Cl. 395-800,000.
- Greenhorn, Robert C.: See—
Stewart, Ronald F.; Welburn, David J.; Welsh, David M.; and Greenhorn, Robert C., 5,509,355, Cl. 102-275,800.
- Greenstein, Michael: See—
Carter, Guy T.; Torrey, Margaret J.; and Greenstein, Michael, 5,510,251, Cl. 435-119,000.
- Lum, Paul; Greenstein, Michael; and Verdonk, Edward, 5,509,418, Cl. 128-662,060.
- Gregg, Eugene S., III; and Mittler, James A., Combined radar detector, speed measuring device and printer for verifying vehicle speed, 5,510,793, Cl. 342-20,000.
- Grendahl, Dennis T.; and Harnsberger, Fritz D., to Grendahl, Dennis T., Syringe having a flexible collar, 5,509,903, Cl. 604-187,000.

Gresch, Walter, to Bucher-Guyer AG Maschinenfabrik. Process for selective removal of sugar from beverages. 5,510,125, Cl. 426-11.000.

Griat, Jacqueline. *See—*
Picard, Elisabeth; Lambert, Jacqueline; and Griat, Jacqueline, 5,510,100, Cl. 424-59.000.

Griaznov, Andrei K.: *See—*
Pulmer, John W.; Griaznov, Andrei K.; Kight, William D.; and Zakos-hansky, Vladimir M., 5,510,543, Cl. 568-754.000.

Grier, David L.: *See—*
Carhart, Raymond E.; Grier, David L.; and Schaller, Anthony J., 5,511,186, Cl. 395-600.000.

Grimberg, Georges S. Therapeutic composition remedying the disorders appearing in the otolaryngological sphere. 5,510,111, Cl. 424-439.000.

Grimm, Wolfgang: *See—*
Kuhn, Thomas; Grimm, Wolfgang; and Beck, Matthias, 5,510,996, Cl. 304-474.280.

Grisar, J. Martin; Petty, Margaret A.; and Bolkenius, Frank, to Merrell Pharmaceuticals Inc. Cardioprotective agents. 5,510,373, Cl. 514-455.000.

Grivel, Tristan; Gilabert, Claude; and Bonnaud, Francis, to Societe Anonyme SAFT. Storage cell battery unit equipped with a cooling device. 5,510,207, Cl. 429-120.000.

Gronlund, Robert. Swimming pool skimmer. 5,510,020, Cl. 210-169.000.

Gronseth, Rosanne E.: *See—*
Biegler, Robert M.; Gronseth, Rosanne E.; Ryther, Robert J.; Juare, Michael P.; Svendsen, John A.; and Shih, Youngtzing, 5,510,871, Cl. 354-300.000.

Grootjans, Jacques F.: *See—*
Delorme, Luc F. L.; Cerejo, Francisco M. M.; and Grootjans, Jacques F., 5,510,553, Cl. 585-444.000.

Grosheins, Pireot, to Lamiere de Picardie. Process for manufacturing a composite base fabric intended for the reinforcement of a waistband and composite base fabric thus obtained. 5,510,142, Cl. 427-176.000.

Gross, Peter L., to Illinois Tool Works, Inc. Load cell mounting. 5,509,317, Cl. 73-862.632.

Grosse-Bley, Michael; Bömer, Bruno; Grosser, Rolf; Arlt, Dieter; and Lange, Walter, to Bayer Aktiengesellschaft. Optically active sulphur-containing amino acid derivatives. 5,510,530, Cl. 564-154.000.

Grosse-Entrup, Hubert, to GKN Walterscheid GmbH. Driveshaft with closeable maintenance aperture in protective tubes. 5,509,858, Cl. 464-172.000.

Grosser, Rolf: *See—*
Grosse-Bley, Michael; Bömer, Bruno; Grosser, Rolf; Arlt, Dieter; and Lange, Walter, 5,510,530, Cl. 564-154.000.

Laue, Christian; Schröder, Georg; Arlt, Dieter; and Grosser, Rolf, 5,510,503, Cl. 556-21.000.

Grossman, Günter; and Iwata, Yoshikazu, to Mitsubishi Materials Corporation. Drill. 5,509,761, Cl. 408-59.000.

Groth, Ernest F. Fibrous material packaging machine. 5,509,256, Cl. 53-513.000.

Ground Air, Inc.: *See—*
Demko, Michael; Blumentrin, David; and Zapalac, Robin, 5,509,462, Cl. 165-45.000.

Grover, David B.; O'Neil, Edward F., III; and Ross, Robert A., Jr., to International Business Machines Corporation. Semiconductor memory system having sense amplifier being activated late during clock cycle. 5,511,031, Cl. 365-208.000.

Grube, Violet M.: *See—*
Hanson, William D.; Brud, Lynn C.; Byerly, Shannon K.; Ellis, Clifford J.; Everett, Rob D.; Gossen, Barbara A.; Grube, Violet M.; Iwanski, David G.; LeMahieu, David L.; Qin, Jian; Stevens, Robert A.; Wentzel, Tom K.; Yarbrough, Sandra M.; Zenker, David L.; and Zunker, MaryAnn, 5,509,915, Cl. 604-378.000.

Grundel, Manfred, to Fichtel & Sachs AG. Shock absorber with adjustable damping with controlled damping characteristics. 5,509,512, Cl. 188-284.000.

Grycewicz, Thomas J.; Khoury, Jehad; and Woods, Charles L., to United States of America, Air Force. Joint transform correlator using temporal discrimination. 5,511,019, Cl. 364-822.000.

Gu, Wen-Jian; and Liu, Rui, to Philips Electronics North America Corporation. High frequency push-pull converter with input power factor correction. 5,510,974, Cl. 363-134.000.

Guardiola, Béatrice. *See—*
Guillaumet, Gérard; and Guardiola, Béatrice, 5,510,374, Cl. 514-456.000.

Guazzieri, Stefano: *See—*
Cecchetti, Walter; and Guazzieri, Stefano, 5,509,917, Cl. 606-15.000.

Gubernator, Klaus: *See—*
Hubschwerlen, Christian; Charnas, Robert; Heinze, Ingrid; and Gubernator, Klaus, 5,510,343, Cl. 514-210.000.

Guckian, Robert C.: *See—*
Blecha, Bill A.; Coty, Thomas; Curry, John J.; Graves, Howard T.; Guckian, Robert C.; Hall, John M.; McDowell, Samuel B.; Nguyen, Steve H.; Samuels, Raemon N.; Smith, Thomas E.; Wiedmann, Joseph J.; and Wright, Richard A., 5,510,618, Cl. 250-332.000.

Guenther, Werner: *See—*
Doebert, Michael; Guenther, Werner; Schulze-Ganzlin, Ulrich; Ploetz, Joseph; Huebeck, Erich; and Franetzk, Manfred, 5,511,106, Cl. 378-146.000.

Gueret, Jean-Louis H., to L'Oreal. Head for dispensing a product, particularly a pasty product, and dispensing equipped with this head. 5,509,584, Cl. 222-321.700.

Gugsch, Mathias: *See—*
Carstens, Udo; and Gugsch, Mathias, 5,509,643, Cl. 267-140.120.

Guichard, Jacques; and Eude, Gérard, to France Telecom. Process for synchronizing the scanning circuit of an image display device. 5,510,846, Cl. 348-511.000.

Guild Associates, Inc.: *See—*
Fink, David J.; Ward, Thomas J.; and Preston, Joel C., 5,510,066, Cl. 264-40.100.

Guilford Pharmaceuticals Inc.: *See—*
Hamilton, Gregory S., 5,510,338, Cl. 514-82.000.

Guillaumet, Gérard; and Guardiola, Béatrice, to Adir et Compagnie. 3-aminochroman compounds. 5,510,374, Cl. 514-456.000.

Guiol, Georges: *See—*
Pierson, Benoit; Guiol, Georges; and Limon, Florence, 5,510,991, Cl. 364-434.000.

Gula, Lance; and Whipple, Michael J., to Eaton Corporation. Miniature circuit breaker with ground fault electronics supported by stiff conductors for easy assembly. 5,510,759, Cl. 335-18.000.

Gunawan, Iwan: *See—*
Malamas, Michael S.; and Gunawan, Iwan, 5,510,360, Cl. 514-364.000.

Guo, I-Hong. Combination handbag. 5,509,515, Cl. 190-110.000.

Gurley, Sally, to Allegro Natural Dyes LLC. Mordant composition for natural dye processes. 5,509,941, Cl. 8-625.000.

Guthry, Joe M. Position indicator device for golf clubs. 5,509,657, Cl. 273-162.000.

Gutsmuths, Eckhard: *See—*
Bassler, Wolfgang; Gutsmuths, Eckhard; Kleinschnittger, Hans; and Mannes, Wolfgang, 5,510,039, Cl. 210-703.000.

Gwilliam, Douglas G.; and Norman, David G. Tools for dental work. 5,509,803, Cl. 433-166.000.

H B. Fuller Licensing & Financing, Inc.: *See—*
Meyer, Paul J.; and Spinks, Anne, 5,509,984, Cl. 156-107.000.

Meyer, Paul J.; and Spinks, Anne, 5,510,416, Cl. 524-528.000.

H Power Corporation: *See—*
Werth, John, 5,510,201, Cl. 429-17.000.

Ha, Dong-In, to Samsung Electronics Co., Ltd. Radio-frequency output level compensating circuit of portable radio transceiver. 5,511,234, Cl. 455-127.000.

Haarmann & Reimer GmbH: *See—*
Hopp, Rudolf; and Rabenhorst, Jürgen, 5,510,252, Cl. 435-146.000.

Habicht, Helmut. Axially extendible conduit. 5,509,698, Cl. 285-302.000.

Hachisuka, Hisao; Kojima, Katsuhide; Nakazono, Yutaka; Hirose, Masahiko; Kihara, Yasuo; Maeda, Masatoshi; Ikebata, Hisashi; and Matsumoto, Kenji, to Nitto Denko Corporation. Acid chloride. 5,510,527, Cl. 562-867.000.

Hackenberg, John H.: *See—*
Schneider, Christian; Hackenberg, John H.; and Clark, Aaron P., 5,509,704, Cl. 292-163.000.

Hacking, Duncan, to Tapeswitch Corporation of America. Switch joint for electrical switching mats. 5,510,586, Cl. 200-86.000.

Hadowanetz, Alison E.: *See—*
O'Young, Chi-Lin; Pellet, Regis J.; Hadowanetz, Alison E.; Hazen, John; and Browne, James E., 5,510,560, Cl. 585-671.000.

Hagan, Virginia B.: *See—*
Zigelboim, Ilan; and Hagan, Virginia B., 5,509,165, Cl. 15-230.110.

Hagen, Susan E.: *See—*
Domagala, John M.; Hagen, Susan E.; Lunney, Elizabeth; and Tait, Bradley D., 5,510,375, Cl. 514-457.000.

Hagenauer, Joachim, to Deutsche Forschungsanstalt für Luft- und Raumfahrt e.V. Method for source-controlled channel decoding by expanding the Viterbi algorithm. 5,511,081, Cl. 371-43.000.

Hageniers, Omer L.: *See—*
Pryor, Timothy R.; Hockley, Bernard; Liptay-Wagner, Nick; Hageniers, Omer L.; and Pastorius, W. J., 5,510,625, Cl. 250-559.230.

Hagiwara, Shinsuke: *See—*
Sue, Haruaki; Hagiwara, Shinsuke; and Saitoh, Hiroyuki, 5,510,446, Cl. 528-153.000.

Hagiwara, Yoshimune: *See—*
Akao, Yasushi; Baba, Shiro; Sawase, Terumi; and Hagiwara, Yoshimune, 5,511,211, Cl. 395-800.000.

Hagmann, William: *See—*
Graham, Donald W.; Aster, Susan D.; Hagmann, William; and Tolman, Richard L., 5,510,485, Cl. 544-336.000.

Haider, Karl W.; Slack, William E.; Adkins, Rick L.; Rosthauser, James W.; and Markus, Peter H., to Bayer Corporation. Process for castable polyurea elastomers. 5,510,445, Cl. 528-60.000.

Haidos, John C.: *See—*
Kumar, Ramesh C.; Arudi, Ravindra L.; Carlson, James G.; Chang, Daniel Y.; Haidos, John C.; Modert, Keith J.; Patel, Suman K.; and Rott, Nelson T., 5,510,187, Cl. 428-425.900.

Haines, Barry S.: *See—*
Breithaupt, Howard K.; and Haines, Barry S., 5,509,606, Cl. 239-130.000.

Hale, Gregory E.: *See—*
Foley, Peter F.; and Hale, Gregory E., 5,510,851, Cl. 348-658.000.

Halkey-Roberts Corporation: *See—*
Weinheimer, Jack M.; Taylor, Michael T.; and Boe, Richard A., 5,509,576, Cl. 222-5.000.

Hall, Arthur, III, to General Motors Corporation. Dual-motor electric drive system for vehicles. 5,509,491, Cl. 180-9.440.

Hall, Arthur, III, to General Motors Corporation. Planet gear assembly with a planetary carrier. 5,509,865, Cl. 475-340.000.

Hall, David: *See—*
Flatau, Alison; and Hall, David, 5,510,660, Cl. 310-26.000.

Hall, John C.; and Leon, Juan F., to Space Systems/Loral, Inc. Composite battery cell sleeve. 5,510,208, Cl. 429-164.000.

Hall, John M.: *See—*
Blecha, Bill A.; Coty, Thomas; Curry, John J.; Graves, Howard T.; Guckian, Robert C.; Hall, John M.; McDowell, Samuel B.; Nguyen, Steve H.; Samuels, Raemon N.; Smith, Thomas E.; Wiedmann, Joseph J.; and Wright, Richard A., 5,510,618, Cl. 250-332.000.

Hall, Terry, to Connection Technology Ltd. System for measuring the torque applied to a threaded connection between sections of oilfield pipe. 5,509,316, Cl. 73-862.250.

Hall, William B.: *See—*
Schantz, David L., Jr.; Hall, William B.; Winkel, William B.; and Lansberry, Geoffrey B., 5,510,725, Cl. 324-768.000.

Hallenstvedt, Oddbjörn; Skogman, Kaj; and Kristiansson, Bo, to AB Volvo Penta. Transmission device, especially a reverse gear for boats. 5,509,323, Cl. 74-378.000.

Hallgren, Leif, to Alfa Laval Thermal AB. Distribution pattern of a plate heat exchanger. 5,509,471, Cl. 165-167.000.

Halliburton Company: *See—*
Birchak, James R.; Lifson, Alexander; Linyaev, Eugene J.; Minear, John W.; Roessler, Dennis E.; and Young, David J., 5,510,582, Cl. 181-102.000.

Boyd, Charles L.; and Stewart, Joseph A., 5,509,434, Cl. 137-8.000.

Vick, James D., Jr., 5,509,476, Cl. 166-75.130.

Halpaap, Reinhard; Meier-Westhues, Hans-Ulrich; Wamprecht, Christian; Bock, Manfred; Schultz, Wolfgang; and Kahl, Lothar, to Bayer Aktiengesellschaft. Powder coating compositions and their use for coating heat-resistant substrates. 5,510,444, Cl. 528-45.000.

Hamada, Hiroyuki; Tsujide, Tohru; and Sugimoto, Masaaki, to NEC Corporation. Automatic LSI testing apparatus using expert system. 5,511,162, Cl. 395-183.020.

Hamada, Shinji; Takata, Kanji; Yokota, Akinori; Matsuda, Hiromu; and Ikoma, Munehisa, to Matsushita Electric Industrial Co., Ltd. Cell and module battery of sealed alkaline storage battery. 5,510,203, Cl. 429-53.000.

Hamada, Toshimichi: *See—*
Ohia, Masashi; Kobayashi, Hiroshi; Sekiya, Tsuneo; Hamada, Toshimichi; Fukuda, Kyoko; and Iijima, Koji, 5,510,830, Cl. 348-36.000.

Hamaji, Yukio: *See—*
Sano, Harunobu; and Hamaji, Yukio, 5,510,305, Cl. 501-138.000.

Hamamatsu Photonics K.K.: *See—*
Kyushima, Hiroyuki; Nagura, Koji; Hasegawa, Yutaka; Kawano, Eiichiro; Kuroyanagi, Tomihiko; Atsumi, Akira; and Mizuide, Masuya, 5,510,674, Cl. 313-533.000.

Suzuki, Hideki; and Uchiyama, Shoichi, 5,510,588, Cl. 250-207.000.

Hann, Richard A.; and Mcallister, Kenneth A. D., to Imperial Chemical Industries PLC. Thermal transfer printing dyesheet. 5,510,313, Cl. 503-227.000.

Hanna, Michael D.; and Rashid, Moinuddin S., to General Motors Corporation. Brake system zinc-base alloy components. 5,509,728, Cl. 303-115.200.

Hanrahan, Michael J.: *See—*
Prince, Eric T.; Hanrahan, Michael J.; and Wilson, Sharlene A., 5,510,215, Cl. 430-7.000.

Hansen, David R.: *See—*
Beaudet, Douglas B.; Hansen, David R.; and Tompkins, Michael P., 5,511,150, Cl. 395-113.000.

Hansen, Geir S., to Viking Imports, Inc. Luge sled. 5,509,665, Cl. 280-22.100.

Hanson, William D.; Brud, Lynn C.; Byerly, Shannon K.; Ellis, Clifford J.; Everett, Rob D.; Gossen, Barbara A.; Grube, Violet M.; Iwanski, David G.; LeMahieu, David L.; Qin, Jian; Stevens, Robert A.; Wentzel, Tom K.; Yarbrough, Sandra M.; Zenker, David L.; and Zunker, MaryAnn, to Kimberly-Clark Corporation. Thin absorbent article having rapid uptake of liquid. 5,509,915, Cl. 604-378.000.

Hantle, Edward A., deceased (by Kathleen A. Hantle, personal representative); Woodward, Orrin A.; Harris, David E.; and Fischer, John G., to General Motors Corporation. Fuel pump for motor vehicle. 5,509,778, Cl. 415-55.100.

Hantle, Kathleen A., personal representative: *See—*
Hantle, Edward A., deceased; Woodward, Orrin A.; Harris, David E.; and Fischer, John G., 5,509,778, Cl. 415-55.100.

Hanyu, Yukio: *See—*
Asaoka, Masanobu; Takao, Hideaki; Hanyu, Yukio; and Kojima, Makoto, 5,510,159, Cl. 428-1.000.

Hanzlik, Cheryl A.: *See—*
Nash, Robert J.; Hanzlik, Cheryl A.; Muller, Richard N.; and Hodgson, Richard J., 5,510,220, Cl. 430-106.000.

Hao, Yu. Cartridge for automatic pencil. 5,509,743, Cl. 401-65.000.

Hara, Hideki, to NEC Corporation. Method for manufacturing a nonvolatile semiconductor memory device using a residual sidewall film. 5,510,282, Cl. 437-43.000.

Hara, Keisuke: *See—*
Tung, Kenny S. C.; Harvey, John; Kida, Yasuo; Derossi, Christopher S.; Hara, Keisuke; and Miyatake, Nobuhiro, 5,511,193, Cl. 395-650.000.

Harabuchi, Takashi: *See—*
Yano, Seinosuke; Moriyama, Koh; Harabuchi, Takashi; Nakano, Yoshikazu; Mochiki, Hiroshi; and Nagata, Kimio, 5,509,977, Cl. 148-328.000.

Harada, Eiichi: *See—*
Ito, Seiya; Hirao, Motoaki; Shiraha, Michihiro; Nozoe, Shunpei; Kawamura, Kazuyoshi; Fujii, Kenichi; Harada, Eiichi; Ino, Tatsuo; Uozumi, Masahiro; and Abe, Tetsuo, 5,509,264, Cl. 60-39.120.

Harada, Shigeru: *See—*
Fujiki, Noriaki; Harada, Shigeru; Adachi, Hiroshi; and Adachi, Etsushi, 5,510,653, Cl. 257-759.000.

Harada, Tomofumi: *See—*
Hayashi, Masayuki; Mitekura, Yoshihiro; Kanaya, Koichi; Terao, Masato; Tagawa, Toshiya; Tomidokoro, Nobuaki; Kitayama, Masahiro; Kizaki, Osamu; Kawada, Yasuo; Nakahara, Kazuki; Harada, Tomofumi; and Hashimoto, Yasunari, 5,510,876, Cl. 355-202.000.

Harano, Yoshiyuki; Namai, Sozo; Maeda, Katsuyuki; and Murai, Takaaki, to Dai Chemical Industries, Ltd. Compositions, epoxidized compositions, a heat curable resin composition, an epoxy resin composition, radically polymerized compositions, a curable resin composition and a polymer having epoxy groups. 5,510,428, Cl. 525-438.000.

Harden, James A., Jr.: *See—*
Huppenthal, Jon M.; Garcia, Steven E.; Harden, James A., Jr.; and Herzog, Catherine A., 5,509,827, Cl. 439-638.000.

Harima, Yoshihiko: *See—*
Inoue, Yoshiaki; Murabayashi, Shigeru; Yoshikawa, Yoshio; Nagasaka, Takeshi; Harima, Yoshihiko; and Yoshino, Isamu, 5,510,166, Cl. 428-76.000.

Harman, John R.: *See—*
Dammeyer, Ned E.; and Harman, John R., 5,509,509, Cl. 188-164.000.

Harman, Robert K.; and Gagnon, André, to Auratek Security Inc. Intrusion detection system. 5,510,766, Cl. 340-552.000.

Harmer, Roland G.: *See—*
Gouldson, Stanley F.; and Harmer, Roland G., 5,509,587, Cl. 223-91.000.

Harms, Dale N. Speed layout stick. 5,509,207, Cl. 33-41.400.

Harnsberger, Fritz D.: *See—*
Grendahl, Dennis T.; and Harnsberger, Fritz D., 5,509,903, Cl. 604-187.000.

Harper, James M. E.: *See—*
Cabral, Cyril, Jr.; Clevenger, Lawrence A.; d'Heurle, Francois M.; Harper, James M. E.; Mann, Randy W.; Miles, Glen L.; and Rakowski, Donald W. D., 5,510,295, Cl. 437-200.000.

Harper, John: *See—*
Polarek, James; Tamura, Richard; and Harper, John, 5,510,328, Cl. 514-8.000.

Harris, David E.: *See—*
Hantle, Edward A., deceased; Woodward, Orrin A.; Harris, David E.; and Fischer, John G., 5,509,778, Cl. 415-55.100.

Harris, Gregory D., to Du Pont Merck Pharmaceutical Company, The. Process for the isolation and purification of ester functionalized imidazole intermediates by selective hydrolysis. 5,510,495, Cl. 548-334.500.

Harris, Gregory D., to Du Pont Merck Pharmaceutical Company, The. Process for the isolation and purification of ester functionalized imidazole intermediates by selective hydrolysis. 5,510,495, Cl. 548-334.500.

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- Regnat, Dieter; and Kleiner, Hans-Jerg, 5,510,554, Cl. 585-466.000.
- Strutz, Heinz, 5,510,512, Cl. 560-186.000.
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- Hatke, Wilfried, 5,510,455, Cl. 528-310.000.
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- Hornung, Craig W.; and Bair, William H., to Whitaker Corporation. The Power crimping tool for tape feed products. 5,509,194, Cl. 29-751.000.
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Wu, Peter, 5,510,574, Cl. 174-35.000.

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Ge, Shichao; Huang, Xi; and Ge, Xiaojin, 5,510,915, Cl. 359-59.000.

Huang, Zheng; and Heegard, Chris, to GI Corporation. Quadrature amplitude modulated data for standard bandwidth television channel. 5,511,096, Cl. 375-265.000.

Huber, Klaus B.; and Hromas, Joe C., to Schlumberger Technology Corporation. Method of perforating including an automatic release apparatus suspending by wireline or coiled tubing in a wellbore for perforating a long length interval of the wellbore in a single run using a gun string longer than a wellhead lubricator. 5,509,481, Cl. 166-297.000.

Hubschwerlen, Christian; Charnas, Robert; Heinze, Ingrid; and Gubernator, Klaus, to Hoffmann-La Roche Inc. Bicyclic and tricyclic β -lactams. 5,510,343, Cl. 514-210.000.

Hudimac, Paul V., to Mechanical Service Co., Inc. Machine-set modular-fixturing system. 5,509,214, Cl. 33-642.000.

Huebeck, Erich: See—
Doebert, Michael; Guenther, Werner; Schulze-Ganzlin, Ulrich; Ploetz, Joseph; Huebeck, Erich; and Franetzi, Manfred, 5,511,106, Cl. 378-146.000.

Huels Aktiengesellschaft: See—
Jadamus, Hans; and Röber, Stefan, 5,510,160, Cl. 428-36.910.

Sauer, Thomas, 5,510,399, Cl. 523-335.000.

Huffman, William A.: See—
Brennan, John; Hsu, Peter Y.; Huffman, William A.; Rodman, Paul; Scanlon, Joseph T.; Tang, Man K.; and Ciavaglia, Steve J., 5,510,934, Cl. 395-446.000.

Hufnagl, Walter: See—
Klawuhn, Manfred; Hufnagl, Walter; Müller, Roland; Schäfer, Gerhard; and Peter, Andreas, 5,509,348, Cl. 99-290.000.

Hughes Aircraft Company: See—
Castelaz, Patrick F., 5,511,218, Cl. 395-800.000.

Dillon, Douglas, 5,511,079, Cl. 371-43.000.

Farb, Joseph E.; Chang, Chen-chi P.; and Li, Mei F., 5,511,036, Cl. 365-185.100.

Sanfleben, Henry M.; Rosson, James M.; and Hermansen, Ralph D., 5,510,138, Cl. 427-96.000.

Whitty, James; and Ross, Brian, 5,510,935, Cl. 359-822.000.

Hughes, John C.: See—
Leaf, Curtis D.; Drozdik, Larry N.; Hughes, John C.; and Klejeski, Anthony T., 5,509,393, Cl. 123-529.000.

Hulls Aktiengesellschaft: See—
Steffen, Klaus-Dieter, 5,510,509, Cl. 560-124.000.

Humanetics Corporation: See—
Graves, Frederic A.; and Gallaher, Daniel D., 5,510,551, Cl. 585-351.000.

Humber, Kurt; and Moench, Uwe, to Hofmann Werkstatt-Technik GmbH. Mechanical drive arrangement for a measuring spindle of a wheel balancing machine. 5,509,307, Cl. 73-487.000.

Humer, Mladen: See—
Kolená, David P.; Glinski, Paul A.; Crane, Robert S.; Humer, Mladen; Viano, David C.; and Neely, Richard J., 5,509,716, Cl. 297-216.130.

Humerickhouse, Rod A.: See—
Gerzon, Koert; Humerickhouse, Rod A.; Besch, Henry R., Jr.; and Bidasee, Keshore R., 5,510,500, Cl. 552-8.000.

Hummel, Sean P., to Pilot Industries, Inc. Precocked quick connect fluid coupling having a v-shaped holding ring. 5,509,695, Cl. 285-23.000.

Hunt, Loren W.: See—
Gleich, Gerald J.; Ohnishi, Tsukasa; and Hunt, Loren W., 5,510,339, Cl. 514-171.000.

Hunter, Douglas P.: See—
Rodger, Christopher E.; and Hunter, Douglas P., 5,510,969, Cl. 362-321.000.

Hunter, Robert O., Jr.; Smith, Adlai H.; and McArthur, Bruce B., to Litel Instruments. Direct etch processes for the manufacture of high density multichip modules. 5,509,553, Cl. 216-13.000.

Huppenthal, Jon M.; Garcia, Steven E.; Harden, James A., Jr.; and Herzog, Catherine A., to Cray Computer Corporation. High density, high bandwidth, coaxial cable, flexible circuit and circuit board connection assembly. 5,509,827, Cl. 439-638.000.

Hurley, Donna C.; Gilmore, Robert S.; and Young, John D., to General Electric Company. Eddy current surface inspection probe for aircraft fastener inspection, and inspection method. 5,510,709, Cl. 324-242.000.

Husain, Zaki D.; Zenger, Helmut; Goodson, F. Dale; and Wass, Donald J., to Daniel Industries, Inc. Closely coupled, dual turbine volumetric flow meter. 5,509,305, Cl. 73-195.000.

Hüsler, Rinaldo: See—
Bermer, Godwin; Sitek, Franciszek; and Hüsler, Rinaldo, 5,510,539, Cl. 568-376.000.

Hussein, Fathi D.: See—
Baker, Edgar C.; Cevallos-Candau, Jose F.; Hussein, Fathi D.; Lee, Kiu H.; and Noshay, Allen, 5,510,433, Cl. 526-74.000.

Hutchinson, Mark W.: See—
Randall, Russel R.; Schneider, David M.; Hutchinson, Mark W.; and Hobart, Steven L., 5,511,037, Cl. 367-33.000.

Huthmacher, Winfried: See—
Kahrs, Manfred; Kunz, Gerhard; Fleck, Franz; Krines, Hans-Gebhard; Peterknecht, Walter; and Huthmacher, Winfried, 5,509,383, Cl. 123-90.120.

Hux, Guido, to GEC Alsthom T&D AG. Multipole switch with common polyphase operating mechanism characterized by staggered connection or disconnection. 5,510,590, Cl. 218-6.000.

Huxley, Graham A.: See—
Joice, Gary T. C.; and Huxley, Graham A., 5,509,807, Cl. 434-226.000.

Hybridon, Inc.: See—
Agrawal, Sudhir; and Tang, Jin-Yan, 5,510,475, Cl. 536-24.300.

Hyde, Robert E. Apparatus for dehumidifying air in an air-conditioned environment with climate control system. 5,509,272, Cl. 62-176.500.

Hydro-Life, Inc.: See—
Cripe, Gerry D., 5,509,605, Cl. 239-33.000.

Hydrochem Developments Ltd.: See—
Schneider, John C., 5,509,535, Cl. 209-169.000.

Hyundai Electronics Ind. Co., Ltd.: See—
Song, Yong Il, 5,510,880, Cl. 355-228.000.

Hyundai Electronics Industries Co. Ltd.: See—
Choi, Yang K., 5,510,289, Cl. 437-60.000.

Jung, Chang H., 5,511,033, Cl. 365-222.000.

Kim, Jae K., 5,510,286, Cl. 437-50.000.

Kwon, Sung K., 5,510,290, Cl. 437-69.000.

Nam, Jong G., 5,511,028, Cl. 365-200.000.

Park, Hae S., 5,509,995, Cl. 156-643.100.

Park, Tae-Jung, 5,510,682, Cl. 315-370.000.

Hyzer, Susan M.: See—
Pasucci, Gregory A.; Rasmussen, David E.; Decious, Gaylon M.; Garbe, James R.; Hyzer, Susan M.; Woest, Karen L.; Vairavan, Vairavan; Koch, David L.; Gottschalk, Donald A., Jr.; Burkhardt, Dennis E.; Standish, Darrell E.; Madaus, Paul W.; Spacek, Dan J.; Nesler, Clay G.; Stark, James K.; Mageland, Otto M.; Singers, Robert R.; and Wagner, Michael E., 5,511,188, Cl. 395-600.000.

I.M.A. Industria Macchine Automatiche S.p.A.: See—
Tagliaferri, Roberto; Giancarlo, Franceschi; and Marzocchi, Paolo, 5,509,257, Cl. 53-566.000.

I/O Exploration Products (U.S.A.), Inc.: See—
Corrigan, Michael A., 5,510,577, Cl. 174-74.00R.

Ichiba, Akihiko: See—
Kikuta, Shinji; Fukuda, Motoyuki; Nagata, Tsutomu; Nishino, Toshio; and Ichiba, Akihiko, 5,510,882, Cl. 355-245.000.

Ichihara, Kazuo; and Izuta, Shingo, to Funai Electric Co., Ltd. CD-ROM (compact disc read-only memory) regenerative unit. 5,511,001, Cl. 364-514.00R.

Ichikawa, Reiko; Ikenoue, Yoshiaki; and Wudl, Fred, to Showa Denko K. K. Bridged cyclic arleneethylene polymers. 5,510,456, Cl. 528-377.000.

Ichikawa, Youhei: See—
Okuda, Yasushi; Odake, Yoshinori; Nakao, Ichiro; and Ichikawa, Youhei, 5,510,639, Cl. 257-317.000.

Ideal Ideas, Inc.: See—
Glynn, Kenneth P., 5,509,580, Cl. 222-153.100.

Ideal-Standard GmbH: See—
Bergmann, Konrad; and Läller, Klaus J., 5,509,150, Cl. 4-691.000.

Idemitsu Kosan Co., Ltd.: See—
Takeuchi, Mizutomo, 5,510,434, Cl. 526-152.000.

Idemitsu Petrochemical Co., Ltd.: See—
Okamoto, Masaya; and Chiba, Jiro, 5,510,414, Cl. 524-494.000.

Idosaka, Hidetaka; and Masuno, Takatsugu, to Kabushiki Kaisha Somic Ishikawa. Ball joint. 5,509,748, Cl. 403-133.000.

Igarashi, Lawrence Y. Golf club head with integrally cast sole plate. 5,509,659, Cl. 273-169.000.

Igarashi, Osamu: See—
Sano, Masakatsu; Katsuura, Nobuo; Igarashi, Osamu; Nakayama, Atsushi; Imamura, Toshihide; and Kadotani, Kanichi, 5,510,195, Cl. 428-613.000.

Igarashi, Tatsushi: See—
Hiramoto, Tatsumi; Igarashi, Tatsushi; Matsuno, Hiromitsu; Matsushima, Takeo; and Iso, Shinichi, 5,510,158, Cl. 427-582.000.

IGP, Research and Development Ltd.: See—
Yomdin, Yosef; Elihai, Yoram; and Briskin, Miriam, 5,510,838, Cl. 348-384.000.

Ihara, Takeshi: See—
Hamano, Hiroshi; Amemiya, Izumi; Yamamoto, Takuji; Kitagami, Hiro; and Ihara, Takeshi, 5,510,745, Cl. 327-333.000.

Ihm, Mark K., to Kelsey-Hayes Company. Composite disc brake rotor and method for producing same. 5,509,510, Cl. 188-219 X.00L.

Iijima, Koji: See—
Ohia, Masashi; Kobayashi, Hiroshi; Sekiya, Tsuneo; Hamada, Toshimichi; Fukuda, Kyoko; and Iijima, Koji, 5,510,830, Cl. 348-36.000.

Iijima, Masakazu: See—
Hongo, Kazuya; Nakada, Katsumi; Iijima, Masakazu; Takahashi, Noriyoshi; Suwabe, Masaaki; and Takimoto, Hitoshi, 5,510,217, Cl. 430-58.000.

Iijima, Sadafumi: See—
Fukushima, Kiyoto; Iijima, Sadafumi; and Tsunoda, Motoyuki, 5,510,179, Cl. 428-323.000.

Iino, Tadashi, to Yazaki Corporation. On-vehicle display. 5,510,983, Cl. 364-424.010.

Iinuma, Toshihiko: See—
Nakajima, Hiroomi; Katsumata, Yasuhiro; Iwai, Hiroshi; Iinuma, Toshihiko; Inou, Kazumi; Kitagawa, Mitsuhiro; Morizuka, Kouhei; Nakagawa, Akio; and Omura, Ichiro, 5,510,647, Cl. 257-559.000.

Iiyama, Michitomo: See—
Nakamura, Takao; Inada, Hiroshi; and Iiyama, Michitomo, 5,509,183, Cl. 29-25.010.

Nakamura, Takao; Iiyama, Michitomo; and Inada, Hiroshi, 5,510,324, Cl. 505-330.000.

Ikebata, Hisashi: See—
Hachisuka, Hisao; Kojima, Katsuhide; Nakazono, Yutaka; Hirose, Masahiko; Kihara, Yasuo; Maeda, Masatoshi; Ikebata, Hisashi; and Matsumoto, Kenji, 5,510,527, Cl. 562-867.000.

Ikedo, Kaori: See—
Matsuura, Hidekazu; Iwasaki, Yoshihide; Ikeda, Kaori; Suzuki, Takayuki; Tanaka, Masashi; and Miyadera, Yasuo, 5,510,425, Cl. 525-423.000.

Ikeda, Yasushi: See—
Ono, Nobuyuki; Hayashi, Yoshihisa; Kisuki, Atsushi; and Ikeda, Yasushi, 5,510,792, Cl. 342-4.000.

Ikeda, Yoshihiko; Yamane, Takeo; Kaji, Eiichi; and Ishimaru, Kenji, to Tosoh Akzo Corporation. Production method of tris(pentafluorophenyl)borane using pentafluorophenylmagnesium derivatives prepared from pentafluorobenzene. 5,510,536, Cl. 568-6.000.

Ikeda, Yukio: See—
Takematsu, Tetsuo; Kume, Takashi; Komata, Takeo; Suzuki, Kiyoshi; Ikeda, Yukio; Kawamura, Matsue; and Mori, Kaoru, 5,510,317, Cl. 504-147.000.

Ikemoto, Isao: See—
Noda, Shinya; Sekine, Kazumi; Tsuda, Tadayuki; Ikemoto, Isao; Watanabe, Kazushi; Sasago, Yoshikazu; Kobayashi, Kazunori; and Sasaki, Shinichi, 5,510,878, Cl. 355-211.000.

Ikenoue, Yoshiaki: See—
Ichikawa, Reiko; Ikenoue, Yoshiaki; and Wudl, Fred, 5,510,456, Cl. 528-377.000.

Ikeuchi, Toshihiro: See—
Hirabayashi, Yoshinori; Ikeuchi, Toshihiro; Kato, Susumu; Miyazawa, Takeshige; and Nakamura, Kanji, 5,510,321, Cl. 504-289.000.

Ikoma, Munehisa: See—
Hamada, Shinji; Takata, Kanji; Yokota, Akinori; Matsuda, Hiromu; and Ikoma, Munehisa, 5,510,203, Cl. 429-53.000.

Ilgmann, Wilhelm: See—
Kaule, Wittich; Ilgmann, Wilhelm; Schwenk, Gerhard; and Stenzel, Gerhard, 5,509,691, Cl. 283-67.000.

Illinois Tool Works Inc.: See—
Broskow, James A., 5,509,884, Cl. 493-346.000.

Gross, Peter L., 5,509,317, Cl. 73-862.632.

Larson, Paul M.; and Egan, Donald H., 5,509,769, Cl. 411-456.000.

Image Design & Marketing: See—
Berger, Howard H.; Yamron, Gary T.; and Perkins, Richard, 5,509,656, Cl. 273-153.00R.

Imai, Eiichi: See—
Kukimoto, Tsutomu; Yusa, Hiroshi; Tomiyama, Koichi; Takiguchi, Tsuyoshi; Imai, Eiichi; Kuribayashi, Tetsuya; Ochi, Hisayuki; and Suetatsu, Hiroyuki, 5,510,223, Cl. 430-126.000.

Imai, Motomasa; Shutoh, Naoki; Oh-Ishi, Katsuyoshi; Ueno, Fumio; Ohkuma, Hideo; Katsumura, Yuji; Kobayashi, Masaki; and Takahashi, Toshiyuki, to Kabushiki Kaisha Toshiba; and Toshiba Tungaloy Co., Ltd. Metal oxide resistor, power resistor, and power circuit breaker. 5,509,558, Cl. 218-143.000.

Imai, Takashi: See—
Agata, Takeshi; and Imai, Takashi, 5,510,219, Cl. 430-106.000.

Imai, Yuji: See—
Mizutani, Hideo; Amano, Kesayoshi; Wakamoto, Shinji; and Imai, Yuji, 5,510,892, Cl. 356-139.100.

Imamura, Toshihide: See—
Sano, Masakatsu; Katsuura, Nobuo; Igarashi, Osamu; Nakayama, Atsushi; Imamura, Toshihide; and Kadotani, Kanichi, 5,510,195, Cl. 428-613.000.

Imken, Ronald L.: See—
Franken, Jerome A.; Franken, Richard F.; Imken, Ronald L.; and Vanderlee, Keith A., 5,509,200, Cl. 29-852.000.

Imperial Chemical Industries PLC: See—
Hann, Richard A.; and Mcallister, Kenneth A. D., 5,510,313, Cl. 503-227.000.

Stewart, Ronald F.; Welburn, David J.; Welsh, David M.; and Greenhorn, Robert C., 5,509,355, Cl. 102-275.800.

Inaba, Kohji; Nakamura, Tatsuya; Chiba, Tatsuhiko; and Ishiyama, Takao, to Canon Kabushiki Kaisha. Toner for developing electrostatic image and process for production thereof. 5,510,222, Cl. 430-109.000.

Inada, Hiroshi: See—
Nakamura, Takao; Inada, Hiroshi; and Iiyama, Michitomo, 5,509,183, Cl. 29-25.010.

Nakamura, Takao; Iiyama, Michitomo; and Inada, Hiroshi, 5,510,324, Cl. 505-330.000.

Inagaki, Masashi: See—
Utsumi, Shigeo; Inagaki, Masashi; and Watanuki, Yuko, 5,510,192, Cl. 428-480.000.

InControl, Inc.: See—
Adams, John M.; and Allerness, Clifton A., 5,509,925, Cl. 607-5.000.

Incze, Mária: See—
Tuba, Zoltán; Mahó, Sándor; Gere, Anikó; Vittay, Pál; Kiss, Béla; Pálosi, Éva; Szeporny, László; Szántay, Csaba; Soti, Ferenc; Baloghné Kardos, Zsuzsa; Incze, Mária; Balogh, Gábor; and Gazdag, Mária, 5,510,345, Cl. 514-218.000.

Indiana University Foundation: See—
Gerzon, Koert; Humerickhouse, Rod A.; Besch, Henry R., Jr.; and Bidasee, Keshore R., 5,510,500, Cl. 552-8.000.

Reilly, James P.; Colby, Steven M.; and King, Timothy B., 5,510,613, Cl. 250-287.000.

Industrial Control Development, Inc.: See—
Vockler, Larry D., 5,510,188, Cl. 428-426.000.

Industrial Technology Research Institute: See—
Huang, Jammy C.; and Liu, David N., 5,509,840, Cl. 445-24.000.
Jau-Jiu, Ju; and Jinn-Kang, Wang, 5,511,060, Cl. 369-118.000.
Liu, David N., 5,509,839, Cl. 445-24.000.

Information Optics Corporation: See—
Russell, James T., 5,511,035, Cl. 365-234.000.

Information Resources, Inc.: See—
Douglass, Ralph G.; and Furman, Arthur R., 5,510,859, Cl. 348-731.000.

Ingwersen, Peter, to Molex Incorporated. Wire position shifting mechanism and method of assembling wire harnesses. 5,509,201, Cl. 29-861.000.

Innes, Mark E., to Eaton Corporation. Duty cycle filtered trip signalling. 5,510,949, Cl. 361-93.000.

Ino, Tatsuo: See—
Ito, Seiya; Hirao, Motoaki; Shiraha, Michihiro; Nozoe, Shunpei; Kawamura, Kazuyoshi; Fujii, Kenichi; Harada, Eiichi; Ino, Tatsuo; Uozumi, Masahiro; and Abe, Tetsuo, 5,509,264, Cl. 60-39.120.

Ineki, Satoshi; Takesue, Mitsuyuki; Hashimoto, Isao; Kihara, Noriaki; and Sugi, Kiyooki, to Mitsui Petrochemical Industries, Ltd. Process for preparing N,O-dialkylhydroxylamine, its salts or intermediates in their synthesis. 5,510,511, Cl. 560-157.000.

Inou, Kazumi: See—
Nakajima, Hiroomi; Katsumata, Yasuhiro; Iwai, Hiroshi; Jinuma, Toshihiko; Inou, Kazumi; Kitagawa, Mitsuhiro; Morizuka, Kouhei; Nakagawa, Akio; and Omura, Ichiro, 5,510,647, Cl. 257-559.000.

Inoue, Akihisa: See—
Kojima, Akinori; Hangai, Katsuki; Yoshida, Shoji; Makino, Akihiro; Masumoto, Tsuyoshi; and Inoue, Akihisa, 5,509,975, Cl. 148-104.000.

Masumoto, Tsuyoshi; Inoue, Akihisa; and Horio, Yuma, 5,509,978, Cl. 148-403.000.

Inoue, Akihisa: See—
Kojima, Akinori; Hangai, Katsuki; Yoshida, Shoji; Makino, Akihiro; Masumoto, Tsuyoshi; and Inoue, Akihisa, 5,509,975, Cl. 148-104.000.

Inoue, Kaoru: See—
Fujita, Suguru; Takahashi, Kazuaki; Sagawa, Morikazu; Sakai, Hiroyuki; Ota, Yorio; and Inoue, Kaoru, 5,510,758, Cl. 333-247.000.

Inoue, Kiyoshi, to Nippon Oil Co., Ltd. Central Technical Research Laboratory. Lubricating oil additive comprising sulfurized monoalkylcatechol and its derivatives. 5,510,043, Cl. 252-42.700.

Inoue, Shuji: See—
Phillips, Larry; Naipally, Saiprasad V.; Meyer, Robert; and Inoue, Shuji, 5,510,842, Cl. 348-426.000.

Inoue, Takeo; Nishida, Hideharu; Sugishita, Shozo; and Tsukihashi, Akira, to Sanyo Electric Co., Ltd. Audio signal coding and decoding device. 5,511,095, Cl. 375-244.000.

Inoue, Yoshiaki; Murabayashi, Shigeru; Yoshikawa, Yoshio; Nagasaka, Takeshi; Harima, Yoshihiko; and Yoshino, Isamu, to Mitsubishi Gas Chemical Company, Inc. Inhibitor parcel and method for preserving electronic devices or electronic parts. 5,510,166, Cl. 428-76.000.

Inoue, Yukie; Hayashi, Ryuzo; and Matsuya, Naoka, to Kanzaki Paper Manufacturing Co., Ltd. Apparatus and method for assaying optical isomers. 5,510,244, Cl. 435-26.000.

Insight Biotech Inc.: See—
Van Alstyne, Diane; and Sharma, Lawrence R., 5,510,264, Cl. 435-240.270.

Insituform (Netherlands) B.V.: See—
Smith, Edward P.; and Towers, Graham F., 5,510,078, Cl. 264-516.000.

Institut Dr. Friedrich Forster: See—
Forster, Friedrich M., 5,509,320, Cl. 73-866.500.

Institut Francais du Petrole: See—
Lermite, Christophe; Larue, Joseph; and Rojey, Alexandre, 5,510,567, Cl. 585-833.000.

Istituto Biochimico Italiano Giovanni Lorenzini S.p.A.: See—
Borella, Fabio; Brandt, Alberto; and Carli, Fabio, 5,510,114, Cl. 424-452.000.

Integrated Device Technology, Inc.: See—
Lien, Chuen-Der, 5,510,744, Cl. 327-310.000.

Integrated Environmental Solutions, Inc.: See—
Schnieffer, Fred E.; Bass, Robert; and McMahon, Stephen G., 5,509,760, Cl. 405-258.000.

Intel Corporation: See—
Agarwal, Rohit, 5,511,003, Cl. 364-514.000.
Bhasker, Narjala, 5,511,075, Cl. 370-85.130.
England, David G.; Eschmann, Michael; and Moore, Cecil, 5,511,069, Cl. 370-24.000.
Farrell, Robert; and Mehrotra, Sharad, 5,510,740, Cl. 327-142.000.
Jayakumar, Muthurajan, 5,511,200, Cl. 395-739.000.
Kennedy, Howard J., Jr.; Downs, Terry; and Herman, Josh, 5,511,195, Cl. 395-650.000.
Zilka, Anthony M., 5,511,226, Cl. 395-823.000.

Inter-City Products Corporation (USA): See—
Obosu, Charles B., 5,509,469, Cl. 165-151.000.

Interlink Electronics, Inc.: See—
Findlater, Stewart M.; and Hickman, Kenneth T., 5,510,783, Cl. 341-34.000.

Interlock Industries Limited: See—
Hindin, Philip J.; and Bucher, Albert G., 5,509,177, Cl. 16-370.000.

Intermec Corporation: See—
Amal, Kevin R., 5,510,589, Cl. 200-522.000.

International Business Machines Corporation: See—

Anthias, Tefros; and West, Andrew M., 5,511,199, Cl. 395-700.000.

Béchade, Roland A., 5,511,016, Cl. 364-745.000.

Balz, James G.; Johnson, Gregory M.; LaPlante, Mark J.; and Long, David C., 5,509,556, Cl. 216-56.000.

Barucchi, Gerard; Cuny, Philippe; Klein, Philippe; Maurel, Olivier; and Peter, Jean-Luc, 5,511,078, Cl. 371-40.100.

Berger, Adam L.; Brown, Peter F.; Della Pietra, Stephen A.; Della Pietra, Vincent J.; Kehler, Andrew S.; and Mercer, Robert L., 5,510,981, Cl. 364-419.020.

Best, Margaret E.; Comita, Paul B.; Rubin, Kurt A.; Suzuki, Takao; Tang, Wade W. C.; and Yen, Yu-Sze, 5,510,164, Cl. 428-641.000.

Blaum, Miguel M.; Siegel, Paul H.; Sincerbox, Glenn T.; and Vardy, Alexander, 5,510,912, Cl. 359-21.000.

Boyles, Ray W.; Gierlach, Michael F.; Gopal, Prabhchand M.; Sultan, Robert; and Vacek, Gary M., 5,511,208, Cl. 395-800.000.

Brady, Michael S.; MacInnis, Alexander G.; and Powell, Vernon T., 5,511,165, Cl. 395-200.010.

Burke, Peter A.; and Leach, Michael A., 5,510,652, Cl. 257-752.000.

Cabral, Cynl, Jr.; Clevenger, Lawrence A.; d'Heurle, Francois M.; Harper, James M. E.; Mann, Randy W.; Miles, Glen L.; and Rakowski, Donald W. D., 5,510,295, Cl. 437-200.000.

Cina, Vincent J., Jr.; and Pazel, Donald P., 5,510,808, Cl. 345-123.000.

Cina, Michael F.; Cohen, Mitchell S.; Johnson, Glen W.; Oprysko, Modest M.; and Trehwella, Jeannine M., 5,511,140, Cl. 385-93.000.

Combs, James L.; Crump, Dwayne T.; and Pancoast, Steven T., 5,511,202, Cl. 395-750.000.

Cragun, Brian J., 5,511,187, Cl. 395-600.000.

Crump, Dwayne T.; Pancoast, Steven T.; Landry, John M.; and Benson, Paul H., IV, 5,511,204, Cl. 395-750.000.

Davis, Charles R.; Duffy, Thomas P.; Hanakovic, Steven L.; Heck, Howard L.; Kolas, John T.; Kresge, John S.; Light, David N.; and Trivedi, Ajit K., 5,509,186, Cl. 29-830.000.

Frankeny, Jerome A.; Frankeny, Richard F.; Imken, Ronald L.; and Vanderlee, Keith A., 5,509,200, Cl. 29-852.000.

Grover, David B.; O'Neil, Edward F., III; and Ross, Robert A., Jr., 5,511,031, Cl. 365-208.000.

Jimenez, Lisa J.; Lawrence, William H.; Markovich, Vova R.; Owen, Robert J.; and Sambucetti, Carlos J., 5,509,557, Cl. 216-95.000.

Johnson, Lee E., Jr.; Kokoszka, Daryl J.; and Larky, Steven P., 5,511,154, Cl. 395-122.000.

Kannan, Krishnamurthi; Jones, Christopher D.; Lee, Nathan J.; Leontrades, Kyriakos; Novak, Frank P.; and Sharma, Vikram, 5,511,205, Cl. 395-750.000.

Kulakowski, John E.; Means, Rodney J.; and Stephens, Gary R., 5,511,228, Cl. 395-834.000.

Rhine, James R.; Anthony, Nicos J.; Levy, Stephen E., and Wolf, Catherine G., 5,511,135, Cl. 382-187.000.

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Shackelford, Floyd W.; Smith, Judith A.; Stiles, April D. E.; and Yates, Kenneth D., 5,511,196, Cl. 395-700.000.

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Wang, John S., 5,511,157, Cl. 395-137.000.

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Szlam, Aleksander, 5,511,112, Cl. 379-88.000.

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Hodgdon, Russell B., 5,510,394, Cl. 521-27.000.

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Sanderson, Thomas; Megnin, Michael J.; Zimmerman, Jeffrey J.; Hill, Howard T.; Meetz, Michael C.; Pirtle, Eugene C.; Swenson, Sabrina L.; and Shibley, George P., 5,510,258, Cl. 435-237.000.

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Takahashi, Koji; Hieda, Teruo; Kyuma, Kenji; Nakatani, Yoshihiro; Suzuki, Koichiro; Abe, Takeshi; and Ishikawa, Yoshifumi, 5,510,901, Cl. 358-335.000.

Ishimaru, Kenji: See—
Ikeda, Yoshihiko; Yamane, Takeo; Kaji, Eiichi; and Ishimaru, Kenji, 5,510,536, Cl. 568-6.000.

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Irie, Mitsuru; Utakouji, Takeshi; Karaki, Morihiro; Takeshita, Nobuo; Koike, Manabu; Satou, Yasuyuki; Egusa, Naoyuki; Shinoda, Masahisa; Ishimori, Akira; Shima, Akihiro; and Yagi, Shigenori, 5,511,048, Cl. 369-13.000.

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Masui, Shohei; Matsumoto, Masahito; Usui, Nobuhiro; Hosokawa, Toshihiro; and Ishitsubo, Ryuichi, 5,509,990, Cl. 156-242.000.

Ishiwata, Yutaka: See—
Tamura, Masataka; Ishiwata, Yutaka; and Itoh, Yoshiyasu, 5,509,472, Cl. 165-171.000.

Ishiyama, Takao: See—
Inaba, Kohji; Nakamura, Tatsuya; Chiba, Tatsuhiko; and Ishiyama, Takao, 5,510,222, Cl. 430-109.000.

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Ishizuka Research Institute, Ltd.: See—
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Baracchini, Edgardo, Jr.; and Bennett, Clarence F., 5,510,239, Cl. 435-6.000.

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Iso, Shinichi: See—
Hiramoto, Tatsumi; Igarashi, Tatsushi; Matsuno, Hiromitsu; Matsushima, Takeo; and Iso, Shinichi, 5,510,158, Cl. 427-582.000.

Isobe, Yoko: See—
Nishikawa, Takeshi; and Isobe, Yoko, 5,511,210, Cl. 395-800.000.

Isogawa, Hironobu; and Anraku, Hideo, to Sekisui Chemical Co., Ltd. Serum and plasma separating compositions and blood testing containers. 5,510,237, Cl. 435-2.000.

Isosono, Keinosuke; and Suzuki, Tatsuo, to Material Engineering Technology Laboratory, Inc. Container for therapeutic use. 5,509,898, Cl. 604-87.000.

Isosu, Toru: See—
Kimura, Tsutomu; Fukuhara, Masaaki; Takahashi, Yasuhito; and Isosu, Toru, 5,510,883, Cl. 355-245.000.

ISP Investments Inc.: See—
Narayanan, Kolazi S.; and De Thomas, Waldo, 5,510,307, Cl. 502-159.000.

Itami, Yukio: See—
Suzuki, Mitsuo; Itami, Yukio; Hashimoto, Yoshio; Yamamoto, Mutsumi; and Takahashi, Yoshihiro, 5,510,664, Cl. 310-268.000.

Ito, Haruki: See—
Kobayashi, Hiroshi; Shimizu, Masaaki; and Ito, Haruki, 5,510,533, Cl. 564-407.000.

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Kamimaki, Hideki; Nishioka, Kiyokazu; Tachiuchi, Tsuguji; Tsuchiya, Nobuo; Jinushi, Masahiro; Sadamitsu, Hitoshi; Ito, Hiroshi; Yoshitomi, Takashi; Isaji, Koichi; and Ohba, Takao, 5,511,201, Cl. 395-750.000.

Ito, Larry N., to Dow Chemical Company, The. Process for rearranging allylic geminal dihalogen compounds. 5,510,546, Cl. 570-236.000.

Ito, Seiya; Hirao, Motoaki; Shiraha, Michihiro; Nozoe, Shunpei; Kawamura, Kazuyoshi; Fujii, Kenichi; Harada, Eiichi; Ino, Tatsuo; Uozumi, Masahiro; and Abe, Tetsuo, to Kawasaki Jukogyo Kabushiki Kaisha. Direct coal fired turbine combined power generation system. 5,509,264, Cl. 60-39.120.

Ito, Yukiyo: See—
Satoh, Tsutomu; Shimizu, Ikuo; and Ito, Yukiyo, 5,510,229, Cl. 430-270.180.

Itoh, Hiroyuki: See—
Hashimoto, Chikara; Takamatsu, Atsushi; Itoh, Hiroyuki; and Toyooka, Takehiro, 5,510,913, Cl. 359-37.000.

Kurotsu, Takahiro; Itoh, Hiroyuki; and Sakuma, Sadatoshi, 5,510,315, Cl. 504-115.000.

Itoh, Shigeo; Toki, Hitoshi; and Yonezawa, Yoshihisa, to Futaba Denshi Kogyo K.K. Low-velocity electron excited phosphor and method for producing same. 5,510,154, Cl. 427-526.000.

Itoh, Toshiyuki: See—
Sato, Kaoru; Itoh, Toshiyuki; Okazawa, Kazuhiko; Kimizuka, Junichi; Kusano, Akihisa; Abe, Makoto; and Inuyama, Toshihiko, 5,511,161, Cl. 395-182.210.

Itoh, Yoshiyasu: See—
Tamura, Masataka; Ishiwata, Yutaka; and Itoh, Yoshiyasu, 5,509,472, Cl. 165-171.000.

Itoi, Satoshi, to NEC Corporation. Video data compressor minimizing propagation of error. 5,510,904, Cl. 358-336.000.

Itoi, Satoshi; and Araki, Shigeru, to NEC Corporation. Playback data detecting method for improving bit error rate for random error. 5,511,080, Cl. 371-43.000.

Itoyama, Taketoshi; Abe, Yuichi; and Yamaguchi, Masao, to Tokyo Electron Limited. Probe apparatus and burn-in apparatus. 5,510,724, Cl. 324-760.000.

Ironix Corporation: See—
Severt, David; Siegner, George; Upchurch, Daren; Eriker, William; and Anselmo, James, 5,511,108, Cl. 379-21.000.

ITT Automotive Europe GmbH: See—
Kahrs, Manfred; Kunz, Gerhard; Fleck, Franz; Krines, Hans-Gebhard; Peterknecht, Walter; and Huthmacher, Winfried, 5,509,383, Cl. 123-90.120.

Zaviska, Dalibor; and Linhoff, Paul, 5,509,729, Cl. 303-117.100.

ITT Corporation: See—
Baughan, Steven M.; and Hartman, Eric T., 5,509,175, Cl. 16-332.000.

Mosquera, Rene A., 5,509,814, Cl. 439-82.000.

Norris, Jeffrey J., 5,510,584, Cl. 200-5.00A.

Norris, Jeffrey J.; Herout, Edward J.; and Russell, Phillip R., 5,510,782, Cl. 341-22.000.

Small, Robert W.; and van den Enden, John P., 5,509,821, Cl. 439-272.000.

Iversen, Alfred W.: See—
Spindler, Jeffrey D.; Burkhalter, Kenneth E., Jr.; and Iversen, Alfred W., 5,509,538, Cl. 209-630.000.

Iwaguchi, Isao: See—
Sato, Shinichi; Ohtsuki, Munenori; Iwaguchi, Isao; and Shinoda, Ichiro, 5,511,087, Cl. 372-38.000.

Iwai, Hiroshi: See—
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Iwama, Naoya: See—
Nishijima, Akio; Iwama, Naoya; Suganami, Syoji; and Suzuki, Katsutoshi, 5,510,810, Cl. 345-156.000.

Iwamoto, Takashi: See—
Nihei, Ryo; Naito, Yasuo; Wakio, Hiroshi; and Iwamoto, Takashi, 5,511,007, Cl. 364-571.010.

Iwamura, Ryuichi, to Sony Corporation. Encoding apparatus in which flat subblocks are identified in blocks of a motion signal prior to coding the blocks and complementary decoding apparatus. 5,510,841, Cl. 348-420.000.

Iwanaga, Yoshiharu, to Canon Kabushiki Kaisha. Sheet guiding device having obliquely-movable sheet restriction portion. 5,509,647, Cl. 271-238.000.

Iwanski, David G.: See—
Hanson, William D.; Brud, Lynn C.; Byerly, Shannon K.; Ellis, Clifford J.; Everett, Rob D.; Gossen, Barbara A.; Grube, Violet M.; Iwanski, David G.; LeMahieu, David L.; Qin, Jian; Stevens, Robert A.; Wentzel, Tom K.; Yarbrough, Sandra M.; Zenker, David L.; and Zunker, MaryAnn, 5,509,915, Cl. 604-378.000.

Iwaoka, Junzo: See—
Takano, Ryosuke; Hayashi, Toshiaki; Miyoshi, Kazuhiko; and Iwaoka, Junzo, 5,509,301, Cl. 73-116.000.

Iwasaki, Fumiharu: See—
Takahashi, Hiroshi; Sakutara, Toshihiko; and Iwasaki, Fumiharu, 5,510,224, Cl. 430-138.000.

Iwasaki, Yoshihide: See—
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Iwata, Hitoshi; Kogiso, Katsuya; and Kinoshita, Kenichi, to Kabushiki Kaisha Tokai Rika Denki Seisakusho. Acceleration detecting apparatus. 5,509,308, Cl. 73-514.090.

Iwata, Yoshikazu: See—
Grossman, Günter; and Iwata, Yoshikazu, 5,509,761, Cl. 408-59.000.

Iwatani, Masanobu: See—
Okano, Hiroshi; and Iwatani, Masanobu, 5,509,559, Cl. 220-1.500.

- Iwaya, Yoshiaki: *See—*
Tomioka, Isao; Saito, Minoru; Yamada, Hiroshi; Iwaya, Yoshiaki; and Echigo, Yoshiaki, 5,510,395, Cl. 521-184.000.
- Izuta, Shingo: *See—*
Ichihara, Kazuo; and Izuta, Shingo, 5,511,001, Cl. 364-514.00R.
- Jackson, Basil J.: *See—*
Le, Chinh H.; Jackson, Basil J.; and Eifert, James B., 5,511,182, Cl. 395-550.000.
- Jackson, Marc R.; Maguire, Joel M.; and Diehl, Thomas E., to General Motors Corporation. Casting assembly adapted for either manual or automatic transmissions. 5,509,329, Cl. 74-606.00R.
- Jackson, William B., to EA Technology Limited. Electromagnetic induction heating apparatus for heating elongated metal workpieces. 5,510,600, Cl. 219-645.000.
- Jacky, Pergent: *See—*
Gohl, Pierre; Gomez, Gerard; Jacky, Pergent; and Wojerz, Daniel, 5,511,225, Cl. 395-821.000.
- Jacobs, Ludovicus L. G.; Lednor, Peter W.; Limahelu, Alex G. G.; Schoonebeek, Ronald J.; and Vonkeman, Koert A., to Shell Oil Company. Process for the catalytic partial oxidation of hydrocarbons. 5,510,056, Cl. 252-373.000.
- Jadamus, Hans; and Röber, Stefan, to Huels Aktiengesellschaft. Thermoplastic multilayer composites. 5,510,160, Cl. 428-36.910.
- Jae-Chang, Jeong, to Samsung Electronics Co., Ltd. LDP karaoke apparatus with music tempo adjustment and singer evaluation capabilities. 5,511,053, Cl. 369-54.000.
- Jäger, Andreas: *See—*
Jäger, Arnold; Jäger, Andreas; and Jäger, Sebastian, 5,510,067, Cl. 264-46.600.
- Jäger, Arnold; Jäger, Andreas; and Jäger, Sebastian. Method of producing a plastic pin having an insert in a neck portion. 5,510,067, Cl. 264-46.600.
- Jäger, Sebastian: *See—*
Jäger, Arnold; Jäger, Andreas; and Jäger, Sebastian, 5,510,067, Cl. 264-46.600.
- Jagmin, Gary E. Radiographically readable information carrier and method of using the same. 5,509,805, Cl. 433-215.000.
- Jakobson, Gerald; and Siemanowski, Werner, to Solvay Fluor und Derivate GmbH. Process and apparatus for producing diglycerin. 5,510,542, Cl. 568-680.000.
- James Cash Machine Co., Inc.: *See—*
Cash, David R., 5,509,365, Cl. 112-117.000.
- Jaminet, Jerome F.: *See—*
McHugh, Thomas M.; Barrett, David W.; Ahigian, Edward E.; Jaminet, Jerome F.; He, Thomas; Peruggi, Richard E.; Kowalczyk, Thomas M.; and Kulak, Richard E., 5,509,504, Cl. 187-316.000.
- Jan, William Y.: *See—*
Cunningham, John E.; Goossen, Keith W.; Jan, William Y.; and Walker, James A., 5,510,277, Cl. 437-24.000.
- Janky, James M.: *See—*
Abraham, Charles; and Janky, James M., 5,510,797, Cl. 342-352.000.
- Jansen, Rolf-Michael, to Hoechst Aktiengesellschaft. Process for the preparation of hydrofluorocarbons. 5,510,545, Cl. 570-171.000.
- Janssens, Wilhelmus; and Vanmaele, Luc, to AGFA-GEVAERT, N.V. Thermal dye sublimation transfer donor element. 5,510,225, Cl. 430-200.000.
- Janusz, Michael J.: *See—*
Angelastro, Michael R.; Bey, Philippe; Doherty, Niall S.; Janusz, Michael J.; Mehdi, Shujaath; and Peet, Norton P., 5,510,333, Cl. 514-18.000.
- Japan Atomic Energy Research Institute: *See—*
Rais, Jiri; and Tachimori, Shoichi, 5,510,091, Cl. 423-9.000.
- Japan Casting & Forging Corporation: *See—*
Yano, Seinosuke; Morioka, Koh; Harabuchi, Takashi; Nakano, Yoshikazu; Mochiki, Hiroshi; and Nagata, Kimio, 5,509,977, Cl. 148-328.000.
- Japan Radio Co., Ltd.: *See—*
Terasaka, Toshiaki; Muramatsu, Tsuyoshi; Miyata, Souichi; Kuwabara, Tatsuyuki; Tomita, Masaharu; Nagamura, Kiyotaka; and Nakamura, Takao, 5,511,215, Cl. 395-800.000.
- Japan Tobacco Inc.: *See—*
Watanabe, Tomoichi, 5,509,525, Cl. 198-474.100.
- Japuntich, Daniel A.; Grannis, Vaughn B.; Seppala, Harold J.; and Ferguson, Anthony B., to Minnesota Mining and Manufacturing Company. Unidirectional fluid valve. 5,509,436, Cl. 137-15.000.
- Jaruzel, Kurt, to Paschal-Werk G. Maier GmbH. Formwork with form panels and connecting means. 5,509,635, Cl. 249-47.000.
- Jarvis, William R.: *See—*
Seymour, Sydney K.; McConnell, Bain C.; Deal, Philip A.; Furin, Wayne M.; Henderson, Calvin W.; Jarvis, William R.; and Lassiter, Wallace R., 5,510,616, Cl. 250-308.000.
- Jau-Jui, Ju; and Jinn-Kang, Wang, to Industrial Technology Research Institute. Magneto-optical head with a three prism beam splitter to split a reflected beam into three beams. 5,511,060, Cl. 369-118.000.
- Jayakumar, Muthurajan, to Intel Corporation. Method and apparatus for providing an enhanced programmable priority interrupt controller. 5,511,200, Cl. 395-739.000.
- Jean-Marc Lamoureux: *See—*
Couté, Léon-Pierre, 5,509,445, Cl. 137-533.110.
- Jeffords, Thomas P., Sr.: *See—*
Bailey, Ralph E.; and Jeffords, Thomas P., Sr., 5,511,145, Cl. 392-355.000.
- Jellé, John F., to Holmes-Halley Industries. Sectional door and panel therefor. 5,509,457, Cl. 160-201.000.
- Jenkins, Gareth I.: *See—*
de Leeuw van Weenen, Marcus J.; Glynn, Kevin; and Jenkins, Gareth I., 5,511,191, Cl. 395-600.000.
- Jenkins, Michael J.: *See—*
Phillips, David L.; and Jenkins, Michael J., 5,509,697, Cl. 285-158.000.
- Jensen, Eric L.: *See—*
Majeed, Kamal N.; Fratini, Albert V., Jr.; Stacey, Scott A.; Jensen, Eric L.; Varner, Jay R.; and Hauser, James W., 5,510,988, Cl. 364-424.050.
- Jensen, Randall A.; and Burgardt, Jeffrey, to Skylights, Incorporated. Structural panel useful for skylights. 5,509,250, Cl. 52-200.000.
- Jeong, Hochang; and Park, Jong-Chul, to Samsung Electronics Co., Ltd. Data conversion apparatus. 5,510,788, Cl. 341-106.000.
- Jesmok, Gary: *See—*
Tsay, Grace C.; and Jesmok, Gary, 5,510,465, Cl. 530-389.100.
- Jiang, Zhiping: *See—*
Abraham, Kuzhikalai M.; and Jiang, Zhiping, 5,510,209, Cl. 429-192.000.
- Jimenez, Lisa J.; Lawrence, William H.; Markovich, Voya R.; Owen, Robert J.; and Sambucetti, Carlos J., to International Business Machines Corporation. Depositing a conductive metal onto a substrate. 5,509,557, Cl. 216-95.000.
- Jin, Sungho; and McCormack, Mark T., to AT&T Corp. Solder medium for circuit interconnection. 5,509,815, Cl. 439-91.000.
- Jinn-Kang, Wang: *See—*
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- Jinno, Makoto; and Yoshimi, Takashi, to Kabushiki Kaisha Toshiba. Control robot. 5,509,847, Cl. 451-11.000.
- Jinushi, Masahiro: *See—*
Kamimaki, Hideki; Nishio, Kiyokazu; Tachiuchi, Tsuguji; Tsuchiya, Nobuo; Jinushi, Masahiro; Sadamitsu, Hitoshi; Ito, Hiroshi; Yoshitomi, Takashi; Isaji, Koichi; and Ohba, Takao, 5,511,201, Cl. 395-750.000.
- Jlidi, Bessem: *See—*
Calabrese, Salvatore J.; Seaton, Henry A.; Murray, S. Frank; Ettles, Christopher M.; Kennedy, Warren C.; Dinc, Saim; Jlidi, Bessem; and Strong, William, 5,509,344, Cl. 84-437.000.
- Johannes Heidenhain GmbH: *See—*
Ernst, Alfons, 5,509,211, Cl. 33-561.000.
- Johansson, John G.: *See—*
Chong, Wesley K. M.; Chao, Wan-Rui; Yasuda, Dennis M.; Johansson, John G.; Avery, Mitchell A.; and Tanabe, Masato, 5,510,340, Cl. 514-172.000.
- Johnson, Charles B.: *See—*
Wodecki, Norman D.; Johnson, Charles B.; and Wheeler, Kevin D., 5,510,673, Cl. 313-524.000.
- Johnson, Dennis W.; and Schulze, Karl H., to Babcock & Wilcox Company. The Two stage downflow flue gas treatment condensing heat exchanger. 5,510,087, Cl. 422-173.000.
- Johnson, Dennis W.: *See—*
Bhat, Pervaje A.; and Johnson, Dennis W., 5,510,094, Cl. 423-243.070.
- Johnson, Glen W.: *See—*
Cina, Michael F.; Cohen, Mitchell S.; Johnson, Glen W.; Oprysko, Modest M.; and Trewhella, Jeannine M., 5,511,140, Cl. 385-93.000.
- Johnson, Glenn W.: *See—*
Koenig, Norbert; and Johnson, Glenn W., 5,510,865, Cl. 354-173.100.
- Johnson, Gregory M.: *See—*
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- Johnson, Jerry L.: *See—*
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- Johnson, Kristina M.: *See—*
Liu, Jian-Yu; and Johnson, Kristina M., 5,510,914, Cl. 359-56.000.
- Johnson, Lee E., Jr.; Kokoszka, Daryl J.; and Larky, Steven P., to International Business Machines Corporation. Method and apparatus for managing concurrent access to multiple memories. 5,511,154, Cl. 395-122.000.
- Johnson, Marvin M.: *See—*
Cheung, Tin-Tack P.; Johnson, Marvin M.; Brown, Scott H.; Zisman, Stan A.; and Kimble, James B., 5,510,550, Cl. 585-259.000.
- Johnson, Robert M., Jr.: *See—*
Duong, Minh H.; Dorsey, Donald A.; and Johnson, Robert M., Jr., 5,511,235, Cl. 455-75.000.
- Johnson Service Company: *See—*
Pascucci, Gregory A.; Rasmussen, David E.; Decious, Gaylon M.; Garbe, James R.; Hyzer, Susan M.; Woest, Karen L.; Vairavan, Vairavan; Koch, David L.; Gottschalk, Donald A., Jr.; Burkhardt, Dennis E.; Standish, Darrell E.; Madaus, Paul W.; Spacek, Dan J.; Nesler, Clay G.; Stark, James K.; Mageland, Otto M.; Singers, Robert R.; and Wagner, Michael E., 5,511,188, Cl. 395-600.000.
- Joice, Gary T. C.; and Huxley, Graham A., to CanCode Safety Services, Inc. Conflagration simulator and method of operating. 5,509,807, Cl. 434-226.000.
- Jolly, Ronald P., to HMT, Inc. Floating roof. 5,509,562, Cl. 220-216.000.
- Jolly, Ronald P., to HMT, Inc. Apparatus for coupling a pontoon to a floating roof in a storage tank for liquid products. 5,509,563, Cl. 220-221.000.
- Jonathan, Banford: *See—*
Simpson, Leslie A.; Robb, John; Jonathan, Banford; Dietz, Paul F.; and Temperley, John, 5,509,960, Cl. 106-437.000.

- Jones, Brent R.; and Crawford, Clark W., to Tektronix, Inc. Solid ink stick. 5,510,821, Cl. 347-88.000.
- Jones, Christopher B., to Revvo Castor Company Limited. The Castor brake assembly. 5,509,506, Cl. 188-1.120.
- Jones, Christopher D.: *See—*
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- Jones, Craig S., to Dell USA, L.P. Method for configuring a composite drive for a disk drive array controller. 5,511,227, Cl. 395-829.000.
- Jones, David F.: *See—*
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- Jones, Edward M., to Chemical Research & Licensing Company. Method for operating a distillation column reactor. 5,510,089, Cl. 422-189.000.
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- Joshi, Sharad: *See—*
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- Juaire, Michael P.: *See—*
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- Juve, Eric K.: *See—*
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- K I Industries, Inc.: *See—*
Worrell, James L., 5,509,174, Cl. 16-121.000.
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- Kabushiki Kaisha Hayashibara Seibutsu: *See—*
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- Kabushiki Kaisha Kobe Seiko Sho: *See—*
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- Akama, Yoshiaki, 5,509,843, Cl. 445-50.000.
- Anbe, Yoshiharu, 5,509,285, Cl. 72-8.600.
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- Jinno, Makoto; and Yoshimi, Takashi, 5,509,847, Cl. 451-11.000.
- Kameda, Tsuneji; Asayama, Masahiro; and Suyama, Shoko, 5,510,303, Cl. 501-92.000.
- Kawano, Mitsumoto, 5,510,853, Cl. 348-678.000.
- Nakajima, Hiroomi; Katsumata, Yasuhiro; Iwai, Hiroshi; Iinuma, Toshi-hiko; Inou, Kazumi; Kitagawa, Mitsuhiro; Morizuka, Kouhei; Naka-gawa, Akio; and Omura, Ichiro, 5,510,647, Cl. 257-559.000.
- Nakamoto, Masayuki, 5,510,703, Cl. 324-96.000.
- Saito, Naritoshi, 5,511,091, Cl. 375-226.000.
- Shiba, Masue; and Nakata, Shigeharu, 5,511,222, Cl. 395-800.000.
- Shimizu, Mitsuru, 5,511,027, Cl. 365-189.090.
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- Tanaka, Yoichiro; and Tsuji, Hiroyuki, 5,510,690, Cl. 320-2.000.
- Tanimoto, Shigeo; and So, Mayumi, 5,510,662, Cl. 310-156.000.
- Watanabe, Yoshio; and Abuyama, Yasuo, 5,510,908, Cl. 358-448.000.
- Kaczorek, Joseph W.: *See—*
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- Bhatti, Mohinder S.; Kadle, Prasad S.; and Baker, James A., 5,509,275, Cl. 62-271.000.
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- Kahlke, Michael; and Schaupt, Kurt, to Schott Glaswerke. Gas fires cooking assembly with plate conductive to heat radiation. 5,509,403, Cl. 126-39.00E.
- Kahrs, Manfred; Kunz, Gerhard; Fleck, Franz; Krines, Hans-Gebhard; Peterknecht, Walter; and Huthmacher, Winfried, to ITT Automotive Europe GmbH. Hydraulic unit. 5,509,383, Cl. 123-90.120.
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- Kai, Miki: *See—*
Sugimoto, Hiroyuki; Kai, Miki; and Arai, Makoto, 5,510,886, Cl. 355-273.000.
- Kai, Yoshiaki; Takahashi, Kiyosi; and Ohchi, Yukikazu, to Matsushita Electric Industrial Co., Ltd. Fluorine containing diester of alkyl- or alkenylsuccinic acid, preparation thereof and magnetic recording medium. 5,510,513, Cl. 560-197.000.
- Kajlez, Darko; Bowers, John H.; and Zhou, Guangun, to Checkpoint Systems, Inc. Multiple frequency tag. 5,510,769, Cl. 340-572.000.
- Kaji, Eiichi: *See—*
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- Kalnitsky, Alexander; Dixit, Girish A.; and Chen, Fusen E., to SGS-Thomson Microelectronics, Inc. Method of forming vias for multilevel metallization. 5,510,294, Cl. 437-195.000.
- Kaloi, Dennis M.; and Simon, Richard A. Electronic solid-state record/playback device and system. 5,511,000, Cl. 364-514.00A.
- Kamata, Yoshiyuki: *See—*
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- Kamimaki, Hideki; Nishioka, Kiyokazu; Tachiuchi, Tsuguji; Tsuchiya, Nobuo; Jinushi, Masahiro; Sadamitsu, Hitoshi; Ito, Hiroshi; Yoshitomi, Takashi; Isaji, Koichi; and Ohba, Takao, to Hitachi, Ltd.; and Hitachi Video & Information System, Inc. Data processing apparatus, power supply controller and display unit. 5,511,201, Cl. 395-750.000.
- Kaminski, Brian D.; Gelazini, Paul J.; Miller, William L.; and Van Vechten, Roger G., to General Motors Corporation. Bearing cap for an internal combustion engine. 5,509,387, Cl. 123-195.00R.
- Kamler, Frank, to Babcock & Wilcox Company, The. Sludge lance nozzle. 5,509,609, Cl. 239-461.000.
- Kammerer, William; Friedlander, Baruch R.; and Slezak, Yaron, to Wafer-Scale Integration, Inc. Source pre-charge system in a memory array. 5,511,032, Cl. 365-230.060.
- Kamo, Tomochi; Takeuchi, Seizi; Matsuda, Shinpei; Soeta, Atsuko; Suzuki, Takaaki; and Yoshida, Yutaka, to Hitachi, Ltd. $Ti_{1-x}(Ba_{1-x}Sr_x)_2CaCu_2O_y$ oxide superconductor and method of producing the same. 5,510,323, Cl. 505-120.000.
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- Kampschulte, Uwe: See—
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- Kamyr, Inc.: See—
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- Kanai, Masahiro: See—
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- Kanaya, Koichi: See—
Hayashi, Masayuki; Mitekura, Yoshihiro; Kanaya, Koichi; Terao, Masato; Tagawa, Toshiya; Tomidokoro, Nobuaki; Kitayama, Masahiro; Kizaki, Osamu; Kawada, Yasuo; Nakahara, Kazuki; Harada, Tomofumi; and Hashimoto, Yasunari, 5,510,876, Cl. 355-202.000.
- Kanda, Yuichi: See—
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- Kane, Brian, to Mannesmannrnfur Aktiengesellschaft. 2/2 directional seat valve. 5,509,447, Cl. 137-625.340.
- Kaneko, Katsuyuki, to Matsushita Electric Industrial Co., Ltd. Parallel processor system for detecting the end of data transmission. 5,511,221, Cl. 395-800.000.
- Kaneko, Kyojiro: See—
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- Kanemaru, Tetsuro: See—
Nakata, Kouichi; Kikuchi, Toshihiro; Senoo, Akihiro; and Kanemaru, Tetsuro, 5,510,218, Cl. 430-59.000.
- Kankyo Kagaku Center Co., Ltd.: See—
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- Kannan, Krishnamurthy, Jones, Christopher D.; Lee, Nathan J.; Leontades, Kyriakos; Novak, Frank P.; and Sharma, Vikram, to International Business Machines Corporation. System for distributed power management in portable computers. 5,511,205, Cl. 395-750.000.
- Kanterovitch, Dan, to Scitex Corporation Ltd. Containers and method of making same. 5,509,561, Cl. 220-428.000.
- Kanzaki Paper Manufacturing Co., Ltd.: See—
Inoue, Yukie; Hayashi, Ryuzo; and Matsuya, Naoka, 5,510,244, Cl. 435-26.000.
- Kao Corporation: See—
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- Kao Corporation and Shibuya Kogyo Co., Ltd.: See—
Ohmori, Toshiyuki; Hatanaka, Shigemi; Honma, Yasuhiro; Kobayashi, Hiroaki; Saito, Eiichi; and Hamano, Ichiro, 5,509,524, Cl. 198-465.100.
- Kapaun, Gustav: See—
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- Kapp, Daniel L.: See—
Merkel, Paul B.; Poslusny, Jerrold N.; Kapp, Daniel L.; and Ross, John R., 5,510,235, Cl. 430-553.000.
- Kappel, David W.: See—
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- Kara, Salim G., to Post N Mail, L.C. System and method for automatically printing postage on mail. 5,510,992, Cl. 364-464.020.
- Karaki, Morihiro: See—
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- Karashima, Takeo: See—
Akazawa, Yasumasa; Kitai, Taiko; Sasaki, Katsuyuki; and Karashima, Takeo, 5,509,972, Cl. 134-26.000.
- Karell, Manuel L. Safe ear wax remover. 5,509,921, Cl. 606-162.000.
- Kariya, Toshimitsu: See—
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- Saito, Keishi; Aoi, Katsuyuki; Kariya, Toshimitsu; and Koda, Yujo, 5,510,631, Cl. 257-77.000.
- Kariyama, Masaru, to Sharp Kabushiki Kaisha. High voltage MOS transistor. 5,510,643, Cl. 257-409.000.
- Karl, Rex A., to Texas Instruments Incorporated. Torque hinge. 5,509,176, Cl. 16-342.000.
- Karmarkar, Subhash D.: See—
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- Karpovich, Yakov; and Iranmanesh, Ali A., to Crosspoint Solutions, Inc. Multilayer antifuse with intermediate spacer layer. 5,510,629, Cl. 257-50.000.
- Karumanchi, Arundhati, to Caterpillar Inc. Dynamic payload monitor. 5,509,293, Cl. 73-1.00B.
- Kasai, Masuo: See—
Matsumoto, Kiyoshi; Maeda, Takeshi; Nakamura, Shigeru; Umeda, Mariko; and Kasai, Masuo, 5,511,050, Cl. 369-44.230.
- Kasama, Toshio: See—
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- Kasashima, Hirokazu: See—
Kawano, Katsumi; Mori, Kinji; Suzuki, Yasuo; Orimo, Masayuki; Kasashima, Hirokazu; and Nakai, Kozo, 5,511,167, Cl. 395-200.030.
- Kashimura, Tetsuo: See—
Nishi, Kazuya; Hidaka, Kishio; Kashimura, Tetsuo; Nakamura, Shigeyoshi; Fukui, Yutaka; and Nakahara, Shinichi, 5,510,080, Cl. 420-451.000.
- Kashine, Takashi, to Mitsubishi Denki Kabushiki Kaisha. High resolution timer using low resolution counter. 5,511,047, Cl. 368-119.000.
- Kashino, Teruo; Otani, Shinichi; Nemoto, Kazuhiro; and Wada, Futoshi, to Konica Corporation. Sheet-like material processing apparatus and photo-sensitive material processing apparatus. 5,510,870, Cl. 354-298.000.
- Kashiyama, Kenji: See—
Hitomi, Mitsuo; Kashiyama, Kenji; and Masuda, Shunji, 5,509,394, Cl. 123-559.100.
- Kasper, George, to LaMarche Manufacturing Company. Ferroresonant battery charger with constant current finish rate. 5,510,692, Cl. 320-23.000.
- Kassner, Uwe: See—
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- Kaszcuk, Linda: See—
DoMinh, Thap; Kaszcuk, Linda; and Tutt, Lee W., 5,510,227, Cl. 430-269.000.
- Kaszuba, Michael: See—
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- Katakura, Takahiro: See—
Hosono, Satoru; Abe, Tomoaki; Yonekubo, Shuji; Kitahara, Tsuyoshi; and Katakura, Takahiro, 5,510,816, Cl. 347-10.000.
- Kataoka, Kazunori: See—
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- Katayama, Michio: See—
Nakamaru, Hiroki; Fujimura, Tohru; Ohnuma, Hiroaki; Mochizuki, Kazuo; Morito, Nobuyuki; and Katayama, Michio, 5,510,196, Cl. 428-659.000.
- Kateco, Inc.: See—
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- Katilas, Leonard T.: See—
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- Kato, Heizaburo, to Sankyo Seisakusho Co. Dynamically balanced mechanical pressing machine. 5,509,351, Cl. 100-282.000.
- Kato, Kazuo: See—
Masuyama, Kenichi; Kato, Kazuo; and Araki, Hiroaki, 5,510,177, Cl. 428-323.000.
- Kato, Mitsuhide: See—
Tsuru, Teruhisa; Okamura, Hisatake; Mandai, Harufumi; Kato, Mitsuhide; and Tonegawa, Ken, 5,510,802, Cl. 343-700.0MS.
- Kato, Naohito: See—
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- Kato, Susumu: See—
Hirabayashi, Yoshinori; Ikeuchi, Toshihiro; Kato, Susumu; Miyazawa, Takeshige; and Nakamuras, Kanji, 5,510,321, Cl. 504-289.000.
- Kato, Toshio: See—
Okada, Yuzo; and Kato, Toshio, 5,510,137, Cl. 426-565.000.
- Katsuma, Takatoshi, to Sumitomo Wiring Systems Ltd. Lever-type connector and method for assembling and connecting same. 5,509,816, Cl. 439-157.000.
- Katsumata, Yasuhiro: See—
Nakajima, Hiroomi; Katsumata, Yasuhiro; Iwai, Hiroshi; Inuma, Toshihiko; Inoue, Kazumi; Kitagawa, Mitsuhiro; Morizuka, Kouhei; Nakagawa, Akio; and Omura, Ichiro, 5,510,647, Cl. 257-559.000.
- Katsumura, Yuji: See—
Imai, Motomasa; Shutoh, Naoki; Oh-Ishi, Katsuyoshi; Ueno, Fumio; Ohkuma, Hideo; Katsumura, Yuji; Kobayashi, Masaki; and Takahashi, Toshiyuki, 5,509,558, Cl. 218-143.000.
- Katsuta, Hiroshi: See—
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- Katsura, Nobuo: See—
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- Kaul, Banshi L., to Sandoz Ltd. Process for mass pigmentation of synthetic polyamides. 5,510,403, Cl. 524-90.000.

- Kaul, Banshi L.; and Vougioukas, Angelos-Elie, to Sandoz Ltd. Salts of metal-free anionic phenylazopyrazolone dyes having cations containing sterically hindered amine groups. 5,510,467, Cl. 534-728.000.
- Kaule, Wiltich; Ilgmann, Wilhelm; Schwenk, Gerhard; and Stenzel, Gerhard, to GAO Gesellschaft für Automation und Organisation mbH. Security element in the form of threads or strips to be embedded in security documents and a method for producing and testing the same. 5,509,691, Cl. 283-67.000.
- Kawada, Yasuo: See—
Hayashi, Masayuki; Mitekura, Yoshihiro; Kanaya, Koichi; Terao, Masato; Tagawa, Toshiya; Tomidokoro, Nobuaki; Kitayama, Masahiro; Kizaki, Osamu; Kawada, Yasuo; Nakahara, Kazuki; Harada, Tomofumi; and Hashimoto, Yasunari, 5,510,876, Cl. 355-202.000.
- Kawahara, Hideo: See—
Ueda, Osamu; Hieda, Teruo; and Kawahara, Hideo, 5,510,850, Cl. 348-649.000.
- Kawakami, Shigeru; Omoto, Noriaki; and Shogaki, Toshihiro, to Matsushita Electric Industrial Co., Ltd. Satellite television broadcasting receiver including improved clamping circuit. 5,510,855, Cl. 348-695.000.
- Kawam, Elias A.; and Cardellino, Terri A., to Martin Marietta Corporation. Electro-thermally actuated switch. 5,510,598, Cl. 219-505.000.
- Kawamine, Katsumi: See—
Kyotani, Yoshinori; Kawamine, Katsumi; Toma, Tsutomu; Ohgiya, Tadaaki; Yamaguchi, Takashi; Onogi, Kazuhiro; Sato, Seiichi; Shimizu, Noboru; Shigyo, Hiromichi; Ohta, Tomio; Oda, Toshiaki; Okuno, Yukihiko; Shibuya, Kimiyuki; Takahashi, Yoshio; Fujii, Mikio; and Uchida, Yasumi, 5,510,366, Cl. 514-411.000.
- Kawamura, Kazuyoshi: See—
Ito, Seiya; Hirao, Motoaki; Shiraha, Michihiro; Nozoe, Shunpei; Kawamura, Kazuyoshi; Fujii, Kenichi; Harada, Eiichi; Ino, Tatsu; Uozumi, Masahiro; and Abe, Tetsuo, 5,509,264, Cl. 60-39.120.
- Kawamura, Kiyoshi, to Yamaha Corporation. Method for adjustment of hammer let off on a keyboard musical instrument. 5,509,340, Cl. 84-236.000.
- Kawamura, Matsue: See—
Takematsu, Tetsuo; Kume, Takashi; Komata, Takeo; Suzuki, Kiyoshi; Ikeda, Yukio; Kawamura, Matsue; and Mori, Kaoru, 5,510,317, Cl. 504-147.000.
- Kawamura, Teruo: See—
Nakagawa, Ryohta; Kawamura, Teruo; and Maeda, Kazutoshi, 5,509,190, Cl. 29-712.000.
- Kawano, Eiichi: See—
Kyushima, Hiroyuki; Nagura, Koji; Hasegawa, Yutaka; Kawano, Eiichi; Kuroyanagi, Tomihiko; Atsumi, Akira; and Mizuide, Masuya, 5,510,674, Cl. 313-533.000.
- Kawano, Katsumi; Mori, Kinji; Suzuki, Yasuo; Orimo, Masayuki; Kasashima, Hirokazu; and Nakai, Kozo, to Hitachi, Ltd. Program processing method and apparatus for producing a data flow type program. 5,511,167, Cl. 395-200.030.
- Kawano, Mitsuo, to Kabushiki Kaisha Toshiba. Automatic gain control circuit for stabilizing the level of a reproduced color signal. 5,510,853, Cl. 348-678.000.
- Kawasaki Jugokyo Kabushiki Kaisha: See—
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- Kawasaki Steel Corporation: See—
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- Murata, Masaomi, 5,510,636, Cl. 257-206.000.
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- Kawashima, Masatoshi, to Kankyo Kagaku Center Co., Ltd. Optical resolution method. 5,510,520, Cl. 562-401.000.
- Kawashima, Nobuyuki: See—
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- Kayama, Masahiro: See—
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- Kaye, Ronald S.: See—
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- KDF Fluid Treatment, Inc.: See—
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- Keeping and MacKay Limited (K. & M.): See—
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- Keesling, Clinton H. Prestressed concrete piling. 5,509,759, Cl. 405-232.000.
- Kehler, Andrew S.: See—
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- Keil, Michael: See—
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- Keim, Wilhelm: See—
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- Keller, Dennis B.; and Denton, Donald R., to Air-Maze Corporation. Disposable two-stage air cleaner. 5,509,948, Cl. 55-337.000.
- Keller, Jeff. Seat attachment apparatus. 5,509,751, Cl. 403-235.000.
- Keller, Louis D. Kit and method for converting a wheelbarrow into a garden cart. 5,509,681, Cl. 280-415.100.
- Keller, Randy C.: See—
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- Keller, Urs: See—
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- Keller, Werner; Dutsch, German; and Hartmann, Roland, to Deutsche Star GmbH. Linear guiding device. 5,509,736, Cl. 384-45.000.
- Kelley, Kenneth H. Soap bar holder. 5,509,529, Cl. 206-77.100.
- Kelly, John: See—
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- Kelsey-Hayes Company: See—
Ihm, Mark K., 5,509,510, Cl. 188-219 X.00L.
- Kempe, Inc.: See—
Kovacs, Peter; Kovacs, Mihaly; and Kovacs, Endro, 5,509,370, Cl. 114-270.000.
- Kendall, Donald H., to United States of America, Army. Self loading cargo vehicle. 5,509,775, Cl. 414-437.000.
- Kendall, Robert M.: See—
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- Kennedy, Burton K., Jr., to National Security Containers, Inc. Latch and lock for trailer doors. 5,509,700, Cl. 292-3.000.
- Kennedy, Howard J., Jr.; Downs, Terry; and Herman, Josh, to Intel Corporation. Driver, computer-implemented process, and computer system for processing data using loadable microcode running on a programmable processor. 5,511,195, Cl. 395-650.000.
- Kennedy, Warren C.: See—
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- Kern, Gregory A.: See—
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Sherman, Larry G.; and Yuill, William A., 5,510,561, Cl. 585-734.000.
- Keyser, Gene E., to Environmental Solvents Corporation. Fluorinated terpene compounds. 5,510,544, Cl. 570-125.000.
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Morozov, Alexei; Bougrova, Antonina; Kharchevnikov, Vadim; and Valentian, Dominique, 5,509,266, Cl. 60-203.100.
- Khor, Sok L.: See—
Froix, Michael; Shipley, Larry; Liau, Christine J. Y.; Nguyen, Hien; and Khor, Sok L., 5,510,116, Cl. 424-486.000.
- Khoury, Jehad: See—
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- Kiczek, Edward F.; Miller, Jeremy P.; and Cohen, Joseph P., to Air Products and Chemicals, Inc. Combination immersion/impingement tunnel freezer. 5,509,277, Cl. 62-374.000.
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- Kida, Yasuo: See—
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- Kidde-Graviner Limited: See—
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- Kieczykowski, Gerard R.: See—
Dauer, Richard R.; DiMichele, Lisa; Futran, Mauricio; and Kieczykowski, Gerard R., 5,510,517, Cl. 562-13.000.
- Kiendl, Helmut, to Deutsche Aerospace AG. Articulation arrangement for connecting folding structure elements. 5,509,747, Cl. 403-102.000.
- Kiesel, Mark J., to Caterpillar Inc. Bidirectional snubber for a hydraulic suspension cylinder. 5,509,513, Cl. 188-289.000.
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- Pulmer, John W.; Griaznov, Andrei K.; Kight, William D.; and Zakos-hansky, Vladimir M., 5,510,543, Cl. 568-754.000.
- Kihara, Noriaki: *See—*
- Inoki, Satoshi; Takesue, Mitsuaki; Hashimoto, Isao; Kihara, Noriaki; and Sugi, Kiyooki, 5,510,511, Cl. 560-157.000.
- Kihara, Yasuo: *See—*
- Hachisuka, Hisao; Kojima, Katsuhide; Nakazono, Yutaka; Hirose, Masahiko; Kihara, Yasuo; Maeda, Masatoshi; Ikebata, Hisashi; and Matsumoto, Kenji, 5,510,527, Cl. 562-867.000.
- Kikuchi, Toshihiro: *See—*
- Nakata, Kouichi; Kikuchi, Toshihiro; Senoo, Akihiro; and Kanemaru, Tetsuro, 5,510,218, Cl. 430-59.000.
- Kikuta, Shinji; Fukuda, Motoyuki; Nagata, Tsutomu; Nishino, Toshio; and Ichiba, Akihiko, to Mita Industrial Co., Ltd. Developing device having an improved agitation and conveyance device, 5,510,882, Cl. 355-245.000.
- Kilham, Benjamin. Remote drug injection device, 5,509,904, Cl. 604-192.000.
- Killeen, John E.: *See—*
- Bonavia, Howard V.; and Killeen, John E., 5,510,952, Cl. 361-251.000.
- Kim, Dae J., to Goldstar Co., Ltd. Method of multi-speed recording-reproducing a video signal in digital video cassette recorder, 5,510,899, Cl. 358-335.000.
- Kim, Do W.: *See—*
- Lee, Jae C.; and Kim, Do W., 5,509,283, Cl. 68-18.00F.
- Kim, Jae K., to Hyundai Electronics Industries Co., Ltd. Method for forming narrow contact holes of a semiconductor device, 5,510,286, Cl. 437-50.000.
- Kim, Jong-Rak, to Daewoo Electronics Co., Ltd. Method for detecting class errors in a transmitted image signal encoded by classified vector quantization, 5,511,136, Cl. 382-275.000.
- Kim, Yong K., to LG Semicon Co., Ltd. Method for fabricating CCD image sensors, 5,510,285, Cl. 437-53.000.
- Kim, Yongmin: *See—*
- Hicok, Gary D.; Alexander, Thomas; Lim, Yong J.; and Kim, Yongmin, 5,511,174, Cl. 395-375.000.
- Kim, Yoon J., to Research Resources, Inc. Potassium bromate replacer composition, 5,510,129, Cl. 426-62.000.
- Kim, Young-shol, to Yukong Limited. Solid electrolyte for sodium-sulfur secondary cell and process for preparing the same, 5,510,210, Cl. 429-193.000.
- Kimball, Cathy S. Outfit organizer cover, 5,509,588, Cl. 223-98.000.
- Kimberly-Clark Corporation: *See—*
- Connell, Cynthia A.; Houchens, Kimberly S.; and Van Hout, Leslie H., 5,509,142, Cl. 2-79.000.
- Hanson, William D.; Brud, Lynn C.; Byerly, Shannon K.; Ellis, Clifford J.; Everett, Rob D.; Gossen, Barbara A.; Grube, Violet M.; Iwanski, David G.; LeMahieu, David L.; Qin, Jian; Stevens, Robert A.; Wentzel, Tom K.; Yarbrough, Sandra M.; Zenker, David L.; and Zunker, MaryAnn, 5,509,915, Cl. 604-378.000.
- Hermans, Michael A.; Chen, Fung-Jou; Spiegelberg, Harry L.; Kressner, Bernhardt E.; and Nielsen, Janice G., 5,510,001, Cl. 162-113.000.
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- Yeo, Richard S., 5,509,913, Cl. 604-364.000.
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- Cheung, Tin-Tack P.; Johnson, Marvin M.; Brown, Scott H.; Zisman, Stan A.; and Kimble, James B., 5,510,550, Cl. 585-259.000.
- Kime, Frederick A.: *See—*
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- Kimizuka, Junichi: *See—*
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- Kimura, Kozo; Yoshioka, Kosuki; and Kiyohara, Tokuzo, to Matsushita Electric Co. Ind. Ltd. Speculative execution processor, 5,511,172, Cl. 395-375.000.
- Kimura, Minami, to Orient Watch Co., Ltd. Titanium alloy and method for production thereof, 5,509,979, Cl. 148-421.000.
- Kimura, Shigeo: *See—*
- Mizutani, Yasukazu; Kimura, Shigeo; and Koseki, Hideo, 5,509,786, Cl. 417-32.000.
- Ohtomo, Naoki; and Kimura, Shigeo, 5,509,420, Cl. 128-660.900.
- Kimura, Tsutomu; Fukuhara, Masaaki; Takahashi, Yasuhito; and Isono, Toru, to Fuji Xerox Co., Ltd. Electrophotographic single-component developing device, 5,510,883, Cl. 355-245.000.
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- Kincaid, Dennis C., to United States of America, Agriculture. Control of fluids, 5,509,449, Cl. 137-505.220.
- Kines, Joseph G.: *See—*
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- Kinetic Concepts, Inc.: *See—*
- Schubert, Paul E., 5,509,160, Cl. 5-630.000.
- King, Timothy B.: *See—*
- Reilly, James P.; Colby, Steven M.; and King, Timothy B., 5,510,613, Cl. 250-287.000.
- Kinoshta, Kenichi: *See—*
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- Kipp, Gary W.: *See—*
- Markin, Rodney S.; and Kipp, Gary W., 5,510,984, Cl. 364-424.020.
- Kippes, Arlin J. Transfer aid, 5,509,152, Cl. 5-81.100.
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- Kirkman, Thomas R. Apparatus and method for retaining a catheter in a blood vessel in a fixed position, 5,509,900, Cl. 604-104.000.
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- Abusleme, Julio A.; and Kirsch, Sheldon J., 5,510,435, Cl. 526-207.000.
- Kirschner, Lawrence, to Church & Dwight Co., Inc. Process for removing coatings from hard surfaces, 5,509,971, Cl. 134-7.000.
- Kirschner, Richard J.; Mott, John E.; Eckenrode, Frances M.; and Brunner, David P., to Upjohn Company, The. Eliminating internal initiation of soluble CD4 gene, 5,510,256, Cl. 435-172.300.
- Kiss, Béla: *See—*
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- Kita, Katsunori: *See—*
- Nakano, Hirofumi; Fujii, Noboru; Yamashita, Yoshinori; Saitoh, Yutaka; Agatsuma, Tsutomu; Ando, Katsuhiko; Nishiie, Yasushi; Kita, Katsunori; Morishima, Naoki; and Gomi, Katsushige, 5,510,501, Cl. 552-201.000.
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- Kitagawa, Mitsuhiro: *See—*
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- Kitahara, Tsuyoshi: *See—*
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- Kitayama, Masahiro: *See—*
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- Horie, Noriyoshi; Hosokawa, Hayami; Tada, Masami; Yamashita, Tsukasa; Ohgaki, Tatsuo; and Kiyomoto, Hironobu, 5,511,142, Cl. 385-129.000.
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- Takase, Akira; Kai, Hiroyuki; Masui, Moriyasu; Masumoto, Katuhisa; Nakamura, Akihiko; Kiyoshima, Yujiro; and Sasaki, Mikio, 5,510,506, Cl. 560-35.000.
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- Klawuhn, Manfred; Hufnagl, Walter; Müller, Roland; Schäfer, Gerhard; and Peter, Andreas, to Braun Aktiengesellschaft. Coffee maker for the preheating and keeping warm of cups, 5,509,348, Cl. 99-290.000.
- Klees, Daniel J.; and Shepherd, Terri, to Klees, Daniel J. Leash with sound, 5,509,859, Cl. 472-64.000.

- Kleiman, Mark E.; and Bennett, Robert R., to Klimex, Inc. Air shaft, 5,509,618, Cl. 242-571.200.
- Klein, Norbert; and Freiwald, Gerhard, to Firma Carl Freudenberg. Radial lip seal for a shaft in a housing, 5,509,667, Cl. 277-37.000.
- Klein, Philippe: *See—*
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- Kleindienst, Anke: *See—*
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- Kleiner, Hans-Jerg: *See—*
- Regnat, Dieter; and Kleiner, Hans-Jerg, 5,510,554, Cl. 585-466.000.
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- Klejeski, Anthony T.: *See—*
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- Kliwer, Waldemar. Pocket tripod, 5,510,863, Cl. 354-81.000.
- Klimek, David J.; and Wright, Thomas, to SNE Enterprises, Inc. Window operator assembly, 5,509,234, Cl. 49-342.000.
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- Kliot, Eugene, to Visual Impact Films Corporation. Back pack for heavy bulky footwear, 5,509,589, Cl. 224-209.000.
- Klöckner Moeller GmbH: *See—*
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- Klotzsch, Helmut W.: *See—*
- Achter, Eugene K.; Lieb, David; Beaty, John S.; Klotzsch, Helmut W.; Thompson, Craig D.; and Bosworth, Jonathan, 5,510,620, Cl. 250-339.120.
- Knauf, Edmund R., Jr.; and Schumacher, Robert G., II, to AmeTek, Inc. Faucet assembly with replaceable filter, 5,510,031, Cl. 210-460.000.
- Knauf, Vic C.; and Thompson, Gregory A. Plant fatty acid synthases, 5,510,255, Cl. 435-172.300.
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- Walles, Bethany J.; Pham, Cuong V.; Kneisel, Lawrence L.; and Hayden, Brian J., 5,510,721, Cl. 324-754.000.
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- Lang, Armin; and Knödler, Helmut, 5,509,493, Cl. 180-132.000.
- Knoll, George W. Inline carbonator, 5,510,060, Cl. 261-27.000.
- Knoop, Robert D., to Custom Metalcraft, Inc. Venting device, 5,509,564, Cl. 220-360.000.
- Knott, Willibald, to Siemens Aktiengesellschaft. X-ray tube with multiple differently sized focal spots and method for operating same, 5,511,105, Cl. 378-134.000.
- Knox, Michael E.: *See—*
- Kumar, Mahesh; and Knox, Michael E., 5,510,757, Cl. 333-104.000.
- Ko, Ensei: *See—*
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- Kobayashi, Hiroaki: *See—*
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- Kobayashi, Hiroshi: *See—*
- Ohia, Masashi; Kobayashi, Hiroshi; Sekiya, Tsuneo; Hamada, Toshimichi; Fukuda, Kyoko; and Iijima, Koji, 5,510,830, Cl. 348-36.000.
- Kobayashi, Hisashi: *See—*
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- Kobayashi, Kazunori: *See—*
- Noda, Shinya; Sekine, Kazumi; Tsuda, Tadayuki; Ikemoto, Isao; Watanabe, Kazushi; Sasago, Yoshikazu; Kobayashi, Kazunori; and Sasaki, Shinichi, 5,510,878, Cl. 355-211.000.
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- Imai, Motomasa; Shutoh, Naoki; Oh-Ishi, Katsuyoshi; Ueno, Fumio; Ohkuma, Hideo; Katsumura, Yuji; Kobayashi, Masaki; and Takahashi, Toshiyuki, 5,509,558, Cl. 218-143.000.
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- Mahoney, John J.: See—
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- Makino, Akihiro: See—
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- Makita, Kensuke; Moriguchi, Yasuo; and Okuda, Junichi, to Central Glass Company, Limited. Coating composition and method for forming thin film on substrate using same. 5,510,141, Cl. 427-165.000.
- Malak, Stephen P.: See—
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- Malamas, Michael S.; and Gunawan, Iwan, to American Home Products Corporation. Azolidinediones as antihypertensive agents. 5,510,360, Cl. 514-364.000.
- Malecha, James W.: See—
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- Malhi, Sarwinder, to Texas Instruments Incorporated. Method of making a semiconductor device with a composite drift region composed of a substrate and a second semiconductor material. 5,510,275, Cl. 437-41.000.
- Malthy, Frederick L.; Kramer, L. Jonathan; Horrocks, Leslie D., deceased; Horrocks, by Maureen, executrix; and Stern, David M., to Drexelbrook Controls, Inc. Error compensating instrument system with digital communications. 5,510,779, Cl. 340-870.300.
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- Man, Susan K.: See—
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- Mandai, Harufumi: See—
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- Mandrand, Bernard F.: See—
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- Mann, Glenn E. Alarm strap for luggage. 5,510,768, Cl. 340-571.000.
- Mann, Morris A.: See—
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- Mann, Randy W.: See—
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- Manners, Mia J.: See—
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- Manning, Harold J., to Cerad Industries, Inc. Floor dry material and method of manufacture. 5,510,310, Cl. 502-412.000.
- Manostat Corporation: See—
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- Mansson, Staffan; and Hedlund, Benny, to AB Volvo Penta. Transmission device, especially for boat motors. 5,509,863, Cl. 475-273.000.
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- Marchionna, Mario: See—
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- Marcinkowski, Victor: See—
Ryan, Dino, 5,509,477, Cl. 166-76.100.
- Marcou, Jean-Claude; Packard, Thomas N.; Finlay, David A.; and Murphy, Patrick J., to Pass & Seymour, Inc. Ground fault interrupter wiring device with improved latching and actuating components. 5,510,760, Cl. 335-18.000.
- Marcoux, B. Paul, to Flexstake, Inc. Method of retarding vegetation growth. 5,509,231, Cl. 47-58.000.
- Marechal, Christian: See—
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- Marek, Henry S.: See—
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- Markin, Rodney S.; and Kipp, Gary W., to Board of Regents-Univ. of Nebraska. Automated guided vehicle enunciator system. 5,510,984, Cl. 364-424.020.
- Markovich, Voya R.: See—
Jimenez, Lisa J.; Lawrence, William H.; Markovich, Voya R.; Owen, Robert J.; and Sambucetti, Carlos J., 5,509,557, Cl. 216-95.000.
- Markusch, Peter H.: See—
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- Marlin, Lawrence: See—
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- Marrero, Orestes. Fishing net mechanism. 5,509,227, Cl. 43-7.000.
- Marshall, Burpee W. Alarm system for precluding a child from straying. 5,510,771, Cl. 340-573.000.
- Marshall, Larry R., to Light Solutions Corporation. Passively stabilized intracavity doubling laser. 5,511,085, Cl. 372-22.000.
- Marshall, Paul N., to Abbott Laboratories. Flow cytometry lytic agent and method enabling 5-part leukocyte differential count. 5,510,267, Cl. 436-63.000.
- Martin, Dan L.: See—
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- Martin, Isabel: See—
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- Martin, J. T.: See—
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- Martin, J. Philip, to Clarke American Checks, Inc. Photocopy resistant document and method of making same. 5,510,199, Cl. 428-690.000.
- Martin, Lawrence L.; Payack, Joseph E.; and Brucato, Salvatore M., to Hoechst Marion Roussel, Inc. 4-heteroaryl-1,3-benzodiazepines and 2-substituted-gamma-(heteroaryl)benzeneethanamines. 5,510,346, Cl. 514-221.000.
- Martin Marietta Corporation: See—
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- Harris, Karl A.; Myers, Thomas H., II; and Yanka, Robert W., 5,510,644, Cl. 257-458.000.
- Kawam, Elias A.; and Cardellino, Terri A., 5,510,598, Cl. 219-505.000.
- Martin, Robert L. All-terrain vehicle enclosure. 5,509,717, Cl. 296-77.100.
- Martin, Seigbert: See—
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- Martinez, Dionisio R.; Basaly, Mores A.; and Perina, Davide, to Novamax Technologies Holdings, Inc. Process for obtaining a range of colors of the visible spectrum using electrolysis on anodized aluminium. 5,510,015, Cl. 205-173.000.
- Marylyn House: See—
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- Marzocchi, Paolo: See—
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- Mashak, James N., to Ohmeda Inc. Pump flow vaporizer. 5,509,405, Cl. 128-203.120.
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- Mason, Bradley R.; and Mason, Jeffrey T., to Breg, Inc. Leg suspension method for flexion and extension exercise of the knee or hip joint. 5,509,894, Cl. 601-34.000.
- Mason, Jeffrey T.: See—
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- Massachusetts Institute of Technology: See—
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- Azarbayevani, Ali; Galyean, Timley; and Pentland, Alex, 5,511,153, Cl. 395-119.000.
- Chiang, Yei-Ming; Lee, Jong-Ren; and Hozer, Leszek, 5,509,555, Cl. 216-56.000.
- Chun, Jung-Hoon; Lanza, Richard C.; and Saka, Nannaji, 5,509,460, Cl. 164-454.000.
- Krieger, Monty; and Kodama, Tatsuhiko, 5,510,466, Cl. 530-395.000.
- Stankovic, Aleksandar M.; Verghese, George C.; and Perreault, David J., 5,510,698, Cl. 323-282.000.
- Stephanopoulos, Gregory; Singhvi, Rahul; Park, Seujeung; Flytzani-Stephanopoulos, Maria; and Applegate, Mark A., 5,510,262, Cl. 435-240.230.
- Massachusetts Institute of Technology, a MA corp.: See—
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- Masseling, Willem H.: See—
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- Mastandra, Mark S.: See—
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- Masuda, Minoru: See—
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- Masuda, Shunji: See—
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- Masui, Moriyasu: See—
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- Masui, Shohei; Masumoto, Masahito; Usui, Nobuhiro; Hosokawa, Toshihiro; and Ishitsubo, Ryuchi, to Sumitomo Chemical Company, Limited. Process for producing a multilayer molded article. 5,509,990, Cl. 156-242.000.
- Masukawa, Seizo: See—
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- Masumoto, Karuhisa: See—
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- Masumoto, Tsuyoshi; Inoue, Akihisa; and Horio, Yuma, to Yamaha Corporation. High strength and anti-corrosive aluminum-based alloy. 5,509,978, Cl. 148-403.000.
- Masumoto, Tsuyoshi: See—
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- Masuno, Takatsugu: See—
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- Masuyama, Kenichi; Kato, Kazuo; and Araki, Hiroaki, to Fuji Photo Film Co., Ltd. Magnetic recording medium. 5,510,177, Cl. 428-323.000.
- Matalevich, Joseph R.; Lundy, Douglas A.; Cortash, Michael J.; and Grande, Michael L., to Xerox Corporation. Magnetic toner compositions. 5,510,221, Cl. 430-106.600.
- Matassa, Victor G.; Reeve, Austin J.; Sternfeld, Francine; Routledge, Helen; and Street, Leslie, to Merck, Sharp and Dohme Limited. Imidazole, triazole and tetrazole derivatives. 5,510,362, Cl. 514-381.000.
- Matassa, Victor G.: See—
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- Matec Holding AG: See—
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- Maternal Engineering Technology Laboratory, Inc.: See—
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- Matono, Naoto: See—
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- Matra Transport: See—
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- Matson, Robert M.: See—
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- Matsubara, Kunihiro: See—
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- Matsuda, Hiromu: See—
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- Matsuda, Kieichi: See—
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- Matsuda, Shinpei: See—
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- Matsuda, Yuichi: See—
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- Matsui, Shigezumi: See—
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- Matsumaru, Shigeo: See—
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- Matsumoto, Kenji: See—
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- Matsumoto, Kiyoshi; Maeda, Takeshi; Nakamura, Shigeru; Umeda, Mariko; and Kasai, Masuo, to Hitachi, Ltd. Focus error detecting method and optical head using the same. 5,511,050, Cl. 369-44.230.
- Matsumoto, Masahito: See—
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- Matsumoto, Shigeharu: See—
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- Matsumura, Osamu, to Sony Corporation. Digital video tape recorder. 5,510,903, Cl. 358-335.000.
- Matsunaga, Kuniyuki; Ohwada, Junichi; Suzuki, Masahiko; and Yamamoto, Hideaki, to Hitachi, Ltd. Liquid crystal display device with a structure of improved terminal contact. 5,510,918, Cl. 359-88.000.
- Matsunaga, Nobuko: See—
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- Matsunaga, Yoshikuni: See—
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- Matsuno, Hiromitsu: See—
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- Matsuo, Masashi; Yamauchi, Masaru; Matsunaga, Nobuko; Yokotsuka, Shunsuke; and Unoki, Masao, to Asahi Glass Company, Ltd. Fluoropolymer composition for coating and article coated with the same. 5,510,406, Cl. 524-237.000.
- Matsushima, Hideyuki: See—
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- Matsushima, Takeo: See—
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- Matsushita Electric Co. Ind. Ltd.: See—

- Kimura, Kozo; Yoshioka, Kosuki; and Kiyohara, Tokuzo, 5,511,172, Cl. 395-375.000.
- Matsushita Electric Corporation of America: See—
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- Matsushita Electric Industrial Co., Ltd.: See—
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- Matsuyama, Jinsho; Kariya, Toshimitsu; Fujioka, Yasushi; Takei, Tetsuya; Nakagawa, Katsumi; Kanai, Masahiro; and Echizen, Hiroshi, to Canon Kabushiki Kaisha. Continuous film-forming process using microwave energy in a moving substrate web functioning as a substrate and plasma generating space, 5,510,151, Cl. 427-509.000.
- Matsuzaki, Kazuo: See—
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- Mattes, Henri: See—
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- Matthews, Demetrios N.: See—
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- Matula, Paul A.: See—
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- Matuzaki, Yoshinobu: See—
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- Maurel, Olivier: See—
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- Maxxim Medical, Inc.: See—
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- May, Timothy J., to Reynolds Consumer Products Inc. Closure arrangement having a peelable seal, 5,509,735, Cl. 383-210.000.
- Mayapple Holdings, LLC: See—
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- Mayhew, Christopher A., to Vision III Imaging, Inc. Autostereoscopic imaging apparatus and method using suit scanning of parallax images, 5,510,831, Cl. 348-47.000.
- Mayhugh, Daniel R.: See—
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- Mayo Foundation for Medical Education and Research: See—
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- Mazda Motor Corporation: See—
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- Shimbara, Yoshimi, 5,509,848, Cl. 451-24.000.
- Mazelsky, Robert: See—
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- Mazzone, Dominick N.: See—
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- McAllister, Kenneth A. D.: See—
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- McArthur, Bruce B.: See—
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- McCandlish, Elizabeth, to Colgate-Palmolive Co. Enzymatic aqueous pretreatment composition for dishware, 5,510,052, Cl. 252-174.120.
- McCanlies, Elizabeth R.: See—
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- McCann, James M.: See—
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- McCauley, Phillip F.: See—
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- McClaren, Ronald L.: See—
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- McConnell, Bain C.: See—
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- Mitsubishi Denki Kabushiki Kaisha: See—
Arimoto, Kazutami, 5,510,749, Cl. 327-546.000.
- Fujiki, Noriaki; Harada, Shigeru; Adachi, Hiroshi; and Adachi, Etsushi, 5,510,653, Cl. 257-759.000.
- Fukunaga, Masanori, 5,510,943, Cl. 361-18.000.
- Irie, Mitsuru; Utakouji, Takeshi; Karaki, Morihiro; Takeshita, Nobuo; Koike, Manabu; Satou, Yasuyuki; Egusa, Naoyuki; Shinoda, Masahisa; Ishimori, Akira; Shima, Akihiro; and Yagi, Shigenori, 5,511,048, Cl. 369-13.000.
- Kashida, Takashi, 5,511,047, Cl. 368-119.000.
- Machida, Hirohisa, 5,511,189, Cl. 395-600.000.
- Minato, Tadaharu, 5,510,274, Cl. 437-6.000.
- Morikawa, Hiroaki; and Kumabe, Hisao, 5,510,272, Cl. 437-2.000.
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- Nakamura, Koji; Tsukui, Keitaro; and Umino, Kenichi, 5,510,671, Cl. 313-477.00R.
- Noda, Minoru, 5,510,280, Cl. 437-41.000.
- Sawada, Seiji; and Konishi, Yasuhiro, 5,511,029, Cl. 365-201.000.
- Shimizu, Masako; and Tanaka, Ken-ichi, 5,511,133, Cl. 382-156.000.
- Suda, Eiichi, 5,511,169, Cl. 395-280.000.
- Mitsubishi Gas Chemical Company, Inc.: See—
Inoue, Yoshiaki; Murabayashi, Shigeru; Yoshikawa, Yoshio; Nagasaka, Takeshi; Harima, Yoshihiko; and Yoshino, Isamu, 5,510,166, Cl. 428-76.000.
- Mitsubishi Kasei Corporation: See—
Nakamura, Atsushi; and Nakashima, Satoshi, 5,510,176, Cl. 428-316.000.
- Mitsubishi Materials Corporation: See—
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- Mitsubishi Oil Co., Ltd.: See—
Yabumoto, Junzuke; and Hirose, Masanori, 5,510,019, Cl. 210-137.000.
- Mitsubishi Shindoh Co., Ltd.: See—
Takahashi, Shunji; Masukawa, Seizo; Futatsuka, Rensei; Sugimoto, Tetsuya; Suzuki, Takeshi; Azuma, Chuzo; Kanda, Yuichi; and Fukatami, Takao, 5,510,197, Cl. 428-670.000.
- Mitsui Petrochemical Industries, Ltd.: See—
Inoki, Satoshi; Takesue, Mitsuyuki; Hashimoto, Isao; Kihara, Noriaki; and Sugi, Kiyooki, 5,510,511, Cl. 560-157.000.
- Tan, Shoji; Shigemura, Yukimasa; Abe, Shinji; and Narita, Junichi, 5,510,565, Cl. 585-823.000.
- Mitsuya, Munehisa; Wada, Yasuo; Heike, Seiji; and Kondo, Seiichi, to Hitachi, Ltd. Solid surface observation method and apparatus therefor, and electronic apparatus formed of the solid surface observation apparatus and method of forming the electronic apparatus. 5,510,614, Cl. 250-306.000.
- Mittler, James A.: See—
Grege, Eugene S., III; and Minter, James A., 5,510,793, Cl. 342-20.000.
- Miura, Toshinari: See—
Watabe, Masahiro; and Miura, Toshinari, 5,510,887, Cl. 355-299.000.
- Miwa, Akio: See—
Ishikawa, Osamu; Oya, Naoko; Sasaki, Michio; and Miwa, Akio, 5,509,973, Cl. 136-251.000.
- Miyachi, Yoshifumi; Urakami, Kazuto; and Taninaka, Setsuo, to Sanyo Turf Co., Ltd.; and Hayakawa Rubber Company Limited. Lawn protecting method and elastic body for lawn protection. 5,509,230, Cl. 47-58.000.
- Miyadera, Yasuo: See—
Matsuura, Hidekazu; Iwasaki, Yoshihide; Ikeda, Kaori; Suzuki, Takayuki; Tanaka, Masashi; and Miyadera, Yasuo, 5,510,425, Cl. 525-423.000.
- Miyake, Toshio: See—
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- Miyamoto, Hidenori: See—
Omi, Junichi; Miyamoto, Hidenori; Amanuma, Tatsuo; and Nakamura, Toshiyuki, 5,510,683, Cl. 318-271.000.
- Miyasaka, Mitsutoshi, to Seiko Epson Corporation. CVD apparatus, method of forming semiconductor film, and method of fabricating thin-film semiconductor device. 5,510,146, Cl. 427-255.000.
- Miyata, Souichi: See—
Terasaka, Toshiaki; Muramatsu, Tsuyoshi; Miyata, Souichi; Kuwabara, Tatsuyuki; Tomita, Masaharu; Nagamura, Kiyotaka; and Nakamura, Takao, 5,511,215, Cl. 395-800.000.
- Miyatake, Nobuhiro: See—
Tung, Kenny S. C.; Harvey, John; Kida, Yasuo; Derossi, Christopher S.; Hara, Keisuke; and Miyatake, Nobuhiro, 5,511,193, Cl. 395-650.000.
- Miyauchi, Daisuke: See—
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- Miyauchi, Yasunori: See—
- Morikawa, Shuichi; Futatsuka, Masahiko; Ishida, Satoshi; Miyauchi, Yasunori; Masuda, Minoru; and Takagawa, Makoto, 5,510,909, Cl. 358-498.000.
- Miyazaki, Hiroyuki, to NEC Corporation. Bar code reader having means for switching between drives of a plurality of semiconductor laser diodes at high speed. 5,510,605, Cl. 235-467.000.
- Miyazaki, Seizo: See—
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- Miyazawa, Takeshige: See—
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- Miyoshi, Kazuhiko: See—
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- Miz Co., Ltd.: See—
Arai, Kazuyoshi; Shoda, Ichiro; Kohno, Naoshi; Sato, Takayuki; and Okamoto, Yoko, 5,510,009, Cl. 205-746.000.
- Mizrahi, Joseph: See—
Daniel, Abraham M.; Eyal, Aharon M.; Mizrahi, Joseph; Hazan, Betty; Fisher, Rod R.; Kolstad, Jeffrey J.; and Stewart, Brenda F., 5,510,526, Cl. 562-580.000.
- Mizugaki, Hisayoshi: See—
Ishizaka, Hironori; Wakushima, Shigetoo; Mizugaki, Hisayoshi; and Ohta, Masahiko, 5,510,803, Cl. 343-700.0MS.
- Mizuide, Masuya: See—
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- Mizutani, Hideo; Amano, Kesayoshi; Wakamoto, Shinji; and Imai, Yuji, to Nikon Corporation. Inclination detecting apparatus and method. 5,510,892, Cl. 356-139.100.
- Mizutani, Yasukazu; Kimura, Shigeo; and Koseki, Hideki, to Ubukata Industries Co., Ltd. Thermal protector mounting structure for hermetic refrigeration compressors. 5,509,786, Cl. 417-32.000.
- MMS Space Systems Limited: See—
Wishart, Alexander W., 5,510,799, Cl. 342-373.000.
- Moazzami, Reza: See—
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- Maniar, Papu D.; Moazzami, Reza; and Mogab, C. Joseph, 5,510,651, Cl. 257-751.000.
- Mobil Oil Corporation: See—
Ashjian, Henry; Shen, Dong-Ming; and Wu, Margaret M., 5,510,549, Cl. 585-22.000.
- Chang, Clarence D.; Kresge, Charles T.; Santiesteban, Jose G.; and Vartuli, James C., 5,510,309, Cl. 502-308.000.
- Coolbaugh, Thomas S.; Loveless, Frederick C.; Matthews, Demetrios N.; and Rudnick, Leslie R., 5,510,548, Cl. 585-12.000.
- Feuston, Maureen H.; Kommneni, Choudari; Low, Lawrence K.; and Mackerer, Carl R., 5,510,392, Cl. 514-772.300.
- Hilbert, Timothy T.; Mazzone, Dominick N.; and Sarli, Michael S., 5,510,016, Cl. 208-89.000.
- Mochiki, Hiroshi: See—
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- Mochizuki, Kazuo: See—
Nakamura, Hiroki; Fujimura, Tohru; Ohnuma, Hiroaki; Mochizuki, Kazuo; Morito, Nobuyuki; and Katayama, Michio, 5,510,196, Cl. 428-659.000.
- Mochizuki, Yayoi: See—
Ando, Ryo; and Mochizuki, Yayoi, 5,511,061, Cl. 369-124.000.
- Mock, Elmar; and Aeschlimann, Marcel, to Tetra Laval Holdings & Finance S.A. Closure unit. 5,509,585, Cl. 222-541.100.
- Moderi, Martin J.; Matsumoto, Shigeharu; Bouzide, Paul M.; Tsau, Yung-Chun; Kristiansen, Inge B.; Castor, Patrick F.; Nelson, John W.; and Carlson, Roger W., to Restaurant Technology, Inc. Data processing system and method for retail stores. 5,510,979, Cl. 364-405.000.
- Modert, Keith J.: See—
Kumar, Ramesh C.; Arudi, Ravindra L.; Carlson, James G.; Chang, Daniel Y.; Haidos, John C.; Modert, Keith J.; Patel, Suman K.; and Rotto, Nelson T., 5,510,187, Cl. 428-425.900.
- Moench, Uwe: See—
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- Mogab, C. Joseph: See—
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- Mogamiya, Makoto, to Asahi Kogaku Kogyo Kabushiki Kaisha. Apparatus for adjusting intermeshing angle in feed screw mechanism. 5,510,937, Cl. 359-823.000.
- Mohan, Thyagarajan: See—
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- Molex Incorporated: See—
Comerci, Joseph D.; DeRoss, Robert; and Data, Mark M., 5,509,812, Cl. 439-76.100.
- Ingwersen, Peter, 5,509,201, Cl. 29-861.000.
- Lenz, William R.; and Patel, Arvind, 5,509,574, Cl. 221-197.000.
- Watanabe, Souichi, 5,509,195, Cl. 29-755.000.
- Molozay, Maurice: See—

- d'Appollonia, Sylvain S.; and Molozay, Maurice, 5,509,292, Cl. 73-1.00G.
 Molus, Richard: See—
 Scofield, Robert E.; Molus, Richard; and Ness, Donald L., 5,510,612, Cl. 250-239.000.
 Molyneaux, David A.; and Liu, Haiying, to Picker International, Inc. Digital combination and correction of quadrature magnetic resonance receiver coils, 5,510,711, Cl. 324-309.000.
 Mon Cheri, Inc.: See—
 Banke, Cheri L., 5,509,545, Cl. 211-205.000.
 Mondini, Giancarlo; Meyer, Urs; Moser, Robert; Bischofberger, Jurg; Keller, Urs; and Jomot, Erich. Autoleveller draw frame having process feed back control system, 5,509,179, Cl. 19-239.000.
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 Montie, Edwin A.: See—
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 Montner, Paul; Chick, Thomas W.; Stark, Dan; and Riedesel, Marvin L., to University of New Mexico. Exercise hydration regimen to enhance exercise endurance and performance, 5,510,335, Cl. 514-23.000.
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 Tacklind, Thomas A.; and Moon, William G., 5,510,940, Cl. 360-106.000.
 Moore, Andrew J.; Ma, David L.; Bontz, Robert L.; and Bonham, Harry B., Jr., to Alcatel Network Systems, Inc. Method for bonding a fiber to a sleeve for fiber optic packaging applications, 5,509,952, Cl. 65-406.000.
 Moore, Cecil: See—
 England, David G.; Eschmann, Michael; and Moore, Cecil, 5,511,069, Cl. 370-24.000.
 Moore, Frank D., to Norton Chemical Process Products Corp. Non-welded support plate member, 5,510,061, Cl. 261-94.000.
 Moore, Frank D., to Norton Chemical Process Products Corp. Securing packing elements, 5,510,170, Cl. 428-184.000.
 Moore, Rebecca G.: See—
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 Cawfield, David W.; Dossan, Ronald L.; Loftis, Harry J.; Moore, Sanders H.; Brooker, Robert T.; and Stinrat, Jay S., 5,510,097, Cl. 423-387.000.
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 Corke, Michael; Werthman, Dean A.; Moran, Robin M.; Stowe, David W.; Ronan, Neville J.; and Beaudet, Amy R., 5,510,917, Cl. 359-110.000.
 Moraveji, Farhood; and Musbah, Mahmud F., to National Semiconductor Corporation. Fast slewing amplifier using dynamic current mirrors, 5,510,754, Cl. 330-267.000.
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 Moretti, Massimo. Exercise apparatus, 5,509,875, Cl. 482-90.000.
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 Morgan, Scott D., to Minnesota Mining and Manufacturing Company. Method for rapid quantification of microorganism growth, 5,510,246, Cl. 435-39.000.
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 Mori, Masahiko, to Alps Electric Co., Ltd. Print band initializing method, 5,509,740, Cl. 400-145.100.
 Mori, Takahiro; and Horiyama, Takashi, to Konica Corporation. Magnetic recording medium and magnetic recording method, 5,510,168, Cl. 428-141.000.
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 Moriguchi, Yasuo: See—
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 Morikawa, Hiroaki; and Kumabe, Hisao, to Mitsubishi Denki Kabushiki Kaisha. Method for fabricating solar cell, 5,510,272, Cl. 437-2.000.
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 Morioka, Tetsuya, to Fujitsu Limited. Buffer storage control system, 5,510,973, Cl. 364-134.000.
 Morishima, Naoki: See—
 Nakano, Hirofumi; Fujii, Noboru; Yamashita, Yoshinori; Saitoh, Yutaka; Agatsuma, Tsutomu; Ando, Katsuhiko; Nishii, Yasushi; Kita, Katsunori; Morishima, Naoki; and Gomi, Katsushige, 5,510,501, Cl. 552-201.000.
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 Moroi, Hidehiro; and Kakegawa, Kazutomo, to Asmo Co., Ltd. Drive control circuit for motor, 5,510,684, Cl. 318-282.000.
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 Morozov, Alexei; Bougrova, Antonina; Kharchevnikov, Vadim; and Valentin, Dominique, to Societe Europeenne de Propulsion. Device for measuring variations in the thrust of a plasma acceleration with closed electron drift, 5,509,266, Cl. 60-203.100.
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 Bass, Gregory T., 5,509,470, Cl. 165-158.000.
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 Mosquera, Rene A., to ITT Corporation. Socket contact for mounting in a hole of a device, 5,509,814, Cl. 439-82.000.
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 Abdo, David G., 5,511,170, Cl. 395-280.000.
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 Mahabadi, John K., 5,510,735, Cl. 327-77.000.
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 O'Dea, Robert J.; and Cadd, Jimmy W., 5,511,232, Cl. 455-54.100.
 Schneider, Christian; Hackenberg, John H.; and Clark, Aaron P., 5,509,704, Cl. 292-163.000.
 Theobald, David J., 5,510,693, Cl. 320-24.000.
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 Moy, Grant G. Bent chest tube assembly, 5,509,909, Cl. 604-281.000.
 Mozar, Stefan G.; and Van Bodegraven, Tijmen C., to U.S. Philips Corporation. Power supply over-voltage protection, 5,510,944, Cl. 361-18.000.
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 Aulick, Rodney O.; Beach, Bradley L.; Franey, Terence E.; Mrvos, James M.; and Vella, David G., 5,510,820, Cl. 347-85.000.
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- Nash, Shetty, Chandrashekar S.; and Ramesh, Manian, 5,510,439, Cl. 526-279.000.
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- Nass Magnet GmbH: *See—*
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- Shimony, Ilan; and Greenfeld, Zvi, 5,511,219, Cl. 395-800.000.
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- Umstadt, Ruth; and Madsen, Benny, 5,511,236, Cl. 455-76.000.
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 Hillstead, Richard A.; and Muhlestein, Joseph B., 5,509,908, Cl. 604-264.000.
 Nowlin, Tim: See—
 Albright, Walter E., Jr.; and Nowlin, Tim, 5,509,837, Cl. 440-111.000.
 Nozoe, Shunpei: See—
 Ito, Seiya; Hirao, Motoaki; Shiraha, Michihiro; Nozoe, Shunpei; Kawamura, Kazuyoshi; Fujii, Kenichi; Harada, Eiichi; Ino, Tatsuo; Uozumi, Masahiro; and Abe, Tetsuo, 5,509,264, Cl. 60-39.120.
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 Nuckolls, Charles E.: See—
 Lundberg, James R.; and Nuckolls, Charles E., 5,511,100, Cl. 375-376.000.
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- Hongo, Kazuya; Nukada, Katsumi; Iijima, Masakazu; Takahashi, Noriyoshi; Suwabe, Masaaki; and Takimoto, Hitoshi, 5,510,217, Cl. 430-58.000.
- Numata, Ken, to Texas Instruments Incorporated. Method of making reliable metal leads in high speed LSI semiconductors using thermosensitive layers. 5,510,293, Cl. 437-195.000.
- Nuske, David: See—
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- Nutronics Electronics Co., Inc.: See—
Maiale, Nicholas F., Jr.; and Hausman, Donald F., 5,510,679, Cl. 315-194.000.
- Nuxoll, James P., to Micron Technology, Inc. Apparatus for loading and unloading burn-in boards. 5,509,193, Cl. 29-741.000.
- Nuyen, Linh T., to Picogiga Societe Anonyme. Integrated circuit having complementary heterojunction field effect transistors. 5,510,635, Cl. 257-195.000.
- NVX Corporation: See—
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- Nyland, David, to Western Atlas International, Inc. Method for calculating the optimum vibrator spacing for ground roll reduction. 5,511,040, Cl. 367-56.000.
- Nys, Dirk: See—
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- Oberdorf, Klaus: See—
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- Obusu, Charles B., to Inter-City Products Corporation (USA). Interrupted fin for heat exchanger. 5,509,469, Cl. 165-151.000.
- O'Brien, Edward J.: See—
Bloch, Nathan D.; and O'Brien, Edward J., 5,509,593, Cl. 225-37.000.
- O'Brien, Francis J., Jr., to United States of America, Navy. Enhanced adaptive statistical filter providing improved performance for target motion analysis noise discrimination. 5,511,042, Cl. 367-135.000.
- O'Brien, Rita M.: See—
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- O'Brien, Stephen W., to Tripac International, Inc. Method for an air conditioning system. 5,509,276, Cl. 62-298.000.
- Occidental Chemical Corporation: See—
Rutan, Charles R.; Sumrall, Jack D.; and Alex, Anthony L., 5,509,435, Cl. 137-15.000.
- Ochi, Hisayuki: See—
Kukimoto, Tsutomu; Yusa, Hiroshi; Tomiyama, Koichi; Takiguchi, Tsuyoshi; Imai, Eiichi; Kuribayashi, Tetsuya; Ochi, Hisayuki; and Suetatsu, Hiroyuki, 5,510,223, Cl. 430-126.000.
- Ochoa, Sandy: See—
Bonko, Mark L.; Lopp, Loran C., Jr.; and Ochoa, Sandy, 5,509,456, Cl. 157-1.000.
- Oda, Kiyoshi: See—
Yuuki, Kenji; Oda, Kiyoshi; and Matsushima, Hideyuki, 5,509,181, Cl. 24-116.00A.
- Oda, Toshiaki: See—
Kyotani, Yoshinori; Kawamine, Katsumi; Toma, Tsutomu; Ohgiya, Tadaaki; Yamaguchi, Takashi; Onogi, Kazuhiro; Sato, Seiichi; Shimizu, Noboru; Shigyo, Hiromichi; Ohta, Tomio; Oda, Toshiaki; Okuno, Yukihiko; Shibuya, Kimiyuki; Takahashi, Yoshio; Fujii, Mikio; and Uchida, Yasumi, 5,510,366, Cl. 514-411.000.
- Odake, Yoshinori: See—
Okuda, Yasushi; Odake, Yoshinori; Nakao, Ichiro; and Ichikawa, Youhei, 5,510,639, Cl. 257-317.000.
- O'Dea, Robert J.; and Cadd, Jimmy W., to Motorola, Inc. Method for providing autonomous radio talk group configuration. 5,511,232, Cl. 455-54.100.
- Offeron, Leo A. Painter's supply cart. 5,509,672, Cl. 280-47.350.
- Officina Meccanica Sestese S.p.A.: See—
Maggioli, Cesarino, 5,509,594, Cl. 226-35.000.
- Ogasawara, Takio; and Yamamoto, Manabu, to Sanshin Kogyo Kabushiki Kaisha. Outboard motor. 5,509,836, Cl. 440-76.000.
- Ogawa, Chihito, to NEC Corporation. Semiconductor device. 5,510,642, Cl. 257-380.000.
- Ogawa, Francis T.: See—
Buffaloe, George W., IV; Ogawa, Francis T.; and Brugger, James M., 5,510,716, Cl. 324-445.000.
- Buffaloe, George W., IV; Ogawa, Francis T.; and Brugger, James M., 5,510,717, Cl. 324-445.000.
- Ogawa, Hisahito: See—
Kuramoto, Yasunori; and Ogawa, Hisahito, 5,511,134, Cl. 382-158.000.
- Ogawa, Ken: See—
Oshima, Yoshikazu; Ogawa, Ken; and Nishida, Toshiyuki, 5,509,389, Cl. 123-423.000.
- Oguchi, Takahiro: See—
Shido, Shunichi; Hatanaka, Katsunori; Sakai, Kunihiro; Oguchi, Takahiro; and Yamano, Akihiko, 5,510,858, Cl. 348-718.000.
- Ogundiran, Sunday O.: See—
McGehee, James F.; Ogundiran, Sunday O.; and Lin, Robert, 5,510,521, Cl. 562-414.000.
- Oh, Don S.; Shin, Dong J.; and Lee, Hun, to Electronics and Telecommunications Research Institute. Speech path switching control apparatus and method for making maintenance of speech possible upon occurrence of fault in echo cancellation. 5,511,064, Cl. 370-15.000.
- Ohba, Takao: See—
Kamimaki, Hideki; Nishioka, Kiyokazu; Tachiuchi, Tsuguji; Tsuchiya, Nobuo; Jinushi, Masahiro; Sadamitsu, Hitoshi; Ito, Hiroshi; Yoshitomi, Takashi; Isaji, Koichi; and Ohba, Takao, 5,511,201, Cl. 395-750.000.
- Ohchi, Yukikazu: See—
Kai, Yoshiaki; Takahashi, Kiyosi; and Ohchi, Yukikazu, 5,510,513, Cl. 560-197.000.
- Ohde, Yuko; Tanaka, Hideo; and Kuroda, Ichiro, to NEC Corporation. Program control circuit determining the designated number of times a sequence of instructions is repetitively executed to prevent further execution of a jump instruction. 5,511,207, Cl. 395-800.000.
- Ohgaki, Tatsuo: See—
Horie, Noriyoshi; Hosokawa, Hayami; Tada, Masami; Yamashita, Tsukasa; Ohgaki, Tatsuo; and Kiyomoto, Hironobu, 5,511,142, Cl. 385-129.000.
- Ohgiya, Tadaaki: See—
Kyotani, Yoshinori; Kawamine, Katsumi; Toma, Tsutomu; Ohgiya, Tadaaki; Yamaguchi, Takashi; Onogi, Kazuhiro; Sato, Seiichi; Shimizu, Noboru; Shigyo, Hiromichi; Ohta, Tomio; Oda, Toshiaki; Okuno, Yukihiko; Shibuya, Kimiyuki; Takahashi, Yoshio; Fujii, Mikio; and Uchida, Yasumi, 5,510,366, Cl. 514-411.000.
- Ohia, Masashi; Kobayashi, Hiroshi; Sekiya, Tsuneo; Hamada, Toshimichi; Fukuda, Kyoko; and Iijima, Koji, to Sony Corporation. Apparatus and method for producing a panorama image using a motion vector of an image in an image signal. 5,510,830, Cl. 348-36.000.
- Oh-Ishi, Katsuyoshi: See—
Imai, Motomasa; Shutoh, Naoki; Oh-Ishi, Katsuyoshi; Ueno, Fumio; Ohkuma, Hideo; Katsumura, Yuji; Kobayashi, Masaki; and Takahashi, Toshiyuki, 5,509,558, Cl. 218-143.000.
- Ohkuma, Hideo: See—
Imai, Motomasa; Shutoh, Naoki; Oh-Ishi, Katsuyoshi; Ueno, Fumio; Ohkuma, Hideo; Katsumura, Yuji; Kobayashi, Masaki; and Takahashi, Toshiyuki, 5,509,558, Cl. 218-143.000.
- Ohlsson, Thomas: See—
Dellby, Fredrik; and Ohlsson, Thomas, 5,509,248, Cl. 52-742.110.
- Ohmeda Inc.: See—
Mashak, James N., 5,509,405, Cl. 128-203.120.
- Ohmido, Tatsuya, to Fujitsu Limited. Non-volatile memory controlling apparatus and applications of the same to electronic computer peripheral equipments. 5,511,183, Cl. 395-182.120.
- Ohnori, Toshiyuki; Hatanaka, Shigemi; Honma, Yasuhiro; Kobayashi, Hiroaki; Saito, Eiichi; and Hamano, Ichiro, to Kao Corporation and Shibuya Kogyo Co., Ltd. Article transportation processing system. 5,509,524, Cl. 198-465.100.
- Ohnishi, Hiroshi; Kitano, Kouji; Kayano, Mitsuo; and Kurihara, Nobuo, to Hitachi, Ltd. Automatic automobile transmission with variable shift pattern controlled in response to estimated running load. 5,510,982, Cl. 364-424.100.
- Ohnishi, Takafumi: See—
Terui, Nobuo; Ohnishi, Takafumi; and Furuta, Kenji, 5,510,924, Cl. 359-143.000.
- Ohnishi, Tsukasa: See—
Gleich, Gerald J.; Ohnishi, Tsukasa; and Hunt, Loren W., 5,510,339, Cl. 514-171.000.
- Ohno, Takeshi: See—
Ohtoko, Naotsugu; and Ohno, Takeshi, 5,509,615, Cl. 242-43.200.
- Ohno, Tetuo; Kuroda, Yoshitaka; Kobayashi, Hisashi; and Matuzaki, Yoshinobu, to Nippondenso Co., Ltd. Forming roller for corrugated fin. 5,509,288, Cl. 72-186.000.
- Ohnuma, Hiroaki: See—
Nakamaru, Hiroki; Fujimura, Tohru; Ohnuma, Hiroaki; Mochizuki, Kazuo; Morito, Nobuyuki; and Katayama, Michio, 5,510,196, Cl. 428-659.000.
- Ohsawa, Yutaka: See—
Yamamoto, Masato; Yamanaka, Toshimasa; Nakajima, Masahiro; and Ohsawa, Yutaka, 5,510,875, Cl. 354-409.000.
- Ohta, Masahiko: See—
Ishizaka, Hironori; Wakushima, Shigetoo; Mizugaki, Hisayoshi; and Ohta, Masahiko, 5,510,803, Cl. 343-700.000.
- Ohta, Tomio: See—
Kyotani, Yoshinori; Kawamine, Katsumi; Toma, Tsutomu; Ohgiya, Tadaaki; Yamaguchi, Takashi; Onogi, Kazuhiro; Sato, Seiichi; Shimizu, Noboru; Shigyo, Hiromichi; Ohta, Tomio; Oda, Toshiaki; Okuno, Yukihiko; Shibuya, Kimiyuki; Takahashi, Yoshio; Fujii, Mikio; and Uchida, Yasumi, 5,510,366, Cl. 514-411.000.
- Ohtoko, Naotsugu; and Ohno, Takeshi, to Kabushiki Kaisha Mino Seisakusho. Irregular pitch grooved traverse drum having shifted yard path turning points. 5,509,615, Cl. 242-43.200.
- Ohtomo, Naoki; and Kimura, Shigeo, to Aloka Co., Ltd. Bone assessment apparatus and method. 5,509,420, Cl. 128-660.900.
- Ohtsubo, Hiroyasu: See—
Nishizawa, Akihito; Nishimura, Ryuji; and Ohtsubo, Hiroyasu, 5,510,835, Cl. 348-242.000.
- Ohitsuki, Munenori: See—
Sato, Shinichi; Ohitsuki, Munenori; Iwaguchi, Isao; and Shinoda, Ichiro, 5,511,087, Cl. 372-38.000.
- Ohwada, Junichi: See—
Matsunaga, Kuniyuki; Ohwada, Junichi; Suzuki, Masahiko; and Yamamoto, Hideaki, 5,510,918, Cl. 359-88.000.

- Ohya, Tatsushi; Nakata, Masahiro; and Matono, Naoto, to Sanyo Electric Co., Ltd. Magneto-resistive type magnetic head with a shunt layer of molybdenum. 5,510,941, Cl. 360-113.000.
- Oishi, Noriaki; and Veltman, Markus H., to Sony Corporation. Apparatus and method for multiplexing encoded data signals and recording medium having multiplexed signals recorded thereon. 5,511,054, Cl. 369-59.000.
- Oja, Chris J. Wheel hole and lug measuring tool and method. 5,509,208, Cl. 33-203.000.
- Okabe, Naoto; and Kato, Naohito, to Nippondenso Co., Ltd. Insulated gate bipolar transistor. 5,510,634, Cl. 257-139.000.
- Okada, Seiji; Suzuki, Yutaka; Sakamoto, Kouichi; Teshigahara, Hitoshi; Taka, Takao; Fukada, Yasuto; and Oki, Masami, to Sumitomo Metal Industries, Ltd. Hot pressure welding of hot steel stock. 5,509,600, Cl. 228-205.000.
- Okada, Yoshiyuki, to Fujitsu Limited. Process and apparatus for image magnification. 5,511,137, Cl. 382-298.000.
- Okada, Yuzo; and Kato, Toshio, to Ajinomoto Co., Inc. Sweet ice stuffs and jellied foods. 5,510,137, Cl. 426-565.000.
- Okamoto, Hiroshi: See—
Tanaka, Naoki; Okamoto, Hiroshi; Naito, Masayoshi; Umemura, Shin-ichiro; Morooka, Yasuo; Kayama, Masahiro; and Okudaira, Hiroaki, 5,510,976, Cl. 364-148.000.
- Okamoto, Masaya; and Chiba, Jiro, to Idemitsu Petrochemical Co., Ltd. Polycarbonate resin composition and process for producing the same. 5,510,414, Cl. 524-494.000.
- Okamoto, Yoko: See—
Arai, Kazuyoshi; Shoda, Ichiro; Kohno, Naoshi; Sato, Takayuki; and Okamoto, Yoko, 5,510,009, Cl. 205-746.000.
- Okamura, Hisatake: See—
Tsuru, Teruhisa; Okamura, Hisatake; Mandai, Harufumi; Kato, Mitsuhide; and Toneyawa, Ken, 5,510,802, Cl. 343-700.000.
- Okamura, Nobuyuki; and Yamagami, Atsushi, to Canon Kabushiki Kaisha. Method for forming a functional deposited film by bias sputtering process at a relatively low substrate temperature. 5,510,011, Cl. 204-192.300.
- Okamura, Tetsuya: See—
Yamaoka, Fumiyuki; Takahashi, Toru; Okamura, Tetsuya; and Nakamura, Michiya, 5,510,985, Cl. 364-424.050.
- Okano, Hiroshi; and Iwatani, Masanobu, to Asahi Glass Company Ltd. Container for transportation. 5,509,559, Cl. 220-1.500.
- Okano, Teruo: See—
Yokoyama, Masayuki; Sakurai, Yasuhisa; Okano, Teruo; and Kataoka, Kazunori, 5,510,103, Cl. 424-78.080.
- Okazawa, Kazuhiko: See—
Sato, Kaoru; Itoh, Toshiyuki; Okazawa, Kazuhiko; Kimizuka, Junichi; Kusano, Akihisa; Abe, Makoto; and Inuyama, Toshihiko, 5,511,161, Cl. 395-182.210.
- Oki Electric Industry Co., Ltd.: See—
Cho, Shizuo, 5,510,750, Cl. 327-546.000.
- Tanaka, Yasuhiro; Tanabe, Tetsuya; and Tanoi, Satoru, 5,511,030, Cl. 365-203.000.
- Tanoi, Satoru, 5,510,746, Cl. 327-427.000.
- Oki, Masami: See—
Okada, Seiji; Suzuki, Yutaka; Sakamoto, Kouichi; Teshigahara, Hitoshi; Taka, Takao; Fukada, Yasuto; and Oki, Masami, 5,509,600, Cl. 228-205.000.
- Okuda, Junichi: See—
Makita, Kensuke; Moriguchi, Yasuo; and Okuda, Junichi, 5,510,141, Cl. 427-165.000.
- Okuda, Yasuji; and Ueda, Hiroaki, to Sakura Color Products Corporation. Aqueous pigment ink composition for writing utensils. 5,510,397, Cl. 523-161.000.
- Okuda, Yasushi; Odake, Yoshinori; Nakao, Ichiro; and Ichikawa, Youhei, to Matsushita Electric Industrial Co., Ltd. Non-volatile semiconductor memory having a ring-shaped floating gate. 5,510,639, Cl. 257-317.000.
- Okudaira, Hiroaki: See—
Tanaka, Naoki; Okamoto, Hiroshi; Naito, Masayoshi; Umemura, Shin-ichiro; Morooka, Yasuo; Kayama, Masahiro; and Okudaira, Hiroaki, 5,510,976, Cl. 364-148.000.
- Okuno, Yukihiko: See—
Kyotani, Yoshinori; Kawamine, Katsumi; Toma, Tsutomu; Ohgiya, Tadaaki; Yamaguchi, Takashi; Onogi, Kazuhiro; Sato, Seiichi; Shimizu, Noboru; Shigyo, Hiromichi; Ohta, Tomio; Oda, Toshiaki; Okuno, Yukihiko; Shibuya, Kimiyuki; Takahashi, Yoshio; Fujii, Mikio; and Uchida, Yasumi, 5,510,366, Cl. 514-411.000.
- Okura, Zenichi: See—
Aoki, Nobuaki; Kohmoto, Shinsuke; and Okura, Zenichi, 5,510,936, Cl. 359-822.000.
- Olbrick, Edward M.: See—
Heuschkel, Albert V.; Kaczorek, Joseph W.; and Olbrick, Edward M., 5,509,851, Cl. 454-67.000.
- Olges, Lawrence T.: See—
Duve, John P.; Misik, Michael F.; Soberski, George A.; and Olges, Lawrence T., 5,510,585, Cl. 200-35.000.
- Olin Corporation: See—
Cawfield, David W.; Dotson, Ronald L.; Loftis, Harry J.; Moore, Sanders H.; Brooker, Robert T.; and Stirrat, Jay S., 5,510,097, Cl. 423-387.000.
- Chouraki, Richard J., 5,510,108, Cl. 424-408.000.
- O'Meara, William L.; and Murray, Terry A., 5,510,062, Cl. 264-3.400.
- Oliver, James H., to Iowa State University Research Foundation, Inc. Sculptured surface synthesis based on functional design constraints. 5,510,995, Cl. 364-474.240.
- Olsen, Glenn C.; and West, Charles A. Sand dune and shore-line erosion prevention system. 5,509,755, Cl. 405-21.000.
- Olsen, Ulf N.; Franke, Erik; and Strand, Elif, to Minnesota Mining and Manufacturing Company. Transfer article for forming tetrafluoropolymer and colored images and method of making same. 5,510,178, Cl. 428-323.000.
- Olympus Optical Co., Ltd.: See—
Rokutan, Takao; Oshiba, Mitsuo; Sakurada, Takefumi; Tani, Naoki; and Sugaya, Takumi, 5,511,051, Cl. 369-44.280.
- Terui, Nobuo; Ohnishi, Takafumi; and Furuta, Kenji, 5,510,924, Cl. 359-143.000.
- OM Corporation: See—
Hiranuma, Takanari; and Sato, Kyokuichi, 5,509,569, Cl. 220-746.000.
- O'Mara, David: See—
Dillon, David B.; and O'Mara, David, 5,509,482, Cl. 166-297.000.
- O'Mara, Kerry D.; and Smalser, Paul J., Sr., to Hasbro, Inc. Piezoresistive input device. 5,510,812, Cl. 345-161.000.
- O'Meara, William L.; and Murray, Terry A., to Olin Corporation. Method of producing a nitrocellulose propellant containing a cellulosic burn rate modifier infiltrated therein. 5,510,062, Cl. 264-3.400.
- Omi, Junichi; Miyamoto, Hidenori; Amanuma, Tatsuo; and Nakamura, Toshiyuki, to Nikon Corporation. Motor speed control device. 5,510,683, Cl. 318-271.000.
- Omoto, Noriaki: See—
Kawakami, Shigeru; Omoto, Noriaki; and Shogaki, Toshihiro, 5,510,855, Cl. 348-695.000.
- Omron Corporation: See—
Horie, Noriyoshi; Hosokawa, Hayami; Tada, Masami; Yamashita, Tsukasa; Ohgaki, Tatsuo; and Kiyomoto, Hironobu, 5,511,142, Cl. 385-129.000.
- Omstead, Mary N.: See—
Singh, Sheo B.; Garrity, George M.; Genillourd, Olga; Lingham, Russell B.; Martin, Isabel; Omstead, Mary N.; Silverman, Keith C.; and Zink, Deborah L., 5,510,371, Cl. 514-450.000.
- Omura, Ichiro: See—
Nakajima, Hiroomi; Katsumata, Yasuhiro; Iwai, Hiroshi; Iinuma, Toshihiko; Inoue, Kazumi; Kitagawa, Mitsuhiko; Morizuka, Kouhei; Nakagawa, Akio; and Omura, Ichiro, 5,510,647, Cl. 257-559.000.
- Onan Corporation: See—
Leaf, Curtis D.; Drozdik, Larry N.; Hughes, John C.; and Klejeski, Anthony T., 5,509,393, Cl. 123-529.000.
- O'Neil, Edward F., III: See—
Grover, David B.; O'Neil, Edward F., III; and Ross, Robert A., Jr., 5,511,031, Cl. 365-208.000.
- Onishi, Steven: See—
Sayag, Michel; and Onishi, Steven, 5,510,623, Cl. 250-370.110.
- Ono, Hiroshi, to NEC Corporation. Selective calling receiver capable of stopping a notifying operation by touching a chain clip. 5,511,231, Cl. 455-38.200.
- Ono, Nobuyuki; Hayashi, Yoshihisa; Kisuki, Atsushi; and Ikeda, Yasushi, to TDK Corporation. Anechoic chamber and wave absorber. 5,510,792, Cl. 342-4.000.
- Onogi, Kazuhiko: See—
Kyotani, Yoshinori; Kawamine, Katsumi; Toma, Tsutomu; Ohgiya, Tadaaki; Yamaguchi, Takashi; Onogi, Kazuhiro; Sato, Seiichi; Shimizu, Noboru; Shigyo, Hiromichi; Ohta, Tomio; Oda, Toshiaki; Okuno, Yukihiko; Shibuya, Kimiyuki; Takahashi, Yoshio; Fujii, Mikio; and Uchida, Yasumi, 5,510,366, Cl. 514-411.000.
- Ontario Hydro: See—
de Buda, Eric; and deWalle, Stewart, 5,510,781, Cl. 341-11.000.
- Onuma, Hiroshi; Mimata, Takashi; and Kubo, Kimio, to Hitachi Metals, Ltd. Vacuum casting apparatus and method using the same. 5,509,458, Cl. 164-63.000.
- Opperman, Stephen H.; and Arsenault, Mark S., to Horizon Holdings, Inc. Regenerative apparatus for recovery of volatiles. 5,509,956, Cl. 95-109.000.
- Oprysko, Modest M.: See—
Cina, Michael F.; Cohen, Mitchell S.; Johnson, Glen W.; Oprysko, Modest M.; and Trehwella, Jeannine M., 5,511,140, Cl. 385-93.000.
- Optical Solutions, Inc.: See—
Goldman, Don S., 5,510,621, Cl. 250-343.000.
- Optrel AG: See—
Ackermann, Emil, 5,510,609, Cl. 250-201.100.
- Orient Watch Co., Ltd.: See—
Kimura, Minami, 5,509,979, Cl. 148-421.000.
- Orimo, Masayuki: See—
Kawano, Katsumi; Mori, Kinji; Suzuki, Yasuo; Orimo, Masayuki; Kasashima, Hirokazu; and Nakai, Kozi, 5,511,167, Cl. 395-200.030.
- Orita, Akira: See—
Tasaki, Koji; Hidaka, Takashi; and Orita, Akira, 5,511,113, Cl. 379-112.000.
- Orlowski, Thomas E.; and Vandebroek, Sophie V., to Xerox Corporation. Porous silicon light emitting diode arrays and method of fabrication. 5,510,633, Cl. 257-93.000.
- Ormat Industries Ltd.: See—
Fisher, Uriyel, 5,509,381, Cl. 123-41.310.
- Ormsby, Ronald D.: See—
Paske, William C.; Rodney, Paul F.; and Ormsby, Ronald D., 5,509,490, Cl. 175-57.000.
- Ortar, Agnès: See—
Cauhere, Paul; Fort, Yves; and Ortat, Agnès, 5,510,516, Cl. 560-220.000.
- Osaka Diamond Industrial Co., Ltd.: See—

- Chen, Chia-Fu; Nishimura, Kazuhito; Ko, Ensei; Ishizuka, Hiroshi; and Hosomi, Satoru, 5,510,157, Cl. 427-577.000.
- Osborn, Harry C., to HOB Manufacturing Company Incorporated. Rack apparatus for drying multiple rigid, painted objects. 5,509,544, Cl. 211-190.000.
- Osborn, Thomas W., III, to Procter & Gamble Company, The. Thin flexible sanitary napkin. 5,509,914, Cl. 604-368.000.
- Osborne, William N.; Prinsen, Petrus J. M.; and Montic, Edwin A., to Philips Electronics North American Corporation. Electron beam device having a glass envelope and a focussing lens provided thereon. 5,510,670, Cl. 313-450.000.
- Oshiba, Mitsuo: See—
Rokutan, Takao; Oshiba, Mitsuo; Sakurada, Takefumi; Tani, Naoki; and Sugaya, Takumi, 5,511,051, Cl. 369-44.280.
- Oshima, Yoshikazu; Ogawa, Ken; and Nishida, Toshiyuki, to Honda Giken Kogyo K.K. Ignition timing control system for internal combustion engines. 5,509,389, Cl. 123-423.000.
- Osrarn Sylvania Inc.: See—
Coushaine, Charles M.; Corsini, Peter H.; and Tremblay, John L., 5,510,967, Cl. 362-261.000.
- Osservatorio Geofisico Sperimentale: See—
Angeleri, Giampiero; Persoglia, Sergio; Poletto, Flavio; and Rocca, Fabio, 5,511,038, Cl. 367-40.000.
- Osteonics Corp.: See—
Cohen, Robert C., 5,509,934, Cl. 623-20.000.
- Osteotech, Inc.: See—
Prewett, Annamaria B.; and Stikeleather, Roger C., 5,510,396, Cl. 523-113.000.
- Osterle, Kurt: See—
Schuppler, Wolfgang; Sroka, Michael; Ebersberger, Fritz; and Osterle, Kurt, 5,510,069, Cl. 264-132.000.
- Oswaldson, Rolf: See—
Strid, Kent; and Oswaldson, Rolf, 5,509,998, Cl. 162-29.000.
- Ota, Masahiro: See—
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- Salem Engelhard: *See*—
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Kornreich, Wayne D.; Hernandez, Jean F.; Rivier, Jean E.; Rivier, Catherine L.; and Vale, Wylie W., Jr., 5,510,458, Cl. 530-306.000.
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- Salvino, Joseph M.: *See*—
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- Sambucetti, Carlos J.: *See*—
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- Samson, Gene: *See*—
Littmann, Laszlo; Samson, Gene; and Vegh, Gabriel, 5,509,411, Cl. 128-642.000.
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Lim, Byung C.; Hong, Yoo S.; Lee, Ki Y.; and Park, Tae H., 5,510,300, Cl. 501-18.000.
- Samsung Electronics Co., Ltd.: *See*—
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Cho, Jung H.; and Lee, Sang S., 5,510,573, Cl. 84-610.000.
- Ha, Dong-In, 5,511,234, Cl. 455-127.000.

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Ko, Jung-Wan; and Strolle, Christopher H., 5,511,099, Cl. 375-368.000.
Kopet, Thomas G.; Lui Kuo, Gerry C.; and Lew, Stephen D., 5,510,857, Cl. 348-699.000.
Lee, Jae C.; and Kim, Do W., 5,509,283, Cl. 68-18.00F.
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Song, Myung-Hoon, 5,510,987, Cl. 364-424.050.
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Samuels, Raemon N.: See—
Blecha, Bill A.; Cory, Thomas; Curry, John J.; Graves, Howard T.; Guckian, Robert C.; Hall, John M.; McDowell, Samuel B.; Nguyen, Steve H.; Samuels, Raemon N.; Smith, Thomas E.; Wiedmann, Joseph J.; and Wright, Richard A., 5,510,618, Cl. 250-332.000.
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Medeiros, Edmund E., Jr.; and Sanders, Stan A., 5,509,590, Cl. 224-161.000.
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Sanderson, Thomas; Mcginley, Michael J.; Zimmerman, Jeffrey J.; Hill, Howard T.; Meitz, Michael C.; Pirtle, Eugene C.; Swenson, Sabrina L.; and Shibley, George P., to Bayer Corporation; and Iowa State University Research Foundation. Porcine reproductive and respiratory syndrome virus antigen and processes for the preparation and use of said antigen in vaccines and diagnostics, 5,510,258, Cl. 435-237.000.
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Rohwein, Gerald J.; and Roose, Lars D., 5,510,668, Cl. 313-141.000.
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Barra, Jordi B.; and Sorolla, Jose R., 5,510,483, Cl. 544-297.000.
Giger, Rudolf K. A.; and Mattes, Henri, 5,510,353, Cl. 514-300.000.
Kaul, Bansil L., 5,510,403, Cl. 524-90.000.
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SanGregory, Jude A.: See—
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Sano, Harunobu; and Hamaji, Yukio, to Murata Manufacturing Co., Ltd. Non-reducible dielectric ceramic composition, 5,510,305, Cl. 501-138.000.
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Ogasawara, Takio; and Yamamoto, Manabu, 5,509,836, Cl. 440-76.000.
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Santhanam, Mahalingam, to Rheox, Inc. Pourable liquid polyesteramide rheological additives and the use thereof, 5,510,452, Cl. 528-291.000.
Santanni, Blaise F. Method of playing chess, 5,509,662, Cl. 273-260.000.
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Chang, Clarence D.; Kresge, Charles T.; Santisteban, Jose G.; and Vartuli, James C., 5,510,309, Cl. 502-308.000.
Santus, Giancarlo; and Golzi, Roberto, to Recordati S.A., Chemical and Pharmaceutical Company. Controlled release therapeutic system for liquid pharmaceutical formulations, 5,510,119, Cl. 424-490.000.
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Inoue, Takao; Nishida, Hideharu; Sugishita, Shozo; and Tsukihashi, Akira, 5,511,095, Cl. 375-244.000.
Ohayama, Tatsushii; Nakata, Masahiro; and Matono, Naoto, 5,510,941, Cl. 360-113.000.
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Miyachi, Yoshifumi; Urakami, Kazuto; and Taninaka, Setsuo, 5,509,230, Cl. 47-58.000.
Sappington, Donald R., to Tokonics Manufacturing, Inc. Dual archery sight, 5,509,402, Cl. 124-87.000.
Sarli, Michael S.: See—
Hilbert, Timothy T.; Mazzone, Dominick N.; and Sarli, Michael S., 5,510,016, Cl. 208-89.000.
Sarvazjan, Armen P.; and Belonenko, Vladimir N., to Aktsionermoe Obschestvo Zakrytoye Tipa "Biotekhinvest". Apparatus for determining physical properties of fluids, 5,509,299, Cl. 73-64.530.
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Noda, Shinya; Sekine, Kazumi; Tsuda, Tadayuki; Ikemoto, Isao; Watanabe, Kazushi; Sasago, Yoshikazu; Kobayashi, Kazunori; and Sasaki, Shinichi, 5,510,878, Cl. 355-211.000.
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Akazawa, Yasumasa; Kitai, Taiko; Sasaki, Katsuyuki; and Karashima, Takeo, 5,509,972, Cl. 134-26.000.
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Sasaki, Michio: See—
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Takase, Akira; Kai, Hiroyuki; Masui, Moriyasu; Masumoto, Katuhisa; Nakamura, Akihiko; Kiyoshima, Yujiro; and Sasaki, Mikio, 5,510,506, Cl. 560-35.000.
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Nomura, Hiroshi; and Sasaki, Takamitsu, 5,510,868, Cl. 354-208.000.
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Sato, Kaoru; Itoh, Toshiyuki; Okazawa, Kazuhiko; Kimizuka, Junichi; Kusano, Akihisa; Abe, Makoto; and Inuyama, Toshihiko, to Canon Kabushiki Kaisha. Method and apparatus to reset a microcomputer by resetting the power supply, 5,511,161, Cl. 395-182.210.
Sato, Katsuhiko: See—
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Kyotani, Yoshinori; Kawamine, Katsumi; Toma, Tsutomu; Ohgiya, Tadaaki; Yamaguchi, Takashi; Onogi, Kazuhiro; Sato, Seiichi; Shimizu, Noboru; Shigyo, Hiromichi; Ohta, Tomio; Oda, Toshiaki; Okuno, Yukihiko; Shibuya, Kimiyuki; Takahashi, Yoshio; Fujii, Mikio; and Uchida, Yasumi, 5,510,366, Cl. 514-411.000.
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Sato, Toshifumi, to NEC Corporation. Mobile communication system capable of transmitting and receiving a radio signal obtained by TDMA and CDMA without interference, 5,511,068, Cl. 370-18.000.
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Mori, Yoji; and Satoh, Kenichi, 5,509,779, Cl. 415-56.100.
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Satou, Yasuyuki: See—
Irie, Mitsuru; Utakouji, Takeshi; Karaki, Morihiro; Takeshita, Nobuo; Koike, Manabu; Satou, Yasuyuki; Egusa, Naoyuki; Shinoda, Masahisa; Ishimori, Akira; Shima, Akihiro; and Yagi, Shigenori, 5,511,048, Cl. 369-13.000.
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Satyamurthy, Nagichettiar; Barrio, Jorge R.; Bishop, Allyson J.; Namavari, Mohammad; and Bida, Gerald T., to University of California, Regents of the. Synthesis of N-formyl-3,4-di-n-butoxycarbonyloxy-6-(trimethylstannyl)-L-phenylalanine ethyl ester and its regioselective radiofluorodeastannylation to 6-[¹⁸F]fluoro-L-dopa, 5,510,522, Cl. 562-446.000.
Sauer, Thomas, to Huels Aktiengesellschaft. Aqueous, high-solids synthetic rubber emulsion and its preparation, 5,510,399, Cl. 523-335.000.
Saunders, Rowland F.; and Washburn, Michael J., to General Electric Company. Method for reducing vector density based on image size, 5,509,415, Cl. 128-660.070.
Saur, Reinhold: See—
Wingert, Horst; Sauter, Hubert; Ammermann, Eberhard; Lorenz, Gisela; Saur, Reinhold; Schelberger, Klaus; and Hampel, Manfred, 5,510,348, Cl. 514-231.200.
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Yasuda, Hiroyuki; Sawada, Yoshiaki; and Maegawa, Hirotsoshi, 5,511,206, Cl. 395-775.000.
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Sayag, Michel; and Onishi, Steven, to Loral Fairchild Corp. Center readout intra-oral image sensor, 5,510,623, Cl. 250-370.110.
Sayka, Anthony; and Vargas, Patricia A., to VLSI Technology, Inc. Apparatus and method for detecting contaminants carried by a fluid, 5,509,375, Cl. 118-712.000.
SCA Schucker GmbH: See—
Schucker, Josef, 5,510,149, Cl. 427-421.000.
Scalfati, Daniele, to TIS Technische Idraulico Stradali S.p.A. Multidirectional mechanical device dissipating energy, particularly for the constraint of structures in seismic zones, 5,509,238, Cl. 52-167.700.
Scanlon, Joseph T.: See—
Brennan, John; Hsu, Peter Y.; Huffman, William A.; Rodman, Paul; Scanlon, Joseph T.; Tang, Man K.; and Ciavaglia, Steve J., 5,510,934, Cl. 395-446.000.
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Secunia, James; Hinant, John G.; and Gerhard, David P., to B&W Nuclear Service Company, The. Diverse processor electronic protection and control module, 5,511,223, Cl. 395-800.000.
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Schantz, David L., Jr.; Hall, William B.; Winkel, William B.; and Lansberry, Geoffrey B., to Westinghouse Electric Corp. Method and apparatus for testing a power bridge for an electric vehicle propulsion system, 5,510,725, Cl. 324-768.000.
Scharf, Albert; and Pimentel, Diane A. Wheelchair tether, 5,509,680, Cl. 280-304.100.
Scharfenbergkupplung GmbH: See—
Kreher, Joachim, 5,509,548, Cl. 213-77.000.
Scharnick, Michael R.: See—
Briedis, Gunars; Hastings, Jerome K.; and Scharnick, Michael R., 5,510,951, Cl. 361-154.000.
Scharpf, Mike A. Protected flooring, 5,509,715, Cl. 296-181.000.
Schauer, Frank, to 737333 Ontario Inc. Robotic gripper module, 5,509,707, Cl. 294-86.400.
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Kahlke, Michael; and Schaupert, Kurt, 5,509,403, Cl. 126-39.00E.
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Cliff, Geoffrey R.; and Richards, Ian C., 5,510,344, Cl. 514-212.000.
Schertz, Mitchell; and Richards, Robert R., to Rofeh Simulations Limited. Interactive neonatal resuscitation training simulator and method, 5,509,810, Cl. 434-262.000.
Scherz, Michael W.; and Pikul, Stanislaw, to Procter & Gamble Company, The. Di-tert-butylphenol compounds with heterocyclic moiety, useful as anti-inflammatory agents, 5,510,361, Cl. 514-378.000.
Schieve, Eric W., to Dell USA, L.P. Method and circuit for determining the size of a cache memory, 5,511,180, Cl. 395-497.030.
Schirow, Samuel G.: See—
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Schlumberger Industries, Inc.: See—
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Schlumberger Technology Corporation: See—
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Huber, Klaus B.; and Hromas, Joe C., 5,509,481, Cl. 166-297.000.
Sezginer, Abdurrahman; and Druskin, Vladimir L., 5,510,712, Cl. 324-368.000.
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Schmidt, Peter, to Dr. Ing. h.c.F. Porsche AG. Variable valve timing gear, 5,509,384, Cl. 123-90.170.
Schmidt, George A., to Strick Corporation. Frameless container for carrying cargo having overlapped sidewalls and a unitary bottom scuff panel, 5,509,714, Cl. 296-181.000.
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- Kyotani, Yoshinori; Kawamine, Katsumi; Toma, Tsutomu; Ohgiya, Tadaaki; Yamaguchi, Takashi; Onogi, Kazuhiro; Sato, Seichi; Shimizu, Noboru; Shigyo, Hiromichi; Ohta, Tomio; Oda, Toshiaki; Okuno, Yukihiko; Shibuya, Kimiyuki; Takahashi, Yoshio; Fujii, Mikio; and Uchida, Yasumi, 5,510,366, Cl. 514-411.000.
- Shimizu Seisaku Kabushiki Kaisha: See—

- Aoki, Hiroshi, 5,509,353, Cl. 101-425,000.
Shimoda, Tomoaki: *See—*
Sakashita, Takeshi; Shimoda, Tomoaki; and Nagai, Takashi, 5,510,450, Cl. 528-199,000.
Shimokata, Akihiro: *See—*
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Shimomura, Akihiko; Murai, Keiichi; and Toganoh, Shigeo, to Canon Kabushiki Kaisha, Transfer-molding resin composition for use to manufacture ink jet recording head, and ink jet recording head manufactured by using the same, 5,510,818, Cl. 347-65,000.
Shimony, Ilan; and Greenfield, Zvi, to National Semiconductor Corporation, Mechanism for implementing vector address pointer registers in system having parallel, on-chip DSP module and CPU core, 5,511,219, Cl. 395-800,000.
Shimowada, Tadayuki: *See—*
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Shin, Dong J.: *See—*
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Shin Nikkei Company, Ltd.: *See—*
Ishikawa, Osamu; Oya, Naoko; Sasaki, Michio; and Miwa, Akio, 5,509,973, Cl. 136-251,000.
Shindo, Hitoshi, to Cannon Kabushiki Kaisha, Semiconductor device and process for preparing the same, 5,510,640, Cl. 257-347,000.
Shindo, Masuo: *See—*
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Shinno, Tatsuya; and Yamashita, Hiroki, to Minolta Co., Ltd. Sheet sorter with hole punching assembly, 5,509,645, Cl. 270-58,000.
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Sato, Shinichi; Ohnuki, Munenori; Iwaguchi, Isao; and Shinoda, Ichiro, 5,511,087, Cl. 372-38,000.
Shinoda, Masahisa: *See—*
Irie, Mitsuru; Utakouji, Takeshi; Karaki, Morihiro; Takeshita, Nobuo; Koike, Manabu; Satou, Yasuyuki; Egusa, Naoyuki; Shinoda, Masahisa; Ishimori, Akira; Shima, Akihiro; and Yagi, Shigenori, 5,511,048, Cl. 369-13,000.
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Takase, Akira; Kai, Hiroyuki; Masui, Moriyasu; Masumoto, Katuhisa; Nakamura, Akihiko; Kiyoshima, Yujiro; and Sasaki, Mikio, 5,510,506, Cl. 560-35,000.
Shiozawa, Kenichiro, to Chiyoda Co., Ltd. Polishing cloth, 5,510,175, Cl. 428-288,000.
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Calabrese, Gary S.; Calvert, Jeffrey M.; Chen, Mu-San; Dressick, Walter J.; Dulcey, Charles S.; Georget, Jacques H., Jr.; and Bohland, John F., Jr., 5,510,216, Cl. 430-16,000.
Shipley, Larry: *See—*
Frois, Michael; Shipley, Larry; Liao, Christine J. Y.; Nguyen, Hien; and Khor, Sok L., 5,510,116, Cl. 424-486,000.
Shippell, Joseph G.: *See—*
Taravella, Philip; Domanski, Ronald S.; Burchett, Kevin; Blair, Edward J.; and Shippell, Joseph G., 5,509,534, Cl. 206-587,000.
Shiraha, Michihiro: *See—*
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Shirai, Masaharu; and Tsuchita, Shubei, to International Business Machines Corporation, Printed circuit board with landless blind hole for connecting an upper wiring pattern to a lower wiring pattern, 5,510,580, Cl. 174-266,000.
Shirai, Takeshi; Pawlak, Andrzej M.; and Green, Alan H., to General Motors Corporation, Variable reluctance rotation sensor with leakage magnetic flux sensing, 5,510,708, Cl. 324-174,000.
Shirakata, Yoko; and Kozu, Noriko, to Fujitsu Limited, Processing system and processing method capable of dynamically replacing job environment, 5,511,194, Cl. 395-650,000.
Shirakawa, Hidetoshi: *See—*
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Shirakawa, Masayoshi: *See—*
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Shirakihara, Toshio, to Kabushiki Kaisha Toshiba, Method and apparatus for managing thread private data in a parallel processing computer, 5,511,192, Cl. 395-650,000.
Shiramizu, Yoshimi, to NEC Corporation, Method of cleaning semiconductor substrate using an aqueous acid solution, 5,509,970, Cl. 134-3,000.
Shirk, James A.: *See—*
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Shirochi, Yoshiki; and Yamashita, Keitaro, to Sony Corporation, Video signal recording apparatus with rerecording inhibit circuit, 5,510,900, Cl. 358-335,000.
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Shives, Mark E. Cargo securing system for pick-up trucks, 5,509,764, Cl. 410-150,000.
Shober, R. Anthony: *See—*
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Shoda, Ichiro: *See—*
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Shoji, Hideyuki: *See—*
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Short, Jay M.; and Kretz, Patricia L., to Stratagene, Mutagenesis testing using transgenic non-human animals carrying test DNA sequences, 5,510,099, Cl. 424-9,200.
Showa Aluminum Corporation: *See—*
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Showa Denko K.K.: *See—*
Akizawa, Toshiyuki; Hasegawa, Hiroyuki; Nakamura, Hitoshi; Urabe, Katsufumi; Yoshida, Shingo; Matsuda, Yuichi; and Sakai, Tamiharu, 5,510,515, Cl. 560-218,000.
Ichikawa, Reiko; Ikenoue, Yoshiaki; and Wudl, Fred, 5,510,456, Cl. 528-377,000.
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Shukla, Rajesh K.: *See—*
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Shyu, Rong-Fuh, to Winbond Electronics, Corp. Method and apparatus using symmetrical coding look-up tables for color space conversion, 5,510,852, Cl. 348-660,000.
Siecor Corporation: *See—*
Hawkins, Paul D.; Ekanayake, Dulip; McGranahan, Daniel S.; and Staber, Harley J., 5,511,144, Cl. 385-135,000.
Siegel, Paul H.: *See—*
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Siemens Aktiengesellschaft: *See—*
Amann, Markus-Christian, 5,511,084, Cl. 372-20,000.
Bergner, Peter, 5,511,124, Cl. 380-48,000.
Doebert, Michael; Guenther, Werner; Schulze-Ganzlin, Ulrich; Ploetz, Joseph; Huebeck, Erich; and Franetzkij, Manfred, 5,511,106, Cl. 378-146,000.
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Laue, Hans-Bodo, 5,509,599, Cl. 228-180,210.
Loncle, Jean-Pierre, 5,510,775, Cl. 340-825,070.
Mueller, Werner; Bittl, Herbert; Friedel, Rudolf; Schmidt, Roland; and Krogmann, Henrik, 5,511,104, Cl. 378-125,000.
Noe, Reinhold, 5,510,927, Cl. 359-191,000.
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Schrenk, Hartmut, 5,511,023, Cl. 365-189,010.
Siemens Automotive Corporation: *See—*
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Siemens Electric Limited: *See—*
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Siemens Elema AB: *See—*
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Siemens Energy & Automation: *See—*
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Siergiej, Richard R.: *See—*
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Sigma-Tau Industrie Farmaceutiche Riunite S.p.A.: *See—*
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Sigr Great Lakes Carbon GmbH: *See—*
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- Sihi GmbH & Co KG: *See—*
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Brennan, John; Hsu, Peter Y.; Huffman, William A.; Rodman, Paul; Scanlon, Joseph T.; Tang, Man K.; and Ciavaglia, Steve J., 5,510,934, Cl. 395-446,000.
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Silverman, Keith C.: *See—*
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Simandl, Ronald F.: *See—*
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Simar, Laurence R., Jr., to Texas Instruments Incorporated, Excitatory and inhibitory cellular automata for computational networks, 5,511,146, Cl. 395-24,000.
Simmerman, Richard H.; and Woloszyk, Leonard B. J., to Simmerman, Richard H. Apparatus for retaining hangers, 5,509,542, Cl. 211-124,000.
Simmonds Precision Engine Systems Inc.: *See—*
Bonavia, Howard V.; and Killeen, John E., 5,510,952, Cl. 361-251,000.
Simmons Company: *See—*
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Simmons, Randy G.: *See—*
Derstine, Michael P.; and Simmons, Randy G., 5,510,959, Cl. 361-816,000.
Simon, Andrea; Cully, Jan; and Vollbrecht, Heinz-Rüdiger, to SKW Trostberg Aktiengesellschaft, Process for the production of highly concentrated fruit aromas from condensed fruit vapours, 5,510,134, Cl. 426-424,000.
Simon, Arno: *See—*
Zachmann, Günter; Gast, Jürgen; Simon, Arno; and Schülbel, Reiner, 5,510,619, Cl. 250-339,080.
Simon, John G.; McLaughlin, Paul D.; Felice, Leo C.; Joshi, Sharad; and Syad, Azhar, to UroMed Corporation, Urethral plug assembly having adhesive for enhanced sealing capabilities and method of using said plug assembly, 5,509,427, Cl. 128-885,000.
Simon, Richard A.: *See—*
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Simone, Dianne O.: *See—*
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Simpson, Leslie A.; Robb, John; Jonathan, Banford; Dietz, Paul F.; and Temperley, John, to Toxide Group Services Limited, Composite pigmentary material, 5,509,960, Cl. 106-437,000.
Sims, Karl P., to Thinking Machines Corporation, System and method for creating and evolving directed graphs, 5,511,158, Cl. 395-140,000.
Sincerbox, Glenn T.: *See—*
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Singh, Narasingh B.; Henningsen, Tom; McHugh, James P.; Supertzi, Emmanouel P.; Stornick, Richard P.; and Mazelsky, Robert, to Westinghouse Electric Corporation, Solid solution crystals of Tl_2AsSe_3 and Tl_2AsS_3 for high efficiency optical applications, 5,510,929, Cl. 359-322,000.
Singh, Sheo B.; Garrity, George M.; Genilourd, Olga; Lingham, Russell B.; Martin, Isabel; Omstead, Mary N.; Silverman, Keith C.; and Zink, Deborah L., to Merck & Co., Inc. Inhibitors of farnesyl-protein transferase, 5,510,371, Cl. 514-450,000.
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Sirkar, Kamallesh K.; and Shukla, Rajesh K. Hollow fiber immobilization with chopped microporous hollow fibers, 5,510,257, Cl. 435-182,000.
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Sitzmann, Eugene V.: *See—*
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Sivers von, Rolf: *See—*
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SKF USA Inc.: *See—*
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Skiver, Steven G.: *See—*
Murphy, Morgan D.; Borrego, Diego A.; and Skiver, Steven G., 5,510,776, Cl. 340-825,170.
Skog, Göran: *See—*
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SKW Trostberg Aktiengesellschaft: *See—*
Simon, Andrea; Cully, Jan; and Vollbrecht, Heinz-Rüdiger, 5,510,134, Cl. 426-424,000.
Skylights, Incorporated: *See—*
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Skyline Displays, Inc.: *See—*
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Small, Robert W.; and van den Enden, John P., to ITT Corporation, D-sub connector, 5,509,821, Cl. 439-272,000.
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Davidson, James A.; and Mishra, Ajit K., 5,509,933, Cl. 623-16,000.
Smith, Billy W. Foot blanket, 5,509,156, Cl. 5-482,000.
Smith, Charles W., Jr.; Rosio, Larry R.; and Shore, Stephen H., to Snap-Tite, Inc. Precision cleaning vessel, 5,509,431, Cl. 134-95,100.
Smith, Donald P.; Dobie, Michael J.; Sparman, Alden B., Sr.; and Norris, John R., to Patentsmith Corporation, Convection heat transfer apparatus, 5,510,601, Cl. 219-679,000.
Smith, Edward P.; and Towers, Graham F., to Insituform (Netherlands) B.V. Method of lining pipelines and passageways, 5,510,078, Cl. 264-516,000.
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Smith, James E., to Fluidrive, Inc. Steerable wheel drive assembly, 5,509,497, Cl. 180-308,000.
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Smith, Judith A.: *See—*
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Smith, Leary W.; and Boylston, Clifford H. Connector with spring retainer, 5,509,696, Cl. 285-27,000.
Smith, Lewis S.; Nash, Thomas W.; and Hart, Steven C., to Xerox Corporation, Positive push development auger, 5,510,881, Cl. 355-245,000.
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Smith, Robert A.; and Piggott, James R., to ZymoGenetics, Inc. Glucagon antagonists, 5,510,459, Cl. 530-308,000.
Smith, Rusland J., to Simmons Company, Apparatus for pocketed coil construction having improved tracking characteristics, 5,509,887, Cl. 493-439,000.
Smith, Scott E.; Le, Duy-Loan T.; and Ho, Michael, to Texas Instruments Incorporated, Write per bit with write mask information carried on the data path past the input data latch, 5,511,025, Cl. 365-189,050.

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Snamprogetti S.p.A.: See—
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SNE Enterprises, Inc.: See—
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Snow Brand Milk Products Co., Ltd.: See—
Hayasaka, Hitoshi; Kawashima, Nobuyuki; Ueda, Masatsugu; and Kumazawa, Eitaro, 5,510,327, Cl. 514-8.000.

Snow, Eric S., to United States of America, Navy. Infrared-to-visible converter. 5,510,627, Cl. 257-21.000.

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Sobocinski, Ronald A.: See—
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Société Civile d'Invention pour la Gestion des Brevets Cantaloube: See—
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Société Européenne de Propulsion: See—
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Société Nouvelle Technigaz: See—
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Kamo, Tomoichi; Takeuchi, Seizi; Matsuda, Shinpei; Soeta, Atsuko; Suzuki, Takaaki; and Yoshida, Yutaka, 5,510,323, Cl. 505-120.000.

Sohn, Sang-suk, to Samsung Electronics Co. Ltd. Writing method for ink jet printer using electro-rheological fluid and apparatus thereof. 5,510,817, Cl. 347-21.000.

Solloway, John C.: See—
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Solomon, Jeffrey A.; and SanGregory, Jude A., to Eastman Kodak Company. Method and apparatus for preventing film creep by delaying deactivation of film metering member by shutter driver member. 5,510,866, Cl. 354-204.000.

Soltech, Inc.: See—
Nelson, Thomas E., 5,509,566, Cl. 220-444.000.

Soltys, Paul: See—
Breilant, Julian P., Jr.; Woo, Leon; Nelson, Deanna J.; Appl, Richard; Weinless, Naomi L.; Pokropinski, Sharon; Soltys, Paul; and Barenberg, Sumner A., 5,510,115, Cl. 424-473.000.

Solvay (Société Anonyme): See—
Dehennau, Claude; and Depireux, Thierry, 5,510,401, Cl. 524-47.000.

Solvay Fluor and Derivate GmbH: See—
Jakobson, Gerald; and Siemanowski, Werner, 5,510,542, Cl. 568-680.000.

Somiya, Akira: See—
Kurose, Shigeo; Honjo, Yoshihiro; and Somiya, Akira, 5,510,140, Cl. 427-131.000.

SOMOS GmbH: See—
Becker, Achim; and Elotos, Michael, 5,509,216, Cl. 34-219.000.

Sone, Kazuya, to NEC Corporation. High speed comparator having two differential amplifier stages and latch stage. 5,510,734, Cl. 324-65.000.

Song, Myung-Hoon, to Samsung Heavy Industry Co., Ltd. Shock prevention apparatus for hydraulic/air-pressure equipment and method thereof. 5,510,987, Cl. 364-424.050.

Song, Yong Il, to Hyundai Electronics Ind. Co., Ltd. Compensation device for sensitivity of the photosensitive drum of copying apparatus. 5,510,880, Cl. 355-228.000.

Sonnino, Maddalena. Process for producing an organic material with high flame-extinguishing power, and product obtained thereby. 5,510,041, Cl. 252-3.000.

Sonor Johs. Link GmbH: See—
Sassmannshausen, Werner; Menzel, Karl-Heinz; and Kleindienst, Anke, 5,509,629, Cl. 248-171.000.

Sony Corporation: See—
Ando, Ryo; and Mochizuki, Yayoi, 5,511,061, Cl. 369-124.000.

Fujinami, Yasushi; and Yonemitsu, Jun, 5,510,902, Cl. 358-335.000.

Goda, Yoshimasa, 5,511,049, Cl. 369-44.150.

Iwamura, Ryuichi, 5,510,841, Cl. 348-420.000.

Maari, Koichi, 5,510,283, Cl. 437-43.000.

Matsumura, Osamu, 5,510,903, Cl. 358-335.000.

Nagashima, Masaru, 5,510,677, Cl. 315-8.000.

Nishino, Tomoki; and Takeda, Masashi, 5,510,654, Cl. 257-773.000.

Ohia, Masashi; Kobayashi, Hiroshi; Sekiya, Tsuneo; Hamada, Toshimi-
chi; Fukuda, Kyoko; and Iijima, Koji, 5,510,830, Cl. 348-36.000.

Oishi, Noriaki; and Veltman, Markus H., 5,511,054, Cl. 369-59.000.

Otsuki, Tadashi; Arai, Shizuo; and Nike, Tadayuki, 5,511,055, Cl. 369-75.100.

Segawa, Yoshihisa; Segawa, Kazuko; Kitamura, Takuya; and Murakami, Yoshihiro, 5,510,785, Cl. 341-67.000.

Seki, Seizo, 5,510,165, Cl. 426-67.000.

Shirochi, Yoshiki; and Yamashita, Keitaro, 5,510,900, Cl. 358-335.000.

Yagasaki, Yoichi; and Koyanagi, Hideki, 5,510,906, Cl. 358-342.000.

Yasuda, Hiroyuki; Sawada, Yoshiaki; and Maegawa, Hirotoshi, 5,511,206, Cl. 395-775.000.

Yonemitsu, Jun; and Yagasaki, Yoichi, 5,510,840, Cl. 348-402.000.

Sorolla, Jose R.: See—
Barra, Jordi B.; and Sorolla, Jose R., 5,510,483, Cl. 544-297.000.

Sóti, Ferenc: See—
Tuba, Zoltán; Mahó, Sándor; Gere, Anikó; Vittay, Pál; Kiss, Béla; Pálósi, Éva; Szporny, László; Szántay, Csaba; Söti, Ferenc; Baloghné Kardos, Zsuzsa; Incze, Mária; Balogh, Gábor; and Gazdag, Mária, 5,510,345, Cl. 514-218.000.

Southwall Technologies Inc.: See—
Pass, Thomas; and Woodard, Floyd E., 5,510,173, Cl. 428-216.000.

Sowerby, Frederick O. Arm brace. 5,509,426, Cl. 128-878.000.

Space Systems/Loral, Inc.: See—
Hall, John C.; and Leon, Juan F., 5,510,208, Cl. 429-164.000.

Spacek, Dan J.: See—
Pascucci, Gregory A.; Rasmussen, David E.; Decious, Gaylon M.; Garbe, James R.; Hyzer, Susan M.; Woest, Karen L.; Vairavan, Vairavan; Koch, David L.; Gottschalk, Donald A., Jr.; Burkhardt, Dennis E.; Standish, Darrell E.; Madaus, Paul W.; Spacek, Dan J.; Nesler, Clay G.; Stark, James K.; Mageland, Otto M.; Singers, Robert R.; and Wagner, Michael E., 5,511,188, Cl. 395-600.000.

Spall, J. Michael: See—
Chen, Zhongtai; Shell, Ronald G.; Keller, Randy C.; and Spall, J. Michael, 5,509,648, Cl. 271-260.000.

Spanig, Jörg: See—
Peyman, Anuschirwan; Budt, Karl-Heinz; Spanig, Jörg; Li, Jian-Qi; and Stowasser, Bernd, 5,510,504, Cl. 558-145.000.

Sparman, Alden B., Sr.: See—
Smith, Donald P.; Dobie, Michael J.; Sparman, Alden B., Sr.; and Norris, John R., 5,510,601, Cl. 219-679.000.

Spears, Marlene A.: See—
Tuller, Harry L.; Kramer, Steve A.; Spears, Marlene A.; and Pal, Uday B., 5,509,189, Cl. 29-623.100.

Spears, William E., Jr., to Church & Dwight Co., Inc. Blast nozzle for water injection and method of using same for blast cleaning solid surfaces. 5,509,849, Cl. 451-40.000.

Specht, Martin; Hausrath, Udo; and Rösch, Christoph, to HS Technik Und Design Technische Entwicklungen GmbH. Apparatus for raising and lowering a load on or from a support. 5,509,776, Cl. 414-462.000.

Speer, Howard V.: See—
Thier, Richard D.; Speer, Howard V.; and Swenson, Phillip O., 5,509,258, Cl. 56-11.300.

Sperzel, Michael: See—
Wachtler, Peter; Heuer, Lutz; Sperzel, Michael; and Stünkel, Klaus G., 5,510,365, Cl. 514-407.000.

Spiegelberg, Harry L.: See—
Hermans, Michael A.; Chen, Fung-Jou; Spiegelberg, Harry L.; Kressner, Bernhardt E.; and Nielsen, Janice G., 5,510,001, Cl. 162-113.000.

Hermans, Michael A.; Chen, Fung-Jou; Spiegelberg, Harry L.; Kressner, Bernhardt E.; and Nielsen, Janice G., 5,510,002, Cl. 162-113.000.

Spies, Terence R.: See—
Tobey, Chris E.; Shih, Yung-Ho; Robin, Michael B.; Rupel, Wesley O.; Edwards, Michael D.; Spies, Terence R.; Bovee, James C., Jr.; Seidensticker, Robert B., Jr.; and McCulley, Mark R., 5,510,811, Cl. 345-157.000.

Spindler, Jeffrey D.; Burkhalter, Kenneth E., Jr.; and Iversen, Alfred W., to Amphion Inc. Paperless order picking system. 5,509,538, Cl. 209-630.000.

Spinergy Inc.: See—
Leonard, George H.; and Connolly, Martin T., 5,509,438, Cl. 137-231.000.

Spinks, Anne: See—
Meyer, Paul J.; and Spinks, Anne, 5,509,984, Cl. 156-107.000.

Meyer, Paul J.; and Spinks, Anne, 5,510,416, Cl. 524-528.000.

Spitler, Brian L.; and Sumer, Suleyman O., to Regent Lighting Corporation. Luminaire including a double-ended lamp and means for protecting against electric shock during relamping. 5,510,964, Cl. 362-217.000.

Spotless Plastics Pty. Ltd.: See—
Gouldson, Stanley F.; and Harmer, Roland G., 5,509,587, Cl. 223-91.000.

Sputore, Simona: See—
Frigerio, Marco; Sputore, Simona; and Santagostino, Marco, 5,510,538, Cl. 568-347.000.

Square D Company: See—
Rodgers, Barry, 5,510,773, Cl. 340-638.000.

Rosen, Gary M., 5,510,960, Cl. 361-823.000.

SRICHEM, Inc.: See—
Wood, Louis L., 5,510,426, Cl. 525-435.000.

Wood, Louis L., 5,510,427, Cl. 525-435.000.

Sreebny, Leo M.; Schwartz, Steven S.; and Meek, Allen G., to Research Foundation of State University of New York. The Preparation and use of whole saliva. 5,510,122, Cl. 424-537.000.

SRI International: See—
Chong, Wesley K. M.; Chao, Wan-Ru; Yasuda, Dennis M.; Johansson, John G.; Avery, Mitchell A.; and Tanabe, Masato, 5,510,340, Cl. 514-172.000.

Sroka, Michael: See—
Schuppler, Wolfgang; Sroka, Michael; Ebersberger, Fritz; and Österle, Kurt, 5,510,069, Cl. 264-132.000.

Staat, Robert H. Magnetically-actuated coupler for model railroad cars. 5,509,546, Cl. 213-75.000.

Staber, Harley J.: See—
Hawkins, Paul D.; Ekanayake, Dulip; McGranahan, Daniel S.; and Staber, Harley J., 5,511,144, Cl. 385-135.000.

Stacey, Scott A.: See—
Majeed, Kamal N.; Frattini, Albert V., Jr.; Stacey, Scott A.; Jensen, Eric L.; Varner, Jay R.; and Hauser, James W., 5,510,988, Cl. 364-424.050.

Staedtler & Uhl: See—
Egger, Josef, 5,509,178, Cl. 19-215.000.

Stahlecker, Fritz; to Stahlecker, Fritz; and Stahlecker, Hans. Supporting disk for a supporting disk bearing for open-end spinning rotors. 5,509,262, Cl. 57-264.000.

Stahlecker, Hans: See—
Stahlecker, Fritz, 5,509,262, Cl. 57-264.000.

Standard Register Company, The: See—
Laurash, David F.; Arway, Lawrence W.; and Mudry, Oleh B., 5,509,694, Cl. 283-81.000.

Standish, Darrell E.: See—
Pascucci, Gregory A.; Rasmussen, David E.; Decious, Gaylon M.; Garbe, James R.; Hyzer, Susan M.; Woest, Karen L.; Vairavan, Vairavan; Koch, David L.; Gottschalk, Donald A., Jr.; Burkhardt, Dennis E.; Standish, Darrell E.; Madaus, Paul W.; Spacek, Dan J.; Nesler, Clay G.; Stark, James K.; Mageland, Otto M.; Singers, Robert R.; and Wagner, Michael E., 5,511,188, Cl. 395-600.000.

Stanford Telecommunications, Inc.: See—
Engelbrecht, Lloyd; and Weinberg, Aaron, 5,510,801, Cl. 342-457.000.

Stangeland, Maynard L.: See—
Brenson, Roger E.; Bowling, William C., Jr.; Lariviere, Brian W.; and Stangeland, Maynard L., 5,509,517, Cl. 192-65.000.

Stankovic, Aleksandar M.; Verghese, George C.; and Perreault, David J., to Massachusetts Institute of Technology. Markov chain controlled random modulation of switching signals in power converters. 5,510,698, Cl. 323-282.000.

Stark, Dan: See—
Montner, Paul; Chick, Thomas W.; Stark, Dan; and Riedesel, Marvin L., 5,510,335, Cl. 514-213.000.

Stark, James K.: See—
Pascucci, Gregory A.; Rasmussen, David E.; Decious, Gaylon M.; Garbe, James R.; Hyzer, Susan M.; Woest, Karen L.; Vairavan, Vairavan; Koch, David L.; Gottschalk, Donald A., Jr.; Burkhardt, Dennis E.; Standish, Darrell E.; Madaus, Paul W.; Spacek, Dan J.; Nesler, Clay G.; Stark, James K.; Mageland, Otto M.; Singers, Robert R.; and Wagner, Michael E., 5,511,188, Cl. 395-600.000.

Starnes, Keith E.: See—
McQuade, William F.; Starnes, Keith E.; and Adams, Mark A., 5,509,466, Cl. 165-113.000.

State Industries, Inc.: See—
Lindahl, D. Kent, 5,509,567, Cl. 220-465.000.

Stauffer, Kenneth J.: See—
Lumma, William C.; Freidinger, Roger M.; Brady, Stephen F.; Sander-
son, Philip E.; Feng, Dong-Mei; Lyle, Terry A.; Stauffer, Kenneth J.; Tucker, Thomas J.; and Vacca, Joseph P., 5,510,369, Cl. 514-422.000.

Steele, David S.; and Taylor, Robert R. Three-way trap elbow and cleanout system. 5,509,148, Cl. 4-255.010.

Stefan Briles: See—
Brues, Stefan, 5,510,825, Cl. 347-251.000.

Stefely, James S.: See—
Dennison, Kathleen A.; La Londe, Monserrat R.; and Stefely, James S., 5,510,421, Cl. 525-204.000.

Steffen, Klaus-Dieter, to Hüls Aktiengesellschaft. Preparation of esters of cyclopropane-1,1-dicarboxylic acid. 5,510,509, Cl. 560-124.000.

Steger, Rudolph; Slabinski, Chester J.; and Garfinkel, Michael, to Otis Elevator Company. Arrangement for detecting elevator car position. 5,509,505, Cl. 187-394.000.

Stein Seal Company: See—
Borkiewicz, Mark R., 5,509,664, Cl. 277-3.000.

Stein, William L., Sr.; and Rimko, Robert W., to General Motors Corporation. Low profile splice bussing plate. 5,509,819, Cl. 439-189.000.

Steinway Musical Properties, Inc.: See—
Calabrese, Salvatore J.; Scarton, Henry A.; Murray, S. Frank; Ettles, Christopher M.; Kennedy, Warren C.; Dinc, Saim; Jildi, Bessem; and Strong, William, 5,509,344, Cl. 84-437.000.

Stekelenburg, Michael A. W., to U.S. Philips Corporation. Solid state imaging device having an adjustable width/height ratio. 5,510,836, Cl. 348-299.000.

Stenger, David A.: See—
Georger, Jacques H., Jr.; Stenger, David A.; and Fare, Thomas L., 5,510,628, Cl. 257-32.000.

Stenzel, Gerhard: See—
Kaule, Wittich; Ilgmann, Wilhelm; Schwenk, Gerhard; and Stenzel, Gerhard, 5,509,691, Cl. 283-67.000.

Stephanopoulos, Gregory; Singhvi, Rahul; Park, Seuejung; Flytzani-
Stephanopoulos, Maria; and Applegate, Mark A., to Massachusetts Institute of Technology. Cell-culturing apparatus and method employing a macroporous support. 5,510,262, Cl. 435-240.230.

Stephens, Gary R.: See—
Kulakowski, John E.; Means, Rodney J.; and Stephens, Gary R., 5,511,228, Cl. 395-834.000.

Sterling Winthrop, Inc.: See—
Seoane, Peter R.; Salvino, Joseph M.; Douty, Brent D.; Awad, Mohamed M. A.; Dolle, Roland E.; Sawatz, David G.; Faunce, David M.; and Houck, Wayne T., 5,510,380, Cl. 514-613.000.

Stern, David M.: See—
Maltby, Frederick L.; Kramer, L. Jonathan; Horrocks, Leslie D.; deceased; Horrocks, by Maureen, executrix; and Stern, David M., 5,510,779, Cl. 340-870.300.

Sternfeld, Francine: See—
Matassa, Victor G.; Reeve, Austin J.; Sternfeld, Francine; Routledge, Helen; and Street, Leslie, 5,510,362, Cl. 514-381.000.

Stevens, Robert A.: See—
Hanson, William D.; Brud, Lynn C.; Byerly, Shannon K.; Ellis, Clifford J.; Everett, Rob D.; Gossen, Barbara A.; Grube, Violet M.; Iwanski, David G.; LeMahieu, David L.; Qin, Jian; Stevens, Robert A.; Wentzel, Tom K.; Yarbrough, Sandra M.; Zenker, David L.; and Zunker, MaryAnn, 5,509,915, Cl. 604-378.000.

Stevens, Willem K.: See—
Côté, Hélène C. F.; Stevens, Willem K.; Nesheim, Michael E.; and MacGillivray, Ross T. A., 5,510,248, Cl. 435-69.600.

Stevenson, Karen L.; Laramée, Debra M.; and Demers, Cynthia L. Cap with opening having a removable closure. 5,509,145, Cl. 2-195.100.

Stevenson, Thomas M.: See—
Patel, Kanu M.; and Stevenson, Thomas M., 5,510,318, Cl. 504-223.000.

Stewart, Brenda F.: See—
Daniel, Abraham M.; Eyal, Aharon M.; Mizrahi, Joseph; Hazan, Betty; Fisher, Rod R.; Kolstad, Jeffrey J.; and Stewart, Brenda F., 5,510,526, Cl. 562-580.000.

Stewart, Joseph A.: See—
Boyd, Charles L.; and Stewart, Joseph A., 5,509,434, Cl. 137-8.000.

Stewart, Ronald F.; Welburn, David J.; Welsh, David M.; and Greenhorn, Robert C., to Imperial Chemical Industries PLC. Low energy fuse and method of manufacture. 5,509,355, Cl. 102-275.800.

Stikeleather, Roger C.: See—
Prewett, Annamarie B.; and Stikeleather, Roger C., 5,510,396, Cl. 523-113.000.

Stiles, April D. E.: See—
Shackelford, Floyd W.; Smith, Judith A.; Stiles, April D. E.; and Yates, Kenneth D., 5,511,196, Cl. 395-700.000.

Stiles, David R.: See—
Favor, John G.; Van Dyke, Korbin; and Stiles, David R., 5,511,175, Cl. 395-375.000.

Stimson, Charles J.; and Beshear, Brady S., to Call Processing, Inc. Telephone pre-paid calling card system and method. 5,511,114, Cl. 379-114.000.

Stirrat, Jay S.: See—
Cawfield, David W.; Dotson, Ronald L.; Loftis, Harry J.; Moore, Sanders H.; Brooker, Robert T.; and Stirrat, Jay S., 5,510,097, Cl. 423-387.000.

Stjernschantz, Johan; and Resul, Bahrām, to Pharmacia AB. Method for composition for treatment of gastric and duodenal disorders. 5,510,382, Cl. 514-530.000.

Stockton, John: See—
Visel, Thomas A.; Stockton, John; and Regen, Joel H., 5,511,058, Cl. 369-103.000.

Stolka, Milan: See—
Facci, John S.; Lewis, Richard B.; Stolka, Milan; Abkowitz, Martin A.; Levy, Michael J.; Mammino, Joseph; and Shahn, Michael M., 5,510,879, Cl. 355-219.000.

Stone Container Corporation: See—
Crews, Mitchell S., 5,509,620, Cl. 242-608.000.

Stone, William M., to Xetel Corporation. Method of making substrate edge connector. 5,509,197, Cl. 29-842.000.

St-Onge, Yvon: See—
Dufour, Yvon; Roy, Jean-Guy; and St-Onge, Yvon, 5,509,523, Cl. 198-403.000.

Storage Technology Corporation: See—
Lopez, Roger, 5,509,468, Cl. 165-144.000.

Storrick, Richard P.: See—
Singh, Narsingh B.; Henningsen, Tom; McHugh, James P.; Supertzi, Emmanuel P.; Storrick, Richard P.; and Mazelsky, Robert, 5,510,929, Cl. 359-322.000.

Story, Lana. Pillow case with animal or other character appendages. 5,509,157, Cl. 5-490.000.

Stouffer, Jan M.; Blanchard, Elwood N.; and Leffew, Kenneth W., to Du Pont de Nemours & Co., Inc. Production of poly(ethylene terephthalate). 5,510,454, Cl. 528-308.100.

Stowasser, Bernd: See—
Peyman, Anuschirwan; Budt, Karl-Heinz; Spanig, Jörg; Li, Jian-Qi; and Stowasser, Bernd, 5,510,504, Cl. 558-145.000.

- Stowe, David W.: *See—*
Corke, Michael; Werthman, Dean A.; Moran, Robin M.; Stowe, David W.; Ronan, Neville J.; and Beaudet, Amy R., 5,10,917, Cl. 359-110,000.
- Stoy, James R., to Texaco Inc. Method of determining the quality of steam for stimulating hydrocarbon production. 5,509,478, Cl. 166-250,060.
- Straeter, Joseph G.: *See—*
Weder, Donald E.; Straeter, Joseph G.; and Bergstrand, John, 5,509,251, Cl. 53-399,000.
- Straeter, William F.: *See—*
Weder, Donald E.; and Straeter, William F., 5,509,188, Cl. 29-469,500.
- Strand, Eilif: *See—*
Olsen, Ulf N.; Franke, Erik; and Strand, Eilif, 5,510,178, Cl. 428-323,000.
- Stratagene: *See—*
Short, Jay M.; and Kretz, Patricia L., 5,510,099, Cl. 424-9,200.
- Straut, Nelson F. Bearing pusher. 5,509,186, Cl. 29-256,000.
- Street, Leslie: *See—*
Matassa, Victor G.; Reeve, Austin J.; Sternfeld, Francine; Routledge, Helen; and Street, Leslie, 5,510,362, Cl. 514-381,000.
- Streeter, Robert T., to Dresser-Rand Company. Bearing case support. 5,509,782, Cl. 415-213,100.
- Strick Corporation: *See—*
Schmidt, George A., 5,509,714, Cl. 296-181,000.
- Strid, Kent; and Oswaldson, Rolf, to Götaverken Energy Aktiebolag. Method and apparatus for clarifying green liquor. 5,509,998, Cl. 162-29,000.
- Strolle, Christopher H.: *See—*
Ko, Jung-Wan; and Strolle, Christopher H., 5,511,099, Cl. 375-368,000.
- Strom, Terry B. Treatment of autoimmune diseases with IL-2 receptor-specific cytotoxins. 5,510,105, Cl. 424-182,100.
- Strong, William: *See—*
Calabrese, Salvatore J.; Scarton, Henry A.; Murray, S. Frank; Ettles, Christopher M.; Kennedy, Warren C.; Dine, Saim; Jidi, Bessem; and Strong, William, 5,509,344, Cl. 84-437,000.
- Stroppolo, Federico; Bonadeo, Daniele; Tocchini, Francesco; and Gazzaniga, Annibale, to Zambon Group S.p.A. Ophthalmic pharmaceutical composition containing N-acetyl-cysteine and polyvinylalcohol. 5,510,101, Cl. 424-78,040.
- Stroppolo, Federico; Bonadeo, Daniele; Fornasini, Gian F.; and Gazzaniga, Annibale, to Zambon Group S.p.A. Pharmaceutical compositions containing the salts of S(+)-2-(4-isobutylphenyl)propionic acid with basic amino acids. 5,510,385, Cl. 514-555,000.
- Strutz, Heinz, to Hoechst Aktiengesellschaft. Process for preparation of 2-(dialkoxymethyl)-carboxylic acid esters. 5,510,512, Cl. 560-186,000.
- Strüwe, Volker; Wojtanowitsch, Ladislaus; Gehrler, Gregor; and Brötzer, Thomas, to Du Pont de Nemours, E. I., and Company. Printing equipment accessory, especially for making proof prints. 5,509,619, Cl. 242-573,200.
- Stryer, Lubert: *See—*
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- Stukenborg, Jeffrey S.: *See—*
Allen, Michael D.; Cheatham, Claude H.; MC Coy, Scott D.; Membrillera, Ignacio J.; Miles, Robert R.; Mullen, Leonard A.; Neal, Robert A.; and Stukenborg, Jeffrey S., 5,509,514, Cl. 188-322,170.
- Stünkel, Klaus G.: *See—*
Wächler, Peter; Heuer, Lutz; Sperzel, Michael; and Stünkel, Klaus G., 5,510,365, Cl. 514-407,000.
- Su, Chin B., to Texas A&M University System. The. Low noise and narrow linewidth external cavity semiconductor laser for coherent frequency and time domain reflectometry. 5,511,086, Cl. 372-31,000.
- Suarato, Antonino: *See—*
Faardi, Daniela; Bargiotti, Alberto; and Suarato, Antonino, 5,510,469, Cl. 536-6,400.
- Suda, Eiichi, to Mitsubishi Denki Kabushiki Kaisha. Data transmission apparatus and a communication path management method therefor. 5,511,169, Cl. 395-280,000.
- Sudduth, Bruce C.: *See—*
Mansour, Mansour N.; and Sudduth, Bruce C., 5,510,092, Cl. 423-239,100.
- Sue, Haruaki; Hagiwara, Shinsuke; and Saitoh, Hiroyuki, to Hitachi Chemical Company, Ltd. Method of preparing naphthol-modified phenolic resin and epoxy resin molding material for sealing electronic parts. 5,510,446, Cl. 528-153,000.
- Suematsu, Hiroyuki: *See—*
Kukimoto, Tsutomu; Yusa, Hiroshi; Tomiyama, Koichi; Takiguchi, Tsuyoshi; Imai, Eiichi; Kuribayashi, Tetsuya; Ochi, Hisayuki; and Suematsu, Hiroyuki, 5,510,223, Cl. 430-126,000.
- Sugamura, Kazuo; Takeshita, Toshikazu; Asao, Hironobu; Nakamura, Masataka; Shimamura, Toshiro; Suzuki, Manabu; and Hamuro, Junji, to Ajinomoto Co., Inc.; and Sugamura, Kazuo. Human IL-2 receptor γ chain molecule. 5,510,259, Cl. 435-240,200.
- Suganami, Syoji: *See—*
Nishijima, Akio; Iwama, Naoya; Suganami, Syoji; and Suzuki, Katsutoshi, 5,510,810, Cl. 345-156,000.
- Sugano, Toshihiko; and Takahama, Tomohiko, to Mitsubishi Chemical Corporation. Catalyst component for use in the polymerization of α -olefins and process for producing α -olefin polymers using the same. 5,510,502, Cl. 556-11,000.
- Sugaya, Takumi: *See—*
Rokutan, Takao; Oshiba, Mitsuo; Sakurada, Takefumi; Tani, Naoki; and Sugaya, Takumi, 5,511,051, Cl. 369-44,280.
- Sugi, Kiyooki: *See—*
Inoki, Satoshi; Takesue, Mitsuyuki; Hashimoto, Isao; Kihara, Noriaki; and Sugi, Kiyooki, 5,510,511, Cl. 560-157,000.
- Sugimoto, Hiroyuki; Kai, Miki; and Arai, Makoto, to Ricoh Company, Ltd. Image forming apparatus having an intermediate image carrier. 5,510,886, Cl. 355-273,000.
- Sugimoto, Masaaki: *See—*
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- Sugimoto, Tetsuya: *See—*
Takahashi, Shunji; Masukawa, Seizo; Futatsuka, Rensei; Sugimoto, Tetsuya; Suzuki, Takeshi; Azuma, Chuzo; Kanda, Yuichi; and Fukutami, Takao, 5,510,197, Cl. 428-670,000.
- Sugimoto, Toshiyuki: *See—*
Aga, Hajime; Shibuya, Takashi; Sugimoto, Toshiyuki; and Miyake, Toshio, 5,510,250, Cl. 435-97,000.
- Sugishita, Shozo: *See—*
Inoue, Takeo; Nishida, Hideharu; Sugishita, Shozo; and Tsukihashi, Akira, 5,511,095, Cl. 375-244,000.
- Sugiura, Hiroaki; Tanaka, Fuminori; and Uesugi, Daisuke, to Yoshino Kogyosho Co., Ltd. Method of blow-molding biaxially oriented polyethylene terephthalate resin bottle-shaped container. 5,510,079, Cl. 264-521,000.
- Sugiura, Yasushi: *See—*
Yamamoto, Noboru; and Sugiura, Yasushi, 5,509,306, Cl. 73-204,150.
- Sugiyama, Akira; and Otani, Masatoshi, to Canon Kabushiki Kaisha. Voice and video communication apparatus. 5,510,829, Cl. 348-14,000.
- Sullivan, Brian T.; Li, Li; Dobrowolski, Jerzy A.; and Grant, Peter D., to National Research Council of Canada. Optical storage media having visible logos. 5,510,163, Cl. 428-64,100.
- Sullivan, Lawrence E.: *See—*
Ragburam, Srikanth; and Sullivan, Lawrence E., 5,510,564, Cl. 585-822,000.
- Sullivan, Paul J.; Scott, Vernon R.; and Smith, Robert, to Pumpworks, Inc. Electromagnetically driven reciprocating pump with fluted piston. 5,509,792, Cl. 417-417,000.
- Sullivan, Thomas D.: *See—*
Quail, Peter H.; Christensen, Alan H.; Hershey, Howard P.; Sharrock, Robert A.; and Sullivan, Thomas D., 5,510,474, Cl. 536-24,100.
- Sultan, Robert: *See—*
Boyles, Ray W.; Gierlach, Michael F.; Gopal, Prabandham M.; Sultan, Robert; and Vacek, Gary M., 5,511,208, Cl. 395-800,000.
- Sulzbach, Frank C., to Texas Instruments Incorporated. Durable wideband anti-reflection coating for infrared windows. 5,510,186, Cl. 428-408,000.
- Sulzer-Escher Wyss GmbH: *See—*
Bassler, Wolfgang; Gutsmuths, Eckhard; Kleinschnittger, Hans; and Mannes, Wolfgang, 5,510,039, Cl. 210-703,000.
- Mannes, Wolfgang, 5,509,536, Cl. 209-273,000.
- Sumer, Suleyman O.: *See—*
Spidler, Brian L.; and Sumer, Suleyman O., 5,510,964, Cl. 362-217,000.
- Sumino, Yoichi: *See—*
Akama, Terufumi; and Sumino, Yoichi, 5,509,413, Cl. 128-660,020.
- Sumitomo Chem. Co., Ltd.: *See—*
Takase, Akira; Kai, Hiroyuki; Masui, Moriyasu; Masumoto, Karuhisa; Nakamura, Akihiko; Kiyoshima, Yujiro; and Sasaki, Mikio, 5,510,506, Cl. 560-35,000.
- Sumitomo Chemical Company, Limited: *See—*
Hozumi, Shigeo; Kitayama, Shinichiro; and Nakagawa, Hiroya, 5,510,540, Cl. 568-640,000.
- Masui, Shobei; Matsumoto, Masahito; Usui, Nobuhiro; Hosokawa, Toshihiro; and Ishitsubo, Ryuichi, 5,509,990, Cl. 156-242,000.
- Nakae, Kiyohiko; Kotani, Kozo; Sakaya, Taiichi; and Nakagahara, Makoto, 5,510,404, Cl. 524-99,000.
- Yoneyoshi, Yukio; Kudo, Junko; and Nishioka, Toshio, 5,510,519, Cl. 562-401,000.
- Sumitomo Electric Industries, Ltd.: *See—*
Go, Hisao; and Kushida, Norimasa, 5,510,932, Cl. 359-341,000.
- Nakamura, Takao; Inada, Hiroshi; and Iiyama, Michitomo, 5,509,183, Cl. 29-25,010.
- Nakamura, Takao; Iiyama, Michitomo; and Inada, Hiroshi, 5,510,324, Cl. 505-330,000.
- Sumitomo Metal Industries, Ltd.: *See—*
Okada, Seiji; Suzuki, Yutaka; Sakamoto, Kouichi; Teshigahara, Hitoshi; Taka, Takao; Fukada, Yasuto; and Oki, Masami, 5,509,600, Cl. 228-205,000.
- Sumitomo Wiring Systems Ltd.: *See—*
Katsuma, Takatoshi, 5,509,816, Cl. 439-157,000.
- Muta, Junji; and Furuta, Yoshiaki, 5,509,828, Cl. 439-699,200.
- Saba, Toshikazu, 5,509,829, Cl. 439-752,000.
- Tsuji, Takeshi, 5,509,817, Cl. 439-188,000.
- Sumrall, Jack D.: *See—*
Rutan, Charles R.; Sumrall, Jack D.; and Alex, Anthony L., 5,509,435, Cl. 137-15,000.
- Sun Company, Inc. (R&M): *See—*
Umansky, Benjamin S.; Boyer, Kevin A.; and Hsu, Chao-Yang, 5,510,558, Cl. 585-658,000.
- Sun, Eric T.: *See—*
Talley, John J.; Getman, Daniel P.; DeCrescenzo, Gary A.; Lin, Ko-Chung; Vazquez, Michael L.; Mueller, Richard A.; Reed, Kathryn L.; Heintz, Robert M.; Clare, Michael; Freskos, John N.; and Sun, Eric T., 5,510,349, Cl. 514-237,500.

- Sun Microsystems, Inc.: *See—*
Rogers, Alan C.; and Davidson, Bradley M., 5,510,733, Cl. 326-110,000.
- Shandhu, Bal S., 5,510,732, Cl. 326-94,000.
- Sun, Xi-Qing: *See—*
Li, Zhi-Jian; Sun, Xi-Qing; and Liu, Li-Tian, 5,510,299, Cl. 437-225,000.
- Sunbeam Corporation: *See—*
Wong, John; Sze, Raymond; Tompkins, Thomas H.; and Ward, Randall S., 5,510,127, Cl. 426-19,000.
- Sundaram, Kandasamy M.: *See—*
Gartside, Robert J.; Ercan, Cemal; and Sundaram, Kandasamy M., 5,510,557, Cl. 585-654,000.
- Sundberg, Erik; and Nilsson, Ovc. Bipolar battery and method of making a partition wall for such a battery. 5,510,211, Cl. 429-210,000.
- Sundstrom, Christofor E.: *See—*
Kopecky, Stanley J.; Zaluda, Daniela; Sundstrom, Christofor E.; Zibell, Steven E.; and Boyd, William T., 5,510,124, Cl. 426-5,000.
- Sunley, John G.: *See—*
Garland, Carl S.; Giles, Martin F.; Poole, Andrew D.; and Sunley, John G., 5,510,524, Cl. 562-519,000.
- Suntory Limited: *See—*
Higuchi, Naoki; Saitoh, Masayuki; and Shibata, Hiroshi, 5,510,531, Cl. 564-159,000.
- Suokone Oy: *See—*
Meriläinen, Tuomo, 5,509,488, Cl. 172-63,000.
- Supertzi, Emmanuel P.: *See—*
Singh, Narsingh B.; Henningsen, Tom; McHugh, James P.; Supertzi, Emmanuel P.; Storrick, Richard P.; and Mazelsky, Robert, 5,510,929, Cl. 359-322,000.
- Supracor Systems, Inc.: *See—*
Landi, Curtis L.; and Wilson, Susan L., 5,509,484, Cl. 168-14,000.
- Sur-Gard Security Systems Ltd.: *See—*
Hartley, Douglas; Huan, Doan N.; and Bailey, Sean, 5,511,109, Cl. 379-40,000.
- Suwabe, Masaaki: *See—*
Hongo, Kazuya; Nukada, Katsumi; Iijima, Masakazu; Takahashi, Noriyoshi; Suwabe, Masaaki; and Takimoto, Hitoshi, 5,510,217, Cl. 430-58,000.
- Suyama, Masuo, to Fujitsu Limited. Optical amplifier and optical communication system with optical amplifier using pumping right beam. 5,510,931, Cl. 359-341,000.
- Suyama, Shoko: *See—*
Kameda, Tsuneki; Asayama, Masahiro; and Suyama, Shoko, 5,510,303, Cl. 501-92,000.
- Suzuki, Hideki; and Uchiyama, Shoichi, to Hamamatsu Photonics K.K. Image intensifier apparatus. 5,510,588, Cl. 250-207,000.
- Suzuki, Katsuo; and Yoshimura, Junichi, to Fujitsu Limited. Relay transmission system including optical amplification. 5,510,925, Cl. 359-177,000.
- Suzuki, Katsutoshi: *See—*
Nishijima, Akio; Iwama, Naoya; Suganami, Syoji; and Suzuki, Katsutoshi, 5,510,810, Cl. 345-156,000.
- Suzuki, Keiichi; and Tada, Masahito, to Kureha Kagaku Kogyo Kabushiki Kaisha. Resinous soft magnetic composition. 5,510,412, Cl. 524-440,000.
- Suzuki, Kiyoshi: *See—*
Takematsu, Tetsuo; Kume, Takashi; Komata, Takeo; Suzuki, Kiyoshi; Ikeda, Yukio; Kawamura, Matsue; and Mori, Kaoru, 5,510,317, Cl. 504-147,000.
- Suzuki, Koichiro: *See—*
Takahashi, Koji; Hieda, Teruo; Kyuma, Kenji; Nakatani, Yoshihiro; Suzuki, Koichiro; Abe, Takeshi; and Ishikawa, Yoshifumi, 5,510,901, Cl. 358-335,000.
- Suzuki, Manabu: *See—*
Sugamura, Kazuo; Takeshita, Toshikazu; Asao, Hironobu; Nakamura, Masataka; Shimamura, Toshiro; Suzuki, Manabu; and Hamuro, Junji, 5,510,259, Cl. 435-240,200.
- Suzuki, Masahiko: *See—*
Matsunaga, Kuniyuki; Ohwada, Junichi; Suzuki, Masahiko; and Yamamoto, Hideaki, 5,510,918, Cl. 359-88,000.
- Suzuki, Masakazu, to Fujitsu Limited. Electronic part unit or assembly having a plurality of electronic parts enclosed within a metal enclosure member mounted on a wiring layer. 5,510,956, Cl. 361-704,000.
- Suzuki, Masatoshi: *See—*
Motoshima, Kuniaki; Kitayama, Tadayoshi; Yamashita, Junichiro; Nakagawa, Eiichi; Akiba, Shigeyuki; Suzuki, Masatoshi; Goto, Koji; Abe, Haruo; and Norimatsu, Naoki, 5,510,930, Cl. 359-341,000.
- Suzuki, Mitsuo; Itami, Yukio; Hashimoto, Yoshio; Yamamoto, Mutsumi; and Takahashi, Yoshihiro, to Ricoh Company, Ltd.; and Tohoku Richo Co., Ltd. Brushless motor. 5,510,664, Cl. 310-268,000.
- Suzuki Motor Corporation: *See—*
Morita, Masahisa, 5,510,657, Cl. 307-9,100.
- Suzuki, Takaaki: *See—*
Kamo, Tomoichi; Takeuchi, Seizi; Matsuda, Shinpei; Soeta, Atsuko; Suzuki, Takaaki; and Yoshida, Yutaka, 5,510,323, Cl. 505-120,000.
- Suzuki, Takao: *See—*
Best, Margaret E.; Comita, Paul B.; Rubin, Kurt A.; Suzuki, Takao; Tang, Wade W. C.; and Yen, Yu-Sze, 5,510,164, Cl. 428-641,000.
- Suzuki, Takayuki: *See—*
Matsura, Hidekazu; Iwasaki, Yoshihide; Ikeda, Kaori; Suzuki, Takayuki; Tanaka, Masashi; and Miyadera, Yasuo, 5,510,425, Cl. 525-423,000.
- SUZUKI, Takeshi: *See—*
Takahashi, Shunji; Masukawa, Seizo; Futatsuka, Rensei; Sugimoto, Tetsuya; Suzuki, Takeshi; Azuma, Chuzo; Kanda, Yuichi; and Fukutami, Takao, 5,510,197, Cl. 428-670,000.
- Suzuki, Tatsuo: *See—*
Isono, Keinosuke; and Suzuki, Tatsuo, 5,509,898, Cl. 604-87,000.
- Suzuki, Toru, to Digital Stream Corporation. Optical-type position and posture detecting device. 5,510,893, Cl. 356-139,030.
- Suzuki, Yasuo: *See—*
Kawano, Katsumi; Mori, Kinji; Suzuki, Yasuo; Orimo, Masayuki; Kasashima, Hirokazu; and Nakai, Kozo, 5,511,167, Cl. 395-200,030.
- Suzuki, Yutaka: *See—*
Okada, Seiji; Suzuki, Yutaka; Sakamoto, Kouichi; Teshigahara, Hitoshi; Taka, Takao; Fukada, Yasuto; and Oki, Masami, 5,509,600, Cl. 228-205,000.
- Svendsen, John A.: *See—*
Biegler, Robert M.; Gronseth, Rosanne E.; Ryther, Robert J.; Juairé, Michael P.; Svendsen, John A.; and Shih, Youngtzung, 5,510,871, Cl. 354-300,000.
- Swan, David A.: *See—*
Lau, Robert G.; Abbott, John S.; and Swan, David A., 5,509,703, Cl. 292-1,000.
- Swanson, David K.: *See—*
Edwards, Stuart D.; Kordis, Thomas F.; and Swanson, David K., 5,509,419, Cl. 128-642,000.
- Swanson, Jon R.: *See—*
Bosch, H. William; Marcer, Donna M.; Mueller, Ronald L.; Swanson, Jon R.; and Mishra, Dinesh S., 5,510,118, Cl. 424-489,000.
- Swenson, Phillip O.: *See—*
Thier, Richard D.; Speer, Howard V.; and Swenson, Phillip O., 5,509,258, Cl. 56-11,300.
- Swenson, Sabrina L.: *See—*
Sanderson, Thomas; Megninley, Michael J.; Zimmerman, Jeffrey J.; Hill, Howard T.; Meetz, Michael C.; Pirtle, Eugene C.; Swenson, Sabrina L.; and Shibley, George P., 5,510,258, Cl. 435-237,000.
- Swierski, Thomas, to Tartaro, Gail Marie. Laser plumbing device. 5,509,209, Cl. 33-282,000.
- Syad, Azhar: *See—*
Simon, John G.; McLaughlin, Paul D.; Felice, Leo C.; Joshi, Sharad; and Syad, Azhar, 5,509,427, Cl. 128-885,000.
- Sybert, Paul D.: *See—*
Flowers, Larry L.; Sybert, Paul D.; and Ramsey, David L., 5,510,449, Cl. 528-199,000.
- Sykes, Richard H. Graphic arts material extrusion device. 5,509,966, Cl. 118-697,000.
- Sylwester, Alan: *See—*
Delnick, Frank M.; Doddapaneni, Narayan; Lagasse, Robert R.; Simandl, Ronald F.; Glasgow, D. Gerald; and Sylwester, Alan, 5,510,212, Cl. 429-218,000.
- Synfelt, Edward G., to General Electric Co. Apparatus and method for providing uniform radial clearance of seals between rotating and stationary components. 5,509,780, Cl. 415-174,100.
- Syntex (U.S.A.) Inc.: *See—*
Robinson, James, III; Rohloff, John C.; and Kowalczyk, Bruce A., 5,510,486, Cl. 546-99,000.
- Systems Analysis and Integration, Inc.: *See—*
Pomatto, Lawrence A., 5,510,700, Cl. 324-66,000.
- Syvetsen, Kare: *See—*
Breivik, Kare; Smedal, Arne; and Syvetsen, Kare, 5,509,838, Cl. 441-5,000.
- Szántay, Csaba: *See—*
Tuba, Zoltán; Mahó, Sándor; Gere, Anikó; Vittay, Pál; Kiss, Béla; Pálosi, Éva; Szporny, László; Szántay, Csaba; Soti, Ferenc; Baloghné Kardos, Zsuzsa; Incze, Mária; Balogh, Gábor; and Gazdag, Mária, 5,510,345, Cl. 514-218,000.
- Szczepanski, Richard D.: *See—*
Bov, Raphael F., Jr.; Diaz, Jose R.; Edelman, Thomas L.; McVeigh, Michael J.; Nola, Ana S.; Curynski, Martin J.; Casper, Cindy L.; and Szczepanski, Richard D., 5,510,884, Cl. 355-260,000.
- Sze, Raymond: *See—*
Wong, John; Sze, Raymond; Tompkins, Thomas H.; and Ward, Randall S., 5,510,127, Cl. 426-19,000.
- Szlam, Aleksander, to Inventions, Inc. Automated voice system for improving agent efficiency and improving service to parties on hold. 5,511,112, Cl. 379-88,000.
- Szporny, László: *See—*
Tuba, Zoltán; Mahó, Sándor; Gere, Anikó; Vittay, Pál; Kiss, Béla; Pálosi, Éva; Szporny, László; Szántay, Csaba; Soti, Ferenc; Baloghné Kardos, Zsuzsa; Incze, Mária; Balogh, Gábor; and Gazdag, Mária, 5,510,345, Cl. 514-218,000.
- TA Instruments, Inc.: *See—*
Danley, Robert L., 5,509,733, Cl. 374-11,000.
- Tachibana, Hirokazu; and Yoshiike, Nobuyuki, to Matsushita Electric Industrial Co., Ltd. Method and apparatus for determining an air quality level. 5,511,006, Cl. 364-557,000.
- Tachika, Hiroshi; Togawa, Keiichi; and Fujimoto, Hiroshi, to Toyo Boseki Kabushiki Kaisha. Aqueous polyester dispersion suitable for use as a coating composition. 5,510,417, Cl. 524-608,000.
- Tachimori, Shoichi: *See—*
Rais, Jiri; and Tachimori, Shoichi, 5,510,091, Cl. 423-9,000.
- Tachiuchi, Tsuguji: *See—*

- Kamimaki, Hideki; Nishioka, Kiyokazu; Tachiuchi, Tsuguji; Tsuchiya, Nobuo; Jinushi, Masahiro; Sadamitsu, Hitoshi; Ito, Hiroshi; Yoshitomi, Takashi; Isaji, Koichi; and Ohba, Takao, 5,511,201, Cl. 395-750,000.
- Tacklind, Thomas A.; and Moon, William G., to Quantum Corporation. Ball spindle for reduced friction rotary actuator in disk drive. 5,510,940, Cl. 360-106,000.
- Tada, Masahito: *See—*
Suzuki, Keiichi; and Tada, Masahito, 5,510,412, Cl. 524-440,000.
- Tada, Masami: *See—*
Horie, Noriyoshi; Hosokawa, Hayami; Tada, Masami; Yamashita, Tsukasa; Ohgaki, Tatsuo; and Kiyomoto, Hironobu, 5,511,142, Cl. 385-129,000.
- Taesang, Kim, to Samsung Electronics Co., Ltd. Cage in computer equipment for locking peripheral equipment therewithin using hooked lockpins. 5,510,955, Cl. 361-685,000.
- Taga, Genji: *See—*
Fukuyama, Yoshiki; and Taga, Genji, 5,510,096, Cl. 423-332,000.
- Tagawa, Toshiya: *See—*
Hayashi, Masayuki; Mitekura, Yoshihiro; Kanaya, Koichi; Terao, Masato; Tagawa, Toshiya; Tomidokoro, Nobuaki; Kitayama, Masahiro; Kizaki, Osamu; Kawada, Yasuo; Nakahara, Kazuki; Harada, Tomofumi; and Hashimoto, Yasunari, 5,510,876, Cl. 355-202,000.
- Tagliaferri, Roberto; Giancarlo, Franceschi; and Marzocchi, Paolo, to I.M.A. Industria Macchine Automatiche S.p.A. Packaging machine for withdrawing and opening flat folded cases and for filling them with relative articles. 5,509,257, Cl. 53-566,000.
- Tait, Bradley D.: *See—*
Domagala, John M.; Hagen, Susan E.; Lunney, Elizabeth; and Tait, Bradley D., 5,510,375, Cl. 514-457,000.
- Taiwan Semiconductor Manuf. Company: *See—*
Chen, Ling; Hsu, Sung-Mu; and Weng, Liang F., 5,510,287, Cl. 437-52,000.
- Tak Fi International (Holdings) Ltd.: *See—*
Sher, Tak C., 5,509,799, Cl. 431-276,000.
- Taka, Takao: *See—*
Okada, Seiji; Suzuki, Yutaka; Sakamoto, Kouichi; Teshigahara, Hitoshi; Taka, Takao; Fukada, Yasuto; and Oki, Masami, 5,509,600, Cl. 228-205,000.
- Takagawa, Makoto: *See—*
Morikawa, Shuichi; Futatsuka, Masahiko; Ishida, Satoshi; Miyauchi, Yasunori; Maruda, Minoru; and Takagawa, Makoto, 5,510,909, Cl. 358-498,000.
- Takagi, Katsuhiko, to Alpine Electronics, Inc. Locking and retaining mechanism for an electronic device having a detachable control unit. 5,510,957, Cl. 361-814,000.
- Takahama, Tomohiko: *See—*
Sugano, Toshihiko; and Takahama, Tomohiko, 5,510,502, Cl. 556-11,000.
- Takahara, Hisao; Takamatsu, Yukihiro; and Tanibata, Yasuhiro, to Yokogawa Electric Corporation. Particle component analyzing apparatus, and equivalent particle diameter measuring method using same. 5,510,611, Cl. 250-226,000.
- Takahashi, Fumio: *See—*
Ueno, Yasunori; Umeda, Toshiaki; and Takahashi, Fumio, 5,510,860, Cl. 351-169,000.
- Takahashi, Hidekazu; and Yanai, Norimasa, to Showa Sangyo Co., Ltd. Process for producing zein. 5,510,463, Cl. 530-373,000.
- Takahashi, Hiroshi; Sakuhara, Toshihiko; and Iwasaki, Fumiharu, to Seiko Instruments Inc. Photosensitive microcapsule for photoimaging and thermal development recording media. 5,510,224, Cl. 430-138,000.
- Takahashi, Kazuaki: *See—*
Fujita, Suguru; Takahashi, Kazuaki; Sagawa, Morikazu; Sakai, Hiroyuki; Ota, Yori; and Inoue, Kaoru, 5,510,758, Cl. 333-247,000.
- Takahashi, Koji; Hieda, Tenu; Kyuma, Kenji; Nakatani, Yoshihiro; Suzuki, Koichiro; Abe, Takeshi; and Ishikawa, Yoshifumi, to Canon Kabushiki Kaisha. Signal recording system using sound memory. 5,510,901, Cl. 358-335,000.
- Takahashi, Masakatsu, to Takahashi, Masakatsu. Landing apparatus for airship and the like. 5,509,624, Cl. 244-115,000.
- Takahashi, Nobuo, to NEC Corporation. Active matrix liquid crystal device with opposite substrate having black matrix with larger aperture than active substrate. 5,510,916, Cl. 359-67,000.
- Takahashi, Noriyoshi: *See—*
Hongo, Kazuya; Nukada, Katsumi; Iijima, Masakazu; Takahashi, Noriyoshi; Suwabe, Masaaki; and Takimoto, Hitoshi, 5,510,217, Cl. 430-58,000.
- Takahashi, Shunji; Masukawa, Seizo; Futatsuka, Rensei; Sugimoto, Tetsuya; Suzuki, Takeshi; Azuma, Chuzo; Kanda, Yuichi; and Fukutami, Takao, to Mitsubishi Shindoh Co., Ltd. Lead frame material and lead frame for semiconductor device. 5,510,197, Cl. 428-670,000.
- Takahashi, Tetsuhiko; Yamamoto, Etsuji; Murakami, Yoshiki; and Matsunaga, Yoshikuni, to Hitachi, Ltd. Magnetic resonance imaging apparatus and RF coil employed therein. 5,510,714, Cl. 324-318,000.
- Takahashi, Toru: *See—*
Yamaoka, Fumiyuki; Takahashi, Toru; Okamura, Tetsuya; and Nakamura, Michiya, 5,510,985, Cl. 364-424,050.
- Takahashi, Toshiyuki: *See—*
Imai, Motomasa; Shutoh, Naoki; Oh-Ishi, Katsuyoshi; Ueno, Fumio; Ohkuma, Hideo; Katsumura, Yuji; Kobayashi, Masaki; and Takahashi, Toshiyuki, 5,509,558, Cl. 218-143,000.
- Takahashi, Toyofumi: *See—*
Otake, Masahiro; Takahashi, Toyofumi; Nishiumi, Satoshi; and Kitagawa, Kumiko, 5,509,663, Cl. 273-437,000.
- Takahashi, Yasuhito: *See—*
Kimura, Tsutomu; Fukuhara, Masaaki; Takahashi, Yasuhito; and Isosu, Toru, 5,510,883, Cl. 355-245,000.
- Takahashi, Yoshihiro: *See—*
Suzuki, Mitsuo; Itami, Yukio; Hashimoto, Yoshio; Yamamoto, Mutsumi; and Takahashi, Yoshihiro, 5,510,664, Cl. 310-268,000.
- Takahashi, Yoshio: *See—*
Kyotani, Yoshinori; Kawamine, Katsumi; Toma, Tsutomu; Ohgiya, Tadaaki; Yamaguchi, Takashi; Onogi, Kazuhiro; Sato, Seichi; Shimizu, Noboru; Shigyo, Hiromichi; Ohta, Tomio; Oda, Toshiaki; Okuno, Yukihiro; Shibuya, Kimiyuki; Takahashi, Yoshio; Fujii, Mikio; and Uchida, Yasumi, 5,510,366, Cl. 514-411,000.
- Takahasi, Kiyosi: *See—*
Kai, Yoshiaki; Takahasi, Kiyosi; and Ohchi, Yukikazu, 5,510,513, Cl. 560-197,000.
- Takahata, Yusuke: *See—*
Toraya, Tetsuo; Yamanishi, Mamoru; Takahata, Yusuke; and Kojima, Ichiro, 5,510,479, Cl. 536-26,400.
- Takai, Atsushi; Takeyari, Ryoji; and Takase, Akihiko, to Hitachi, Ltd. Optical frequency division multiplexing network. 5,510,921, Cl. 359-124,000.
- Takamatsu, Atsushi: *See—*
Hashimoto, Chikara; Takamatsu, Atsushi; Itoh, Hiroyuki; and Toyooka, Takehiro, 5,510,913, Cl. 359-37,000.
- Takamatsu, Yukihiro: *See—*
Takahara, Hisao; Takamatsu, Yukihiro; and Tanibata, Yasuhiro, 5,510,611, Cl. 250-226,000.
- Takamizawa, Toru; Kitahara, Daijiro; and Miyazaki, Seizo, to NSK Ltd. Preloading method for preload-adjustable rolling bearing and manufacture of the same. 5,509,198, Cl. 29-898,090.
- Takamoto, Yoshifumi: *See—*
Kagimasa, Toyohiko; Takamoto, Yoshifumi; and Kakuta, Hitoshi, 5,511,177, Cl. 395-441,000.
- Takano, Ryosuke; Hayashi, Toshiaki; Miyoshi, Kazuhiko; and Iwaoka, Junzo, to Daifuku Co., Ltd. Cover-equipped tester for internal combustion engines. 5,509,301, Cl. 73-116,000.
- Takao, Hideaki: *See—*
Asaoka, Masanobu; Takao, Hideaki; Hanyu, Yukio; and Kojima, Makoto, 5,510,159, Cl. 428-1,000.
- Takase, Akihiko: *See—*
Takai, Atsushi; Takeyari, Ryoji; and Takase, Akihiko, 5,510,921, Cl. 359-124,000.
- Takase, Akira; Kai, Hiroyuki; Masui, Moriyasu; Masumoto, Karuhisa; Nakamura, Akihiko; Kiyoshima, Yujiro; and Sasaki, Mikio, to Shionogi & Co., Ltd.; and Sumitomo Chem. Co., Ltd. Process for producing carboxylic acid derivatives. 5,510,506, Cl. 560-35,000.
- Takata, Kanji: *See—*
Hamada, Shinji; Takata, Kanji; Yokota, Akinori; Matsuda, Hiromu; and Ikoma, Munehisa, 5,510,203, Cl. 429-53,000.
- Takeda, Hiroshi; and Matsui, Shigezumi, to Hitachi, Ltd. Cache control system equipped with a loop lock indicator for indicating the presence and/or absence of an instruction in a feedback loop section. 5,511,178, Cl. 395-452,000.
- Takeda, Masashi: *See—*
Nishino, Tomoki; and Takeda, Masashi, 5,510,654, Cl. 257-773,000.
- Takehana, Tadashi: *See—*
Nakanishi, Ken; Takehana, Tadashi; Tamaki, Hiroyuki; and Nishikawa, Sumio, 5,510,233, Cl. 430-535,000.
- Takei, Hirofumi, to Canon Kabushiki Kaisha. Automatic exposure control device performing weighted light measurement. 5,510,837, Cl. 348-362,000.
- Takei, Tetsuya: *See—*
Matsuyama, Jinsho; Kariya, Toshimitsu; Fujioka, Yasushi; Takei, Tetsuya; Nakagawa, Katsumi; Kanai, Masahiro; and Echizen, Hiroshi, 5,510,151, Cl. 427-509,000.
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- Takeshita, Nobuo: *See—*
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- Takeuchi, Manabu, to Diamond Electric Mfg. Co., Ltd. Apparatus for determining the ignition characteristic of an internal combustion engine. 5,510,715, Cl. 324-391,000.

- Takeuchi, Mizutomo, to Idemitsu Kosan Co., Ltd. Catalyst for producing aromatic vinyl compound polymer and process for producing aromatic vinyl compound polymer by using same. 5,510,434, Cl. 526-152,000.
- Takeuchi, Seizi: *See—*
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- Takeyari, Ryoji: *See—*
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- Tagiguchi, Tsuyoshi: *See—*
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- Takimoto, Hitoshi: *See—*
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Takubo, Yoshiichi, 5,510,128, Cl. 426-28,000.
- Takubo, Seiji: *See—*
Yamana, Masayuki; and Takubo, Seiji, 5,510,407, Cl. 524-269,000.
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- Talley, John J.; Getman, Daniel P.; DeCrescenzo, Gary A.; Lin, Ko-Chung; Vazquez, Michael L.; Mueller, Richard A.; Reed, Kathryn L.; Heintz, Robert M.; Clare, Michael; Freskos, John N.; and Sun, Eric T., to G.D. Searle & Co. Retroviral protease inhibitors. 5,510,349, Cl. 514-237,500.
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- Talty, Timothy J., to Ford Motor Company. F-shaped three element dipole antenna for motor vehicles. 5,510,804, Cl. 343-713,000.
- Tamaki, Hiroyuki: *See—*
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- Tamaki, Shigeo, to Hitachi, Ltd. and Hitachi Automotive Engineering Co., Ltd. Throttle valve actuating apparatus for use in internal combustion engine. 5,509,396, Cl. 123-400,000.
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- Tammera, Robert F., to Exxon Research and Engineering Company. Vapor controlled fuel dispensing nozzle attachment. 5,509,452, Cl. 141-207,000.
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- Tanabe, Tetsuya: *See—*
Tanaka, Yasuhiro; Tanabe, Tetsuya; and Tanoi, Satoru, 5,511,030, Cl. 365-203,000.
- Tanaka, Fuminori: *See—*
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- Tanaka, Hideo: *See—*
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- Tanaka, Ken-ichi: *See—*
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- Tanaka, Kouji; and Aoyama, Tooru, to Nippondenso Co., Ltd. Power generation control system for generator. 5,510,695, Cl. 322-25,000.
- Tanaka, Masashi: *See—*
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- Tanaka, Masato: *See—*
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- Tanaka, Naoki; Okamoto, Hiroshi; Naito, Masayoshi; Umemura, Shin-ichi; Morooka, Yasuo; Kayama, Masahiro; and Okudaira, Hiroaki, to Hitachi, Ltd. Control system. 5,510,976, Cl. 364-148,000.
- Tanaka, Yasuhiro; Tanabe, Tetsuya; and Tanoi, Satoru, to OKI Electric Industry Co., Ltd. Semiconductor memory device and method of driving same. 5,511,030, Cl. 365-203,000.
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- Tandem Computers, Inc.: *See—*
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- Tang, Fulvio J., to Construction Technology Laboratories, Inc. Cement containing activated belite. 5,509,962, Cl. 106-733,000.
- Tang, Jin-Yan: *See—*
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- Tang, Man K.: *See—*
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- Tang, Ping-Wah; and Mungal, Terrence C., to Eastman Kodak Company. Process of preparing pyrazolo [1,5-b][1,2,4] triazoles. 5,510,492, Cl. 548-262,400.
- Tang, Wade W. C.: *See—*
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- Tani, Naoki: *See—*
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- Tanibata, Yasuhiro: *See—*
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- Tanielian, Minas H., to Boeing Company, The. Silicon wafers containing conductive feedthroughs. 5,510,655, Cl. 257-774,000.
- Tanimoto, Shigeya; and So, Mayumi, to Kabushiki Kaisha Toshiba. Permanent magnet motor. 5,510,662, Cl. 310-156,000.
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- Tannas Co.: *See—*
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- Tanoi, Satoru, to OKI Electric Industry Co., Ltd. Load circuit tolerating large current and voltage swings. 5,510,746, Cl. 327-427,000.
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- Tapeswitch Corporation of America: *See—*
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- Taravella, Philip; Domanski, Ronald S.; Burchett, Kevin; Blair, Edward J.; and Shippell, Joseph G., to Anchor Bay Packaging Corporation. Two-piece dunnage for use in a container. 5,509,534, Cl. 206-587,000.
- Tartaro, Gail Marie: *See—*
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- Tasaki, Koji; Hidaka, Takashi; and Orita, Akira, to Fujitsu Limited. Service switching point and system for creating detailed charging information. 5,511,113, Cl. 379-112,000.
- Tastayre, Gilles. Regeneration of used cleaning solution. 5,510,037, Cl. 210-666,000.
- Tatsumi, Satoshi: *See—*
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- Tatung Telecom Corporation: *See—*
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- Taubl, Clayton. Method for producing decorative laminate finishes. 5,509,989, Cl. 156-238,000.
- Taylor, Harold L.; and Green, Jerry M., to Siemens Energy & Automation. Power supply for ground fault circuit interrupter. 5,510,945, Cl. 361-45,000.
- Taylor, John I. Oil recycling apparatus with a recirculating filtration line. 5,510,023, Cl. 210-180,000.
- Taylor, Kenneth D., to Valleylab Inc. Laser-assisted electrosurgery system. 5,509,916, Cl. 606-13,000.
- Taylor, Michael T.: *See—*
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- Taylor, Robert R.: See—
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- TCOM, L.P.: See—
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- TDK Corporation: See—
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- Teakell, Joe F., to Plast-D-Pusers, Inc. Adjustable reflector/director for fluorescent light fixture, 5,510,965, Cl. 362-223.000.
- Technolizenz Establishment: See—
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- Technomed Medical Systems: See—
Hascot, Gérard; Lacoste, François; Cathaud, Muriel; Devonec, Marian; and Perrin, Paul, 5,509,929, Cl. 607-101.000.
- Tejeda, Alvaro R. Concentric annular filters for purifying water, 5,510,027, Cl. 210-282.000.
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- Teleflex Incorporated: See—
Boike, Randy J., 5,509,750, Cl. 403-164.000.
- Telefonaktiebolaget LM Ericsson: See—
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- Telford, Susan; Aruga, Michio; and Chang, Mei, to Applied Materials, Inc. Process for uniform deposition of tungsten silicide on semiconductor wafers by treatment of susceptor having aluminum nitride surface thereon with tungsten silicide after cleaning of susceptor, 5,510,297, Cl. 437-200.000.
- Temperley, John: See—
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- Tenace, Michael; and DeBortoli, George, to Northern Telecom Limited. Telecommunications cable enclosure, 5,510,576, Cl. 174-65.05S.
- Tennant, Donald M.; White, Donald L.; and Wood, Overt R., II, to AT&T Corp. Device fabrication using DUV/EUV pattern delineation, 5,510,230, Cl. 430-325.000.
- Terao, Masato: See—
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- Terasaka, Toshiaki; Muramatsu, Tsuyoshi; Miyata, Souichi; Kuwabara, Tatsuyuki; Tomita, Masaharu; Nagamura, Kiyotaka; and Nakamura, Takao, to Sharp Kabushiki Kaisha; and Japan Radio Co., Ltd. Debugging system for the loading and execution of data flow programs, 5,511,215, Cl. 395-800.000.
- Terashima, Masaaki: See—
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- Terrell, Donna K.: See—
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- Terrell, Jamie B.; and Terrell, Donna K. Chemical cutter and method for high temperature tubular goods, 5,509,480, Cl. 166-297.000.
- Terrell, Robert C., II. Beverage container dispensing cap, 5,509,551, Cl. 215-229.000.
- Terui, Nobuo; Ohnishi, Takafumi; and Furuta, Kenji, to Olympus Optical Co., Ltd. Voice information transfer system capable of easily performing voice information transfer using optical signal, 5,510,924, Cl. 359-143.000.
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- Tetra Alfa Holdings & Finance S.A.: See—
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- Tetra Laval Holdings & Finance S.A.: See—
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- Mock, Elmar; and Aeschlimann, Marcel, 5,509,585, Cl. 222-541.100.
- Texaco Inc.: See—
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- O'Young, Chi-Lin; Pellet, Regis J.; Hadowanetz, Alison E.; Hazen, John; and Browne, James E., 5,510,560, Cl. 585-671.000.
- Stoy, James R., 5,509,478, Cl. 166-250.060.
- Texaco Company, The: See—
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- Texas A&M University System, The: See—
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- Texas Biotechnology Corporation: See—
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- Texas Instruments Incorporated: See—
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- Burns, Mark A., 5,511,010, Cl. 364-574.000.
- Karl, Rex A., 5,509,176, Cl. 16-342.000.
- Malhi, Sarwinder, 5,510,275, Cl. 437-41.000.
- Nelson, William E., 5,510,824, Cl. 347-239.000.
- Numata, Ken, 5,510,293, Cl. 437-195.000.
- Redwine, Donald J., 5,510,298, Cl. 437-203.000.
- Simar, Laurence R., Jr., 5,511,146, Cl. 395-24.000.
- Smith, Scott E.; Le, Duy-Loan T.; and Ho, Michael, 5,511,025, Cl. 365-189.050.
- Sulzbach, Frank C., 5,510,186, Cl. 428-408.000.
- Yamaguchi, Hirohisa, 5,511,155, Cl. 395-133.000.
- Thalmann, Hans J. Paving stone, brick and tile tool, 5,509,706, Cl. 294-62.000.
- Theis, Joseph R., to General Motors Corporation. Automotive vehicle catalyst diagnostic, 5,509,267, Cl. 60-274.000.
- Theobald, David J., to Motorola, Inc. Method for battery charging, 5,510,693, Cl. 320-24.000.
- Theodor Groz & Söhne & Ernst Beckert: See—
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- Theus, Ulrich; and Motz, Mario, to Deutsche ITT Industries GmbH. Voltage regulator, 5,510,699, Cl. 323-312.000.
- Thier, Richard D.; Speer, Howard V.; and Swenson, Phillip O., to Deere & Company. Operator presence control for reel mower, 5,509,258, Cl. 56-11.300.
- Thinking Machines Corporation: See—
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- Thirion de Briel, Jacques, to Valeo. Diaphragm clutch mechanism of the push-off type, especially for motor vehicles, 5,509,519, Cl. 192-70.270.
- Thirugnanam, Muthuvelu, to Rohm and Haas Company. Synergistic insecticidal compositions, 5,510,363, Cl. 514-383.000.
- Tholander, Lars H. G., to IRO AB. Weft yarn feeding device having a rotating retainer, 5,509,450, Cl. 139-452.000.
- Thomas & Betts Corporation: See—
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- Thomas, Andrew D.: See—
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- Thomas, Robert M., to Chrysler Corporation. Steering column assembly, 5,509,325, Cl. 74-493.000.
- Thomason, Joseph R.; and Van Dyke, John, to Phytac, Inc. Self-supporting thermally-protective plant enclosure formed by self-standing container bodies, 5,509,229, Cl. 47-21.000.
- Thompson, Clinton C. Retractable speed bump, 5,509,753, Cl. 404-6.000.
- Thompson, Craig D.: See—
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- Thompson, Gregory A.: See—
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- Thomson Consumer Electronics, S.A.: See—
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- Thomson-CSF: See—
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- Thorndike, Robert J., to Thorsons Projects Canada, Inc. Landing gear assembly, 5,509,687, Cl. 280-766.100.
- Thorns, Christopher J., to United Kingdom of Great Britain and Northern Ireland. The Minister of Agriculture, Fisheries and Food in Her Britannic Majesty's Government of the Method of testing for the presence of Salmonella serotypes expressing *Salmonella enteritidis* fimbrial antigen (SEFA) and reagents therefore, 5,510,241, Cl. 435-7.300.
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- Three Star Enterprises, Inc.: See—
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- Thuswaldner, Hermann; and Andersson, Sören, to Barracuda Technologies AB. Camouflage netting and a method and apparatus for its manufacture, 5,509,982, Cl. 156-72.000.
- Tiedemann, Edward G., Jr.: See—
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- Tindell, James M.: See—
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- Tingstad, Dennis. Vehicle weight transfer subframe, 5,509,688, Cl. 280-789.000.
- Tinti, Jean-Marie: See—
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- Tiollais, Pierre: See—
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- Toixide Group Services Limited: See—
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- Tipp, Raymond P. Tab lifting tool for lifting container lid tabs, 5,509,380, Cl. 81-3.550.
- TIS Tecnichne Idraulico Stradali S.p.A.: See—

- Scalfati, Daniele, 5,509,238, Cl. 52-167.700.
- Titan Australia Pty Limited: See—
Cromptley, Geoffrey D., 5,509,327, Cl. 74-545.000.
- Toan, Vien V.; Laver, Hugh S.; and Leppard, David G., to Ciba-Geigy Corporation. Ink compositions, 5,509,957, Cl. 106-20.00R.
- Tobey, Chris E.; Shih, Yung-Ho; Robin, Michael B.; Rupel, Wesley O.; Edwards, Michael D.; Spies, Terence R.; Bovee, James C., Jr.; Seidensticker, Robert B., Jr.; and McCulley, Mark R., to Microsoft Corporation. Apparatus and method for controlling cursor movement, 5,510,811, Cl. 345-157.000.
- Tobias, John C., II: See—
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- Tobin, Jeffrey A.: See—
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- Tobin, Philip J.: See—
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- Tocchini, Francesco: See—
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- Togano, Shigeo: See—
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- Togawa, Keiichi: See—
Tachika, Hiroshi; Togawa, Keiichi; and Fujimoto, Hiroshi, 5,510,417, Cl. 524-608.000.
- Tohoku Kieho Co., Ltd.: See—
Suzuki, Mitsuo; Itami, Yukio; Hashimoto, Yoshio; Yamamoto, Mutsumi; and Takahashi, Yoshihiro, 5,510,664, Cl. 310-268.000.
- Toki, Hitoshi: See—
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- Tokico Ltd.: See—
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- Tokieda, Yusuke; and Katsuta, Hiroshi, to NEC Corporation. Low power consumption type one-chip microcomputer having a plurality of peripheral circuits, 5,511,013, Cl. 364-707.000.
- Tokionics Manufacturing, Inc.: See—
Sappington, Donald R., 5,509,402, Cl. 124-87.000.
- Tokumo, Teruhiko: See—
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- Tokutake, Toshinori, to Showa Aluminum Corporation. Heat exchanger, 5,509,473, Cl. 165-178.000.
- Tokuyama Corporation: See—
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- Tokyo Electron Limited: See—
Hioki, Tutomu, 5,509,771, Cl. 414-217.000.
- Itoyama, Taketoshi; Abe, Yuichi; and Yamaguchi, Masao, 5,510,724, Cl. 324-760.000.
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- Tolman, Richard L.: See—
Graham, Donald W.; Aster, Susan D.; and Tolman, Richard L., 5,510,351, Cl. 514-253.000.
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- Toma, Tsutomu: See—
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- Tomita, Katsumi: See—
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- Tomoe-gawa Paper Co., Ltd.: See—
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- Tompkins, Michael P.: See—
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- Tompkins, Thomas H.: See—
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- Tone, Junsuke: See—
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- Tonegawa, Ken: See—
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- Tonhauser, Jürgen: See—
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- Topometrix Corporation: See—
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- Torrington Company, The: See—
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- Toshiba Tungaloy Co., Ltd.: See—
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- Tosoh Akzo Corporation: See—
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- Toth, Thomas L.: See—
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- Towers, Graham F.: See—
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- Toyo Boseki Kabushiki Kaisha: See—
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- Toyoda Gosei Co., Ltd.: See—
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- Toyooka, Takehiro: See—
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- Nakagawa, Ryohita; Kawamura, Teruo; and Maeda, Kazutoshi, 5,509,190, Cl. 29-712.000.
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- Tran, Dan T.; Ricci, Paul B.; Sheth, Jayesh V.; White, Theodore C.; and Cowgill, Richard A., to Unisys Corporation. Configurable network using dual-system busses with common protocol compatible for store-through and non-store-through cache memories, 5,511,224, Cl. 395-800.000.
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- Tremaine, John M.: See—
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- Tremblay, Francois Y.: See—
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- Trico Industries, Inc.: See—
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- Trimble Navigation Limited: See—
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- Tripac International: See—
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- Trivedi, Ajit K.: See—
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- Troiani, Vincent F.: See—
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- Trokhian, Paul D.: See—
Phan, Dean V.; and Trokhian, Paul D., 5,510,000, Cl. 162-111.000.
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- Trout, John F.; to Lily Corporation. Structure motion monitor. 5,509,374, Cl. 116-200.000.
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- Trubic, Donald R. Rotary bow sight. 5,509,401, Cl. 124-87.000.
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- TRW Inc.: See—
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- Tsengas, Steven. Animal feeder assembly. 5,509,376, Cl. 119-51.500.
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- Tsuchita, Shuhei: See—
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- Tsuda, Tadayuki: See—
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- Tsuhata, Tomoko, to NEC Corporation. Microcomputer capable of accessing to an external memory with least possible wait. 5,511,176, Cl. 395-433.000.
- Tsuji, Hiroyuki: See—
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- Tsuji, Takeshi, to Sumitomo Wiring Systems Ltd. Connector having short circuit terminal. 5,509,817, Cl. 439-188.000.
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- Tsumura, Soichi, to NEC Corporation. Delay detection circuit. 5,511,097, Cl. 375-324.000.
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- Tuba, Zoltán; Mahó, Sándor; Gere, Anikó; Vittay, Pál; Kiss, Béla; Pálósi, Éva; Szporny, László; Szántay, Csaba; Soti, Ferenc; Baloghné Kardos, Zsuzsa; Incze, Mária; Balogh, Gábor; and Gazdag, Mária, to Richter Gedeon Vegyeszeti Gyar Rt. Biologically active eburnamine derivatives, pharmaceutical compositions containing them and process for preparing same. 5,510,345, Cl. 514-218.000.
- Tuch, Ronald J.: See—
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- Tucker, Thomas J.: See—
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- Tuckey, Charles H., to Walbro Corporation. Temperature-responsive demand fuel pressure regulator. 5,509,390, Cl. 123-463.000.
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- Tung, Kenny S. C.; Harvey, John; Kida, Yasuo; Derossi, Christopher S.; Hara, Keisuke; and Miyatake, Nobuhiro, to Apple Computer, Inc. Text services manager providing multiple instances of input methods for text language processing and automatic synchronization between methods. 5,511,193, Cl. 395-650.000.
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- Tyndell, Brian P.: See—
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- U S WEST, Inc.: See—
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- Ubukata Industries Co., Ltd.: See—
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- Ulijasz, Thaddeus: See—
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- Ullman, David G.; and Atwood, Paul A. Recumbent bicycle. 5,509,678, Cl. 280-281.100.
- Ullrich, Peter F., to Hilsea Investments, Limited. Method for packaging flowers. 5,509,254, Cl. 53-449.000.
- Umansky, Benjamin S.; Boyer, Kevin A.; and Hsu, Chao-Yang, to Sun Company, Inc. (R&M). Oxidative dehydrogenation of hydrocarbons with active carbon catalyst. 5,510,558, Cl. 585-658.000.
- Umeda, Mariko: See—
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- Union Carbide Chemicals & Plastics Technology Corporation: See—
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- Nielsen, Kenneth A.; and Glancy, Charles W., 5,509,959, Cl. 106-287.350.
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- United Kingdom of Great Britain and Northern Ireland, The Minister of Agriculture, Fisheries and Food in Her Britannic Majesty's Government of the: See—
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- United Microelectronics Corp.: See—
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- Hong, Gary, 5,510,288, Cl. 437-52.000.
- Hsu, Shun-Liang; Lin, Mou-Shiung; and Lei, Ming-Dar, 5,510,637, Cl. 257-304.000.
- Li, Zhi-Jian; Sun, Xi-Qing; and Liu, Li-Tian, 5,510,299, Cl. 437-225.000.
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- Kendall, Donald H., 5,509,775, Cl. 414-437.000.
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- Vrugt, Peter J.: See—
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- Yamauchi, Masaru: *See—*
Matsuo, Masashi; Yamauchi, Masaru; Matsunaga, Nobuko; Yokotsuka, Shunsuke; and Unoki, Masao, 5,510,406, Cl. 524-237.000.
- Yamauchi, Tsunekazu, to Aisin Seiki Kabushiki Kaisha. Viscous fluid coupling, 5,509,516, Cl. 192-58.682.
- Yamauchi, Yoshimitsu, to Sharp Kabushiki Kaisha. Method for manufacturing an asymmetric non-volatile memory, 5,510,284, Cl. 437-43.000.
- Yamaura, Shinichi; Yasui, Takashi, and Yoshioka, Keiichi, to Ricoh Co., Ltd. Programmable logic array and data processing unit using the same, 5,511,173, Cl. 395-375.000.
- Yamazaki, Hiroshi: *See—*
Blais, Burton W.; and Yamazaki, Hiroshi, 5,510,242, Cl. 435-7.320.
- Yamazaki, Shuichi; Ushigami, Yoshiyuki; Fujii, Hiroyasu; and Murakami, Kenichi, to Nippon Steel Corporation. Method for producing a grain-oriented electrical steel sheet having a mirror surface and improved core loss, 5,509,976, Cl. 148-113.000.
- Yamron, Gary T.: *See—*
Berger, Howard H.; Yamron, Gary T.; and Perkins, Richard, 5,509,656, Cl. 273-153.00R.
- Yanai, Norimasa: *See—*
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- Yang, Jian; and Limberg, Allen L., to Samsung Electronics Co., Ltd. Receivers for digital signals buried within the trace and retrace intervals of NTSC television signals, 5,510,845, Cl. 348-476.000.
- Yang, Jimmy: *See—*
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- Yang, Ming-Tzong: *See—*
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- Yang, S. T.: *See—*
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- Yang, Yaohua: *See—*
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- Yanka, Robert W.: *See—*
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- Yano, Seinosuke; Morioka, Koh; Harabuchi, Takashi; Nakano, Yoshikazu; Mochiki, Hiroshi; and Nagata, Kimio, to Japan Casting & Forging Corporation; and Nippon Steel Corporation. High strength hot rolled steel plates and sheets excellent in uniform elongation after cold working and process for producing the same, 5,509,977, Cl. 148-328.000.
- Yarbrough, Sandra M.: *See—*
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- Yarrow, Nigel S.; Milburn, Neil F.; and Burgess, Malcolm J., to Rover Group Limited. Vehicle suspension torque arm assembly, 5,509,684, Cl. 280-720.000.
- Yasuda, Dennis M.: *See—*
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- Yasuda, Hiroyuki; Sawada, Yoshiaki; and Maegawa, Hirotochi, to Sony Corporation. Microprocessor based computer with virtual memory space in overwritable memory, 5,511,206, Cl. 395-775.000.
- Yasui, Takashi: *See—*
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- Yates, James W.; and Yates, Ronnie L. Thermal glove with pocket for finger heater, 5,509,143, Cl. 2-160.000.
- Yates, Kenneth D.: *See—*
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- Yates, Ronnie L.: *See—*
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- Yazaki Corporation: *See—*
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- Yeda Research and Development Co. Ltd.: *See—*
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- Yee, Hsian-Pei; Lauritzen, Peter O.; and Yee, Sinclair S., to University of Washington. Majority carrier power diode, 5,510,641, Cl. 257-367.000.
- Yee, Sinclair S.: *See—*
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- Yen, Haw; and Hsia, Shaw-Tseng, to Vanguard International Semiconductor Corporation. Manufacturable process for tungsten polycide contacts using amorphous silicon, 5,510,296, Cl. 437-200.000.
- Yen, Yu-Sze: *See—*
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- Yeo, Richard S., to Kimberly-Clark Corporation. Flushable compositions, 5,509,913, Cl. 604-364.000.

- Yim, Hyung-Kyu; and Lee, Woong-Moo, to Samsung Electronics Co., Ltd. Depletion mode NAND string electrically erasable programmable semiconductor memory device and method for erasing and programming thereof, 5,511,022, Cl. 365-185.170.
- Yogi Pogi Inc.: *See—*
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- Yokogawa Electric Corporation: *See—*
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- Shimabara, Norio; and Tokumo, Teruhiko, 5,510,958, Cl. 361-719.000.
- Takahara, Hisao; Takamatsu, Yukihiko; and Tanibata, Yasuhiro, 5,510,611, Cl. 250-226.000.
- Yokomori, Masao: *See—*
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- Yokota, Akinori: *See—*
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- Yokoyama, Masayuki; Sakurai, Yasuhisa; Okano, Teruo; and Kataoka, Kazunori, to Research Development Corporation of Japan. Physical trapping type polymeric micelle drug preparation, 5,510,103, Cl. 424-78.080.
- Yokoyama, Shotaro; Amano, Akira; and Matsuzaki, Kazuo, to Fuji Electric Co., Ltd. Acceleration measuring device, 5,509,309, Cl. 73-514.090.
- Yomdin, Yosef; Eliahi, Yoram; and Briskin, Miriam, to IGP Research and Development Ltd. Apparatus and method for picture representation by data compression, 5,510,838, Cl. 348-384.000.
- Yonehara, Akiyumi, to NEC Corporation. Multiplexing device capable of quickly transmitting a monitoring information, 5,511,065, Cl. 370-17.000.
- Yonekubo, Shuji: *See—*
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- Yonemitsu, Jun; and Yagasaki, Yoichi, to Sony Corporation. Methods and devices for encoding and decoding frame signals and recording medium therefor, 5,510,840, Cl. 348-402.000.
- Yonemitsu, Jun: *See—*
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- Yoneyoshi, Yukio; Kudo, Junko; and Nishioka, Toshio, to Sumitomo Chemical Company, Limited. Optically active secondary amine compound, process for producing optically active secondary amine compound and process for producing optically active carboxylic acid by using said compound, 5,510,519, Cl. 562-401.000.
- Yonezawa, Masao: *See—*
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- Yonezawa, Yoshihisa: *See—*
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- Yoo, Jae S., to Daewoo Heavy Industries Ltd. Load clamping apparatus with an increased extent of vertical movement, 5,509,774, Cl. 414-622.000.
- York International Corporation: *See—*
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- Yoshida Kogyo K.K.: *See—*
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- Yoshida, Shingo: *See—*
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- Yoshida, Shoji: *See—*
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- Yoshida, Tatsuo: *See—*
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- Yoshida, Yutaka: *See—*
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- Yoshiike, Nobuyuki: *See—*
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- Yoshikawa, Yoshio: *See—*
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- Yoshimi, Takashi: *See—*
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- Yoshimi, Toshikazu, to Pioneer Electronic Corporation. Communication device having air-borne and solid-borne transmitting and receiving devices, 5,511,132, Cl. 381-205.000.
- Yoshimura, Junichi: *See—*
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- Yoshimura, Katsuji; and Owada, Mitsuru, to Canon Kabushiki Kaisha. Information signal recording apparatus, 5,510,898, Cl. 358-320.000.
- Yoshimura, Noriyuki; and Daikuhara, Yutaka, to Minebea Kabushiki Kaisha. Motor, 5,510,661, Cl. 310-90.000.
- Yoshimura, Takeshi: *See—*
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- Yoshino, Isamu: *See—*
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- Yoshino Kogyosho Co., Ltd.: *See—*
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- Yoshioka, Keiichi: *See—*
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- Yoshioka, Kosuki: *See—*
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- Yoshitomi, Takashi: *See—*
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- Young, David J.: *See—*
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- Young, Desmond W.: *See—*
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- Young, Donald C., to Entek Corporation. Methods for regulating the growth of plants and growth regulant compositions comprising polyactides, 5,510,322, Cl. 504-313.000.
- Young, John D.: *See—*
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- Young, Merry A. Apparatus for guiding a reaming instrument, 5,509,919, Cl. 606-80.000.
- Youngblood, Robert, to Freye, James E. Golf putter with ball retrieval device, 5,509,658, Cl. 273-162.00E.
- Yu, Qun: *See—*
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- Yu, Te-Fang. Method of making fire-resisting synthetic boards, 5,509,983, Cl. 156-79.000.
- Yudate, Kozo: *See—*
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- Yuen Foong Yu H.K. Co., Ltd.: *See—*
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- Yui, Kiyoshi: *See—*
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- Yuill, William A.: *See—*
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- Yuki, Shinichi; Shishido, Kouji; Shirakawa, Masayoshi; and Shindo, Masuo, to Nissan Chemical Industries, Ltd. Surface-treated melamine cyanurate powder and process for its production, 5,510,059, Cl. 252-609.000.
- Yukong Limited: *See—*
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- Yusa, Hiroshi: *See—*
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- Yuuki, Kenji; Oda, Kiyoshi; and Matsushima, Hideyuki, to Yoshida Kogyo K.K. Fitting for ball chains, 5,509,181, Cl. 24-116.00A.
- Zabner, Erich; Kassner, Uwe; and Maihoefer, Bernd, to Robert Bosch GmbH. System for influencing the travel dynamics of an automobile, 5,510,989, Cl. 364-424.050.
- Zachmann, Günter; Gast, Jürgen; Simon, Arno; and Schübel, Reiner, to Brunner Analytische Messtechnik GmbH. Method for the routine identification of plastics, 5,510,619, Cl. 250-339.080.
- Zahrobsky, Peter; and Lent, Bruce, to Videojet Systems, Inc. Ink jet composition for printing on textiles, 5,510,415, Cl. 524-506.000.
- Zakoshansky, Vladimir M.: *See—*
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- Zaluda, Daniela: *See—*
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- Zaluzec, Nestor J., to University of Chicago. The Simultaneous specimen and stage cleaning device for analytical electron microscope, 5,510,624, Cl. 250-441.110.
- Zambon Group S.p.A.: *See—*
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- Stroppolo, Federico; Bonadeo, Daniele; Fornasini, Gian F.; and Gazzaniga, Annibale, 5,510,385, Cl. 514-555.000.
- Zapalac, Robin: *See—*
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- Zapf, Peter J.: *See—*
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- Zaviska, Dalibor; and Linhoff, Paul, to ITT Automotive Europe GmbH. Anti-lock hydraulic brake system with a flow control valve. 5,509,729, Cl. 303-117.100.
- Zazzera, Andre C. Integrated voice and business transaction reporting for telephone call centers. 5,511,117, Cl. 379-265.000.
- Zbar, Jack J.; Collier, Robert B.; and Carlson, Philip G., to Arrow Engineering, Inc. Processes and compositions for dyeing hydrophobic polymer products with disperse dyes and terpene/terpenoid solvents. 5,509,940, Cl. 8-617.000.
- Zebel, Peter J.: *See—*
- Davies, Robert B.; Zebel, Peter J.; and Buxo, Julian, 5,510,648, Cl. 257-657.000.
- Zebco Corporation: *See—*
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- Zeise, Christiane: *See—*
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- Zejda, Frantisek. Vacuum cleaner bumper system. 5,509,171, Cl. 15-325.000.
- Zelikov, Alexander, to Valeo Clutches and Transmissions, Inc. Diaphragm clutch assembly with wear compensator. 5,509,518, Cl. 192-70.250.
- Zeller, Hansjorg: *See—*
- Sharma, Anoop; and Zeller, Hansjorg, 5,511,190, Cl. 395-600.000.
- Zelonis, Donald: *See—*
- Harry, Ieuan L.; Silva, Louis M.; and Zelonis, Donald, 5,509,965, Cl. 118-423.000.
- Zeneca Limited: *See—*
- Empfield, James R.; Mayhugh, Daniel R.; and Russell, Keith, 5,510,386, Cl. 514-603.000.
- Hayward, Christopher F., 5,510,460, Cl. 530-328.000.
- Zenger, Helmut: *See—*
- Husain, Zaki D.; Zenger, Helmut; Goodson, F. Dale; and Wass, Donald J., 5,509,305, Cl. 73-195.000.
- Zenker, David L.: *See—*
- Hanson, William D.; Brud, Lynn C.; Byerly, Shannon K.; Ellis, Clifford J.; Everett, Rob D.; Gossen, Barbara A.; Grube, Violet M.; Iwanski, David G.; LeMahieu, David L.; Qin, Jian; Stevens, Robert A.; Wentzel, Tom K.; Yarbrough, Sandra M.; Zenker, David L.; and Zunker, MaryAnn, 5,509,915, Cl. 604-378.000.
- ZF Friedrichshafen AG: *See—*
- Lang, Armin; and Knödler, Helmut, 5,509,493, Cl. 180-132.000.
- Lang, Armin, 5,509,494, Cl. 180-132.000.
- Legner, Jürgen, 5,509,860, Cl. 475-129.000.
- Zhao, Yang, to Analog Devices, Inc. Micromechanical structure with textured surface and method for making same. 5,510,156, Cl. 427-534.000.
- Zhou, Guangun: *See—*
- Kajfez, Darko; Bowers, John H.; and Zhou, Guangun, 5,510,769, Cl. 340-572.000.
- Zibell, Steven E.: *See—*
- Kopecky, Stanley J.; Zaluda, Daniela; Sundstrom, Christof E.; Zibell, Steven E.; and Boyd, William T., 5,510,124, Cl. 426-5.000.
- Ziegler, Eldon W., Jr., to Atlantic Software, Inc. Method of logical operations in home automation. 5,510,975, Cl. 364-148.000.
- Zigarac, Kevin; and Biggie, Lydia B., to Creative Medical, Inc. Alternating low air loss pressure overlay for patient bedside chair. 5,509,155, Cl. 5-453.000.
- Zigelboim, Ilan; and Hagan, Virginia B. Paint roller. 5,509,165, Cl. 15-230.110.
- Zilka, Anthony M., to Intel Corporation. System for generating snoop addresses and conditionally generating source addresses whenever there is no snoop hit, the source addresses lagging behind the corresponding snoop addresses. 5,511,226, Cl. 395-823.000.
- Zimmerman, Jeffrey J.: *See—*
- Sanderson, Thomas; McGinley, Michael J.; Zimmerman, Jeffrey J.; Hill, Howard T.; Meitz, Michael C.; Pirtle, Eugene C.; Swenson, Sabrina L.; and Shibley, George P., 5,510,258, Cl. 435-237.000.
- Zimmerman, Robert. Seed drill guide assembly. 5,509,363, Cl. 111-157.000.
- Zini, Ivo: *See—*
- McKinstry, Robert E.; and Zini, Ivo, 5,510,411, Cl. 524-418.000.
- Zink, Deborah L.: *See—*
- Singh, Sheo B.; Garrity, George M.; Genillourd, Olga; Lingham, Russell B.; Martin, Isabel; Ornstead, Mary N.; Silverman, Keith C.; and Zink, Deborah L., 5,510,371, Cl. 514-450.000.
- Zisman, Stan A.: *See—*
- Cheung, Tin-Tack P.; Johnson, Marvin M.; Brown, Scott H.; Zisman, Stan A.; and Kimble, James B., 5,510,550, Cl. 585-259.000.
- Zuniga, Michael A.: *See—*
- Bartlett, Charles S.; and Zuniga, Michael A., 5,511,130, Cl. 381-170.000.
- Zunker, MaryAnn: *See—*
- Hanson, William D.; Brud, Lynn C.; Byerly, Shannon K.; Ellis, Clifford J.; Everett, Rob D.; Gossen, Barbara A.; Grube, Violet M.; Iwanski, David G.; LeMahieu, David L.; Qin, Jian; Stevens, Robert A.; Wentzel, Tom K.; Yarbrough, Sandra M.; Zenker, David L.; and Zunker, MaryAnn, 5,509,915, Cl. 604-378.000.
- ZymoGenetics, Inc.: *See—*
- Smith, Robert A.; and Piggott, James R., 5,510,459, Cl. 530-308.000.
- 3Com Corporation: *See—*
- Bowman, Michael H., 5,511,171, Cl. 395-283.000.
- 737333 Ontario Inc.: *See—*
- Schauer, Frank, 5,509,707, Cl. 294-86.400.
- 89908, Inc.: *See—*
- Leitner, Horst, 5,509,679, Cl. 280-284.000.

LIST OF REISSUE PATENTEEES

TO WHOM

PATENTS WERE ISSUED ON THE 23rd DAY OF APRIL, 1996

NOTE—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

- Anderson, Gary J.; and Bush, James W., to Copeland Corporation. Scroll machine with floating seal. Re. 35,216, Cl. 417-310.000.
- BASF Aktiengesellschaft: *See—*
- Schwalm, Reinhold; and Binder, Horst, Re. 35,217, Cl. 430-326.000.
- Becker, Daniel P.; Flynn, Daniel L.; Nosal, Roger; Spangler, Dale P.; and Zabrowski, Daniel L., to G. D. Searle & Co. Azatetracycline compounds. Re. 35,218, Cl. 514-214.000.
- Binder, Horst: *See—*
- Schwalm, Reinhold; and Binder, Horst, Re. 35,217, Cl. 430-326.000.
- Bush, James W.: *See—*
- Anderson, Gary J.; and Bush, James W., Re. 35,216, Cl. 417-310.000.
- Copeland Corporation: *See—*
- Anderson, Gary J.; and Bush, James W., Re. 35,216, Cl. 417-310.000.
- Downs, Arnold A.: *See—*
- McGarry, Kevin M.; and Downs, Arnold A., Re. 35,214, Cl. 361-214.000.
- Flynn, Daniel L.: *See—*
- Becker, Daniel P.; Flynn, Daniel L.; Nosal, Roger; Spangler, Dale P.; and Zabrowski, Daniel L., Re. 35,218, Cl. 514-214.000.
- G. D. Searle & Co.: *See—*
- Becker, Daniel P.; Flynn, Daniel L.; Nosal, Roger; Spangler, Dale P.; and Zabrowski, Daniel L., Re. 35,218, Cl. 514-214.000.
- Lang, Robert J.: *See—*
- Waarts, Robert G.; Welch, David F.; Scifres, Donald R.; Lang, Robert J.; and Nam, Derek W., Re. 35,215, Cl. 372-108.000.
- McGarry, Kevin M.; and Downs, Arnold A., to McGarry, M. Eileen. Grounded magnetic device for removing static charges. Re. 35,214, Cl. 361-214.000.
- McGarry, M. Eileen: *See—*
- McGarry, Kevin M.; and Downs, Arnold A., Re. 35,214, Cl. 361-214.000.
- Nam, Derek W.: *See—*
- Waarts, Robert G.; Welch, David F.; Scifres, Donald R.; Lang, Robert J.; and Nam, Derek W., Re. 35,215, Cl. 372-108.000.
- Nosal, Roger: *See—*
- Becker, Daniel P.; Flynn, Daniel L.; Nosal, Roger; Spangler, Dale P.; and Zabrowski, Daniel L., Re. 35,218, Cl. 514-214.000.
- Schwalm, Reinhold; and Binder, Horst, to BASF Aktiengesellschaft. Aqueous developer solution having hydroxy-alkyl piperidine for positive-working photoresists. Re. 35,217, Cl. 430-326.000.
- Scifres, Donald R.: *See—*
- Waarts, Robert G.; Welch, David F.; Scifres, Donald R.; Lang, Robert J.; and Nam, Derek W., Re. 35,215, Cl. 372-108.000.
- SDL, Inc.: *See—*
- Waarts, Robert G.; Welch, David F.; Scifres, Donald R.; Lang, Robert J.; and Nam, Derek W., Re. 35,215, Cl. 372-108.000.
- Spangler, Dale P.: *See—*
- Becker, Daniel P.; Flynn, Daniel L.; Nosal, Roger; Spangler, Dale P.; and Zabrowski, Daniel L., Re. 35,218, Cl. 514-214.000.
- Waarts, Robert G.; Welch, David F.; Scifres, Donald R.; Lang, Robert J.; and Nam, Derek W., to SDL, Inc. Frequency converted laser diode and lens system therefor. Re. 35,215, Cl. 372-108.000.
- Welch, David F.: *See—*
- Waarts, Robert G.; Welch, David F.; Scifres, Donald R.; Lang, Robert J.; and Nam, Derek W., Re. 35,215, Cl. 372-108.000.
- Zabrowski, Daniel L.: *See—*
- Becker, Daniel P.; Flynn, Daniel L.; Nosal, Roger; Spangler, Dale P.; and Zabrowski, Daniel L., Re. 35,218, Cl. 514-214.000.

LIST OF REEXAMINATION PATENTEEES

TO WHOM

CERTIFICATES WERE ISSUED

- Canon Kabushiki Kaisha: *See—*
- Sato, Koichi; and Ikeda, Masami, B1 4,929,964, Cl. 347-62.000.
- Greer, Thomas W., to Reliable Corporation of America, The. Multiple bingo game apparatus. B1 5,160,146, Cl. 273-269.000.
- Hester, Robert L. Method for detecting undesired dialysis recirculation. B1 5,312,550, Cl. 210-646.000.
- Ikeda, Masami: *See—*
- Sato, Koichi; and Ikeda, Masami, B1 4,929,964, Cl. 347-62.000.
- Juzwik, David J., to United Technologies Automotive, Inc. Circuit sensing circuit for use with a current controlling device in a power delivery circuit. B1 5,032,774, Cl. 318-293.000.
- Juzwik, David L.; and Wrenbeck, Bruce R., to United Technologies Automotive, Inc. Circuit sensing circuit for use with a current controlling device in a power delivery circuit. B1 5,210,475, Cl. 318-293.000.
- Meier, Werner, to Sulzer Bros. Packing element for an exchange column. B1 4,296,050, Cl. 261-112.200.
- Reliable Corporation of America, The: *See—*
- Greer, Thomas W., B1 5,160,146, Cl. 273-269.000.
- Sato, Koichi; and Ikeda, Masami, to Canon Kabushiki Kaisha. Method for preparing liquid jet recording head, liquid jet recording head prepared by said method and liquid jet recording device having said liquid jet recording head mounted thereon. B1 4,929,964, Cl. 347-62.000.
- Sulzer Bros.: *See—*
- Meier, Werner, B1 4,296,050, Cl. 261-112.200.
- United Technologies Automotive, Inc.: *See—*
- Juzwik, David J., B1 5,032,774, Cl. 318-293.000.
- Juzwik, David L.; and Wrenbeck, Bruce R., B1 5,210,475, Cl. 318-293.000.
- Wrenbeck, Bruce R.: *See—*
- Juzwik, David L.; and Wrenbeck, Bruce R., B1 5,210,475, Cl. 318-293.000.

LIST OF DESIGN PATENTEEES

- Ahn, Sung A. Candy. 369,011, Cl. D1-109.000.
- Akaiwa, Masao, to Seiko Epson Corporation. Data imprinting device for a camera. 369,173, Cl. D16-219.000.
- Aktiebolaget Electrolux: *See—*
- Frisell, Carl-Gustaf, 369,060, Cl. D7-379.000.
- Jönson, Åke B., 369,171, Cl. D15-72.000.
- Alexander, Carl E. Adjustable strap wrench. 369,076, Cl. D8-22.000.
- Anderson, Steven P. Holster for drill and/or screwdriver bits. 369,078, Cl. D8-71.000.
- Ando, Takaharu: *See—*
- Onoda, Hiroshi; and Ando, Takaharu, 369,146, Cl. D14-106.000.
- Andrus, Leonard C., to Brass Craft Manufacturing Company. Shower head. 369,203, Cl. D23-213.000.
- Andrus, Leonard C., to Brass Craft Manufacturing Company. Hand held shower head. 369,204, Cl. D23-223.000.
- Andrus, Leonard C., to Brass Craft Manufacturing Company. Hand held shower head. 369,205, Cl. D23-223.000.
- Ariat International, Inc.: *See—*
- Parker, Pamela A., 369,016, Cl. D2-911.000.
- Artus, Mark B.: *See—*
- Lechleiter, Paul R.; and Artus, Mark B., 369,030, Cl. D6-396.000.
- Lechleiter, Paul R.; and Artus, Mark B., 369,031, Cl. D6-397.000.
- Lechleiter, Paul R.; and Artus, Mark B., 369,033, Cl. D6-449.000.
- Lechleiter, Paul R.; and Artus, Mark B., 369,038, Cl. D6-466.000.
- Lechleiter, Paul R.; and Artus, Mark B., 369,040, Cl. D6-468.000.
- Lechleiter, Paul R.; and Artus, Mark B., 369,041, Cl. D6-470.000.
- Lechleiter, Paul R.; and Artus, Mark B., 369,044, Cl. D6-476.000.
- Automatic Liquid Packaging, Inc.: *See—*
- Weiler, Gerhard H., 369,211, Cl. D24-110.000.
- Baker, Mark P.; Brandenburger, Allen M.; House, Richard F.; and Perkins, William H., to Jefferson Smarfil Corporation. Package for compact disk. 369,105, Cl. D9-433.000.

Baker, Mark P.; Brandenburger, Allen M.; House, Richard F.; and Perkins, William H., to Jefferson Smarfit Corporation. Package for compact disk. 369,106, Cl. D9-433.000.

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Barre, René, to Verrieres Brosse & Compagnie. Bottle. 369,099, Cl. D9-335.000.

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Beaumont, Thomas G.; and Meyers, Alfred D., to Motorola, Inc. Housing for a cellular base unit. 369,170, Cl. D14-240.000.

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Botta, Klaus; and Klüber, Thomas, to Ibico AG. Combined binding machine and punch. 369,179, Cl. D18-34.000.

Bourcy, Francis M. Decorative plaque. 369,118, Cl. D11-132.000.

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Brendel, Fred, to EASEC-Schloss-Production GmbH & Co. KG. Bicycle lock. 369,088, Cl. D8-333.000.

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Brooks, Mike; Simpson, Edgar H.; Kastner, Theodore A.; and Wurfbain, Diana A., to Rocky Shoes & Boots, Inc. Shoe upper. 369,018, Cl. D2-969.000.

Brooks, Mike; Simpson, Edgar H.; Kastner, Theodore A.; and Wurfbain, Diana A., to Rocky Shoes & Boots, Inc. Shoe upper. 369,019, Cl. D2-970.000.

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Chen, Tony; and Chang, Thomas, to Umax Data System Inc. Roller type gray scale scanner. 369,148, Cl. D14-107.000.

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Cheng, Liu L., to Chao Li Smelton Co., Ltd. Tool box. 369,023, Cl. D3-271.000.

Chiang, Chih-Tsai. Humidifier. 369,209, Cl. D23-356.000.

Chiodaroli, Michelangelo, to I.M.L. Industria Meccanica Lombarda S.R.L. Extensible support for hanging folders. 369,093, Cl. D8-373.000.

Coggins, Fred H., to Southern Pro Lures. Fishing lure. 369,199, Cl. D22-127.000.

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Cooper, David. Gasoline pump nozzle trigger holder. 369,091, Cl. D8-349.000.

Cooper, James M.; Rohrs, Donald L.; and McCormick, David D., to Parmelee Industries, Inc. Protective eyeglasses. 369,174, Cl. D16-314.000.

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Cummings, Darold B. Tricycle. 369,130, Cl. D12-112.000.

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Dinand, Pierre F., to Paco Rabanne Parfums. Atomizer bottle. 369,098, Cl. D9-332.000.

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Fujisawa, Hirotooshi, to Sony Corporation. Optical disc cartridge. 369,152, Cl. D14-114.000.

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Holbrook, Richard M., Jr., to Thermador Corporation. Grate. 369,062, Cl. D7-408.000.

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Husted, Wayne. Peppermill. 369,068, Cl. D7-679.000.

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 Imswiler, Theodore W., 369,192, Cl. D21-204.000.
 Imswiler, Theodore W., 369,193, Cl. D21-204.000.
- Vossoughi, Sohrab, to Taiwan Video & Monitor Corporation. Monitor with
 detachable speakers. 369,150, Cl. D14-113.000.
- Vossoughi, Sohrab, to Monterey International Corp. Standard keyboard.
 369,155, Cl. D14-115.000.
- Walli, Charles R., Jr. Combined bookcover and binder therefor. 369,182, Cl.
 D19-26.000.
- Wang, Po-Hsiung. Water sprayer. 369,206, Cl. D23-223.000.
- Wang, Po-Hsiung. Water sprayer. 369,207, Cl. D23-223.000.
- Watts, Barry H. Protective cover for shoes. 369,017, Cl. D2-911.000.
- WCI Outdoors Products, Inc.: *See—*
 Tuggle, Lloyd H.; Brant, Ron; and Houge, Michael S., 369,071, Cl.
 D8-8.000.
- Weder, Donald E.; and Straeter, Joseph G., to Highland Supply Corporation.
 Flower pot cover. 369,124, Cl. D11-164.000.
- Weder, Donald E.; and Straeter, Joseph G., to Highland Supply Corporation.
 Flower pot cover. 369,125, Cl. D11-164.000.
- Weder, Donald E.; and Straeter, Joseph G., to Highland Supply Corporation.
 Flower pot cover. 369,126, Cl. D11-164.000.
- Weder, Donald E.; and Straeter, Joseph G., to Highland Supply Corporation.
 Flower pot cover. 369,127, Cl. D11-164.000.
- Weiler, Gerhard H., to Automatic Liquid Packaging, Inc. Combined eyedrop-
 per bottle and overcap. 369,211, Cl. D24-110.000.
- Wicks, James; and Hayashi, Haruo, to Sony Corporation of America. Loud-
 speaker for computer. 369,169, Cl. D14-214.000.
- Williams, David G.: *See—*
 Schurg, Gregory A.; and Williams, David G., 369,210, Cl. D24-
 104.000.
- Wilson Sporting Goods Co.: *See—*
 Severa, William D., 369,194, Cl. D21-212.000.
- Wong, Johnson N. S., to Evergreen Industries, Inc. Histology cassette hinge.
 369,213, Cl. D24-127.000.
- Wurfbaun, Diana A.: *See—*
 Brooks, Mike; Simpson, Edgar H.; Kastner, Theodore A.; and Wurfbain,
 Diana A., 369,018, Cl. D2-969.000.
 Brooks, Mike; Simpson, Edgar H.; Kastner, Theodore A.; and Wurfbain,
 Diana A., 369,019, Cl. D2-970.000.
- Wyatt, Philip D.; and Talbot, Jeffery M., to L&P Property Management
 Company. Merchandising display rack. 369,036, Cl. D6-465.000.
- Wyatt, Philip D.; and Talbot, Jeffery M., to L&P Property Management
 Company. Merchandising display rack. 369,037, Cl. D6-465.000.
- Yamaha Corporation: *See—*
 Nakada, Tsutomu, 369,175, Cl. D17-1.000.
- Yano, Ken, to Sony Corporation. Radio receiver. 369,168, Cl. D14-194.000.
- Yoshida, Shusaku, to Schachihata Inc. Felt pen. 369,183, Cl. D19-49.000.
- Youfu Kou Chao Industrial Co., Ltd.: *See—*
 Sun, Jin R., 369,022, Cl. D3-271.000.
- Ypma International B.V.: *See—*
 Deslen, R. J., 369,120, Cl. D11-143.000.
- Yuen, Se Kit, to John Manufacturing Limited. Combination lamp with radio.
 369,226, Cl. D26-52.000.
- Zenner, Christopher R., to Tri/Mark Corporation. Portion surrounding the
 keyway in the recessed part of a paddle latch. 369,089, Cl. D8-343.000.
- Zigelboim, Ilan; and Hagan, Virginia B. Paint roller frame. 369,027, Cl.
 D4-122.000.

LIST OF PLANT PATENTEES

- Augustine, John R., to Desert Tree Farm. Caesalpinia plant named
 'Descap'. 9,516, Cl. Plt.-54.100.
- Bradford, Lowell G.; and Bradford, Norman G. Peach tree 'White
 Princess'. 9,515, Cl. Plt.-42.100.
- Bradford, Norman G.: *See—*
 Bradford, Lowell G.; and Bradford, Norman G., 9,515, Cl. Plt.-
 42.100.
- Chamberlin, Thomas O., Sr., to Corrin, Allan A. 'September King' plum
 tree. 9,513, Cl. Plt.-38.100.
- Conard-Pyle Company, The: *See—*
 Olij, Huibert W., 9,512, Cl. Plt.-24.000.
- Corrin, Allan A.: *See—*
 Chamberlin, Thomas O., Sr., 9,513, Cl. Plt.-38.100.
- Desert Tree Farm: *See—*
 Augustine, John R., 9,516, Cl. Plt.-54.100.
- Egger, Donald L.; and Pankiewicz-Leap, Teresa. Asiatic hybrid lily plant
 named 'Ceb Fuzzy'. 9,519, Cl. Plt.-87.400.
- Florifis AG: *See—*
 Schumann, Ingeborg; and Utecht, Angelika, 9,522, Cl. Plt.-87.120.
- Geo. J. Ball, Inc.: *See—*
 Trees, Scott C., 9,520, Cl. Plt.-87.600.
 Trees, Scott C., 9,521, Cl. Plt.-87.600.
- Ito Packing Company: *See—*
 Taylor, James W., 9,514, Cl. Plt.-41.100.
- Koppe, Lubbertus H., to M. Koppe B.V. Begonia plant named 'Barkos'.
 9,523, Cl. Plt.-87.180.
- M. Koppe B.V.: *See—*
 Koppe, Lubbertus H., 9,523, Cl. Plt.-87.180.
- M. Lek & Zonen B.V.: *See—*
 Schrama, Ronald, 9,517, Cl. Plt.-70.700.
- Olij, Huibert W., to Conard-Pyle Company, The. Floribunda rose plant
 names 'Olysko'. 9,512, Cl. Plt.-24.000.
- Pankiewicz-Leap, Teresa: *See—*
 Egger, Donald L.; and Pankiewicz-Leap, Teresa, 9,519, Cl. Plt.-
 87.400.
- Polys, Susan M., to Yoder Brothers, Inc. Chrysanthemum plant named
 'Apricot Blush'. 9,518, Cl. Plt.-82.300.
- Schrama, Ronald, to M. Lek & Zonen B.V. Carnation plant named Frans
 Hals. 9,517, Cl. Plt.-70.700.
- Schumann, Ingeborg; and Utecht, Angelika, to Florifis AG. Geranium
 plant named 'Fisuna'. 9,522, Cl. Plt.-87.120.
- Taylor, James W., to Ito Packing Company. Nectarine tree 'Prince Jim'.
 9,514, Cl. Plt.-41.100.
- Trees, Scott C., to Geo. J. Ball, Inc. New Guinea Impatiens named
 'BFP-467 Cherry Red'. 9,520, Cl. Plt.-87.600.
- Trees, Scott C., to Geo. J. Ball, Inc. New Guinea Impatiens named
 'BFP-523 Deep Red'. 9,521, Cl. Plt.-87.600.
- Utecht, Angelika: *See—*
 Schumann, Ingeborg; and Utecht, Angelika, 9,522, Cl. Plt.-87.120.
- Yoder Brothers, Inc.: *See—*
 Polys, Susan M., 9,518, Cl. Plt.-82.300.

CLASSIFICATION OF PATENTS

ISSUED APRIL 23, 1996

NOTE—First number, class; second number, subclass; third number, patent number

CLASS 2	282	5,509,209	CLASS 60	39.12	5,509,264	CLASS 82	697	5,509,966	375	5,509,441							
49.2	5,509,141	382	5,509,210	39.161	5,509,265	1.11	5,509,335	712	5,509,375	494	5,509,442						
79	5,509,142	561	5,509,211	203.1	5,509,266	CLASS 83	461	5,509,336	400	5,509,443							
160	5,509,143	565	5,509,212	274	5,509,267	546	5,509,337	505.22	5,509,444	508	5,509,445						
195.1	5,509,144	613	5,509,213	277	5,509,268	745	5,509,338	28.5	5,509,373	533.11	5,509,446						
209	5,509,145	642	5,509,214	527	5,509,269	862	5,509,339	51.5	5,509,376	625.32	5,509,447						
253	5,509,147	117	5,509,215	740	5,509,270	94	5,509,378	60	5,509,377	625.34	5,509,448						
		219	5,509,216			166	5,509,379	94	5,509,378	625.64	5,509,449						
CLASS 4	255.01	5,509,148	CLASS 36	24	5,509,271	CLASS 84	95.1	5,510,569	CLASS 139	452	5,509,450						
476	5,509,149	10	5,509,217	176.5	5,509,272	95.2	5,510,570	41.31	5,509,381	CLASS 141	67	5,509,451					
691	5,509,150	43	5,509,218	228.5	5,509,273	236	5,509,340	66	5,509,382	207	5,509,452						
CLASS 5	37.1	5,509,151	CLASS 37	238.4	5,509,274	322	5,509,341	90.12	5,509,383	CLASS 144	34 R	5,509,453					
81.1	5,509,152	231	5,509,219	271	5,509,275	418	5,509,342	90.17	5,509,384	252 R	5,509,454						
449	5,509,153	348	5,509,220	298	5,509,276	422.1	5,509,343	90.35	5,509,385	CLASS 148	33.3	5,509,455					
453	5,509,154	CLASS 38	77.5	5,509,221	374	5,509,277	437	5,509,344	190.17	5,509,386	104	5,509,456					
482	5,509,155	CLASS 40	1.5	5,509,222	457.5	5,509,278	609	5,510,572	195 R	5,509,387	113	5,509,457					
490	5,509,156	564	5,509,223	502	5,509,279	610	5,510,573	231	5,509,388	328	5,509,458						
504.1	5,509,157	1.5	5,509,224	CLASS 65	134.6	5,509,280	CLASS 89	14.05	5,509,345	403	5,509,459						
627	5,509,158	564	5,509,225	406	5,509,281	188	5,509,282	CLASS 92	12.2	5,509,346	524	5,509,460					
630	5,509,160	586	5,509,226	502	5,509,282	CLASS 66	121	5,509,280	72	5,509,347	CLASS 149	19.4	5,509,461				
CLASS 8	115.51	5,509,939	CLASS 42	103	5,509,226	CLASS 68	18 F	5,509,283	CLASS 95	24	5,509,954	CLASS 152	545	5,509,455			
151	5,509,940	617	5,509,941	CLASS 43	7	5,509,227	23.7	5,509,284	109	5,509,955	CLASS 156	72	5,509,982				
625	5,509,941	23	5,509,228	CLASS 44	387	5,509,943	CLASS 72	8.6	5,509,285	290	5,509,348	79	5,509,983				
CLASS 15	52.1	5,509,162	387	5,509,943	53	5,509,286	CLASS 100	282	5,509,351	450.2	5,509,350	107	5,509,984				
120.2	5,509,163	237	5,509,167	622	5,509,945	88	5,509,287	CLASS 101	232	5,509,352	160	5,509,985					
222	5,509,164	257.01	5,509,168	CLASS 47	21	5,509,229	186	5,509,288	425	5,509,353	167	5,509,986					
230.11	5,509,165	265	5,509,169	58	5,509,230	305	5,509,289	CLASS 102	202	5,509,354	201	5,509,987					
237	5,509,167	325	5,509,171	79	5,509,231	375	5,509,290	275.8	5,509,355	207.14	5,509,408	220	5,509,988				
250.44	5,509,166	CLASS 16	30	5,509,172	CLASS 49	139	5,509,233	307	5,509,356	642	5,509,411	238	5,509,989				
257.06	5,509,168	114 A	5,509,173	121	5,509,174	342	5,509,234	CLASS 105	218.1	5,509,358	642	5,509,412	242	5,509,990			
265	5,509,170	332	5,509,175	342	5,509,176	383	5,509,235	307	5,509,357	225	5,509,359	245	5,509,991				
325	5,509,171	342	5,509,177	370	5,509,177	CLASS 19	215	5,509,178	CLASS 106	20 R	5,509,357	277	5,509,992				
CLASS 19	215	5,509,178	239	5,509,179	CLASS 24	68 SK	5,509,180	116 A	5,509,181	287.26	5,509,358	326	5,509,993				
297	5,509,182	116 A	5,509,181	297	5,509,182	270	5,509,241	334	5,509,243	287.35	5,509,359	468	5,509,994				
CLASS 29	25.01	5,509,183	405.1	5,509,245	387	5,509,244	514.09	5,509,308	733	5,509,962	690	5,509,423	468.1	5,509,995			
252	5,509,184	533	5,509,246	660	5,509,310	661	5,509,311	CLASS 108	119	5,509,360	692	5,509,424	CLASS 157	1	5,509,456		
256	5,509,185	742.11	5,509,248	706	5,509,312	706	5,509,313	CLASS 110	131	5,509,361	707	5,509,425	CLASS 159	48.2	5,509,996		
402.08	5,509,186	745.1	5,509,249	861.065	5,509,314	861.065	5,509,315	345	5,509,362	CLASS 111	157	5,509,961	CLASS 160	201	5,509,457		
469.5	5,509,187	CLASS 53	399	5,509,251	862.09	5,509,316	862.25	5,509,317	CLASS 112	80.51	5,509,364	702	5,509,426	CLASS 162	16	5,509,997	
623.1	5,509,188	432	5,509,252	862.632	5,509,318	864.11	5,509,319	CLASS 113	117	5,509,365	703	5,509,427	CLASS 164	29	5,509,998		
623.2	5,509,189	441	5,509,253	864.14	5,509,320	866.5	5,509,321	CLASS 114	339	5,509,429	704	5,509,428	CLASS 166	111	5,509,999		
712	5,509,190	449	5,509,254	866.5	5,509,321	89.13	5,509,322	CLASS 115	341	5,509,430	705	5,509,429	CLASS 168	113	5,510,000		
722	5,509,191	513	5,509,255	CLASS 55	233	5,509,946	335	5,509,323	CLASS 116	173	5,509,371	706	5,509,430	CLASS 169	158	5,510,001	
741	5,509,192	566	5,509,257	CLASS 57	58.83	5,509,260	492	5,509,324	CLASS 117	200	5,509,372	707	5,509,431	CLASS 170	168.2	5,510,002	
751	5,509,193	11.3	5,509,258	CLASS 59	263	5,509,261	493	5,509,325	CLASS 118	23	5,509,963	708	5,509,432	CLASS 171	343	5,510,003	
755	5,509,194	400.04	5,509,259	CLASS 61	264	5,509,262	523	5,509,326	CLASS 119	58	5,509,964	709	5,509,433	CLASS 172	454	5,510,004	
830	5,509,195	58.83	5,509,260	CLASS 62	409	5,509,263	545	5,509,327	CLASS 120	423	5,509,965	710	5,509,434	CLASS 173	178	5,510,005	
842	5,509,196	59.1	5,509,261	CLASS 63	265	5,509,262	551.3	5,509,328	CLASS 121	173	5,509,371	711	5,509,435	CLASS 174	8	5,509,461	
852	5,509,197	59.1	5,509,261	CLASS 64	266	5,509,263	606 R	5,509,329	CLASS 122	173	5,509,371	712	5,509,436	CLASS 175	45	5,509,462	
861	5,509,198	59.1	5,509,261	CLASS 65	267	5,509,264	606 R	5,509,329	CLASS 123	173	5,509,371	713	5,509,437	CLASS 176	46	5,509,463	
871	5,509,199	59.1	5,509,261	CLASS 66	268	5,509,265	606 R	5,509,329	CLASS 124	173	5,509,371	714	5,509,438	CLASS 177	80.2	5,509,464	
879	5,509,200	59.1	5,509,261	CLASS 67	269	5,509,266	606 R	5,509,329	CLASS 125	173	5,509,371	715	5,509,439	CLASS 178	80.3	5,509,465	
883	5,509,201	59.1	5,509,261	CLASS 68	270	5,509,267	606 R	5,509,329	CLASS 126	173	5,509,371	716	5,509,440	CLASS 179	80.4	5,509,466	
883	5,509,202	59.1	5,509,261	CLASS 69	271	5,509,268	606 R	5,509,329	CLASS 127	173	5,509,371	717	5,509,441	CLASS 180	80.5	5,509,467	
890.07	5,509,203	59.1	5,509,261	CLASS 70	272	5,509,269	606 R	5,509,329	CLASS 128	173	5,509,371	718	5,509,442	CLASS 181	80.6	5,509,468	
898.09	5,509,204	59.1	5,509,261	CLASS 71	273	5,509,270	606 R	5,509,329	CLASS 129	173	5,509,371	719	5,509,443	CLASS 182	80.7	5,509,469	
CLASS 30	162	5,509,205	380	5,509,206	CLASS 72	274	5,509,271	606 R	5,509,329	CLASS 130	173	5,509,371	720	5,509,444	CLASS 183	80.8	5,509,470
CLASS 33	41.4	5,509,207	203	5,509,208	CLASS 73	275	5,509,272	606 R	5,509,329	CLASS 131	173	5,509,371	721	5,509,445	CLASS 184	80.9	5,509,471
					CLASS 74	276	5,509,273	606 R	5,509,329	CLASS 132	173	5,509,371	722	5,509,446	CLASS 185	81.0	5,509,472
					CLASS 75	277	5,509,274	606 R	5,509,329	CLASS 133	173	5,509,371	723	5,509,447	CLASS 186	81.1	5,509,473
					CLASS 76	278	5,509,275	606 R	5,509,329	CLASS 134	173	5,509,371	724	5,509,448	CLASS 187	81.2	5,509,474
					CLASS 77	279	5,509,276	606 R	5,509,329	CLASS 135	173	5,509,371	725	5,509,449	CLASS 188	81.3	5,509,475
					CLASS 78	280	5,509,277	606 R	5,509,329	CLASS 136	173	5,509,371	726	5,509,450	CLASS 189	81.4	5,509,476
					CLASS 79	281	5,509,278	606 R	5,509,329	CLASS 137	173	5,509,371	727	5,509,451	CLASS 190	81.5	5,509,477
					CLASS 80	282	5,509,279	606 R	5,509,329	CLASS 138	173	5,509,371	728	5,509,452	CLASS 191	81.6	5,509,478
					CLASS 81	283	5,509,280	606 R	5,509,329	CLASS 139	173	5,509,371	729	5,509,453	CLASS 192	81.7	5,509,479
					CLASS 82	284	5,509,281	606 R	5,509,329	CLASS 140	173	5,509,371	730	5,509,454	CLASS 193	81.8	5,509,480
					CLASS 83	285	5,509,282	606 R	5,509,329	CLASS 141	173	5,509,371	731	5,509,455	CLASS 194	81.9	5,509,481
					CLASS 84	286	5,509,283	606 R	5,509,329	CLASS 142	173	5,509,371	732	5,509,456	CLASS 195	82.0	5,509,482
					CLASS 85	287	5,509,284	606 R	5,509,329	CLASS 143	173	5,509,371	733	5,509,457	CLASS 196	82.1	5,509,483
					CLASS 86	288	5,509,285	606 R	5,509,329	CLASS 144	173	5,509,371	734	5,509,458	CLASS 197	82.2	5,509,484
					CLASS 87	289	5,509,286	606 R	5,509,329	CLASS 145	173	5,509,371	735	5,509,459	CLASS 198	82.3	5,509,485
					CLASS 88	290	5,509,287	606 R	5,509,329	CLASS 146	173	5,509,371	736	5,509,460	CLASS 199	82.4	5,509,486
					CLASS 89	291	5,509,288	606 R	5,509,329	CLASS 147	17						

CLASS 166	341	5,510,587	137 R	5,510,597	573.2	5,509,619	707	5,510,650	CLASS 285								
64	5,509,474	522	5,510,589	505	5,509,598	5,509,620	751	5,510,651	23	5,509,695							
68	5,509,475	CLASS 203	553	5,510,599	CLASS 244	752	5,510,652	27	5,509,696								
75.13	5,509,476	48	5,510,006	645	5,510,600	759	5,510,653	158	5,509,697								
76.1	5,509,477	CLASS 204	679	5,510,601	3.12	5,509,621	773	5,510,654	337	5,509,698							
250.06	5,509,478	192.15	5,510,012	1.5	5,509,599	17.11	5,509,622	302	5,509,699								
265	5,509,479	426	5,510,013	216	5,509,562	48	5,509,623	409	5,509,702								
297	5,509,480	488	5,510,010	360	5,509,563	115	5,509,624	CLASS 261									
382	5,509,481	CLASS 205	378	5,509,564	CLASS 220	27	5,510,060	53	5,510,656								
14	5,509,484	101	5,510,014	428	5,509,565	112.2	B1 4,296,050	CLASS 290									
46	5,509,485	173	5,510,015	444	5,509,566	3.4	5,510,062	1	5,509,703								
CLASS 169	384	5,510,008	465	5,509,567	27.1	5,509,627	29.7	5,510,063	163	5,509,704							
CLASS 172	297	5,510,007	711	5,509,568	118	5,509,628	40.1	5,510,064	259 R	5,509,701							
6	5,509,486	746	5,510,009	746	5,509,569	171	5,509,629	CLASS 294									
21	5,509,487	CLASS 206	45.12	5,509,527	CLASS 221	171.1	5,509,630	40.5	5,510,065	1.1	5,509,705						
63	5,509,488	45.24	5,509,528	33	5,509,570	311.2	5,509,631	46.6	5,510,067	62	5,509,706						
CLASS 173	220	5,509,529	76	5,509,572	316.7	5,509,634	132	5,510,069	86.4	5,509,707							
170	5,509,489	77.1	5,509,530	133	5,509,573	370	5,509,631	156	5,510,071	141	5,509,708						
CLASS 174	315.6	5,509,531	197	5,509,574	CLASS 249	47	5,509,635	21.23	5,510,073	3	5,509,709						
35 GC	5,510,574	587	5,509,534	1	5,509,575	91	5,509,636	328.16	5,510,075	19	5,509,710						
35 MS	5,510,575	CLASS 208	89	5,510,016	5	5,509,576	437	5,510,076	77.1	5,509,711							
65 SS	5,510,576	CLASS 209	153.1	5,509,580	201.1	5,510,609	485	5,510,077	124	5,509,712							
128.1	5,510,577	153.13	5,509,581	287	5,510,613	207	5,510,588	515	5,510,078	138	5,509,713						
168	5,510,578	273	5,509,582	306	5,510,614	223 B	5,510,610	521	5,510,079	181	5,509,715						
266	5,510,580	577	5,509,583	308	5,510,615	226	5,510,611	CLASS 267									
CLASS 175	5,509,490	630	5,509,584	310	5,510,616	239	5,510,612	64.19	5,509,641	216.13	5,509,716						
CLASS 177	5,510,581	634	5,509,539	312	5,510,618	287	5,510,613	140.12	5,509,643	228.12	5,509,718						
9.44	5,509,491	CLASS 210	46	5,509,586	332	5,510,619	306	5,510,614	99	5,509,644	344.14	5,509,719					
65.5	5,509,492	86	5,510,017	339.08	5,510,619	339.12	5,510,620	CLASS 269									
132	5,509,493	97	5,510,018	343	5,510,621	367	5,510,622	58	5,509,645	452.13	5,509,721						
291	5,509,494	137	5,510,019	370.11	5,510,623	370.11	5,510,623	CLASS 270									
307	5,509,495	169	5,510,020	441.11	5,510,624	441.11	5,510,624	CLASS 271									
308	5,509,496	170	5,510,022	161	5,509,590	559.23	5,510,625	177	5,509,646	CLASS 301							
CLASS 181	5,510,582	186	5,510,023	209	5,509,589	591	5,510,626	238	5,509,647	37.36	5,509,725						
102	5,510,583	227	5,510,024	244	5,509,591	CLASS 251	5,509,637	260	5,509,648	63.1	5,509,726						
93	5,509,498	232	5,510,026	521	5,509,592	129.16	5,509,637	CLASS 273									
107	5,509,500	282	5,510,027	CLASS 225	129.16	5,509,637	26 A	5,509,649	3	5,509,727							
CLASS 184	5,509,501	307	5,510,028	CLASS 226	3	5,510,041	26 R	5,509,650	115.2	5,509,728							
7.4	5,509,502	397	5,510,029	5,509,593	8.8	5,510,042	56	5,509,651	117.1	5,509,729							
CLASS 187	5,509,503	460	5,510,030	35	5,509,594	42.7	5,510,043	57.2	5,509,652	5,509,730							
242	5,509,504	611	5,510,032	CLASS 227	49.3	5,510,045	84 R	5,509,653	121 B	5,509,654	474.28	5,510,996					
266	5,509,505	638	5,510,033	119	5,509,595	61	5,510,046	5,509,655	153 R	5,509,656							
316	5,509,506	644	5,510,034	176.1	5,509,596	62.2	5,510,046	153 R	5,509,656	162 B	5,509,657						
394	5,509,507	646	B1 5,312,550	CLASS 228	108	5,510,049	89.1	5,510,047	162 E	5,509,658	169	5,509,659					
CLASS 188	5,509,508	666	5,510,036	105	5,509,597	169	5,509,659	95	5,510,048	169	5,509,659	173	5,509,660				
71.5	5,509,509	698	5,510,037	180.1	5,509,598	173	5,509,660	108	5,510,049	169	5,509,659	173	5,509,660				
73.38	5,509,510	703	5,510,038	180.21	5,509,599	135	5,510,051	108	5,510,049	169	5,509,659	173	5,509,660				
164	5,509,509	708	5,510,039	205	5,509,600	174.12	5,510,052	108	5,510,049	169	5,509,659	173	5,509,660				
219 X L	5,509,510	721	5,510,040	205	5,509,600	182.2	5,510,053	108	5,510,049	169	5,509,659	173	5,509,660				
251 A	5,509,511	CLASS 211	13	5,509,540	CLASS 229	186.25	5,510,054	108	5,510,049	169	5,509,659	173	5,509,660				
284	5,509,512	103	5,509,541	199	5,509,601	182.25	5,510,054	108	5,510,049	169	5,509,659	173	5,509,660				
322.17	5,509,514	103	5,509,541	199	5,509,601	373	5,510,056	108	5,510,049	169	5,509,659	173	5,509,660				
110	5,509,515	124	5,509,542	CLASS 232	37	5,510,057	387	5,510,057	3	5,509,664	169	5,509,659	173	5,509,660			
3.23	5,509,520	189	5,509,543	7	5,509,602	570	5,510,058	37	5,509,665	268	5,510,666	303	5,510,666				
58.682	5,509,516	205	5,509,544	39	5,509,603	609	5,510,059	23	5,509,667	328	5,510,666	303	5,510,666				
65	5,509,517	CLASS 213	385	5,510,602	CLASS 235	270	5,509,638	81 R	5,509,668	CLASS 312							
70.25	5,509,518	75 R	5,509,547	454	5,510,603	380	5,509,639	167.5	5,509,669	5,509,707	9.22	5,509,731	CLASS 313				
70.27	5,509,519	75 TC	5,509,546	462	5,510,604	CLASS 254	5,509,638	205	5,509,670	5,509,707	9.22	5,509,731	CLASS 313				
CLASS 190	5,509,515	77	5,509,548	472	5,510,605	CLASS 256	5,509,640	22.1	5,509,665	5,509,665	141	5,510,667	CLASS 315				
3.23	5,509,520	CLASS 215	11.3	5,509,549	31	5,510,627	22.1	5,509,665	47.19	5,509,671	141	5,510,667	271	5,510,683			
58.682	5,509,516	204	5,509,550	204	5,509,550	32	5,510,628	47.35	5,509,672	47.35	5,509,672	402	5,510,669	282	5,510,684		
65	5,509,517	229	5,509,551	229	5,509,551	33	5,510,629	250.1	5,509,673	250.1	5,509,673	450	5,510,670	293	5,510,685		
70.25	5,509,518	256	5,509,552	12.1	5,509,604	34	5,510,630	276	5,509,674	276	5,509,674	477 R	5,510,671	446	5,510,686		
70.27	5,509,519	CLASS 216	13	5,509,553	CLASS 239	93	5,510,631	284	5,509,675	284	5,509,675	497	5,510,672	524	5,510,673		
CLASS 194	5,509,521	22	5,509,554	130	5,509,605	284	5,510,632	304	5,509,676	304	5,509,676	533	5,510,674	533	5,510,674		
292	5,509,521	56	5,509,555	289	5,509,606	314	5,510,633	304	5,509,676	304	5,509,676	533	5,510,674	533	5,510,674		
350	5,509,522	333	5,509,556	333	5,509,607	317	5,510,634	304	5,509,676	304	5,509,676	533	5,510,674	533	5,510,674		
CLASS 198	5,509,523	461	5,509,557	304	5,510,637	317	5,510,634	304	5,509,676	304	5,509,676	533	5,510,674	533	5,510,674		
403	5,509,523	CLASS 218	37	5,510,590	CLASS 241	317	5,510,634	304	5,509,676	304	5,509,676	533	5,510,674	533	5,510,674		
465.1	5,509,524	101.4	5,510,591	347	5,510,610	320	5,510,635	304	5,509,676	304	5,509,676	533	5,510,674	533	5,510,674		
474.1	5,509,525	282	5,510,592	458	5,510,611	321	5,510,636	304	5,509,676	304	5,509,676	533	5,510,674	533	5,510,674		
850	5,509,526	409	5,510,593	458	5,510,612	322	5,510,637	304	5,509,676	304	5,509,676	533	5,510,674	533	5,510,674		
1 B	5,510,583	43.5 A	5,509,614	522	5,510,613	323	5,510,638	304	5,509,676	304	5,509,676	533	5,510,674	533	5,510,674		
5 A	5,510,584	35.2 A	5,509,615	530	5,510,614	324	5,510,639	304	5,509,676	304	5,509,676	533	5,510,674	533	5,510,674		
35 R	5,510,585	130.01	5,510,596	559	5,510,615	325	5,510,640	304	5,509,676	304	5,509,676	533	5,510,674	533	5,510,674		
86 R	5,510,586			575	5,510,616	326	5,510,641	304	5,509,676	304	5,509,676	533	5,510,674	533	5,510,674		
				675	5,510,617	327	5,510,642	304	5,509,676	304	5,509,676	533	5,510,674	533	5,510,674		
					5,510,618	328	5,510,643	304	5,509,676	304	5,509,676	533	5,510,674	533	5,510,674		
						329	5,510,644	304	5,509,676	304	5,509,676	533	5,510,674	533	5,510,674		
						330	5,510,645	304	5,509,676	304	5,509,676	533	5,510,674	533	5,510,674		
						331	5,510,646	304	5,509,676	304	5,509,676	533	5,510,674	533	5,510,674		
						332	5,510,647	304	5,509,676	304	5,509,676	533	5,510,674	533	5,510,674		
						333	5,510,648	304	5,509,676	304	5,509,676	533	5,510,674	533	5,510,674		
	</																

809	5,510,688	552	5,510,766	695	5,510,854	CLASS 361	234	5,511,035	88	5,511,112		
	5,510,689	566	5,510,767		5,510,855	16	5,510,942		112	5,511,113		
CLASS 320		571	5,510,768	699	5,510,856	18	5,510,943	CLASS 366	114	5,511,114		
		572	5,510,769		5,510,857		5,510,944	349	5,509,732	142	5,511,115	
2	5,510,690		5,510,770	718	5,510,858	45	5,510,945		201	5,511,116		
	5,510,691	573	5,510,771	731	5,510,859	56	5,510,946	CLASS 367	265	5,511,117		
23	5,510,692	578	5,510,772				5,510,947	33	5,511,037	399	5,511,118	
24	5,510,693	638	5,510,773	CLASS 351	90	5,510,948	5,510,949	40	5,511,038	414	5,511,119	
39	5,510,694	689	5,510,774	169	5,510,860	93	5,510,950	56	5,511,039	433	5,511,120	
		825.07	5,510,775				5,510,950		5,511,040			
CLASS 322		825.17	5,510,776	CLASS 353	154	5,510,951	99	5,511,041	CLASS 380			
25	5,510,695	825.310	5,510,777	119	5,510,861	214	Re 35,214	135	5,511,042	24	5,511,121	
29	5,510,696	825.44	5,510,778		5,510,862	251	5,510,952	155	5,511,043	25	5,511,122	
CLASS 323		825.560	5,510,779	CLASS 354	680	5,510,953	680	5,510,953	191	5,511,044	29	5,511,123
		870.300	5,510,780			685	5,510,954		48	5,511,124		
273	5,510,697			81	5,510,863		5,510,955	CLASS 368	49	5,511,125		
282	5,510,698	CLASS 341		106	5,510,864	704	5,510,956	2	5,511,045			
312	5,510,699	11	5,510,781	173.1	5,510,865	719	5,510,957	63	5,511,046	CLASS 381		
CLASS 324		22	5,510,782	304	5,510,866	814	5,510,958	119	5,511,047	71	5,511,127	
		34	5,510,783		5,510,867	816	5,510,959		92	5,511,128		
65	5,510,734	34	5,510,784	208	5,510,868	823	5,510,960	CLASS 369	103	5,511,129		
66	5,510,700	67	5,510,785	282	5,510,869			13	5,511,048	170	5,511,130	
71.1	5,510,701	73	5,510,786	298	5,510,870			44.15	5,511,049	205	5,511,131	
	5,510,702	106	5,510,787	300	5,510,871	106	5,510,961	44.23	5,511,050	192	5,511,132	
96	5,510,703	76	5,510,788	324	5,510,873	120	5,510,962	44.28	5,511,051	156	5,511,133	
158.1	120,704	120	5,510,789	402	5,510,874	190	5,510,963	44.34	5,511,052	158	5,511,134	
	5,510,705	131	5,510,790			217	5,510,964		5,511,053	187	5,511,135	
166	5,510,706	173	5,510,791	409	5,510,875	223	5,510,965	75.1	5,511,055	173	5,511,136	
	5,510,707					249	5,510,966	77.2	5,511,056	275	5,511,137	
174	5,510,708	CLASS 342		202	5,510,876	261	5,510,967	94	5,511,057	298	5,511,138	
242	5,510,709	4	5,510,792	208	5,510,877	294	5,510,968	103	5,511,058			
307	5,510,710	20	5,510,793	211	5,510,878	321	5,510,969	109	5,511,059	CLASS 383		
	5,510,711	114	5,510,794	219	5,510,879	396	5,510,970	118	5,511,060	210	5,509,734	
318	5,510,712	162	5,510,795	228	5,510,880			124	5,511,061	61	5,509,735	
368	5,510,713	352	5,510,796	245	5,510,882			219	5,511,062			
391	5,510,715	357	5,510,797			56	5,510,971	275.3	5,511,063	CLASS 384		
445	5,510,716	373	5,510,799	260	5,510,883	127	5,510,972			45	5,509,736	
	5,510,717	387	5,510,800	271	5,510,884	134	5,510,974	CLASS 370	138	5,509,737		
536	5,510,718	457	5,510,801	273	5,510,885			15	5,511,064	275	5,509,738	
548	5,510,719			299	5,510,886	134	5,510,973	17	5,511,065	458	5,509,739	
652	5,510,720	CLASS 343		317	5,510,887	148	5,510,975	18	5,511,066	CLASS 385		
754	5,510,721	700 MS	5,510,802				5,510,976		5,511,067	14	5,511,138	
758	5,510,722		5,510,803	5.09	5,510,888	167.01	5,510,977		5,511,068	60	5,511,139	
	5,510,723	713	5,510,804	CLASS 356		401	5,510,978	24	5,511,069	93	5,511,140	
760	5,510,724			5.09	5,510,890	405	5,510,979	60	5,511,070	60	5,511,141	
768	5,510,725	CLASS 345		5.1	5,510,891	405	5,510,980	62	5,511,071	116	5,511,142	
772	5,510,726	58	5,510,805	139.03	5,510,892	419.02	5,510,981	68.1	5,511,072	129	5,511,143	
CLASS 326		87	5,510,806	139.1	5,510,893	424.01	5,510,982	82	5,511,073	130	5,511,144	
30	5,510,727	103	5,510,807		5,510,894	424.02	5,510,983	84	5,511,074	135	5,511,145	
	5,510,728	123	5,510,808	436	5,510,895	424.05	5,510,984	85.13	5,511,075			
33	5,510,729	136	5,510,809				5,510,985	94.2	5,511,076	CLASS 392		
41	5,510,730	140	5,510,810	CLASS 358			5,510,986	102	5,511,077	355	5,511,146	
63	5,510,731	157	5,510,811		5,510,896		5,510,987			CLASS 395		
94	5,510,732	161	5,510,812	296	5,510,897	424.1	5,510,988	40.1	5,511,078	24	5,511,147	
110	5,510,733	211	5,510,814	310	5,510,898	426.04	5,510,989	43	5,511,079	99	5,511,148	
CLASS 327				320	5,510,899	434	5,510,990		5,511,080	106	5,511,149	
77	5,510,735	CLASS 346		335	5,510,900	464.02	5,510,991		5,511,081	112	5,511,149	
91	5,510,736	141	5,510,823		5,510,901	468	5,510,992		5,511,082	113	5,511,150	
	5,510,737	CLASS 347			5,510,902	470	5,510,993					
103	5,510,738			336	5,510,903	474.24	5,510,994			CLASS 372		
112	5,510,739	10	5,510,815	342	5,510,904	478	5,510,995	6	5,511,083	114	5,511,151	
142	5,510,740	21	5,510,816		5,510,905	489	5,510,996	20	5,511,084	119	5,511,152	
143	5,510,741	62	5,510,817		5,510,906	491	5,510,999	22	5,511,085	122	5,511,153	
146	5,510,742	65	5,510,818	434	5,510,907	514 A	5,511,000	31	5,511,086	133	5,511,154	
165	5,510,743	65	5,510,818	448	5,510,908	514 R	5,511,001	38	5,511,087	137	5,511,155	
310	5,510,744	70	5,510,819	498	5,510,909		5,511,002	45	5,511,088	140	5,511,156	
333	5,510,745	85	5,510,820	502	5,510,910		5,511,003		5,511,089	161	5,511,158	
427	5,510,746	88	5,510,821		5,510,911		5,511,004	108	Re 35,215	162	5,511,160	
434	5,510,747	239	5,510,822	CLASS 359		551.01	5,511,005			182.12	5,511,163	
530	5,510,748	251	5,510,823		5,510,912	552	5,511,006			182.21	5,511,164	
546	5,510,749	256	5,510,826	1	5,510,913	557	5,511,007		5,509,733	183.02	5,511,165	
	5,510,750	257	5,510,827	21	5,510,914	571.01	5,511,008			183.14	5,511,166	
CLASS 330				56	5,510,915	572	5,511,009			185.06	5,511,167	
		CLASS 348		59	5,510,916	574	5,511,010	205	5,511,090	200.01	5,511,168	
84	5,510,751			67	5,510,917	578	5,511,011		5,511,091	200.03	5,511,169	
126	5,510,752	13	5,510,828	88	5,510,918	579	5,511,012		226	5,511,092	200.15	5,511,170
146	5,510,753	14	5,510,829	110	5,510,919	707	5,511,013		230	5,511,093	200.2	5,511,171
267	5,510,754	36	5,510,830	115	5,510,920	724.01	5,511,014		243	5,511,094	280	5,511,172
		47	5,510,831	121	5,510,921	728.01	5,511,015		244	5,511,095		
CLASS 331		97	5,510,832	124	5,510,922	746	5,511,016		265	5,511,096	283	5,511,173
	5,511,126	190	5,510,833	137	5,510,923	757	5,511,017		324	5,511,097	375	5,511,174
44	5,511,127	240	5,510,834	143	5,510,924	822	5,511,018		340	5,511,098		
177 R	5,511,128	292	5,510,835	177	5,510,925		5,511,019		368	5,511,099		
		369	5,510,836	179	5,510,926				376	5,511,100		
CLASS 333		392	5,510,837		5,510,927	185.03	5,511,021		5,511,101	433	5,511,175	
	5,510,757	384	5,510,838	191	5,510,928		5,511,022					
104	5,510,758	402	5,510,839	241	5,510,929	185.17	5,511,023	CLASS 376	441	5,511,177		
223		420	5,510,840	341	5,510,930		5,511,024	283	5,511,102	452	5,511,178	
247					5,510,931	185.28	5,511,025			476	5,511,179	
CLASS 335		426	5,510,841		5,510,932	189.01	5,511,026			497.03	5,511,180	
	5,510,759	446	5,510,842	430	5,510,933	189.05	5,511,027		5,511,103	550.01	5,511,181	
18	5,510,760	476	5,510,843	822	5,510,934	189.09	5,511,028	44	5,511,104	600	5,511,182	
172	5,510,761	511	5,510,844		5,510,935		5,511,029	134	5,511,105			
CLASS 336		554	5,510,845	823	5,510,936		5,511,030	146	5,511,106			
	5,510,762	556	5,510,846		5,510,937	200	5,511,031	207	5,511,107			
192		569	5,510,847			201	5,511,032			CLASS 379		
	5,510,763	649	5,510,848	77.14	5,510,938	203	5,511,033		21	5,511,108		
431	5,510,764	658	5,510,849	78.09	5,510,939	208	5,511,034		40	5,511,109	650	5,511,191
433	5,510,765	660	5,510,850		5,510,940	222	5,511,035		57	5,511,110		
541		678	5,510,851		5,510,941	230.06	5,511,036		67	5,511,111		
			5,510,852	106								
			5,510,853	113								

[illegible]

72.3	5,510.392	481	5,510.431	CLASS 536	51	5,510.503	680	5,510.542	104	5,509.900	
	CLASS 518	528	5,510.432	6.4	5,510.469		754	5,510.543	153	5,509.901	
703	5,510.393	CLASS 526	23.4	18.4	5,510.470	145	5,510.504	CLASS 570	175	5,509.902	
	CLASS 521	74	5,510.433	23.5	5,510.472				187	5,509.903	
27	5,510.394	152	5,510.434	24.1	5,510.474	28	5,510.505	125	5,510.544	192	5,509.904
184	5,510.395	207	5,510.435	24.3	5,510.475	35	5,510.506	236	5,510.545	207	5,509.905
	CLASS 523	240	5,510.436	25.31	5,510.476	41	5,510.507	CLASS 585	212	5,509.906	
113	5,510.396	241	5,510.437	26.4	5,510.479		5,510.508	5	5,510.547	264	5,509.907
161	5,510.397	256	5,510.438	120	5,510.481	124	5,510.509	12	5,510.548	281	5,509.908
171	5,510.398	279	5,510.439	127	5,510.482	129	5,510.510	22	5,510.549	282	5,509.909
335	5,510.399	318.2	5,510.440	CLASS 540	157	5,510.511	259	5,510.550	283	5,509.910	
404	5,510.400			529	5,510.477	186	5,510.512	351	5,510.551		
	CLASS 524	12	5,510.441	585	5,510.478	197	5,510.513	444	5,510.552	364	5,509.911
47	5,510.401	28	5,510.442	CLASS 544	220	5,510.514	466	5,510.553	368	5,509.912	
84	5,510.402	45	5,510.443	251	5,510.480	522	5,510.515	505	5,510.554	378	5,509.913
90	5,510.403	60	5,510.444	297	5,510.483	654	5,510.516	671	5,510.555		
99	5,510.404	153	5,510.446	311	5,510.484	CLASS 562	654	5,510.557	CLASS 606		
233	5,510.405	195	5,510.447	336	5,510.485	13	5,510.517	658	5,510.558	13	5,509.916
237	5,510.406	196	5,510.448	CLASS 546	99	5,510.518	664	5,510.559	15	5,509.917	
317	5,510.407	199	5,510.449	99	5,510.486	401	5,510.519	671	5,510.560	80	5,509.918
322	5,510.408	288	5,510.450	169	5,510.487	414	5,510.520	734	5,510.561	157	5,509.919
407	5,510.410	291	5,510.452	207	5,510.488	446	5,510.521	805	5,510.562	157	5,509.920
418	5,510.411	306	5,510.453	244	5,510.489	519	5,510.523	812	5,510.563	162	5,509.921
440	5,510.412	308.1	5,510.454	268	5,510.490	542	5,510.524	823	5,510.564	205	5,509.922
450	5,510.413	310	5,510.455	344	5,510.491	580	5,510.525	824	5,510.565	207	5,509.923
494	5,510.414	377	5,510.456	CLASS 548	867	5,510.526	833	5,510.567	CLASS 607	5	5,509.924
506	5,510.415	378	5,510.457	262.4	5,510.492	869	5,510.527	834	5,510.568	19	5,509.925
528	5,510.416			267.4	5,510.493	CLASS 564	29	5,509.888	5	5,509.926	
608	5,510.417	CLASS 530	23.5	309.7	5,510.494	74	5,510.529	30	5,509.889	32	5,509.927
	CLASS 525	306	5,510.473	334.5	5,510.495	154	5,510.530	37	5,509.890	037	5,509.928
54.2	5,510.418	365.7	5,510.458	365.7	5,510.496	159	5,510.531	39	5,509.891	101	5,509.929
98	5,510.419	407	5,510.459	407	5,510.497	284	5,510.532	156	5,509.892		
134	5,510.420	52	5,510.498	437	5,510.498	407	5,510.533	224	5,509.893	CLASS 623	
204	5,510.421	229	5,510.499	473	5,510.535	437	5,510.534			1	5,509.931
301	5,510.422	8	5,510.500	CLASS 552	6	5,510.536	473	5,510.535	CLASS 601	2	5,509.930
316	5,510.423	201	5,510.501	311	5,510.537	311	5,510.537	4	5,509.895	11	5,509.932
420	5,510.424			347	5,510.538	376	5,510.538	21	5,509.896	16	5,509.933
423	5,510.425	CLASS 534	728	5,510.502	376	5,510.539	43	5,509.897	27	5,509.934	
435	5,510.426	772	5,510.468	CLASS 556	640	5,510.540	87	5,509.898	55	5,509.935	
	5,510.427	11	5,510.502	654	5,510.541	96	5,509.899	96	5,509.899	26	5,509.936
438	5,510.428									56	5,509.937
468	5,510.429									57	5,509.938
478	5,510.430										

[illegible]

CLASSIFICATION OF PLANTS

P.—	24	9,512	411	9,514	541	9,516	82.3	9,518	87.18	9,523	87.6	9,520
	38.1	9,513	42.1	9,515	70.7	9,517	87.12	9,522	87.4	9,519		9,521

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PATENTS

01	5,509,221	5,509,404	5,509,924	5,510,629	5,511,073	5,509,541
	5,509,393	5,509,407	5,509,926	5,510,646	5,511,074	5,509,596
	5,509,437	5,509,409	5,509,928	5,510,659	5,511,082	5,509,625
	5,509,579	5,509,417	5,509,930	5,510,676	5,511,090	5,509,680
	5,509,582	5,509,418	5,509,936	5,510,691	5,511,098	5,509,737
	5,509,902	5,509,419	5,509,938	5,510,700	5,511,102	5,509,920
	5,509,927	5,509,423	5,509,974	5,510,727	5,511,151	5,509,922
	5,509,981	5,509,424	5,510,025	5,510,728	5,511,171	5,509,968
	5,510,194	5,509,464	5,510,088	5,510,730	5,511,175	5,510,036
	5,510,966	5,509,482	5,510,092	5,510,732	5,511,181	5,510,480
02	5,511,040	5,509,484	5,510,093	5,510,733	5,511,186	5,510,712
04	5,509,233	5,509,498	5,510,099	5,510,744	5,511,190	5,510,729
	5,509,300	5,509,517	5,510,102	5,510,747	5,511,193	5,510,832
	5,509,457	5,509,531	5,510,116	5,510,752	5,511,200	5,510,948
	5,509,522	5,509,532	5,510,121	5,510,754	5,511,218	5,511,043
	5,509,700	5,509,537	5,510,123	5,510,778	5,511,224	5,511,111
	5,509,709	5,509,539	5,510,131	5,510,783	5,511,233	5,511,135
	5,509,852	5,509,549	5,510,164	5,510,790	5,511,236	5,509,870
	5,510,240	5,509,553	5,510,173	5,510,794	5,509,141	5,509,939
	5,510,646	5,509,554	5,510,190	5,510,797	5,509,185	5,510,004
	5,510,649	5,509,570	5,510,202	5,510,800	5,509,304	5,510,308
	5,510,673	5,509,588	5,510,208	5,510,822	5,509,311	5,510,318
	5,510,735	5,509,616	5,510,239	5,510,843	5,509,354	5,510,320
	5,510,739	5,509,621	5,510,254	5,510,851	5,509,468	5,510,386
	5,510,748	5,509,622	5,510,255	5,510,861	5,509,665	5,510,454
	5,511,069	5,509,632	5,510,261	5,510,889	5,509,677	5,510,470
	5,511,138	5,509,652	5,510,263	5,510,895	5,509,795	5,510,495
	5,511,170	5,509,656	5,510,267	5,510,905	5,509,827	5,510,507
	5,511,174	5,509,658	5,510,270	5,510,910	5,509,916	5,510,558
	5,511,209	5,509,659	5,510,287	5,510,912	5,509,941	5,509,155
	5,511,228	5,509,675	5,510,297	5,510,915	5,510,227	5,509,165
05	5,509,399	5,509,679	5,510,322	5,510,928	5,510,517	5,509,212
	5,509,808	5,509,683	5,510,328	5,510,934	5,510,578	5,509,219
06	Re 35,215	5,509,718	5,510,336	5,510,939	5,510,638	5,509,227
	5,509,144	5,509,765	5,510,340	5,510,940	5,510,686	5,509,231
	5,509,154	5,509,788	5,510,418	5,510,997	5,510,704	5,509,239
	5,509,163	5,509,809	5,510,456	5,510,998	5,510,716	5,509,254
	5,509,191	5,509,814	5,510,458	5,510,999	5,510,717	5,509,274
	5,509,204	5,509,831	5,510,465	5,511,000	5,510,774	5,509,342
	5,509,207	5,509,846	5,510,474	5,511,002	5,510,833	5,509,368
	5,509,224	5,509,853	5,510,476	5,511,017	5,510,857	5,509,370
	5,509,236	5,509,871	5,510,481	5,511,020	5,510,914	5,509,372
	5,509,237	5,509,881	5,510,486	5,511,021	5,511,128	5,509,385
	5,509,256	5,509,889	5,510,510	5,511,024	5,509,356	5,509,485
	5,509,279	5,509,891	5,510,522	5,511,026	5,509,408	5,509,489
	5,509,341	5,509,894	5,510,606	5,511,032	5,509,438	5,509,560
	5,509,357	5,509,909	5,510,615	5,511,036	5,509,503	5,509,576
	5,509,359	5,509,921	5,510,621	5,511,067	5,509,504	5,509,634
	5,509,388	5,509,923	5,510,623	5,511,070	5,509,505	5,509,638

5,509,640	5,510,439	5,509,427	5,510,379	5,509,762	5,510,027
5,509,717	5,510,440	5,509,428	5,510,381	5,509,798	5,510,063
5,509,742	5,510,464	5,509,460	5,510,488	5,509,815	5,510,122
5,509,757	5,510,559	5,509,555	5,510,537	5,509,826	5,510,147
5,509,759	5,510,563	5,509,597	5,510,546	5,509,842	5,510,215
5,509,760	5,510,564	5,509,618	5,510,650	5,509,849	5,510,220
5,509,781	5,510,575	5,509,731	5,510,669	5,509,851	5,510,221
5,509,832	5,510,583	5,509,790	5,510,696	5,509,880	5,510,228
5,509,869	5,510,585	5,509,822	5,510,707	5,509,897	5,510,232
5,509,906	5,510,624	5,509,896	5,510,721	5,509,912	5,510,235
5,509,989	5,510,680	5,509,910	5,510,804	5,509,934	5,510,236
5,510,020	5,510,681	5,510,064	5,510,950	5,509,971	5,510,251
5,510,021	5,510,692	5,510,105	5,510,968	5,509,992	5,510,273
5,510,062	5,510,693	5,510,156	5,032,774	5,510,006	5,510,281
5,510,076	5,510,694	5,510,162	5,160,146	5,510,007	5,510,295
5,510,098	5,510,701	5,510,174	5,210,475	5,510,016	5,510,301
5,510,106	5,510,828	5,510,209	5,509,289	5,510,052	5,510,314
5,510,316	5,510,979	5,510,216	5,509,436	5,510,065	5,510,326
5,510,390	5,511,046	5,510,243	5,509,486	5,510,153	5,510,372
5,510,544	5,511,117	5,510,262	5,509,502	5,510,201	5,510,376
5,510,763	5,511,235	5,510,304	5,509,577	5,510,230	5,510,393
5,510,977	5,509,250	5,510,352	5,509,703	5,510,257	5,510,430
5,510,986	5,509,265	5,510,394	5,509,792	5,510,277	5,510,441
5,511,232	5,509,317	5,510,461	5,509,888	5,510,291	5,510,442
5,509,142	5,509,441	5,510,462	5,509,903	5,510,307	5,510,492
5,509,168	5,509,448	5,510,466	5,509,932	5,510,309	5,510,560
5,509,186	5,509,491	5,510,475	5,509,984	5,510,319	5,510,581
5,509,225	5,509,497	5,510,491	5,510,077	5,510,346	5,510,599
5,509,364	5,509,605	5,510,620	5,510,169	5,510,351	5,510,603
5,509,526	5,509,682	5,510,698	5,510,171	5,510,371	5,510,610
5,509,529	5,509,758	5,510,722	5,510,187	5,510,392	5,510,632
5,509,696	5,509,764	5,510,770	5,510,246	5,510,396	5,510,633
5,509,704	5,509,865	5,510,789	5,510,339	5,510,409	5,510,644
5,509,908	5,509,868	5,510,845	5,510,416	5,510,433	5,510,709
5,509,911	5,510,138	5,510,917	5,510,421	5,510,435	5,510,757
5,509,913	5,510,145	5,510,954	5,510,526	5,510,452	5,510,760
5,509,940	5,510,182	5,511,005	5,510,551	5,510,478	5,510,771
5,510,003	5,510,245	5,511,019	5,510,584	5,510,485	5,510,796
5,510,015	5,510,266	5,511,076	5,510,587	5,510,549	5,510,808
5,510,022	5,510,357	5,511,083	5,510,626	5,510,557	5,510,864
5,510,271	5,510,358	5,511,107	5,510,665	5,510,566	5,510,865
5,510,945	5,510,370	5,511,141	5,510,764	5,510,598	5,510,866
5,511,112	5,510,398	5,511,152	5,510,782	5,510,602	5,510,869
5,511,196	5,510,448	5,511,153	5,510,871	5,510,670	5,510,877
5,509,339	5,510,449	5,511,158	5,511,164	5,510,731	5,510,879
5,509,590	5,510,498	5,511,168	5,511,187	5,510,740	5,510,881
5,510,051	5,510,501	5,509,147	5,509,164	5,510,743	5,510,884
5,509,171	5,510,543	5,509,175	5,509,801	5,510,777	5,510,891
5,509,193	5,510,613	5,509,240	5,509,835	5,510,813	5,510,896
5,509,449	5,510,706	5,509,267	5,510,762	5,510,842	5,510,942
5,509,806	5,510,708	5,509,287	5,510,769	5,510,844	5,510,952
5,510,723	5,510,776	5,509,297	5,512,550	5,511,115	5,510,972
Re 35,218	5,509,220	5,509,302	Re 35,214	5,511,116	5,510,974
5,509,174	5,509,945	5,509,322	5,509,382	5,511,119	5,510,978
5,509,188	5,510,364	5,509,324	5,509,402	5,511,121	5,510,981
5,509,201	5,510,660	5,509,325	5,509,412	5,511,148	5,511,052
5,509,213	5,510,995	5,509,329	5,509,591	5,511,159	5,511,059
5,509,242	5,509,152	5,509,387	5,509,608	5,511,195	5,511,140
5,509,251	5,509,229	5,509,390	5,509,642	5,509,565	5,511,150
5,509,293	5,509,333	5,509,392	5,509,767	5,510,212	5,511,205
5,509,295	5,509,854	5,509,400	5,509,897	5,510,335	5,509,156
5,509,330	5,510,023	5,509,443	5,510,253	5,510,668	5,509,160
5,509,331	5,510,028	5,509,510	5,510,349	5,510,795	5,509,172
5,509,358	5,510,780	5,509,518	5,510,378	5,509,146	5,509,209
5,509,371	5,510,963	5,509,534	5,510,487	5,509,151	5,509,282
5,509,373	5,509,365	5,509,538	5,510,496	5,509,169	5,509,411
5,509,374	5,509,546	5,509,543	5,509,228	5,509,170	5,509,470
5,509,391	5,509,566	5,509,568	5,509,380	5,509,187	5,509,573
5,509,313	5,509,753	5,509,575	5,509,564	5,509,196	5,509,651
5,509,520	5,510,820	5,509,627	5,510,075	5,509,199	5,509,720
5,509,521	5,511,202	5,509,693	5,510,132	5,509,218	5,509,722
5,509,542	5,511,204	5,509,637	5,510,356	5,509,226	5,510,048
5,509,545	5,509,316	5,509,639	5,510,608	5,509,259	5,510,155
5,509,574	5,509,499	5,509,648	5,510,798	5,509,275	5,510,183
5,509,620	5,509,705	5,509,681	5,510,984	5,509,344	5,510,342
5,509,666	5,509,837	5,509,685	5,509,149	5,509,346	5,510,355
5,509,671	5,509,969	5,509,695	5,509,158	5,509,425	5,510,616
5,509,769	5,510,127	5,509,712	5,509,426	5,509,500	5,510,773
5,509,770	5,511,166	5,509,716	5,509,530	5,509,527	5,510,949
5,509,805	5,509,223	5,509,726	5,509,876	5,509,556	5,510,959
5,509,812	5,509,294	5,509,728	5,509,241	5,509,557	5,510,964
5,509,859	5,509,352	5,509,750	5,509,421	5,509,587	5,511,208
5,509,866	5,509,623	5,509,775	5,509,904	5,509,589	5,509,613
5,509,884	5,509,631	5,509,777	5,509,965	5,509,592	5,510,136
5,509,886	5,509,702	5,509,778	5,510,070	5,509,644	5,510,447
5,509,907	5,509,736	5,509,857	5,510,117	5,509,669	Re 35,216
5,509,919	5,510,032	5,509,862	5,510,967	5,509,711	5,509,162
5,509,962	5,510,238	5,509,864	5,509,148	5,509,734	5,509,205
5,509,966	5,510,338	5,509,867	5,509,243	5,509,745	5,509,284
5,509,987	5,510,426	5,509,873	5,509,246	5,509,754	5,509,337
5,510,040	5,510,427	5,509,947	5,509,277	5,509,755	5,509,367
5,510,046	5,510,473	5,509,949	5,509,278	5,509,780	5,509,376
5,510,060	5,510,524	5,509,956	5,509,318	5,509,782	5,509,455
5,510,065	5,510,725	5,509,964	5,509,362	5,509,784	5,509,456
5,510,115	5,510,975	5,510,029	5,509,410	5,509,810	5,509,461
5,510,124	5,511,079	5,510,034	5,509,452	5,509,931	5,509,508
5,510,129	5,511,130	5,510,045	5,509,580	5,509,943	5,509,509
5,510,130	5,511,145	5,510,053	5,509,593	5,509,988	5,509,514
5,510,152	5,509,145	5,510,086	5,509,598	5,509,994	5,509,528
5,510,226	5,509,189	5,510,213	5,509,628	5,509,999	5,509,601
5,510,258	5,509,202	5,510,256	5,509,698	5,510,010	5,509,607
5,510,388	5,509,315	5,510,269	5,509,706	5,510,024	5,509,610
5,510,415	5,509,335	5,510,375	5,509,733	5,510,026	5,509,636

	5,509,661	5,509,723	5,510,859	5,509,478	5,510,953	5,509,349
	5,509,686	5,510,738	5,510,929	5,509,480	5,509,363	5,509,363
	5,509,693	5,510,767	5,510,933	5,509,481	5,510,992	5,509,379
	5,509,694	5,510,786	5,511,096	5,509,483	5,511,010	5,509,841
	5,509,719	5,510,815	5,511,099	5,509,490	5,511,015	5,509,900
	5,509,749	5,510,821	5,511,127	5,509,562	5,511,025	5,509,918
	5,509,819	5,510,970	5,511,147	5,509,563	5,511,037	5,509,925
	5,509,825	5,511,003	5,510,143	5,509,583	5,511,039	5,510,188
	5,509,914	5,511,075	5,510,420	5,509,649	5,511,044	5,510,310
	5,509,948	5,511,160	5,511,042	5,509,657	5,511,058	5,510,459
	5,509,953	5,511,226	5,509,157	5,509,670	5,511,086	5,510,589
	5,509,954	5,509,194	5,509,252	5,509,701	5,511,100	5,510,641
42	5,509,985	5,509,214	5,509,310	5,509,732	5,511,114	5,510,655
	5,510,000	5,509,313	5,509,366	5,509,811	5,511,126	5,510,811
	5,510,008	5,509,401	5,509,433	5,509,877	5,511,144	5,510,980
	5,510,042	5,509,431	5,509,690	5,509,879	5,511,146	5,511,035
	5,510,047	5,509,432	5,510,793	5,509,944	5,511,154	5,511,108
	5,510,049	5,509,466	5,510,960	5,509,952	5,511,157	5,511,110
	5,510,050	5,509,544	5,509,206	5,509,986	5,511,165	5,511,197
	5,510,061	5,509,550	5,510,089	5,511,179	5,509,479	5,509,479
	5,510,066	5,509,606	5,509,469	5,510,104	5,511,180	5,509,793
	5,510,087	5,509,662	5,509,496	5,510,135	5,511,182	5,509,959
	5,510,094	5,509,664	5,509,567	5,510,180	5,511,203	5,510,445
	5,510,148	5,509,699	5,509,824	5,510,186	5,511,227	5,510,535
	5,510,170	5,509,714	5,509,933	5,510,199	5,511,238	5,509,234
	5,510,193	5,509,727	5,509,935	5,510,265	5,509,208	5,509,258
	5,510,204	5,509,738	5,510,097	5,510,275	5,509,338	5,509,273
	5,510,333	5,509,744	5,510,198	5,510,278	5,509,751	5,509,405
	5,510,361	5,509,773	5,510,391	5,510,293	5,509,942	5,509,415
	5,510,389	5,509,878	5,510,521	5,510,294	5,510,652	5,509,581
	5,510,429	5,509,882	5,510,596	5,510,298	5,511,016	5,509,586
	5,510,477	5,509,887	5,510,768	5,510,306	5,511,031	5,509,653
	5,510,711	5,510,033	5,509,167	5,510,332	5,509,143	5,509,697
	5,510,946	5,510,118	5,509,176	5,510,347	5,509,235	5,509,710
	5,510,988	5,510,126	5,509,197	5,510,383	5,509,430	5,509,715
	5,511,092	5,510,247	5,509,200	5,510,413	5,509,444	5,509,735
40	5,509,319	5,510,360	5,509,249	5,510,431	5,509,459	5,509,915
	5,509,434	5,510,363	5,509,276	5,510,438	5,509,511	5,510,001
	5,509,453	5,510,369	5,509,303	5,510,497	5,509,724	5,510,002
	5,509,475	5,510,380	5,509,305	5,510,547	5,509,830	5,510,031
	5,510,057	5,510,411	5,509,332	5,510,552	5,510,005	5,510,612
	5,510,550	5,510,422	5,509,375	5,510,556	5,510,260	5,510,622
	5,510,561	5,510,443	5,509,377	5,510,568	5,510,618	5,510,685
	5,510,726	5,510,493	5,509,435	5,510,577	5,510,627	5,510,713
	5,510,862	5,510,505	5,509,442	5,510,582	5,510,628	5,510,951
	5,509,232	5,510,525	5,509,451	5,510,601	5,510,801	5,511,143
	5,509,272	5,510,548	5,509,462	5,510,645	5,510,831	5,511,188
	5,509,369	5,510,630	5,509,463	5,510,651	5,511,085	
	5,509,551	5,510,679	5,509,467	5,510,741	5,511,122	
	5,509,603	5,510,759	5,509,474	5,510,806	5,511,223	
41	5,509,678	5,510,779	5,509,476	5,510,824	5,509,345	
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Ronald H. Brown, *Secretary*
PATENT AND TRADEMARK OFFICE
Bruce Lehman, *Commissioner*

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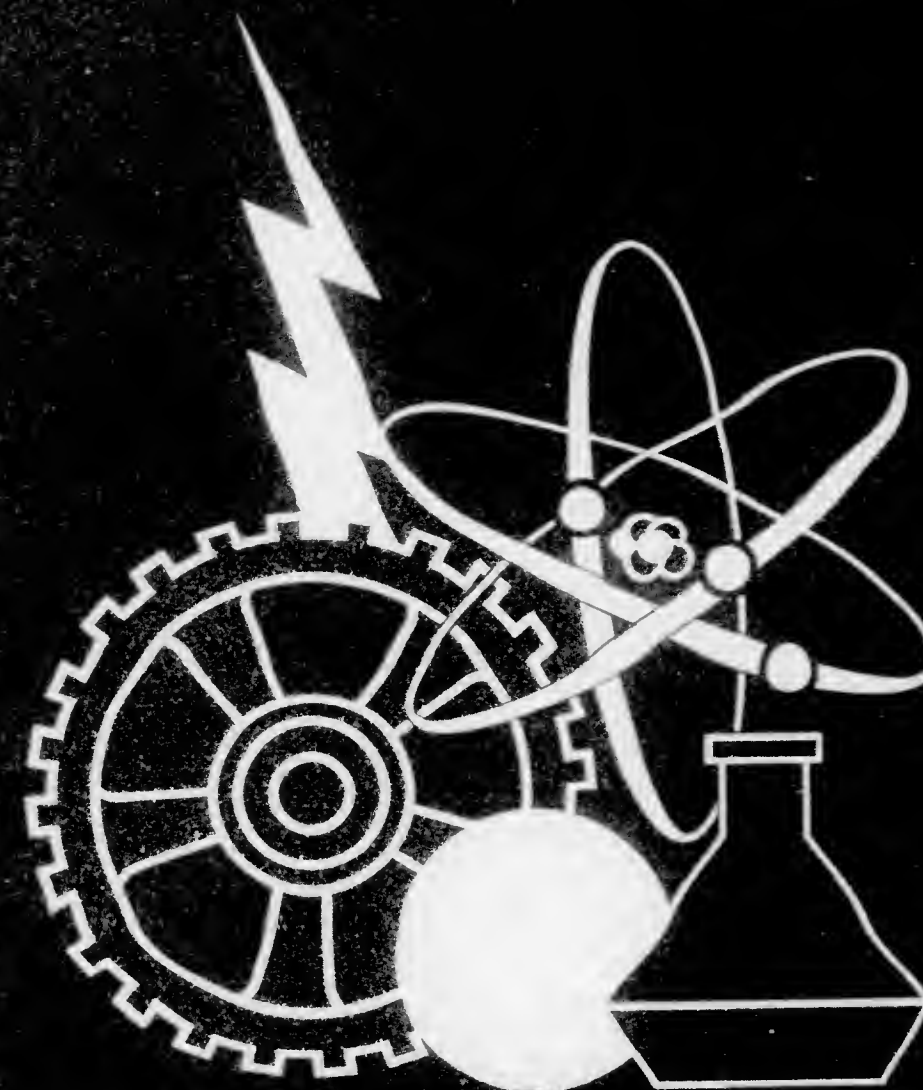
Vol. 1185 Number 5

OFFICIAL GAZETTE

of the
UNITED STATES PATENT AND TRADEMARK OFFICE

PATENTS

April 30, 1996



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OFFICIAL GAZETTE of the
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April 30, 1996 Volume 1185 Number 5

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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty (PCT) Information

For information concerning PCT member countries, see the notice appearing in the *Official Gazette* at 1181 O.G. 50, on December 19, 1995.

For use of the European Patent Office as an International Searching Authority for international applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52, on September 28, 1982.

For use of the European Patent Office as an International Preliminary Examining Authority for international applications filed in the United States Receiving Office, see the notices appearing in the *Official Gazette* at 1080 O.G. 2, on July 7, 1987, and at 1091 O.G. 2, on June 7, 1988. There is no longer a limit on the number of such international applications accepted for international preliminary examination by the European Patent Office; see the notice appearing at 1116 O.G. 32, on July 17, 1990.

The search fee of the European Patent Office was changed, effective June 20, 1995, due to a change in the exchange rate of the U.S. dollar with regard to the German mark, and was announced in the *Official Gazette* at 1181 O.G. 49, on December 19, 1995.

International fees were changed, effective on January 1, 1996, due to a change in the exchange rate of the U.S. dollar with regard to the Swiss franc, and were announced in the *Official Gazette* at 1181 O.G. 49, on December 19, 1995.

Certain domestic PCT fees and charges for International Search and Preliminary Examination were changed, effective October 1, 1995, and were announced in the *Official Gazette* at 1177 O.G. 171, on August 29, 1995.

The schedule of PCT fees (in U.S. dollars), effective January 1, 1996, is as follows:

International Application (PCT Chapter I) fees:

Transmittal fee.....	220.00
Search Fee	
U.S. Patent and Trademark Office (USPTO) as International Searching Authority (ISA)	
—No corresponding prior U.S. national application filed.....	660.00
—Corresponding prior U.S. national application filed.....	430.00
—Supplemental search fee, per additional invention (payable only upon invitation).....	190.00
European Patent Office as ISA.....	1700.00

International fees

Basic fee.....	677.00
Basic Supplemental fee (for each page over 30).....	13.00
Designation fee per country or region	
—For the first 11 national or regional offices designated.....	164.00
—For each designation in excess of 11 offices.....	No Charge

Precautionary designation fee and confirmation fee for each precautionary designation confirmed (PCT Rule 15.5)

—Designation fee.....	164.00
—Confirmation fee.....	82.00

International Application (PCT Chapter II) fees associated with filing a Demand for Preliminary Examination:

Handling fee.....	207.00
Preliminary examination fee	

USPTO as International Preliminary Examining Authority (IPEA)

—USPTO was ISA in PCT Chapter I.....	470.00
—Additional examination fee, per additional invention (payable only upon invitation).....	140.00
—USPTO was not ISA in PCT Chapter I.....	710.00
—Additional examination fee, per additional invention (payable only upon invitation).....	250.00

U.S. National Stage Fees	Small Entity	Regular
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Basic National fee

USPTO was IPEA		
—All claims presented satisfied provisions of PCT Article 33(2) to (4).....	47.00	94.00
—All claims presented did not satisfy provisions of PCT Article 33(2) to (4).....	340.00	680.00
USPTO was ISA but not IPEA.....	375.00	750.00
USPTO was neither ISA nor IPEA		
—Search report has not been prepared by the European Patent Office or the Japanese Patent Office.....	505.00	1010.00
—Search report has been prepared by the European Patent Office or the Japanese Patent Office.....	440.00	880.00

Other National fees

—For each independent claim in excess of 3.....	39.00	78.00
—For each claim in excess of 20.....	11.00	22.00
—For each application containing a multiple dependent claim.....	125.00	250.00
—Surcharge for filing oath or declaration after the time limit applicable under PCT Article 22 or 39(1).....	65.00	130.00
—Processing fee for filing English translation after the time limit applicable under PCT Article 22 or 39(1).....	130.00	130.00

Nov. 27, 1995

BRUCE A. LEHMAN
Assistant Secretary of Commerce and
Commissioner of Patents and Trademarks

Notice of Maintenance Fees Payable

Title 37 Code of Federal Regulations (CFR), Section 1.362(d) provides that maintenance fees may be paid without surcharge for the six-month period beginning 3, 7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(h), as amended effective Dec. 16, 1991. If the maintenance fee is not paid in the patent requiring such payment the patent will expire on the 4th, 8th, or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on April 27, 1993 for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 5,204,993 through 5,206,954
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on April 25, 1989 for which maintenance fees due at 7 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,823,404 through 4,825,468
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on April 23, 1985 for which maintenance fees due at 11 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,512,037 through 4,513,448
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

For patents based on applications filed on or after Dec. 12, 1980, but before Aug. 27, 1982, patent owners must establish small entity status according to 37 CFR 1.27 if they have not done so and if they wish to pay the small entity amount.

The current amounts of the maintenance fees due at 3 years and six months, 7 years and six months, and 11 years and six months are set forth in 37 CFR 1.20(e)-(g), as amended Oct. 1, 1994, which are reproduced below:

37 CFR § 1.20 Post-issuance fees

(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980, in force beyond 4 years; the fee is due by three years and six months after the original grant:

By a small entity (§ 1.9(f))\$495.00
By other than a small entity\$990.00

(f) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 in force beyond 8 years; the fee is due by seven years and six months after the original grant:

By a small entity (§ 1.9(f))\$995.00
By other than a small entity\$1,990.00

(g) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 in force beyond 12 years; the fee is due by eleven years and six months after the original grant:

By a small entity (§ 1.9(f))\$1,495.00
By other than a small entity\$2,990.00

The amount of the surcharge for paying the maintenance fee during the grace period or after expiration of the patent are set forth in 37 CFR 1.20(h), and (i) which are reproduced below:

(h) Surcharge for paying a maintenance fee during the 6 month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980:

By a small entity (§ 1.9(f))\$65.00
By other than a small entity\$130.00

(i) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee

where the delay is shown to the satisfaction of the Commissioner to have been:

(1) unavoidable\$660.00
(2) unintentional\$1,550.00

Notice of Expiration of Patents Due to Failure to Pay Maintenance Fee

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the patent will expire at the end of the 4th, 8th or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENTS WHICH EXPIRED February 21, 1996 DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Serial Number	Issue Date
Re. 32,501 (4,432,137)	06/830,886 (06/408,718)	09/15/87 (02/21/84)
Re. 33,498 (4,725,156)	07/369,391 (06/684,652)	12/18/90 (02/16/88)
Re. 33,859 (4,725,480)	07/608,506 (06/779,643)	03/24/92 (02/16/88)
Re. 34,421 (5,090,043)	07/870,145 (07/616,397)	10/26/93 (02/18/92)
Re. 34,527 (5,088,647)	07/885,344 (07/610,539)	02/01/94 (02/18/92)
4,432,101	06/353,618	02/21/84
4,432,122	06/242,767	02/21/84
4,432,133	06/406,978	02/21/84
4,432,135	06/423,417	02/21/84
4,432,140	06/357,320	02/21/84
4,432,165	06/324,091	02/21/84
4,432,170	06/393,092	02/21/84
4,432,173	06/352,266	02/21/84
4,432,179	06/321,404	02/21/84
4,432,182	06/302,981	02/21/84
4,432,189	06/269,389	02/21/84
4,432,196	06/332,360	02/21/84
4,432,197	06/329,386	02/21/84
4,432,200	06/392,625	02/21/84
4,432,203	06/215,866	02/21/84
4,432,204	06/384,303	02/21/84
4,432,205	06/255,856	02/21/84
4,432,207	06/290,696	02/21/84
4,432,215	06/401,564	02/21/84
4,432,222	06/343,472	02/21/84
4,432,226	06/346,010	02/21/84
4,432,231	06/392,984	02/21/84
4,432,235	06/402,152	02/21/84
4,432,252	06/321,551	02/21/84
4,432,257	06/379,020	02/21/84
4,432,268	06/408,340	02/21/84
4,432,271	06/293,541	02/21/84
4,432,274	06/447,005	02/21/84
4,432,276	06/375,972	02/21/84
4,432,277	06/265,967	02/21/84
4,432,280	06/393,356	02/21/84
4,432,283	06/325,862	02/21/84
4,432,284	06/287,532	02/21/84
4,432,290	06/337,708	02/21/84
4,432,311	06/387,324	02/21/84
4,432,312	06/346,565	02/21/84
4,432,313	06/382,726	02/21/84
4,432,319	06/246,620	02/21/84
4,432,323	06/455,574	02/21/84
4,432,329	06/394,150	02/21/84
4,432,344	06/283,642	02/21/84

Patent Number	Serial Number	Issue Date	4,432,671	06/323,792	02/21/84
4,432,346	06/268,986	02/21/84	4,432,674	06/405,410	02/21/84
4,432,351	06/274,317	02/21/84	4,432,685	06/287,480	02/21/84
4,432,354	06/249,482	02/21/84	4,432,688	06/296,847	02/21/84
4,432,358	06/341,863	02/21/84	4,432,689	06/306,315	02/21/84
4,432,363	06/222,536	02/21/84	4,432,702	06/300,922	02/21/84
4,432,364	06/494,341	02/21/84	4,432,707	06/390,386	02/21/84
4,432,365	06/257,804	02/21/84	4,432,710	06/363,901	02/21/84
4,432,369	06/299,628	02/21/84	4,432,712	06/332,355	02/21/84
4,432,377	06/344,125	02/21/84	4,432,714	06/408,059	02/21/84
4,432,386	06/218,129	02/21/84	4,432,717	06/346,156	02/21/84
4,432,388	06/337,611	02/21/84	4,432,718	06/320,507	02/21/84
4,432,391	06/296,185	02/21/84	4,432,720	06/460,830	02/21/84
4,432,396	06/378,603	02/21/84	4,432,722	06/282,566	02/21/84
4,432,397	06/325,596	02/21/84	4,432,727	06/420,927	02/21/84
4,432,399	06/322,424	02/21/84	4,432,735	06/315,001	02/21/84
4,432,400	06/285,429	02/21/84	4,432,738	06/260,665	02/21/84
4,432,403	06/266,104	02/21/84	4,432,740	06/298,101	02/21/84
4,432,404	06/364,983	02/21/84	4,432,749	06/360,038	02/21/84
4,432,406	06/260,952	02/21/84	4,432,758	06/412,985	02/21/84
4,432,408	06/399,386	02/21/84	4,432,761	06/423,369	02/21/84
4,432,416	06/351,547	02/21/84	4,432,762	06/423,370	02/21/84
4,432,417	06/307,903	02/21/84	4,432,764	06/318,271	02/21/84
4,432,421	06/302,935	02/21/84	4,432,777	06/416,411	02/21/84
4,432,424	06/371,964	02/21/84	4,432,783	06/484,658	02/21/84
4,432,426	06/255,927	02/21/84	4,432,784	06/356,801	02/21/84
4,432,434	06/337,584	02/21/84	4,432,786	06/376,325	02/21/84
4,432,435	06/255,631	02/21/84	4,432,788	06/366,199	02/21/84
4,432,437	06/270,852	02/21/84	4,432,789	06/460,499	02/21/84
4,432,438	06/232,493	02/21/84	4,432,790	06/391,329	02/21/84
4,432,439	06/356,688	02/21/84	4,432,791	06/472,425	02/21/84
4,432,442	06/286,986	02/21/84	4,432,795	06/349,432	02/21/84
4,432,444	06/242,821	02/21/84	4,432,802	06/343,214	02/21/84
4,432,462	06/435,017	02/21/84	4,432,806	06/338,071	02/21/84
4,432,468	06/232,248	02/21/84	4,432,807	06/358,003	02/21/84
4,432,470	06/226,860	02/21/84	4,432,808	06/382,112	02/21/84
4,432,471	06/307,460	02/21/84	4,432,811	06/432,762	02/21/84
4,432,477	06/421,339	02/21/84	4,432,840	06/372,076	02/21/84
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4,432,479	06/506,815	02/21/84	4,432,843	06/403,196	02/21/84
4,432,481	06/388,320	02/21/84	4,432,844	06/348,050	02/21/84
4,432,497	06/265,700	02/21/84	4,432,848	06/322,626	02/21/84
4,432,499	06/216,134	02/21/84	4,432,852	06/350,289	02/21/84
4,432,501	06/365,998	02/21/84	4,432,854	06/338,909	02/21/84
4,432,506	06/402,773	02/21/84	4,432,856	06/258,545	02/21/84
4,432,515	06/243,504	02/21/84	4,432,861	06/475,999	02/21/84
4,432,516	06/316,561	02/21/84	4,432,862	06/340,071	02/21/84
4,432,517	06/250,862	02/21/84	4,432,864	06/332,279	02/21/84
4,432,524	06/288,165	02/21/84	4,432,866	06/313,465	02/21/84
4,432,526	06/336,671	02/21/84	4,432,878	06/279,052	02/21/84
4,432,531	06/367,551	02/21/84	4,432,882	06/331,892	02/21/84
4,432,534	06/465,559	02/21/84	4,432,886	06/421,201	02/21/84
4,432,535	06/405,737	02/21/84	4,432,888	06/307,016	02/21/84
4,432,545	06/373,577	02/21/84	4,432,892	06/263,346	02/21/84
4,432,546	06/419,716	02/21/84	4,432,893	06/379,800	02/21/84
4,432,558	06/327,565	02/21/84	4,432,896	06/423,494	02/21/84
4,432,563	06/300,932	02/21/84	4,432,900	06/283,232	02/21/84
4,432,564	06/337,203	02/21/84	4,432,902	06/399,948	02/21/84
4,432,572	06/247,159	02/21/84	4,432,910	06/320,042	02/21/84
4,432,581	06/336,582	02/21/84	4,432,915	06/360,630	02/21/84
4,432,598	06/265,350	02/21/84	4,432,917	06/322,359	02/21/84
4,432,602	06/253,777	02/21/84	4,432,923	06/386,501	02/21/84
4,432,610	06/235,995	02/21/84	4,432,924	06/366,995	02/21/84
4,432,613	06/253,049	02/21/84	4,432,925	06/387,363	02/21/84
4,432,614	06/451,646	02/21/84	4,432,926	06/287,729	02/21/84
4,432,616	06/371,902	02/21/84	4,432,927	06/243,945	02/21/84
4,432,622	06/385,826	02/21/84	4,432,928	06/375,221	02/21/84
4,432,623	06/301,231	02/21/84	4,432,929	06/284,297	02/21/84
4,432,625	06/336,135	02/21/84	4,432,931	06/307,975	02/21/84
4,432,627	06/312,825	02/21/84	4,432,934	06/217,052	02/21/84
4,432,632	06/338,606	02/21/84	4,432,936	06/412,349	02/21/84
4,432,633	06/343,706	02/21/84	4,432,942	06/310,719	02/21/84
4,432,637	06/350,569	02/21/84	4,432,949	06/422,988	02/21/84
4,432,644	06/254,929	02/21/84	4,432,952	06/421,251	02/21/84
4,432,650	06/336,365	02/21/84	4,432,953	06/422,813	02/21/84
4,432,656	06/253,748	02/21/84	4,432,956	06/384,072	02/21/84
4,432,664	06/239,174	02/21/84	4,432,957	06/352,007	02/21/84
4,432,665	06/297,474	02/21/84	4,432,959	06/404,867	02/21/84
			4,432,964	06/453,358	02/21/84

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4,432,973	06/314,032	02/21/84	4,433,297	06/276,235	02/21/84
4,432,974	06/354,643	02/21/84	4,433,304	06/294,159	02/21/84
4,432,976	06/410,756	02/21/84	4,433,306	06/279,457	02/21/84
4,432,978	06/380,182	02/21/84	4,433,308	06/326,994	02/21/84
4,432,982	06/345,633	02/21/84	4,433,310	06/219,318	02/21/84
4,432,988	06/296,138	02/21/84	4,433,311	06/244,646	02/21/84
4,432,991	06/438,080	02/21/84	4,433,312	06/332,018	02/21/84
4,433,000	06/412,243	02/21/84	4,433,313	06/300,603	02/21/84
4,433,011	06/328,607	02/21/84	4,433,314	06/341,357	02/21/84
4,433,014	06/390,707	02/21/84	4,433,315	06/324,665	02/21/84
4,433,018	06/329,300	02/21/84	4,433,318	06/391,983	02/21/84
4,433,019	06/439,748	02/21/84	4,433,321	06/418,201	02/21/84
4,433,020	06/435,638	02/21/84	4,433,339	06/305,630	02/21/84
4,433,021	06/421,126	02/21/84	4,433,345	06/275,257	02/21/84
4,433,022	06/333,715	02/21/84	4,433,346	06/364,131	02/21/84
4,433,023	06/492,158	02/21/84	4,433,355	06/320,972	02/21/84
4,433,025	06/388,494	02/21/84	4,433,357	06/309,397	02/21/84
4,433,029	06/394,683	02/21/84	4,433,363	06/386,695	02/21/84
4,433,036	06/364,105	02/21/84	4,433,367	06/467,749	02/21/84
4,433,039	06/420,875	02/21/84	4,433,369	06/359,162	02/21/84
4,433,041	06/354,184	02/21/84	4,433,396	06/300,128	02/21/84
4,433,046	06/383,318	02/21/84	4,433,402	06/310,767	02/21/84
4,433,050	06/300,644	02/21/84	4,433,404	06/307,534	02/21/84
4,433,054	06/323,288	02/21/84	4,433,409	06/357,322	02/21/84
4,433,055	06/373,124	02/21/84	4,433,410	06/393,605	02/21/84
4,433,057	06/348,067	02/21/84	4,433,411	06/302,642	02/21/84
4,433,058	06/237,210	02/21/84	4,433,414	06/307,322	02/21/84
4,433,060	06/267,414	02/21/84	4,433,421	06/328,422	02/21/84
4,433,065	06/355,065	02/21/84	4,433,429	06/238,942	02/21/84
4,433,077	06/410,654	02/21/84	4,433,433	06/263,884	02/21/84
4,433,079	06/473,698	02/21/84	4,433,435	06/352,500	02/21/84
4,433,097	06/226,784	02/21/84	4,724,551	06/917,717	02/16/88
4,433,100	06/399,003	02/21/84	4,724,553	07/032,557	02/16/88
4,433,103	06/498,511	02/21/84	4,724,566	06/906,990	02/16/88
4,433,106	06/436,198	02/21/84	4,724,567	06/883,667	02/16/88
4,433,114	06/380,185	02/21/84	4,724,570	06/887,601	02/16/88
4,433,118	06/424,854	02/21/84	4,724,571	06/934,202	02/16/88
4,433,127	06/389,465	02/21/84	4,724,575	06/863,342	02/16/88
4,433,128	06/443,739	02/21/84	4,724,577	06/920,175	02/16/88
4,433,131	06/288,707	02/21/84	4,724,578	06/921,640	02/16/88
4,433,132	06/414,473	02/21/84	4,724,580	06/759,409	02/16/88
4,433,137	06/387,118	02/21/84	4,724,582	06/931,408	02/16/88
4,433,138	06/379,036	02/21/84	4,724,585	06/927,271	02/16/88
4,433,148	06/440,933	02/21/84	4,724,586	06/561,342	02/16/88
4,433,155	06/382,874	02/21/84	4,724,591	07/016,967	02/16/88
4,433,157	06/377,114	02/21/84	4,724,596	06/854,133	02/16/88
4,433,164	06/341,101	02/21/84	4,724,599	06/942,683	02/16/88
4,433,174	06/401,548	02/21/84	4,724,600	06/889,996	02/16/88
4,433,184	06/258,225	02/21/84	4,724,612	06/875,399	02/16/88
4,433,185	06/481,705	02/21/84	4,724,617	06/896,624	02/16/88
4,433,190	06/422,821	02/21/84	4,724,619	06/940,536	02/16/88
4,433,191	06/430,297	02/21/84	4,724,623	06/760,934	02/16/88
4,433,195	06/471,397	02/21/84	4,724,625	06/885,613	02/16/88
4,433,197	06/396,256	02/21/84	4,724,626	06/925,007	02/16/88
4,433,201	06/374,022	02/21/84	4,724,627	06/937,604	02/16/88
4,433,208	06/296,678	02/21/84	4,724,630	06/890,933	02/16/88
4,433,209	06/257,392	02/21/84	4,724,631	06/947,757	02/16/88
4,433,210	06/369,356	02/21/84	4,724,632	06/779,958	02/16/88
4,433,212	06/390,183	02/21/84	4,724,633	06/516,393	02/16/88
4,433,213	06/344,779	02/21/84	4,724,634	07/009,220	02/16/88
4,433,223	06/295,717	02/21/84	4,724,635	07/067,438	02/16/88
4,433,233	06/314,102	02/21/84	4,724,638	06/822,905	02/16/88
4,433,240	06/270,670	02/21/84	4,724,640	06/585,722	02/16/88
4,433,243	06/288,451	02/21/84	4,724,648	06/898,183	02/16/88
4,433,244	06/359,740	02/21/84	4,724,655	06/857,768	02/16/88
4,433,249	06/301,180	02/21/84	4,724,666	06/805,339	02/16/88
4,433,250	06/402,867	02/21/84	4,724,668	07/070,641	02/16/88
4,433,261	06/473,342	02/21/84	4,724,676	06/911,106	02/16/88
4,433,269	06/443,581	02/21/84	4,724,679	06/881,286	02/16/88
4,433,270	06/293,627	02/21/84	4,724,681	06/940,787	02/16/88
4,433,271	06/264,408	02/21/84	4,724,687	06/932,913	02/16/88
4,433,273	06/341,202	02/21/84	4,724,692	07/005,914	02/16/88
4,433,274	06/287,336	02/21/84	4,724,693	06/811,484	02/16/88
4,433,279	06/236,460	02/21/84	4,724,699	06/865,777	02/16/88
4,433,280	06/330,666	02/21/84	4,724,701	07/013,526	02/16/88
4,433,292	06/260,102	02/21/84	4,724,705	06/846,073	02/16/88
4,433,296	06/285,740	02/21/84	4,724,710	06/944,865	02/16/88
			4,724,713	06/794,139	02/16/88
			4,724,714	06/922,735	02/16/88

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4,724,718	06/858,680	02/16/88	4,724,986	06/866,288	02/16/88
4,724,721	06/869,541	02/16/88	4,724,987	06/869,590	02/16/88
4,724,736	06/895,240	02/16/88	4,724,989	07/048,838	02/16/88
4,724,737	06/829,978	02/16/88	4,724,990	06/896,064	02/16/88
4,724,738	06/854,854	02/16/88	4,724,992	06/883,723	02/16/88
4,724,740	06/884,398	02/16/88	4,724,995	06/890,568	02/16/88
4,724,745	06/763,004	02/16/88	4,724,996	06/783,596	02/16/88
4,724,746	07/065,630	02/16/88	4,724,997	06/882,881	02/16/88
4,724,748	06/838,158	02/16/88	4,724,998	07/042,154	02/16/88
4,724,751	07/077,030	02/16/88	4,725,000	07/024,619	02/16/88
4,724,760	06/884,540	02/16/88	4,725,005	07/002,688	02/16/88
4,724,762	07/032,986	02/16/88	4,725,006	06/865,808	02/16/88
4,724,768	06/886,883	02/16/88	4,725,013	06/806,401	02/16/88
4,724,781	07/027,047	02/16/88	4,725,020	06/510,738	02/16/88
4,724,783	06/913,552	02/16/88	4,725,021	06/919,995	02/16/88
4,724,784	06/913,551	02/16/88	4,725,022	07/020,574	02/16/88
4,724,785	06/843,372	02/16/88	4,725,023	06/631,644	02/16/88
4,724,788	06/657,465	02/16/88	4,725,031	06/943,700	02/16/88
4,724,792	06/850,023	02/16/88	4,725,032	06/905,964	02/16/88
4,724,801	07/003,629	02/16/88	4,725,033	06/891,272	02/16/88
4,724,805	07/018,180	02/16/88	4,725,046	07/008,058	02/16/88
4,724,811	07/033,691	02/16/88	4,725,048	06/880,883	02/16/88
4,724,822	06/879,030	02/16/88	4,725,049	07/023,833	02/16/88
4,724,823	06/912,571	02/16/88	4,725,051	06/902,164	02/16/88
4,724,824	06/899,445	02/16/88	4,725,055	06/802,689	02/16/88
4,724,830	06/832,407	02/16/88	4,725,059	07/002,137	02/16/88
4,724,832	06/871,408	02/16/88	4,725,062	06/862,259	02/16/88
4,724,841	06/860,061	02/16/88	4,725,065	06/870,158	02/16/88
4,724,844	06/748,908	02/16/88	4,725,069	06/859,155	02/16/88
4,724,846	06/817,580	02/16/88	4,725,070	06/873,874	02/16/88
4,724,847	07/064,405	02/16/88	4,725,085	06/891,188	02/16/88
4,724,850	06/826,462	02/16/88	4,725,087	06/839,381	02/16/88
4,724,851	06/926,761	02/16/88	4,725,088	06/884,597	02/16/88
4,724,852	06/848,203	02/16/88	4,725,095	06/884,807	02/16/88
4,724,853	06/683,613	02/16/88	4,725,103	06/890,073	02/16/88
4,724,854	06/848,619	02/16/88	4,725,104	07/036,153	02/16/88
4,724,855	06/901,817	02/16/88	4,725,105	06/903,333	02/16/88
4,724,860	06/847,207	02/16/88	4,725,106	06/805,011	02/16/88
4,724,862	06/924,526	02/16/88	4,725,107	06/502,563	02/16/88
4,724,864	06/908,706	02/16/88	4,725,122	06/899,948	02/16/88
4,724,870	06/633,117	02/16/88	4,725,124	06/780,495	02/16/88
4,724,874	06/840,380	02/16/88	4,725,128	06/799,884	02/16/88
4,724,881	06/829,401	02/16/88	4,725,130	06/841,839	02/16/88
4,724,885	06/935,801	02/16/88	4,725,132	06/726,445	02/16/88
4,724,886	06/934,783	02/16/88	4,725,133	06/785,278	02/16/88
4,724,898	06/866,442	02/16/88	4,725,135	06/913,648	02/16/88
4,724,900	06/856,370	02/16/88	4,725,136	06/374,557	02/16/88
4,724,902	06/890,642	02/16/88	4,725,137	06/546,611	02/16/88
4,724,903	06/828,641	02/16/88	4,725,139	06/731,785	02/16/88
4,724,907	06/873,034	02/16/88	4,725,141	06/761,142	02/16/88
4,724,908	06/915,220	02/16/88	4,725,142	06/894,484	02/16/88
4,724,909	06/795,505	02/16/88	4,725,144	06/832,972	02/16/88
4,724,910	06/912,962	02/16/88	4,725,146	06/814,086	02/16/88
4,724,911	06/811,865	02/16/88	4,725,162	07/011,730	02/16/88
4,724,915	07/021,488	02/16/88	4,725,171	06/585,881	02/16/88
4,724,916	07/026,466	02/16/88	4,725,172	06/914,068	02/16/88
4,724,918	07/004,945	02/16/88	4,725,174	07/065,119	02/16/88
4,724,919	06/830,707	02/16/88	4,725,176	06/748,479	02/16/88
4,724,920	06/805,515	02/16/88	4,725,178	06/834,691	02/16/88
4,724,921	06/898,930	02/16/88	4,725,180	07/015,413	02/16/88
4,724,923	06/886,189	02/16/88	4,725,182	07/057,647	02/16/88
4,724,925	07/048,543	02/16/88	4,725,183	07/017,922	02/16/88
4,724,929	06/733,873	02/16/88	4,725,187	06/855,328	02/16/88
4,724,931	06/933,373	02/16/88	4,725,190	06/801,322	02/16/88
4,724,932	07/011,755	02/16/88	4,725,191	06/852,334	02/16/88
4,724,933	07/040,251	02/16/88	4,725,193	06/854,776	02/16/88
4,724,939	06/886,426	02/16/88	4,725,194	06/914,646	02/16/88
4,724,947	06/856,800	02/16/88	4,725,195	07/029,994	02/16/88
4,724,955	07/057,600	02/16/88	4,725,198	06/877,841	02/16/88
4,724,957	06/918,392	02/16/88	4,725,199	06/812,026	02/16/88
4,724,959	06/787,345	02/16/88	4,725,201	07/009,939	02/16/88
4,724,964	07/036,313	02/16/88	4,725,206	06/684,242	02/16/88
4,724,965	06/919,630	02/16/88	4,725,218	06/877,378	02/16/88
4,724,974	07/037,584	02/16/88	4,725,220	06/827,961	02/16/88
4,724,980	06/939,958	02/16/88	4,725,223	06/909,683	02/16/88
4,724,981	07/004,811	02/16/88	4,725,224	07/024,537	02/16/88
4,724,985	06/901,508	02/16/88	4,725,228	07/045,100	02/16/88
			4,725,244	07/070,131	02/16/88
			4,725,245	06/849,560	02/16/88

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4,725,253	06/922,393	02/16/88	4,725,575	06/940,018	02/16/88
4,725,254	06/934,514	02/16/88	4,725,576	06/778,490	02/16/88
4,725,258	06/897,325	02/16/88	4,725,580	06/826,349	02/16/88
4,725,262	06/901,997	02/16/88	4,725,581	06/892,345	02/16/88
4,725,278	07/006,875	02/16/88	4,725,582	06/377,836	02/16/88
4,725,284	06/886,644	02/16/88	4,725,583	06/830,615	02/16/88
4,725,288	06/821,854	02/16/88	4,725,584	06/830,614	02/16/88
4,725,295	06/799,432	02/16/88	4,725,586	06/836,156	02/16/88
4,725,297	07/042,783	02/16/88	4,725,590	06/774,617	02/16/88
4,725,305	06/931,368	02/16/88	4,725,591	06/576,776	02/16/88
4,725,313	07/020,139	02/16/88	4,725,592	06/637,138	02/16/88
4,725,318	06/830,809	02/16/88	4,725,600	06/751,867	02/16/88
4,725,320	07/021,521	02/16/88	4,725,603	06/876,724	02/16/88
4,725,322	06/783,513	02/16/88	4,725,606	06/899,314	02/16/88
4,725,332	06/933,279	02/16/88	4,725,607	06/906,737	02/16/88
4,725,340	06/890,435	02/16/88	4,725,609	06/673,380	02/16/88
4,725,342	06/928,491	02/16/88	4,725,611	07/075,908	02/16/88
4,725,347	06/859,180	02/16/88	4,725,612	07/075,907	02/16/88
4,725,349	06/916,363	02/16/88	4,725,613	07/063,154	02/16/88
4,725,352	06/942,248	02/16/88	4,725,615	06/888,258	02/16/88
4,725,356	06/827,738	02/16/88	4,725,617	06/828,011	02/16/88
4,725,358	06/913,498	02/16/88	4,725,618	06/885,965	02/16/88
4,725,359	06/704,868	02/16/88	4,725,619	06/877,568	02/16/88
4,725,364	06/551,643	02/16/88	4,725,626	06/762,221	02/16/88
4,725,368	06/924,672	02/16/88	4,725,631	06/887,815	02/16/88
4,725,369	06/924,673	02/16/88	4,725,632	06/810,575	02/16/88
4,725,373	06/831,966	02/16/88	4,725,638	06/906,537	02/16/88
4,725,377	06/798,530	02/16/88	4,725,640	06/868,370	02/16/88
4,725,378	06/605,344	02/16/88	4,725,647	06/669,424	02/16/88
4,725,379	06/817,194	02/16/88	4,725,648	06/916,339	02/16/88
4,725,381	06/894,113	02/16/88	4,725,651	06/809,830	02/16/88
4,725,385	06/899,666	02/16/88	4,725,653	06/797,471	02/16/88
4,725,391	06/578,841	02/16/88	4,725,663	06/947,204	02/16/88
4,725,396	06/937,005	02/16/88	4,725,666	06/871,359	02/16/88
4,725,397	06/802,161	02/16/88	4,725,676	06/882,896	02/16/88
4,725,399	06/788,780	02/16/88	4,725,679	06/828,082	02/16/88
4,725,400	06/810,243	02/16/88	4,725,683	06/765,401	02/16/88
4,725,402	06/856,888	02/16/88	4,725,685	06/802,059	02/16/88
4,725,403	06/930,612	02/16/88	4,725,686	06/800,986	02/16/88
4,725,407	06/841,456	02/16/88	4,725,696	06/869,099	02/16/88
4,725,409	06/788,696	02/16/88	4,725,711	06/764,631	02/16/88
4,725,410	06/840,860	02/16/88	4,725,723	06/702,824	02/16/88
4,725,419	06/735,252	02/16/88	4,725,725	06/945,527	02/16/88
4,725,423	06/826,745	02/16/88	4,725,726	06/881,192	02/16/88
4,725,444	06/899,849	02/16/88	4,725,735	06/767,907	02/16/88
4,725,449	07/019,999	02/16/88	4,725,739	06/917,891	02/16/88
4,725,452	06/839,715	02/16/88	4,725,749	06/945,268	02/16/88
4,725,455	06/616,460	02/16/88	4,725,756	06/835,845	02/16/88
4,725,459	06/939,919	02/16/88	4,725,762	06/928,285	02/16/88
4,725,466	06/863,447	02/16/88	4,725,764	06/844,863	02/16/88
4,725,467	06/876,799	02/16/88	4,725,768	06/927,449	02/16/88
4,725,469	07/015,248	02/16/88	4,725,770	07/013,549	02/16/88
4,725,471	06/808,829	02/16/88	4,725,771	06/801,295	02/16/88
4,725,476	07/049,790	02/16/88	4,725,772	06/364,359	02/16/88
4,725,483	06/865,969	02/16/88	4,725,777	06/831,307	02/16/88
4,725,489	06/938,014	02/16/88	4,725,782	07/036,797	02/16/88
4,725,491	06/883,730	02/16/88	4,725,785	06/810,023	02/16/88
4,725,498	06/726,021	02/16/88	4,725,788	06/911,468	02/16/88
4,725,499	06/929,905	02/16/88	4,725,796	06/910,826	02/16/88
4,725,507	06/934,161	02/16/88	4,725,802	07/015,736	02/16/88
4,725,508	06/922,223	02/16/88	4,725,817	06/759,346	02/16/88
4,725,511	06/859,510	02/16/88	4,725,826	07/004,076	02/16/88
4,725,514	06/759,822	02/16/88	4,725,830	06/892,284	02/16/88
4,725,517	06/938,333	02/16/88	4,725,831	06/604,863	02/16/88
4,725,520	06/916,652	02/16/88	4,725,833	06/782,398	02/16/88
4,725,522	06/919,517	02/16/88	4,725,836	06/823,036	02/16/88
4,725,526	06/766,691	02/16/88	4,725,837	06/230,035	02/16/88
4,725,528	06/876,791	02/16/88	4,725,839	06/684,762	02/16/88
4,725,536	06/777,796	02/16/88	4,725,843	06/845,315	02/16/88
4,725,537	06/777,657	02/16/88	4,725,846	06/940,931	02/16/88
4,725,538	06/791,349	02/16/88	4,725,851	06/879,049	02/16/88
4,725,544	06/856,934	02/16/88	4,725,852	07/007,400	02/16/88
4,725,548	06/860,689	02/16/88	4,725,858	06/900,456	02/16/88
4,725,550	06/572,694	02/16/88	4,725,861	06/868,073	02/16/88
4,725,554	06/938,309	02/16/88	4,725,863	07/016,890	02/16/88
4,725,559	06/922,368	02/16/88	4,725,879	07/030,796	02/16/88
4,725,561	06/882,901	02/16/88	4,725,884	06/864,789	02/16/88
			4,725,891	07/007,128	02/16/88

Patent Number	Serial Number	Issue Date	5,088,229	07/563,530	02/18/92
4,725,899	06/832,828	02/16/88	5,088,230	07/553,174	02/18/92
4,725,905	06/836,061	02/16/88	5,088,231	07/573,606	02/18/92
4,725,906	06/839,705	02/16/88	5,088,232	07/529,592	02/18/92
4,725,908	07/070,107	02/16/88	5,088,233	07/675,876	02/18/92
4,725,909	07/045,747	02/16/88	5,088,234	07/600,486	02/18/92
4,725,918	06/899,457	02/16/88	5,088,237	07/419,082	02/18/92
4,725,922	06/865,028	02/16/88	5,088,249	07/340,880	02/18/92
4,725,924	06/849,742	02/16/88	5,088,253	07/600,864	02/18/92
4,725,942	06/824,570	02/16/88	5,088,257	07/580,115	02/18/92
4,725,949	06/628,343	02/16/88	5,088,259	07/409,266	02/18/92
4,725,957	06/787,796	02/16/88	5,088,262	07/574,218	02/18/92
4,725,958	06/810,060	02/16/88	5,088,264	07/551,896	02/18/92
4,725,960	06/832,715	02/16/88	5,088,266	07/324,581	02/18/92
4,725,962	06/852,998	02/16/88	5,088,267	07/398,781	02/18/92
4,725,964	06/696,330	02/16/88	5,088,271	07/700,078	02/18/92
4,725,965	06/888,618	02/16/88	5,088,277	07/251,727	02/18/92
4,725,980	06/798,782	02/16/88	5,088,282	07/618,509	02/18/92
4,725,987	06/790,691	02/16/88	5,088,283	07/462,792	02/18/92
4,725,989	06/940,844	02/16/88	5,088,284	07/672,635	02/18/92
4,725,993	07/028,718	02/16/88	5,088,291	07/643,527	02/18/92
4,725,994	06/729,734	02/16/88	5,088,292	07/550,544	02/18/92
4,725,996	07/010,637	02/16/88	5,088,293	07/574,859	02/18/92
4,725,998	06/940,968	02/16/88	5,088,299	07/501,099	02/18/92
4,726,002	06/945,305	02/16/88	5,088,300	07/623,285	02/18/92
4,726,007	06/881,808	02/16/88	5,088,304	07/598,836	02/18/92
4,726,010	06/833,641	02/16/88	5,088,310	07/505,682	02/18/92
4,726,013	06/820,256	02/16/88	5,088,313	07/443,259	02/18/92
4,726,015	06/886,069	02/16/88	5,088,316	07/413,198	02/18/92
4,726,016	06/783,912	02/16/88	5,088,329	07/520,262	02/18/92
4,726,031	06/784,594	02/16/88	5,088,334	07/130,713	02/18/92
4,726,033	06/823,613	02/16/88	5,088,343	07/540,244	02/18/92
4,726,034	06/765,031	02/16/88	5,088,347	07/449,699	02/18/92
4,726,039	06/861,183	02/16/88	5,088,357	07/645,882	02/18/92
4,726,044	06/920,713	02/16/88	5,088,359	07/550,663	02/18/92
4,726,059	06/839,526	02/16/88	5,088,366	07/591,075	02/18/92
4,726,060	06/813,963	02/16/88	5,088,375	07/594,760	02/18/92
4,726,064	06/656,796	02/16/88	5,088,377	07/639,187	02/18/92
4,726,066	06/886,511	02/16/88	5,088,378	07/615,175	02/18/92
4,726,067	06/926,737	02/16/88	5,088,390	07/470,721	02/18/92
5,088,117	07/561,945	02/18/92	5,088,392	07/607,620	02/18/92
5,088,118	07/319,558	02/18/92	5,088,399	07/586,542	02/18/92
5,088,119	07/594,604	02/18/92	5,088,400	07/645,655	02/18/92
5,088,120	07/678,545	02/18/92	5,088,404	07/349,446	02/18/92
5,088,121	07/647,542	02/18/92	5,088,405	07/724,775	02/18/92
5,088,123	07/698,265	02/18/92	5,088,408	07/662,727	02/18/92
5,088,127	07/621,740	02/18/92	5,088,409	07/526,902	02/18/92
5,088,128	07/680,411	02/18/92	5,088,412	07/556,636	02/18/92
5,088,129	07/628,047	02/18/92	5,088,417	07/568,518	02/18/92
5,088,130	07/475,725	02/18/92	5,088,419	07/435,397	02/18/92
5,088,131	07/615,563	02/18/92	5,088,420	07/112,739	02/18/92
5,088,133	07/470,246	02/18/92	5,088,425	07/492,079	02/18/92
5,088,134	07/345,541	02/18/92	5,088,427	07/508,174	02/18/92
5,088,135	07/682,245	02/18/92	5,088,430	07/523,726	02/18/92
5,088,136	07/470,856	02/18/92	5,088,431	07/528,831	02/18/92
5,088,139	07/739,668	02/18/92	5,088,433	07/560,390	02/18/92

Patent Number	Serial Number	Issue Date	5,088,857	07/547,653	02/18/92
5,088,533	07/627,463	02/18/92	5,088,873	07/640,995	02/18/92
5,088,537	07/357,576	02/18/92	5,088,881	07/658,265	02/18/92
5,088,540	07/622,546	02/18/92	5,088,882	07/200,356	02/18/92
5,088,542	07/733,623	02/18/92	5,088,888	07/621,149	02/18/92
5,088,546	07/749,626	02/18/92	5,088,895	07/577,400	02/18/92
5,088,555	07/622,586	02/18/92	5,088,896	07/726,848	02/18/92
5,088,557	07/494,096	02/18/92	5,088,897	07/486,154	02/18/92
5,088,563	07/569,402	02/18/92	5,088,928	07/494,972	02/18/92
5,088,564	07/695,277	02/18/92	5,088,943	07/557,476	02/18/92
5,088,565	07/498,098	02/18/92	5,088,944	07/608,982	02/18/92
5,088,568	07/539,884	02/18/92	5,088,948	07/577,868	02/18/92
5,088,570	07/650,442	02/18/92	5,088,949	07/639,875	02/18/92
5,088,573	07/697,626	02/18/92	5,088,951	07/610,411	02/18/92
5,088,574	07/509,663	02/18/92	5,088,953	07/639,346	02/18/92
5,088,576	07/378,896	02/18/92	5,088,956	07/694,303	02/18/92
5,088,578	07/586,310	02/18/92	5,088,959	07/377,553	02/18/92
5,088,589	07/569,732	02/18/92	5,088,964	07/452,687	02/18/92
5,088,602	07/651,994	02/18/92	5,088,969	07/644,256	02/18/92
5,088,614	07/691,440	02/18/92	5,088,973	07/424,751	02/18/92
5,088,615	07/525,127	02/18/92	5,088,974	07/439,793	02/18/92
5,088,619	07/588,272	02/18/92	5,088,987	07/474,447	02/18/92
5,088,620	07/693,806	02/18/92	5,088,999	07/674,420	02/18/92
5,088,621	07/520,895	02/18/92	5,089,014	07/051,578	02/18/92
5,088,624	07/478,654	02/18/92	5,089,020	07/383,668	02/18/92
5,088,626	07/609,235	02/18/92	5,089,030	07/588,605	02/18/92
5,088,633	07/672,116	02/18/92	5,089,037	07/705,959	02/18/92
5,088,635	07/565,496	02/18/92	5,089,044	07/555,585	02/18/92
5,088,638	07/349,108	02/18/92	5,089,045	07/522,517	02/18/92
5,088,641	07/661,918	02/18/92	5,089,051	07/596,099	02/18/92
5,088,644	07/714,556	02/18/92	5,089,052	07/392,105	02/18/92
5,088,652	07/662,710	02/18/92	5,089,054	07/619,354	02/18/92
5,088,653	07/486,437	02/18/92	5,089,062	07/663,571	02/18/92
5,088,656	07/713,005	02/18/92	5,089,069	07/542,313	02/18/92
5,088,657	07/502,676	02/18/92	5,089,072	07/208,353	02/18/92
5,088,659	07/672,656	02/18/92	5,089,089	07/431,650	02/18/92
5,088,663	07/543,224	02/18/92	5,089,091	07/518,316	02/18/92
5,088,664	07/657,854	02/18/92	5,089,097	07/491,509	02/18/92
5,088,665	07/429,516	02/18/92	5,089,108	07/542,535	02/18/92
5,088,666	07/577,036	02/18/92	5,089,119	07/419,556	02/18/92
5,088,667	07/558,661	02/18/92	5,089,120	07/365,946	02/18/92
5,088,674	07/557,160	02/18/92	5,089,121	07/389,483	02/18/92
5,088,676	07/213,879	02/18/92	5,089,124	07/554,301	02/18/92
5,088,677	07/448,302	02/18/92	5,089,128	07/460,907	02/18/92
5,088,681	07/702,593	02/18/92	5,089,131	07/268,820	02/18/92
5,088,682	07/361,247	02/18/92	5,089,135	07/442,325	02/18/92
5,088,695	07/664,680	02/18/92	5,089,137	07/592,797	02/18/92
5,088,696	07/593,431	02/18/92	5,089,140	07/493,896	02/18/92
5,088,715	07/552,937	02/18/92	5,089,142	07/605,622	02/18/92
5,088,723	07/620,559	02/18/92	5,089,144	07/447,794	02/18/92
5,088,724	07/585,223	02/18/92	5,089,145	07/601,908	02/18/92
5,088,725	07/580,168	02/18/92	5,089,151	07/605,573	02/18/92
5,088,734	07/639,240	02/18/92	5,089,154	07/598,205	02/18/92
5,088,735	07/678,186	02/18/92	5,089,159	07/266,231	02/18/92
5,088,747	07/581,043	02/18/92	5,089,164	07/633,778	02/18/92
5,088,748	07/635,232	02/18/92	5,089,178	07/353,628	02/18/92
5,088,754	07/646,236	02/18/92	5,089,184	07/451,890	02/18/92
5,088,765	07/526,630	02/18/92	5,089,185	07/451,999	02/18/92
5,088,766	07/596,284	02/18/92	5,089,188	07/370,205	02/18/92
5,088,767	07/605,333	02/18/92	5,089,189	07/348,061	02/18/92
5,088,770	07/604,978	02/18/92	5,089,194	07/537,840	02/18/92
5,088,780	07/722,207	02/18/92	5,089,204	07/591,731	02/18/92
5,088,782	07/661,423	02/18/92	5,089,207	07/237,708	02/18/92
5,088,783	07/599,857	02/18/92	5,089,212	07/560,450	02/18/92
5,088,785	07/604,046	02/18/92	5,089,214	07/558,996	02/18/92
5,088,787	07/633,019	02/18/92	5,089,218	07/381,976	02/18/92
5,088,788	07/673,355	02/18/92	5,089,230	07/491,565	02/18/92
5,088,791	07/620,660	02/18/92	5,089,245	07/506,641	02/18/92
5,088,792	07/485,293	02/18/92	5,089,247	07/489,795	02/18/92
5,088,794	07/611,907	02/18/92	5,089,252	07/400,696	02/18/92
5,088,799	07/550,184	02/18/92	5,089,256	07/296,027	02/18/92
5,088,819	07/517,867	02/18/92	5,089,257	07/408,986	02/18/92
5,088,827	07/450,544	02/18/92	5,089,263	07/389,380	02/18/92
5,088,838	07/688,430	02/18/92	5,089,287	07/419,470	02/18/92
5,088,843	07/393,634	02/18/92	5,089,290	07/622,206	02/18/92
5,088,851	07/591,262	02/18/92	5,089,292	07/556,647	02/18/92
5,088,852	07/421,084	02/18/92	5,089,294	07/557,749	02/18/92
5,088,854	07/565,972	02/18/92	5,089,296	07/489,586	02/18/92
			5,089,298	07/617,721	02/18/92

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5,089,303	07/342,150	02/18/92	5,089,673	07/501,285	02/18/92
5,089,315	07/416,521	02/18/92	5,089,677	07/656,028	02/18/92
5,089,316	07/587,148	02/18/92	5,089,683	07/584,099	02/18/92
5,089,326	07/404,381	02/18/92	5,089,684	07/544,940	02/18/92
5,089,351	07/544,861	02/18/92	5,089,689	07/418,599	02/18/92
5,089,377	07/626,069	02/18/92	5,089,697	07/296,060	02/18/92
5,089,384	07/267,264	02/18/92	5,089,700	07/472,512	02/18/92
5,089,406	07/476,112	02/18/92	5,089,707	07/612,589	02/18/92
5,089,408	07/368,982	02/18/92	5,089,709	07/595,504	02/18/92
5,089,410	07/490,427	02/18/92	5,089,717	07/711,551	02/18/92
5,089,412	07/432,899	02/18/92	5,089,731	07/660,078	02/18/92
5,089,417	07/461,495	02/18/92	5,089,734	07/618,216	02/18/92
5,089,445	07/594,629	02/18/92	5,089,742	07/589,757	02/18/92
5,089,467	07/363,909	02/18/92	5,089,743	07/596,922	02/18/92
5,089,469	07/691,372	02/18/92	5,089,757	07/669,757	02/18/92
5,089,470	07/452,013	02/18/92	5,089,763	07/449,704	02/18/92
5,089,474	07/528,834	02/18/92	5,089,769	07/607,958	02/18/92
5,089,484	07/683,210	02/18/92	5,089,770	07/482,405	02/18/92
5,089,489	07/504,836	02/18/92	5,089,786	07/540,498	02/18/92
5,089,498	07/314,624	02/18/92	5,089,787	07/725,398	02/18/92
5,089,510	07/446,607	02/18/92	5,089,799	07/646,156	02/18/92
5,089,523	07/521,880	02/18/92	5,089,800	07/720,304	02/18/92
5,089,529	06/673,947	02/18/92	5,089,803	07/496,548	02/18/92
5,089,530	07/562,353	02/18/92	5,089,807	07/253,605	02/18/92
5,089,539	07/196,491	02/18/92	5,089,808	07/603,511	02/18/92
5,089,545	07/310,364	02/18/92	5,089,822	07/479,265	02/18/92
5,089,553	07/397,034	02/18/92	5,089,825	07/463,173	02/18/92
5,089,555	07/404,806	02/18/92	5,089,836	07/687,297	02/18/92
5,089,557	07/670,454	02/18/92	5,089,859	07/379,828	02/18/92
5,089,570	07/412,845	02/18/92	5,089,862	07/443,175	02/18/92
5,089,572	07/395,176	02/18/92	5,089,878	07/364,370	02/18/92
5,089,576	07/501,553	02/18/92	5,089,882	07/404,856	02/18/92
5,089,578	07/172,331	02/18/92	5,089,883	07/428,389	02/18/92
5,089,581	07/591,824	02/18/92	5,089,895	07/519,474	02/18/92
5,089,582	07/484,286	02/18/92	5,089,897	07/476,867	02/18/92
5,089,587	07/457,865	02/18/92	5,089,900	07/511,139	02/18/92
5,089,590	07/643,442	02/18/92	5,089,909	07/589,082	02/18/92
5,089,592	07/355,767	02/18/92	5,089,915	07/537,071	02/18/92
5,089,595	07/573,875	02/18/92	5,089,916	07/291,341	02/18/92
5,089,596	07/527,233	02/18/92	5,089,937	07/556,166	02/18/92
5,089,597	07/458,919	02/18/92	5,089,940	07/429,133	02/18/92
5,089,598	07/594,599	02/18/92	5,089,942	07/684,046	02/18/92
5,089,600	07/394,581	02/18/92	5,089,945	07/672,051	02/18/92
5,089,607	07/454,621	02/18/92	5,089,946	07/727,876	02/18/92
5,089,611	07/492,511	02/18/92	5,089,958	07/300,469	02/18/92
5,089,614	07/501,455	02/18/92	5,089,970	07/417,626	02/18/92
5,089,621	07/598,888	02/18/92	5,089,975	07/464,346	02/18/92
5,089,623	07/480,686	02/18/92	5,089,976	07/555,099	02/18/92
5,089,638	07/400,608	02/18/92	5,089,977	07/478,445	02/18/92
5,089,646	07/622,776	02/18/92	5,089,988	07/631,462	02/18/92
5,089,648	07/577,280	02/18/92	5,089,989	07/609,026	02/18/92
5,089,652	07/466,221	02/18/92	5,090,013	07/515,528	02/18/92
5,089,654	07/562,602	02/18/92	5,090,018	07/562,103	02/18/92
5,089,657	07/024,426	02/18/92	5,090,020	07/605,857	02/18/92
5,089,661	07/580,363	02/18/92	5,090,028	07/558,715	02/18/92
5,089,662	07/621,618	02/18/92	5,090,034	07/587,747	02/18/92
5,089,664	07/452,340	02/18/92	5,090,040	07/321,996	02/18/92
			5,090,042	07/632,919	02/18/92

**Patents Reinstated Due To The Acceptance of a Late
Maintenance Fee From 3/08/96**

Patent Number	Serial Number	Filing Date	Issue Date	Granted Date
Re. 33,900	07/387,725	07/31/89	04/28/92	03/11/96
4,404,434	06/291,248	08/10/81	09/13/83	03/15/96
4,593,489	06/769,050	08/26/85	06/10/86	03/15/96
4,676,832	06/665,248	10/26/84	06/30/87	03/15/96
4,695,930	06/783,710	10/03/85	09/22/87	03/15/96
4,779,373	07/093,932	09/08/87	10/25/88	03/11/96
4,874,236	07/163,049	03/02/88	10/17/89	03/08/96
4,874,549	07/186,186	04/26/88	10/17/89	03/08/96
4,895,380	07/157,217	02/17/88	01/23/90	03/08/96
4,896,534	07/274,200	11/21/88	01/30/90	03/15/96
4,908,887	07/229,307	08/08/88	03/20/90	03/15/96
4,934,543	07/347,669	05/05/89	06/19/90	03/14/96
4,953,622	07/392,906	08/14/89	09/04/90	03/15/96
5,024,360	07/461,395	01/05/90	06/18/91	03/15/96
5,028,743	07/470,842	01/26/90	07/02/91	03/15/96
5,036,799	07/498,091	03/22/90	08/06/91	03/15/96
5,040,654	07/431,397	11/03/89	08/20/91	03/15/96
5,042,773	07/460,296	01/03/90	08/27/91	03/15/96
5,059,062	07/537,690	06/14/90	10/22/91	03/15/96
5,071,618	07/585,593	09/20/90	12/10/91	03/15/96

Reissue Applications Filed

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.12(b)).

4,623,208, Re. S.N. 08/406,734, Mar. 20, 1995, Cl. 339/74, LEADLESS CHIP CARRIER SOCKET, Joseph A. Kerul, et. al., Owner of Record: *Wells Electronics, Inc., South Bend, Ind.*, Attorney or Agent: James D. Hall, Ex. Gp.: 3202

5,220,217, Re. S.N. 08/492,462, Jun. 15, 1995, Cl. 307/481, CIRCUIT FOR THE GENERATION OF A SCANNING CLOCK IN AN OPERATIONAL ANALYSIS DEVICE OF THE SERIAL TYPE FOR AN INTEGRATED CIRCUIT, Flavio Scarrá, et. al., Owner of Record: *SGS-Thomson-Microelectronics, Srl, Milano, Italy*, Attorney or Agent: Bryan A. Santorelli, Ex. Gp.: 2509

5,237,797, Re. S.N. 08/518,280, Aug. 23, 1995, Cl. 53/430, METHOD OF VACUUM PACKAGING SUBSTANCES, IN PARTICULAR COSMETIC OR PHARMACEUTICAL PRODUCTS, INSIDE VARIABLE-CAPACITY CONTAINERS CLOSED BY DISPENSER MEMBERS THAT PREVENT INGRESS OF AIR, APPARATUS FOR IMPLANTING THE METHOD, AND DISPENSERS OBTAINED THEREBY, Jean-Pierre Varlet, Owner of Record: *Valois (Societe Anonyme), Le Neubourg, France*, Attorney or Agent: Paul F. Neils, Ex. Gp.: 3201

5,241,407, Re. S.N. 08/522,044, Aug. 31, 1995, Cl. 359/40, PROJECTION-TYPE DISPLAY DEVICE, Tomio Soneharra, et. al., Owner of Record: *Kabushiki Kaisha Suwa Seikoshi, Tokyo, Japan*, Attorney or Agent: Lawrence Rosenthal, Ex. Gp.: 2515

5,248,548, Re. S.N. 08/534,343, Sep. 27, 1995, Cl. 428/222, STAINLESS STEEL YARN AND PROTECTIVE GARMENT, John J. Toon, Owner of Record: *Memtec America Corporation, Timonium, Md.*, Attorney or Agent: Robert F. Frijouf, Ex. Gp.: 1504

5,271,244, Re. S.N. 08/579,091, Dec. 21, 1995, Cl. 62/457.3, CONTAINER FOR PRODUCING COLD FOOD AND BEVERAGES, Jeff J. Stass, Owner of Record: *Inventor*, Attorney or Agent: None, Ex. Gp.: 3404

5,285,570, Re. S.N. 08/601,452, Feb. 14, 1996, Cl. 29/830, PROCESS FOR FABRICATING MICROWAVE AND MILLIMETER WAVE STRIPLINE FILTERS, Napoleon A. Fuli-

nara, Owner of Record: *Stratedge Corporation, San Diego, Calif.*, Attorney or Agent: Eleanor M. Musick, Ex. Gp.: 3206

5,301,736, Re. S.N. 08/500,426, Jul. 10, 1995, Cl. 160/370.2, SUN SHIELD FOR VEHICLES, Hans Wu, Owner of Record: *Inventor*, Attorney or Agent: Richard L. Carlson, Ex. Gp.: 3509

5,427,561, Re. S.N. 08/589,730, Jan. 22, 1996, Cl. 446/463, BATTERY POWERED TOY TRAIN, Herman Eichhorn, et. al., Owner of Record: *Small World Toys, Culver City, Calif.*, Attorney or Agent: Jon E. Hokanson, Ex. Gp.: 3301

Requests for Reexaminations Filed

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

4,311,227, Reexam. No. 90/004,185, Mar. 18, 1996, Cl. 194/206, VENDING SYSTEM FOR FLORAL TYPE PRODUCTS, Kenneth M. Watkins, Owner of Record: *24 Hour Flower Limited, Brentwood, Tenn.*, Attorney or Agent: John G. Mills, John G. Mills & Associates, Wake Forest, N.C., Ex. Gp.: 3107, Requester: Bush Refrigeration c/o Barry Dale Cash, Newark, Del.

4,778,286, Reexam. No. 90/004,189, Feb. 22, 1996, Cl. 384/446, BEARING ASSEMBLY, Satoshi Kadokawa, Owner of Record: *Nippon Seiko Kabushiki Kaisha, Tokyo, Japan*, Attorney or Agent: Foley & Lardner, Washington, D.C., Ex. Gp.: 3503, Requester: Owner

5,022,961, Reexam. No. 90/004,193, Mar. 26, 1996, Cl. 156/646.1, METHOD FOR REMOVING A FILM ON A SILICON LAYER SURFACE, Akira Izumi, et. al., Owner of Record: *Dainippon Screen Mfg. Co., Ltd.; Nobuatsu Watanabe, Kyoto, Japan*, Attorney or Agent: Ostrolenk Faber Gerb & Soffen, New York, N.Y., Ex. Gp.: 1109, Requester: Owner

5,098,676, Reexam. No. 90/004,187, Mar. 20, 1996, Cl. 422/292, STERILIZATION AND STORAGE CONTAINER TRAY, John A. Brooks, Jr., Owner of Record: *Poly-Vac, Inc., Manchester, N.H.*, Attorney or Agent: Norman P. Soloway,

Hayes Soloway Hennessey Grossman & Hage, Manchester, N.H., Ex. Gp.: 1312, Requester: Owner

5,214,072, Reexam. No. 90/004,191, Mar. 22, 1996, Cl. 521/040, PURIFICATION OF POLYCARBONATE, POLY-ESTER CARBONATE OR POLYESTER WASTE, Gerhard Fennhoff, et. al., Owner of Record: *Bayer Aktiengesellschaft, Leverkusen Bayerwerk, Germany*, Attorney or Agent: Aron Preis, Bayer Corp., Pittsburgh, Pa., Ex. Gp.: 1511, Requester: Owner

5,221,470, Reexam. No. 90/004,190, Mar. 18, 1996, Cl. 210/151, APPARATUS FOR TREATING WASTE WATER, Jerry L. McKinney, Owner of Record: *Inventor*, Attorney or Agent: Jennings B. Thompson, Vaden Eickenroht, Thompson & Feather, Houston, Tex., Ex. Gp.: 1308, Requester: John S. Egbert, Harrison & Egbert, Houston, Tex.

5,386,117, Reexam. No. 90/004,188, Mar. 20, 1996, Cl. 250/330, INFRARED THERMOGRAPHY SYSTEM INCLUDING MOBILE UNIT, Kenneth R. Piety, et. al., Owner of Record: *Computational Systems, Inc., Knoxville, Tenn.*, Attorney or Agent: Andrew S. Neely, Luedeka Neely & Graham, Knoxville, Tenn., Ex. Gp.: 2506, Requester: Theodore R. Touw, Westford, Vt.

5,462,535, Reexam. No. 90/004,192, Mar. 25, 1996, Cl. 604/272, SYRINGE SYSTEM, Frits F. Bonnichsen, et. al., Owner of Record: *Novo Nordisk, Bagsvaerd, Denmark*, Attorney or Agent: White & Case, New York, N.Y., Ex. Gp.: 3306, Requester: Owner

5,468,440, Reexam. No. 90/004,186, Mar. 19, 1996, Cl. 264/291, PROCESS OF MAKING ORIENTED FILM OR STRUCTURE, James J. McAlpin, et. al., Owner of Record: *Exxon Chemical Co., Wilmington, Del.*, Attorney or Agent: C. Paige Schmidt, Exxon Chemical Co., Law Technology, Baytown, Tex., Ex. Gp.: 1307, Requester: Owner

**Notice of Expiration of Trademark Registrations Due To
Failure to Renew**

15 U.S.C. 1059 provides that each trademark registration may be renewed for periods of ten years from the end of the expiring period upon payment of the prescribed fee and the filing of an acceptable application for renewal. This may be done at any time within six months before the expiration of the period for which the registration was issued or renewed, or it may be done within three months after such expiration on payment of an additional fee.

According to the records of the Office, the trademark registrations listed below are expired due to failure to renew in accordance with 15 U.S.C. 1059.

**TRADEMARK REGISTRATIONS WHICH EXPIRED
JANUARY 02, 1996
DUE TO FAILURE TO RENEW**

Reg. Number	Serial Number	Reg. Date			
103,320	71/081,689	03/30/1915	1,007,763	73/002,835	04/01/1975
103,321	71/081,690	03/30/1915	1,007,768	73/012,274	04/01/1975
103,357	71/083,280	03/30/1915	1,007,769	73/022,832	04/01/1975
103,397	71/082,305	03/30/1915	1,007,775	73/009,334	04/01/1975
103,402	71/080,971	03/30/1915	1,007,778	73/026,371	04/01/1975
322,889	71/357,523	03/26/1935	1,007,781	73/004,748	04/01/1975
322,909	71/358,340	03/26/1935	1,007,783	73/005,917	04/01/1975
322,941	71/357,556	03/26/1935	1,007,784	73/009,168	04/01/1975
322,957	71/358,284	03/26/1935	1,007,785	73/014,372	04/01/1975
322,959	71/351,452	03/26/1935	1,007,786	73/033,525	04/01/1975
322,979	71/357,918	03/26/1935	1,007,791	73/033,663	04/01/1975
322,993	71/358,456	03/26/1935	1,007,792	73/004,229	04/01/1975
323,028	71/358,251	03/26/1935	1,007,795	73/014,942	04/01/1975
603,764	71/658,192	03/29/1955	1,007,799	73/027,955	04/01/1975
603,775	71/642,741	03/29/1955	1,007,804	73/010,987	04/01/1975
			1,007,805		

Reg. Number	Serial Number	Reg. Date	1,008,066	73/012,998	04/01/1975
1,007,807	73/005,967	04/01/1975	1,008,069	73/016,312	04/01/1975
1,007,808	73/007,791	04/01/1975	1,008,071	73/017,797	04/01/1975
1,007,812	73/010,002	04/01/1975	1,008,075	73/019,222	04/01/1975
1,007,815	73/014,262	04/01/1975	1,008,076	73/019,481	04/01/1975
1,007,823	73/004,697	04/01/1975	1,008,077	73/019,669	04/01/1975
1,007,827	73/014,510	04/01/1975	1,008,082	73/022,293	04/01/1975
1,007,837	73/018,803	04/01/1975	1,008,085	73/024,129	04/01/1975
1,007,838	73/002,032	04/01/1975	1,008,089	72/427,287	04/01/1975
1,007,839	73/013,820	04/01/1975	1,008,093	72/458,170	04/01/1975
1,007,842	73/021,631	04/01/1975	1,008,096	72/444,803	04/01/1975
1,007,843	73/021,853	04/01/1975	1,008,100	72/463,347	04/01/1975
1,007,845	73/023,509	04/01/1975	1,008,101	72/458,289	04/01/1975
1,007,854	73/002,217	04/01/1975	1,008,102	72/450,119	04/01/1975
1,007,867	73/009,801	04/01/1975	1,008,103	72/458,692	04/01/1975
1,007,869	73/011,310	04/01/1975	1,008,107	72/426,037	04/01/1975
1,007,875	73/019,870	04/01/1975	1,008,115	72/407,096	04/01/1975
1,007,876	73/020,240	04/01/1975	1,008,116	72/453,198	04/01/1975
1,007,877	73/020,487	04/01/1975	1,008,117	72/443,958	04/01/1975
1,007,881	73/025,836	04/01/1975	1,008,119	72/429,900	04/01/1975
1,007,887	73/022,526	04/01/1975	1,008,122	72/456,710	04/01/1975
1,007,888	73/023,527	04/01/1975	1,008,124	72/460,451	04/01/1975
1,007,891	73/004,816	04/01/1975	1,008,125	72/460,452	04/01/1975
1,007,896	73/033,777	04/01/1975	1,008,126	72/462,277	04/01/1975
1,007,901	73/010,256	04/01/1975	1,008,127	72/450,801	04/01/1975
1,007,904	73/015,739	04/01/1975	1,008,128	72/450,802	04/01/1975
1,007,911	73/024,737	04/01/1975	1,008,129	72/461,218	04/01/1975
1,007,912	73/021,433	04/01/1975	1,008,131	72/466,066	04/01/1975
1,007,913	73/023,322	04/01/1975	1,008,132	72/466,537	04/01/1975
1,007,914	73/002,113	04/01/1975	1,008,133	72/433,655	04/01/1975
1,007,916	73/019,615	04/01/1975	1,008,138	72/451,632	04/01/1975
1,007,920	73/003,357	04/01/1975	1,008,139	72/452,465	04/01/1975
1,007,922	73/006,913	04/01/1975	1,008,141	72/456,082	04/01/1975
1,007,923	73/011,944	04/01/1975	1,008,142	72/460,112	04/01/1975
1,007,924	73/014,110	04/01/1975	1,008,143	72/462,612	04/01/1975
1,007,926	73/015,824	04/01/1975	1,008,145	72/465,215	04/01/1975
1,007,927	73/016,209	04/01/1975	1,008,147	72/403,519	04/01/1975
1,007,929	73/017,640	04/01/1975	1,008,155	72/464,882	04/01/1975
1,007,942	73/005,256	04/01/1975	1,008,157	72/463,608	04/01/1975
1,007,951	73/017,956	04/01/1975	1,008,163	72/462,677	04/01/1975
1,007,960	73/018,987	04/01/1975	1,008,166	72/434,510	04/01/1975
1,007,961	73/018,990	04/01/1975	1,008,170	72/450,278	04/01/1975
1,007,963	73/019,916	04/01/1975	1,008,173	72/415,712	04/01/1975
1,007,965	73/020,683	04/01/1975	1,008,174	72/431,629	04/01/1975
1,007,967	73/002,565	04/01/1975	1,008,177	72/455,697	04/01/1975
1,007,969	73/009,979	04/01/1975	1,008,179	72/458,301	04/01/1975
1,007,972	73/017,079	04/01/1975	1,008,181	72/433,217	04/01/1975
1,007,973	73/004,957	04/01/1975	1,008,184	72/456,467	04/01/1975
1,007,975	73/007,318	04/01/1975	1,008,191	72/441,361	04/01/1975
1,007,980	73/012,880	04/01/1975	1,008,194	72/464,355	04/01/1975
1,007,982	73/017,158	04/01/1975	1,008,197	72/457,543	04/01/1975
1,007,983	73/017,471	04/01/1975	1,008,198	72/459,158	04/01/1975
1,007,985	73/026,691	04/01/1975	1,008,208	72/452,818	04/01/1975
1,007,986	73/026,807	04/01/1975	1,008,211	72/462,583	04/01/1975
1,007,987	73/028,572	04/01/1975	1,008,213	72/465,198	04/01/1975
1,007,989	73/008,948	04/01/1975	1,008,216	72/442,787	04/01/1975
1,007,990	73/010,080	04/01/1975	1,008,217	72/444,512	04/01/1975
1,007,991	73/011,007	04/01/1975	1,008,219	72/452,514	04/01/1975
1,007,992	73/011,795	04/01/1975	1,008,223	72/457,944	04/01/1975
1,007,997	73/020,860	04/01/1975	1,008,224	72/458,451	04/01/1975
1,008,005	73/020,934	04/01/1975	1,008,228	72/440,625	04/01/1975
1,008,013	73/010,875	04/01/1975	1,008,236	72/466,045	04/01/1975
1,008,017	73/018,120	04/01/1975	1,008,247	72/457,116	04/01/1975
1,008,020	73/024,865	04/01/1975	1,008,250	72/459,851	04/01/1975
1,008,023	73/000,015	04/01/1975	1,008,253	73/013,053	04/01/1975
1,008,026	73/011,631	04/01/1975	1,008,255	73/006,104	04/01/1975
1,008,027	73/011,953	04/01/1975	1,008,257	73/020,153	04/01/1975
1,008,031	73/024,226	04/01/1975	1,008,259	72/443,931	04/01/1975
1,008,032	73/024,381	04/01/1975	1,008,262	72/461,421	04/01/1975
1,008,039	73/023,648	04/01/1975	1,008,263	72/431,879	04/01/1975
1,008,043	73/012,309	04/01/1975	1,008,701	73/013,286	04/01/1975
1,008,044	73/021,526	04/01/1975			
1,008,047	73/024,289	04/01/1975			
1,008,048	73/002,677	04/01/1975			
1,008,054	73/014,660	04/01/1975			
1,008,055	73/015,118	04/01/1975			
1,008,060	73/005,811	04/01/1975			
1,008,065	73/012,996	04/01/1975			

Service by Publication

A petition to cancel the registrations identified below having been filed, and the notice of such proceeding sent by certified mail to registrant at the last known address having been returned

by the Postal Service as undeliverable, notice is hereby given that unless the registrants listed herein, their assigns or legal representatives, shall enter an appearance within thirty days of this publication, the cancellation will proceed as in the case of default.

Bottoms Sportswear, Inc., New York, N.Y., Reg. No. 1,109,475, for the mark "IT'S MAGIC", Canc. No. 24,341.

John E. Thompson, Ocala, Fla., Reg. No. 1,585,449, for the mark "HITCHMATE AND DESIGN", Canc. No. 23,438.

Marla S. Davis, Washington, D.C., Reg. No. 1,744,837 for the mark "DAYLIGHT BAGELS SINCE 1990 AND DESIGN", Canc. No. 23,630.

Zimmerman's Cut Rate Liquor Store, Inc., Chicago, Ill., Reg. No. 886,835 for the mark "ODESSA", Canc. No. 24,732.

TEC Network, Inc., Newport Beach, Calif., Reg. No. 1,779,231, for the mark "TEC NETWORK AND DESIGN", Canc. No. 23,936.

H. K. Porter, Inc., Somerville, Mass., Reg. No. 1,132,094 for the mark "BUILD-A-SET", Canc. No. 24,637.

Goodman Knitting Co., Inc., Medford, Mass., Reg. No. 652,777 for the mark "INDIAN BRAND (STYLIZED)", Canc. No. 24,450.

Jet Fleet Corp., Inc., Dallas Tex., Reg. No. 1,176,523, for the mark "JT JET FLEET CORPORATION" and Design, Canc. No. 24,765.

JEAN BROWN
Technical Support Manager,
Trademark Trial
and Appeal Board, for
ROBERT M. ANDERSON
Deputy Assistant Commissioner
for Trademarks

Registration To Practice

The following list contains the names of persons applying for registration to practice before the United States Patent and Trademark Office who have been given provisional recognition pursuant to 37 CFR 10.9(a) to prepare and prosecute patent applications before the Office until their registration certificates are mailed to them. Final approval for registration is subject to establishing to the satisfaction of the Director of the Office of Enrollment and Discipline that the person seeking registration is of good moral character and repute. [37 CFR 10.7(a)]. Accordingly, any information tending to affect the eligibility of any of the following applicants on moral, ethical, or other grounds should be furnished to the Director, Office of Enrollment and Discipline on or before June 14, 1996.

MacFarlane, Robert H.C., 3323 Spruce St., Oakville, Ont., L6J 2H1, Canada

Schlusser, Dale E., 308-545 Belmont Ave., West, Kitchener, Ont., N2M 5G7, Canada

Therriault, Mario D., 812 New Maryland Hwy., Fredericton, N.B., E3B 6H6, Canada

April 3, 1996 KAREN L. BOVARD, Director
Office of Enrollment and Discipline

Erratum

In the notice of Certificate of Corrections appearing at 1183 O.G. 60, delete Patent No. 5,455,603, the number was erroneously mentioned and should be deleted.

Certificate of Correction
For Week of April 30, 1996

Re. 35,110	5,405,428	5,452,997	5,473,067
D. 339,822	5,405,682	5,453,192	5,473,102
D. 361,340	5,405,720	5,453,593	5,474,156
D. 362,299	5,407,072	5,453,796	5,474,287
D. 365,304	5,408,144	5,454,166	5,474,565
D. 366,525	5,408,194	5,455,176	5,474,825
4,992,579	5,408,397	5,455,223	5,474,895
5,081,034	5,412,510	5,455,862	5,475,432
5,087,494	5,414,726	5,456,552	5,475,467
5,163,326	5,414,959	5,456,810	5,475,468
5,168,570	5,415,184	5,456,863	5,475,472
5,180,534	5,415,554	5,457,058	5,475,482
5,197,959	5,417,243	5,457,111	5,475,488
5,198,625	5,418,716	5,457,547	5,475,998
5,214,448	5,420,543	5,457,794	5,476,171
5,230,072	5,420,727	5,459,731	5,476,378
5,231,794	5,421,136	5,459,806	5,476,477
5,235,626	5,421,969	5,460,186	5,476,498
5,236,541	5,423,039	5,460,548	5,476,541
5,236,619	5,426,961	5,460,600	5,476,701
5,240,418	5,427,213	5,460,853	5,477,123
5,244,893	5,427,967	5,461,585	5,477,248
5,246,433	5,428,413	5,461,952	5,477,688
5,246,899	5,431,629	5,462,094	5,478,117
5,275,055	5,431,902	5,462,158	5,478,238
5,279,029	5,433,173	5,462,310	5,479,086
5,282,857	5,434,457	5,462,647	5,479,175
5,295,021	5,434,466	5,462,954	5,479,284
5,298,456	5,435,943	5,463,244	5,479,462
5,299,130	5,435,959	5,463,261	5,479,605
5,310,200	5,436,876	5,463,412	5,480,163
5,311,056	5,438,175	5,463,463	5,480,172
5,311,595	5,438,764	5,463,592	5,480,247
5,318,674	5,439,519	5,463,809	5,480,564
5,324,858	5,440,439	5,463,827	5,480,663
5,326,778	5,440,578	5,464,614	5,480,750
5,328,081	5,440,579	5,464,774	5,481,036
5,328,279	5,441,651	5,464,978	5,481,187
5,330,753	5,441,910	5,465,148	5,481,371
5,332,838	5,442,230	5,465,169	5,481,522
5,334,517	5,442,793	5,465,561	5,481,654
5,338,009	5,442,939	5,465,650	5,482,370
5,339,156	5,444,079	5,466,788	5,483,076
5,341,427	5,444,672	5,466,891	5,483,082
5,345,262	5,444,980	5,467,196	5,483,402
5,346,532	5,445,155	5,467,209	5,483,576
5,350,842	5,446,647	5,467,391	5,483,697
5,351,649	5,446,839	5,468,344	5,483,857
5,359,404	5,447,471	5,468,811	5,484,031
5,360,422	5,447,638	5,470,004	5,484,202
5,362,548	5,447,815	5,470,243	5,484,728
5,374,836	5,448,374	5,470,506	5,484,986
5,382,384	5,448,443	5,470,768	5,486,466
5,382,958	5,448,793	5,470,957	5,486,625
5,384,987	5,449,259	5,471,008	5,486,747
5,385,152	5,449,939	5,471,286	5,487,358
5,388,208	5,450,457	5,471,321	

Summary of Final Decisions
Issued by the
Trademark Trial and Appeal Board
January 29-February 2, 1996

Date Issued	Type of Case ⁽¹⁾	Proceeding or App'n No.	Party/Parties	Issue	TTAB Decision	Opposer's Mark and Goods/Services	Applicant's Respondent's Mark and Goods/Services	Mark Cited by Examining Attorney	Recommended for Publication
1-30	EX	74/024,113	G-III Apparel Group, Ltd.	2(d)	Refusal Affirmed		"TROUBLE" [men's, women's, and children's wearing apparel, namely, skiwear (jackets, coats, pants, hats, gloves) and sportswear (blazers, pants, skirts, shirts, vests, dresses, suits, blouses, belts)]	"TROUBLE 3" [recycled jeans, jackets, coveralls, t-shirts, dresses and vests]	No
1-31	EX	74/397,189	U. S. Tennis Corp.	2(e)(1)	Refusal Affirmed [mark in its entirety found NOT merely descriptive by disclaimer of "TENNIS" required; decision affirming refusal to be set aside upon submission of disclaimer]		"INTERNATIONAL TENNIS CORPORATION" [novelty item, namely, a tennis ball carrier]		No
2-1	OPP	90,450	Green Bay Holdings, S.A. v. Benetton Group S.p.A.	2(d)	Opposition Dismissed	"BENOTTO" [bicycles and structural parts therefor]	"BENETTON FORMULA" [automobiles, airplanes, baby carriages, and bicycles]		No

(1) EX = EX PARTE; APPEAL; OPP = OPPOSITION; CANCELLATION; CU = CONCURRENT USE; (R) = REQ FOR RECONSIDERATION

SPECIAL BOXES FOR PATENT MAIL

Special box designations should be used to allow forwarding of particular types of mail to the appropriate areas as quickly as possible. Such mail is forwarded to the appropriate area without being opened. Only the specified type of document should be placed in an envelope addressed to one of these special boxes. If any documents other than the specified type identified for each special box are addressed to that box, they will be significantly delayed in reaching the appropriate area for which they are intended.

Please address mail as follows:

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Assistant Commissioner for Patents
Washington, D.C. 20231

Box Designations	Explanation
Box 7	Reissue applications for patents involved in litigation and subsequently filed related papers.
Box 12	Contributions to the Examiner Education Program.
Box 313b	Petitions under 37 CFR 1.313(b) to withdraw a patent application from issue after payment of the issue fee and any papers associated with the petition, including papers necessary for filing a continuing application.
Box AF	Expedited procedure for processing amendments and other responses after final rejection.
Box Comments Patents	Public comments regarding patent related regulations and procedures.
Box DAC	Petitions decided by the Office of Petitions including petitions to revive and petitions to accept late payment of issue fees or maintenance fees.
Box DD	Disclosure Documents or materials related to the Disclosure Document Program.
Box FWC	Requests for File Wrapper Continuation Applications (under 37 CFR 1.62).
Box Interference	Communications relating to interferences and applications and patents involved in interference.
Box Issue Fee	All communications following the receipt of a PTOL-85, "Notice of Allowance and Issue Fee Due," and prior to the issuance of a patent should be addressed to Box Issue Fee, unless advised to the contrary. Assignments are the exception. Assignments should be submitted in a separate envelope and not be sent to Box Issue Fee.
Box M Fee	Correspondence related to a patent that is subject to the payment of a maintenance fee.
Box MPEP	Submissions concerning the Manual of Patent Examining Procedures.
Box Non-Fee Amendment	Non-fee amendments to patent applications.
Box PATENT APPLICATION	(Use Box AF for responses after final rejection).
Box Patent Ext.	New patent applications and associated papers and fees.
Box PCT	Applications for patent term extension.
Box Provisional Patent Application	Mail related to applications filed under the Patent Cooperation Treaty.
Box Reconstruction	The filing of all provisional patent applications and any communications relating thereto.
Box Reexam	Correspondence pertaining to the reconstruction of lost patent files.
Box Sequence	Requests for Reexamination for <i>original</i> request papers <i>only</i> .
Box SN	Submission of diskette for biotechnical application.
	For fee and petitions under 37 CFR 1.182 to obtain date received and/or serial number for patent applications <i>prior</i> to the Office's standard notification (return postcard or the official "Filing Receipt," "Notice to File Missing Parts," or "Notice of Incomplete Application").

SPECIAL BOXES FOR TRADEMARK MAIL

Special box designations should be used to allow forwarding of particular types of trademark mail to the appropriate areas as quickly as possible. In addition to these box designations, filers are encouraged to indicate whether the contents of the envelope contain a fee. Envelopes containing a fee should be marked "FEE;" envelopes not containing a fee should be marked "NO FEE." Box designations and "FEE/NO FEE" indicators should appear on the envelope as well as on the cover sheet or first page of any document.

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Box _____
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Assistant Commissioner for Trademarks
2900 Crystal Drive
Arlington, Virginia 22202-3513

Box Designations	Explanation
Box NEW APP FEE	New trademark applications and fees.
Box ITU FEE	Statements of Use (SOU's), and extension requests.
Box TTAB FEE	Oppositions, cancellation petitions, and ex parte appeals.
Box TTAB NO FEE	Interferences, motions, and extension requests.
Box STATUS NO FEE	Written status inquiries.
Box POST REG FEE	Affidavits, renewals, corrections, and amendments.
Box RESPONSES NO FEE	Responses to Examining Attorneys' Office actions and Post Registration actions.

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Box _____ Commissioner of Patents and Trademarks Washington, D.C. 20231	
Box Designations	Explanation
Box 3	Mail for the Office of Personnel from NFC.
Box 4	Mail for the Deputy Assistant Secretary of Commerce and Deputy Commissioner of Patents and Trademarks; Office of Legislative and International Affairs.
Box 6	Mail for the Office of Procurement.
Box 8	All papers for the Office of the Solicitor <i>except</i> communications relating to <i>pending litigation and disciplinary proceedings</i> ; papers relating to pending litigation in court cases shall be mailed only to Office of the Solicitor, P.O. Box 15667, Arlington, Virginia 22215 and papers relating to pending disciplinary proceedings before the Administrative Law Judge or the Commissioner shall be mailed only to the Office of the Solicitor, P.O. Box 16116, Arlington, Virginia 22215.
Box 9	Coupon orders for U.S. patent and trademark copies.
Box 10	Orders for certified copies of PTO documents.
Box 11	Electronic Ordering Service (EOS).
Box 13	Mail for the Employee and Labor Relations Division.
Box 14	Mail directed to the APS Contracts Office.
Box 16	Deposit Account Replenishment Checks.
Box 17	Invoices directed to the Office of Finance.
Box 171	Vacancy Announcement Applications.
Box Assignment	All assignment documents except those filed with new applications.
Box EEO	Mail for the Office of Civil Rights.
Box OED	Mail for the Office of Enrollment and Discipline.

Reference Collections of U.S. Patents and Trademarks
Available for Public Use in Patent and Trademark Depository Libraries

The following libraries, designated as Patent and Trademark Depository Libraries (PTDLs), receive patent and trademark information in various formats from the U.S. Patent and Trademark Office. Many PTDLs have on file all full-text patents issued since 1790, trademarks published since 1872, and select collections of foreign patents. All PTDLs have both the patent and trademark sections of the *Official Gazette of the U.S. Patent and Trademark Office*. The full-text utility and design patents are distributed numerically on 16 mm microfilm, and plant patents on color microfiche. Patent and trademark search systems on CD-ROM (Compact Disc-Read Only) format are available at all PTDLs to increase utilization of and enhance access to the information found in patents and trademarks. It is through the CD-ROM systems that preliminary patent and trademark searches can be conducted through the numerically arranged collections.

All information is available for use by the public free of charge.

In addition, each PTDL offers reference publications which outline and provide access to the patent and trademark classification systems, as well as other documents and publications which supplement the basic search tools. PTDLs provide technical staff assistance in using all materials. Facilities for making paper copies of patent and trademark information are generally provided for a fee.

Since there are variations in the scope of patent and trademark collections among the PTDLs, and their hours of service to the public vary, anyone contemplating use of these collections at a particular library is urged to contact that library in advance about its collections, services, and hours in order to avert possible inconvenience.

State	Name of Library	Telephone Contact
Alabama	Auburn University Libraries	(205) 844-1747
	Birmingham Public Library	(205) 226-3620
Alaska	Anchorage: Z.J. Loussac Public Library	(907) 562-7323
Arizona	Tempe: Noble Library, Arizona State University	(602) 965-7010
Arkansas	Little Rock: Arkansas State Library	(501) 682-2053
California	Los Angeles Public Library	(213) 228-7220
	Sacramento: California State Library	(916) 654-0069
	San Diego Public Library	(619) 236-5813
	San Francisco Public Library	(415) 557-4488
	Sunnyvale Patent Clearinghouse	(408) 730-7290
Colorado	Denver Public Library	(303) 640-6249
Connecticut	New Haven: Science Park Library	(203) 786-5447
Delaware	Newark: University of Delaware Library	(302) 831-2965
Dist. of Columbia	Washington: Howard University Libraries	(202) 806-7252
Florida	Fort Lauderdale: Broward County Main Library	(305) 357-7444
	Miami-Dade Public Library	(305) 375-2665
	Orlando: University of Central Florida Libraries	(407) 823-2562
	Tampa Campus Library, University of South Florida	(813) 974-2726
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4508
Hawaii	Honolulu: Hawaii State Public Library System	(808) 586-3477
Idaho	Moscow: University of Idaho Library	(208) 885-6235
Illinois	Chicago Public Library	(312) 747-4450
	Springfield: Illinois State Library	(217) 782-5659
Indiana	Indianapolis-Marion County Public Library	(317) 269-1741
	West Lafayette Siegesmund Engineering Library, Purdue University	(317) 494-2872
Iowa	Des Moines: State Library of Iowa	(515) 281-4118
Kansas	Wichita: Ablah Library, Wichita State University	(316) 689-3155
Kentucky	Louisville Free Public Library	(502) 574-1611
Louisiana	Baton Rouge: Troy H. Middleton Library, Louisiana State University	(504) 388-2570
Maine	Orono: Raymond H. Fogler Library, University of Maine	(207) 581-1678
Maryland	College Park: Engineering and Physical Sciences Library, University of Maryland	(301) 405-9157
Massachusetts	Amherst: Physical Sciences Library, University of Massachusetts	(413) 545-1370
	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Ann Arbor: Engineering Library, University of Michigan	(313) 764-5298
	Big Rapids: Abigail S. Timme Library, Ferris State University	(616) 592-3602
	Detroit: Great Lakes Patent and Trademark Center	(313) 833-3379
Minnesota	Minneapolis Public Library and Information Center	(612) 372-6570
Mississippi	Jackson: Mississippi Library Commission	(601) 359-1036
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 390
Montana	Butte: Montana College of Mineral Science and Technology Library	(406) 496-4281
Nebraska	Lincoln: Engineering Library, University of Nebraska-Lincoln	(402) 472-3411
Nevada	Reno: University of Nevada, Reno Library	(702) 784-6579
New Hampshire	Concord: New Hampshire State Library	Not Yet Operational
New Jersey	Newark Public Library	(201) 733-7782
	Piscataway: Library of Science and Medicine, Rutgers University	(908) 445-2895
New Mexico	Albuquerque: University of New Mexico General Library	(505) 277-4412
New York	Albany: New York State Library	(518) 474-5355
	Buffalo and Erie County Public Library	(716) 858-7101

Reference Collections of U.S. Patents and Trademarks Available for Public Use in Patent and Trademark Depository Libraries—(continued)

State	Name of Library	Telephone Contact
North Carolina North Dakota Ohio	New York Public Library (The Research Libraries)	(212) 930-0917
	Raleigh: D.H. Hill Library, North Carolina State University	(919) 515-3280
	Grand Forks: Chester Fritz Library, University of North Dakota	(701) 777-4888
	Akron - Summit County Public Library	Not Yet Operational
	Cincinnati and Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
Oklahoma	Columbus: Ohio State University Libraries	(614) 292-6175
	Toledo/Lucas County Public Library	(419) 259-5212
	Stillwater: Oklahoma State University Center for International Trade Development	(405) 744-7086
Oregon	Portland: Paul L. Boley Law Library, Lewis & Clark College	(503) 768-6786
Pennsylvania	Philadelphia, The Free Library of	(215) 686-5331
	Pittsburgh, Carnegie Library of	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Puerto Rico	Mayaguez General Library, University of Puerto Rico	Not Yet Operational
Rhode Island	Providence Public Library	(401) 455-8027
South Carolina	Clemson University Libraries	(803) 656-3024
	Rapid City: Devereaux Library, South Dakota	
Tennessee	School of Mines and Technology	(605) 394-6822
	Memphis & Shelby County Public Library and Information Center	(901) 725-8877
	Nashville: Stevenson Science Library, Vanderbilt University	(615) 322-2775
Texas	Austin: McKinney Engineering Library, University of Texas at Austin	(512) 495-4500
	College Station: Sterling C. Evans Library, Texas A & M University	(409) 845-3826
	Dallas Public Library	(214) 670-1468
Utah	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
	Salt Lake City: Marriott Library, University of Utah	(801) 581-8394
	Richmond: James Branch Cabell Library, Virginia Commonwealth University	(804) 828-1104
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
West Virginia	Morgantown: Evansdale Library, West Virginia University	(304) 293-2510
Wisconsin	Madison: Kurt F. Wendt Library, University of Wisconsin	
	Madison	(608) 262-6845
Wyoming	Milwaukee Public Library	(414) 286-3051
	Casper: Natrona County Public Library	(307) 237-4935

PATENT EXAMINING CORPS

BRUCE A. LEHMAN, Commissioner

LAWRENCE J. GOFFNEY Jr., Assistant Commissioner for Patents

EDWARD R. KAZENSKE, Deputy Assistant Commissioner for Patents

STEPHEN G. KUNIN, Deputy Assistant Commissioner for Patent Policy

J.O. THOMAS, JR., Deputy Assistant Commissioner for Patent Process Services

PATENT EXAMINING GROUPS	Phone number Area Code 703	New Case Date*
CHEMICAL EXAMINING GROUPS		
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, ENGINEERING AND DESIGNS, GROUP 1100— JOHN E. KITTLE, Director	308-0661	08/11/94
ORGANIC CHEMISTRY, DRUG, BIO-AFFECTING AND BODY TREATING COMPOSITION, GROUP 1200—RICHARD V. FISHER, Director	308-1235	07/06/94
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 1300—BARRY S. RICHMAN, Director	308-0651	09/02/94
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY STOCK MATERIALS AND COMPOSITIONS, GROUP 1500—THEODORE MORRIS, Director	308-2351	11/03/94
BIOTECHNOLOGY, GROUP 1800—JOHN J. DOLL, Director	308-0196	05/20/94
ELECTRICAL EXAMINING GROUPS		
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 2100—STEWART LEVY, Director	308-1782	04/25/94
SPECIAL LAWS AND ADMINISTRATION, GROUP 2200—ROBERT E. GARRETT, Director	308-0511	09/06/94
COMPUTER SYSTEMS AND COMPUTER APPLICATION, GROUP 2300— BOBBY R. GRAY, Director	305-9600	08/12/93
SPECIAL COMPUTER APPLICATIONS: COMPUTER GRAPHICS, BUSINESS PRACTICES, & DIAGNOSTIC TESTING, GROUP 2400—GERALD GOLDBERG, Director	305-3800	04/08/94
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 2500— JANICE A. HOWELL, Director	308-0956	08/30/94
TELECOMMUNICATIONS, GROUP 2600—NICHOLAS P. GODICI, Director	305-4700	07/26/94
DESIGN, GROUP 2900—JOHN E. KITTLE, Director	308-0661	09/06/94
MECHANICAL EXAMINING GROUPS		
HANDLING AND TRANSPORTATION MEDIA, GROUP 3100—F.R. SCHMIDT, Director	308-1113	05/20/94
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 3200—CARLTON R. CROYLE, Director	308-1148	05/19/94
MEDICAL INSTRUMENTS, DIAGNOSTIC EQUIPMENT AND TREATMENT		
DEVICES: SURGERY AND SURGICAL SUPPLIES; AMUSEMENT AND EXERCISING DEVICES; ANIMAL HUSBANDRY; SPORTING GOODS; TOBACCO PRODUCTS AND MANUFACTURING EQUIPMENT; AND PRINTING, GROUP 3300—J.J. LOVE, Director	308-0858	01/02/95
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 3400—DONALD G. KELLY, Director	308-0861	12/01/94
GENERAL CONSTRUCTION, PETROLEUM AND MINING ENGINEERING, GROUP 3500—A.L. SMITH, Director	308-1021	08/09/94

*A communication from the examiner should have been received in most applications filed prior to this date.

Patents will Expire as Follows:

(1) The term of any utility or plant patent that is in force on or results from an application filed before June 8, 1995 is the greater of the 20 year term provided in 35 U.S.C. 154(a)(2) or 17 years from grant subject to any terminal disclaimers. 35 U.S.C. 154(c)(1).

(2) All utility and plant patents granted on applications having an actual United States filing date on or after June 8, 1995 are granted for a term which begins on the date on which the patent is granted and ends 20 years from the date on which the application was filed in the United States. If the application contains a specific reference to an earlier application under 35 U.S.C. 120, 121 or 365(c), the patent term ends twenty years from that date on which the earliest application was filed. 35 U.S.C. 154(a)(2).

(3) All design patents are granted for a term of 14 years from the date of the grant.

However, the term of any patent may have been curtailed by disclaimer under the provisions of 35 U.S.C. 153, have lapsed due to failure to pay maintenance fees, or have been extended under the provisions of 35 U.S.C. 154, 155, or 156. Thus, if more reliable information is needed with respect to a particular patent, then the specific patent file should be reviewed to determine the actual date of patent expiration.

TRADEMARK OPERATION

Bruce A. Lehman, Commissioner
 Phillip G. Hampton, II, Assistant Commissioner
 Robert M. Anderson, Deputy Assistant Commissioner
 David E. Bucher, Director, Trademark Examining Office
 Condition of Trademark Applications as of March 1, 1996

	Oldest Date	
	New*	Amendment Filed
Law Office		
Law Office 101—Ron Williams, Acting Managing Attorney, (703) 308-9101—4th Floor Foods, Beverages, Wines & Spirits—Int. Classes 29, 30, 31, 32, 33 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42.....	07/27/95	12/05/95
Law Office 102—Myra Kurzbard, Managing Attorney, (703) 308-9102—5th Floor Scientific Equipment & Furniture—Int. Classes 9, 20 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42.....	09/11/95	10/11/95
Law Office 103—Kathryn Erskine, Managing Attorney, (703) 308-9103—5th Floor Scientific Equipment & Furniture—Int. Classes 9, 20 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42.....	08/24/95	02/12/96
Law Office 104—Sidney Moskowitz, Managing Attorney, (703) 308-9104—6th Floor Unwrought metals, Industrial Equipment, Tools, Installation, Vehicles, Firearms, Musical Instruments, Building Materials & Floor Coverings—Int. Classes 6, 7, 8, 11, 12, 13, 15, 19, 27 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42.....	08/10/95	11/30/95
Law Office 105—Thomas Howell, Managing Attorney, (703) 308-9105—6th Floor Chemicals, Paints, Lubricants, Pharmaceuticals, Medical Apparatus & Tobacco—Int. Classes 1, 2, 4, 5, 10, 34 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42.....	09/13/95	09/09/95
Law Office 106—Mary Sparrow, Managing Attorney, (703) 308-9106—7th Floor Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42.....	09/15/95	10/04/95
Law Office 107—Thomas Lamone, Managing Attorney, (703) 308-9107—7th Floor Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42.....	09/28/95	09/26/95
Law Office 108—David Shallant, Managing Attorney, (703) 308-9108—8th Floor Precious metals, Fibers, Leather goods, Housewares, Cordage, Yarns, Fabrics, Clothing & Notions— Int. Classes 14, 17, 18, 21, 22, 23, 24, 25, 26 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42.....	09/25/95	12/04/95
Law Office 109—Deborah Cohn, Managing Attorney, (703) 308-9109—8th Floor Precious metals, Fibers, Leather goods, Housewares, Cordage, Yarns, Fabrics, Clothing & Notions—Int. Classes 14, 17, 18, 21, 22, 23, 24, 25, 26 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42.....	09/22/95	01/02/96
••Collective Marks—Class 200 ••Certification Marks—Classes A & B		
Office of Trademark Services—John Walker, Director, (703) 308-9100 Trademark Assistance Center—(703) 308-9000 Pre-Examination—Alan Lambert, Supervisor, (703) 308-9401 ext. 188 Intent-To-Use—(ITU)—(703) 308-9500 Post Registration Section—Mary Bowman, Supervisor, (703) 308-9500 ext. 126 Affidavits Under Sections 8 & 15 (All Classes)..... Renewals (All Classes)..... Section 12(c) Publications (All Classes).....	06/26/95 12/21/95 09/01/95	—0— —0— —0—

1. ** Assigned to all Law Office

2. Applicants with inquiries concerning the status of their applications and a touch telephone should call (703) 305-8747 from 6:30 a.m. to Midnight EST, Monday through Friday. This automated voice system will provide the current status of your application. Applicants are urged not to file unnecessary inquiries concerning the status of their applications. See SECTION 411 of the TRADEMARK MANUAL OF EXAMINING PROCEDURE.

3. * These dates identify the oldest unassigned new case in each Law Office. All cases with earlier dates have either been examined and made the subject of an action or are currently being worked on by the assigned examining attorney.

REEXAMINATIONS

APRIL 30, 1996

Matter enclosed in heavy brackets [] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 4,689,387 (2855th)

S-ALKYL THIOCARBAMATE BASE LENS RESIN

Nobuyuki Kajimoto; Akihiro Tamaki, and Teruyuki Nagata, all of Omata, Japan, assignors to Mitsui Toatsu Chemicals, Incorporated, Tokyo, Japan

Reexamination Request No. 90/003,718, Feb. 9, 1995.

Reexamination Certificate for Patent 4,689,387, issued Aug. 25, 1987, Ser. No. 843,189, Mar. 24, 1986.

Int. Cl.⁶ C08G 18/38

U.S. Cl. 528—76

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims 1, 2, 4, 9 are determined to be patentable as amended. Claims 3, 5-8, 10-15 dependent on an amended claim, are determined to be patentable.

New claims 16-23 are added and determined to be patentable.

1. An S-alkyl thiocarbamate base lens resin *consisting essentially of a resin obtained by reacting one or more NCO-containing compounds with one or more SH-containing aliphatic compounds, wherein the said SH-containing aliphatic compound is a di(2-mercaptoalkyl)ether, 1,4-butanedithiol, di(2-mercaptoethyl) sulfide, 2-mercaptoethanol, ethylene glycol dithioglycolate, trimethylolpropane tris-(thioglycolate), or pentaerythritol tetrakis-(thioglycolate), said S-alkyl thiocarbamate base lens resin being capable of forming a lens by casting polymerization in a lens mold.*

B1 4,958,250 (2856th)

Patent Not Issued For This Number

B1 4,971,259 (2857th)

DUAL HOPPER COFFEE GRINDER

Charles A. Nidiffer, Decatur, Ill., assignor to Bunn-O-Matic Corporation, Springfield, Ill.

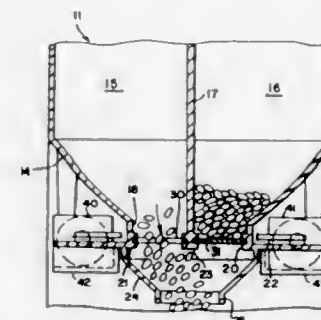
Reexamination Request No. 90/003,543, Aug. 22, 1994.

Reexamination Certificate for Patent 4,971,259, issued Nov.

20, 1990, Ser. No. 61,724, Jun. 15, 1987.

Int. Cl.⁶ A47J 42/50

U.S. Cl. 241—34



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims 1-7 is confirmed.

1. In a timer-controlled coffee grinder comprising a motor-grinding unit having a bean inlet opening in the top of the grinder and a ground coffee discharge opening in the bottom thereof, a coffee bean funnel having its bottom outlet opening disposed to discharge beans by gravity into said bean inlet opening, a coffee bean hopper having a bottom outlet opening disposed to discharge beans by gravity into the top of said funnel, means dividing the interior of said hopper into two side-by-side chambers and said hopper bottom outlet opening into separate side-by-side discharge

areas with each area communicating with only the one of said chambers located above it, a separate slide for opening and closing each said discharge area, means for mounting each said slide for reciprocable movement between a first position closing its associated discharge area and a second position opening of said discharge area, separate reciprocating means including a solenoid for each said slide, means operatively interconnecting the armature of each said solenoid with one of said slides for shifting the same into at least one of its said opening or closing positions, and electrical control circuit means including a separate circuit for each said solenoid and including a timer whereby each slide may be selectively shifted from its closed position to its said area opening position in which it remains for a preselected time period after which it is automatically shifted back to its closed position.

B1 5,061,924 (2858th)

EFFICIENT VECTOR CODEBOOK

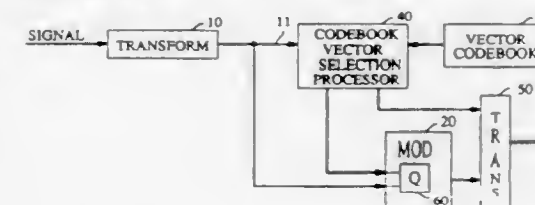
John N. Mailhot, Somerville, N.J., assignor to American Telephone and Telegraph Company, New York, N.Y.

Reexamination Request No. 90/003,789, Apr. 10, 1995.

Reexamination Certificate for Patent 5,061,924, issued Oct. 29, 1991, Ser. No. 645,937, Jan. 25, 1991.

Int. Cl.⁶ H03M 7/36; 7/42

U.S. Cl. 341—76



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims 2-9 and 11 is confirmed.

Claims 1 and 10 are cancelled.

[1. A codebook quantizer including a memory for storing a first plurality of quantization information packets, and means connected to said memory for quantizing an applied input signal that comprises a second plurality of elements m, where m is an integer, to be quantized, wherein said means for quantizing evaluates the benefit of quantizing said applied input signal with each of said quantization information packets and, based on said evaluation, selects one of said quantization information packets and quantizes each element of said applied input signal in accordance with a quantization regimen specified for said each element by said selected one of said quantization information packets, and wherein said first plurality is less than one percent of the number of different quantization regimens definable by one of said quantization information packets, characterized in that:

said means for quantizing retrieves quantization information packets from said memory in such an order that each retrieved quantization information packet specifies a quantization regimen for said elements of said input signal that differs from the quantization regimen specified for said elements of said input

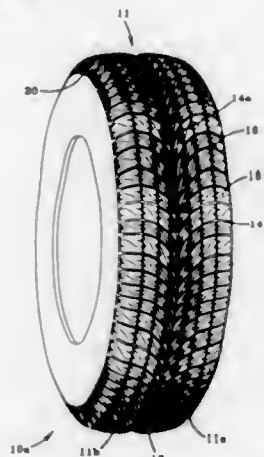
signal by the immediately preceding retrieved quantization information packet in the quantization regimen specification of at most k elements of said input signal, where k is a selected constant less than $m \cdot \log n$.

B1 5,176,766 (2859th)

PNEUMATIC TIRE HAVING A UNIQUE FOOTPRINT
Samuel P. Landers, Uniontown; William E. Glover, Akron, and John S. Altinello, Hartsville, all of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Reexamination Request No. 90/003,724, Feb. 15, 1995.

Reexamination Certificate for Patent 5,176,766, issued Jan. 5, 1993, Ser. No. 666,329, Mar. 8, 1991.
Int. Cl.⁶ B60C 11/11

U.S. Cl. 152—209 R



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims 1-6 is confirmed.

1. A pneumatic automobile tire for use on paved surfaces having an aspect ratio of 0.35 to 0.8 and having a footprint comprising two distinct contact patches, each said contact patch having a substantially trapezoidal shape wherein the two contact patches are oriented longer base-to-longer base and wherein the net-to-gross in the overall footprint is 55% to 65% and the net-to-gross in the contact patch is 65% to 75%, wherein said contact patches are separated by a void area that comprises about 10% to about 20% of footprint width, and wherein each contact patch demonstrates lateral grooves substantially longer than the width of said contact patch.

B2 5,199,098 (2860th)

MOISTURE RESISTANT OPTICAL FIBER COATINGS WITH IMPROVED STABILITY
Kelly J. Nolan, Beaver Dams; Emily M. Squires, Painted Post, both of N.Y., and Eric H. Urruti, Wilmington, N.C., assignors to Corning Incorporated, Corning, N.Y.

Reexamination Request No. 90/003,648, Nov. 30, 1994.
Reexamination Certificate for Patent 5,199,098, issued Mar. 30, 1993, Ser. No. 773,525, Oct. 9, 1991.

Int. Cl.⁶ G02B 6/10

U.S. Cl. 385—128

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims 2 and 3 are cancelled.

Claims 1 and 4 are determined to be patentable as amended.

1. A [coating] coated optical fiber exhibiting improved moisture resistance which includes a glass optical fiber disposed within a

cured polymer primary coating, characterized in that the cured polymer primary coating comprises a phosphite stabilizing agent in combination with a cured polyurethane-acrylate polymer, the urethane groups in the cured polymer being the reaction product of [an] a branched chain trifunctional aliphatic isocyanate comprising both isocyanate and allophanate functionality and a predominantly saturated predominantly nonpolar aliphatic diol, and characterized further in the cured polymer primary coating is the reaction product of a coating composition which consists essentially of (i) a moisture-resistant oligomer formed from said aliphatic isocyanate and said aliphatic diol, (ii) a predominantly saturated aliphatic mono- or di-acrylate monomer, (iii) a photoinitiator, and (iv) a phosphite stabilizing 171 agents] agent.

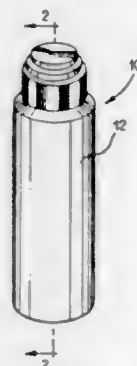
B1 5,222,823 (2861st)

DEVICE FOR MARKING TICKETS FOR GAME OF CHANCE WITH TRANSLUCENT, VIBRANT COLORED INK

Patricia A. Conforti, and Louis J. Conforti, both of 4217 Ironwood Ave., Seal Beach, Calif. 90740
Reexamination Request No. 90/003,285, Dec. 21, 1993.

Reexamination Certificate for Patent 5,222,823, issued Jun. 29, 1993, Ser. No. 851,344, Apr. 14, 1986.
Int. Cl.⁶ B43K 5/00

U.S. Cl. 401—202



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims 1 and 6 are determined to be patentable as amended.

Claims 2-5 and 7-10, dependent on an amended claim, are determined to be patentable.

1. A device for [making] marking pre-existing printed numbers on a bingo ticket with a vibrant colored, translucent mark, such as a spot, without obscuring the pre-existing numbers, the device comprising in combination:

- a container having a mouth;
- a porous applicator body mounted into the mouth of the container, said applicator body closing the container;
- an aqueous, translucent, vibrant colored ink composition contained in the container, the ink composition and the applicator body being selected in such a manner that the ink composition is capable of penetrating the applicator, the ink composition comprising a vibrant, colored, bright pigment consisting essentially of:
 - approximately 23 to 40 percent by weight, of an aqueous slurry of a dyed melamine copolymer resin;
- an effective amount of preservative agent adapted from substantially preventing bacterial and like growth in the ink composition;
- an effective amount of a defoaming agent adapted for substantially preventing formation of bubbles when the ink composition is applied to paper through a sponge rubber applicator;
- an effective amount of a stabilizer agent, selected from a group consisting of carboxymethylcellulose, clays, and aluminum silicate.

approximately 60 to 77 percent, by weight, of water; and a cap removably mounted to the mouth of the container to seal the container for prolonged periods of time.

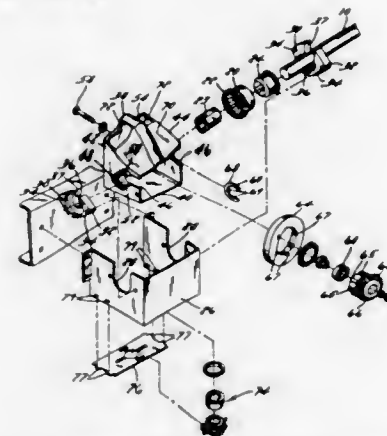
B1 5,287,956 (2862nd)

HIGH SPEED CONVEYOR WITH MOVABLE WHEEL
Ellsworth H. Collins, Mt. Washington; James F. Mattingly, and William A. Fultz, both of Louisville, all of Ky., assignors to Intertake Companies, Shepherdsville, Ky.

Reexamination Request No. 90/003,810, Apr. 26, 1995.
Reexamination Certificate for Patent 5,287,956, issued Feb. 22, 1994, Ser. No. 14,378, Feb. 5, 1993.

Int. Cl.⁶ B65G 13/06

U.S. Cl. 198—781.04



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims 11 and 15-21 is confirmed.

Claims 1-5, 9, 10 and 12-14 are cancelled.

Claims 6 is determined to be patentable as amended.

Claims 7 and 8 dependent on an amended claim, are determined to be patentable.

6. A conveyor, comprising:
a conveyor frame;
a plurality of conveyor rollers mounted on said conveyor frame;
a drive shaft extending along said conveyor frame and having an axis of rotation;
at least one drive wheel rotatable about its axis, said drive wheel being driven from said drive shaft;
a drive wheel mounting frame on which is mounted said drive wheel, wherein said drive wheel mounting frame is mounted so as to pivot about the axis of said drive shaft, such that, when said mounting frame is pivoted to a first position, said drive wheel is in driving contact with at least one of said conveyor rollers, and, when said mounting frame is pivoted to a second position, said drive wheel is out of driving contact with at least said one of said conveyor rollers.

B1 5,326,692 (2863rd)

FLUORESCENT MICROPARTICLES WITH CONTROLLABLE ENHANCED STOKES SHIFT
John M. Brinkley, Elmira; Richard P. Haugland, and Victoria L. Singer, both of Eugene, all of Oreg., assignors to Molecular Probes, Inc., Eugene, Oreg.

Reexamination Request No. 90/003,738, Feb. 21, 1995.
Reexamination Certificate for Patent 5,326,692, issued Jul. 5, 1994, Ser. No. 882,299, May 13, 1992.

Int. Cl.⁶ C12Q 1/68; G01N 33/545; C09K 11/02

U.S. Cl. 435—6

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims 1 and 11 are determined to be patentable as amended.

Claims 2-10 and 12-15, dependent on an amended claim, are determined to be patentable.

1. A fluorescent microparticle made by the process comprising:
a) selecting a series of dyes comprising an initial donor dye with a desired excitation peak and a final acceptor dye with a desired emission peak, wherein the desired excitation peak and the desired emission peak are determined in a polymeric material, and wherein said polymeric material is made up of polymerizable monomers, and wherein each dye in the series has a spectral overlap sufficient to allow for significant energy transfer of excitation energy to the final acceptor dye, b) incorporating said series of dyes in a polymeric microparticle comprising said polymeric material, wherein said series of dyes are randomly incorporated [into] throughout said polymeric microparticle.

REISSUES

APRIL 30, 1996

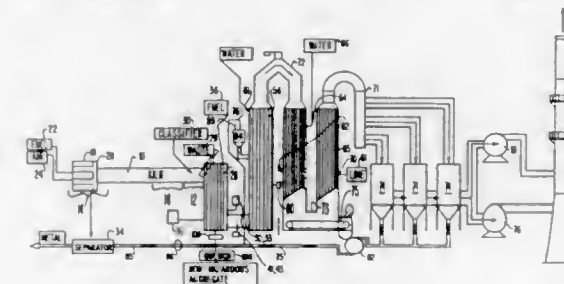
Matter enclosed in heavy brackets [] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 35,219
APPARATUS FOR USING HAZARDOUS WASTE TO FORM NON-HAZARDOUS AGGREGATE
 John M. Kent, Slidell, La., assignor to Marine Shale Processors, Inc., Baton Rouge, La.
 Original No. 4,986,197, dated Jan. 22, 1991, Ser. No. 520,558, May 8, 1990. Continuation-in-part of Ser. No. 362,352, Jun. 6, 1989, Pat. No. 4,922,841, which is a continuation of Ser. No. 244,017, Sep. 14, 1988, abandoned. Application for reissue Jan. 21, 1993, Ser. No. 6,604

Int. Cl.⁶ A47J 36/00;36/24

U.S. Cl. 110—246

40 Claims



30. An apparatus for converting hazardous waste into non-hazardous material, said apparatus comprising:
 a source of solid waste material, said solid waste material comprising large solid waste and waste fines;
 a separator for separating said large solid waste and said waste fines;
 an oxidizer comprising at least one vessel;
 a device for introducing said waste fines to said oxidizer;
 a device for inducing combustion in said oxidizing means to convert said waste fines into noncombustible fines, molten slag, and waste gas;
 at least one conduit for passing said waste gas and said noncombustible fines from said oxidizer;
 a separator for separating said noncombustible fines and said waste gas;
 a device for introducing said noncombustible fines into said molten slag in said oxidizer to form a substantially molten mixture;
 at least one exit from said oxidizer for passing said substantially molten mixture from said oxidizer; and
 a device for cooling said substantially molten mixture to form said non-hazardous material.

Re. 35,220

TWO TERMINAL CONTROLLER

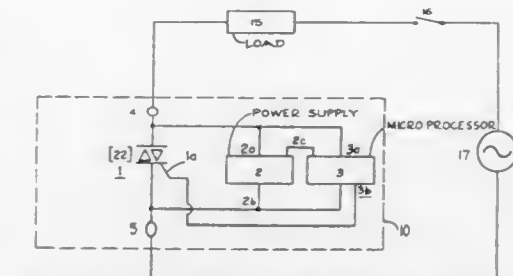
Samuel A. Johnson, Eggle, Id., assignor to Beacon Light Products, Inc., Meridian, Id.
 Original No. 5,030,890, dated Jul. 9, 1991, Ser. No. 345,214, Apr. 28, 1989. Continuation-in-part of Ser. No. 198,282, May 25, 1988, abandoned. Application for reissue Jul. 8, 1993, Ser. No. 88,758

Int. Cl.⁶ H04B 41/14

U.S. Cl. 315—208

55 Claims

1. A two-terminal power control device normally in an off condition until activated by switch means to conduct power from an AC power source to a power load, said device comprising:
 a. input and output terminals [adjacent an] adapted to be connected to the AC power source and [a] the power load, respectively;
 b. [A] a bi-directional dual silicon controlled rectifier responsive to low voltage current pulses, said rectifier in series with and between the input and output terminals;



c. micro-processor control circuit means in series with and providing triggering signals to the rectifier, and responsive to momentary power interruptions in the form of operator-controlled [activation] activations of the switch means;
 d. DC power supply means connected across the rectifier to provide power to the control circuit means when the rectifier is in a state of high or low impedance [and] in [absence] the presence of AC potential across the rectifier;
 e. memory data retention means coupled to control circuit means to retain [recently] stored data during periods of power removal from said AC power source,
 f. the input and output terminals on opposed upper and lower surfaces of a package, said package having dimensions [such that it is] to allow it to be retained between an Edison-style lamp screw shell housing and an incandescent bulb inserted therein, and
 g. said power control device being provided with a timer responsive to momentary power interruptions.

Re. 35,221

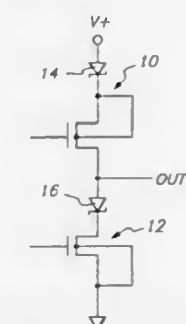
SCHOTTKY ENHANCED CMOS OUTPUT CIRCUIT

Robert L. Reay, Mountain View, Calif., assignor to Linear Technology Corporation, Milpitas, Calif.
 Original No. 5,015,889, dated May 14, 1991, Ser. No. 314,378, Feb. 23, 1989. Application for reissue May 13, 1993, Ser. No. 61,628

Int. Cl.⁶ H03K 19/20;19/094

U.S. Cl. 326—121

14 Claims



6. In an output circuit having an output terminal and first and second transistors which respectively couple first and second voltage potentials to said output terminal responsive to input signals applied to control electrodes of said first and second transistors, wherein at least one of said first and second transistors is an MOS transistor, an improvement comprising:
 a Schottky diode in series with said MOS transistor between said output terminal and one of said first and second voltage potentials.

3085

Re. 35,222

OPTICAL FIBER COMPONENT OPTICAL COUPLER
AND METHOD OF PRODUCING THEREOF

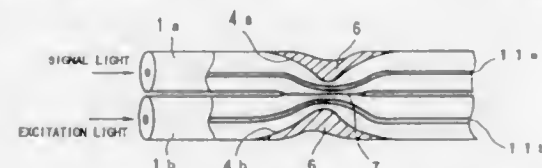
Sumio Hoshino; Masumi Ito; Masayuki Shigematsu; Hiroo Kanamori, all of Yokohama, and Hisasi Izumita, Mito, all of, Japan, assignors to Sumitomo Electric Industries, Ltd., and Nippon Telegraph and Telephone Corporation, both of, Japan

Original No. 5,202,947, dated Apr. 13, 1993, Ser. No. 798,913, Nov. 29, 1991. Application for reissue Jul. 19, 1994, Ser. No. 275,738

Claims priority, application Japan, Nov. 29, 1990, 2-331535
Int. Cl.⁶ G02B 6/26; 6/28

U.S. Cl. 385—123

17 Claims



1. An optical fiber component including an optical fiber comprising:

- a core portion formed of transparent material with a first refractive index;
- a cladding portion formed of transparent material with a second refractive index smaller than said first refractive index and located adjacent to the core portion, having a thin portion, which has a thinner diameter than the cladding portion, in at least a part of the cladding portion in a longitudinal direction of the optical fiber; and
- a light amplifying portion located at the thin portion, the light amplifying portion containing [a sol which has] active elements having a light amplification ability, said light amplifying portion being made by a process comprising the steps of applying a sol containing said active elements and a polyethylene glycol to said thin portion, drying said sol, and sintering said sol to thereby form said light amplifying portion.

Re. 35,223

CYCLIC AMINOALKYLSILANES AND THEIR USE AS
ADHESION PROMOTERS IN ROOM TEMPERATURE
VULCANIZABLE POLYDIORGANOSILOXANE
COMPOSITIONS

Judith Stein, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

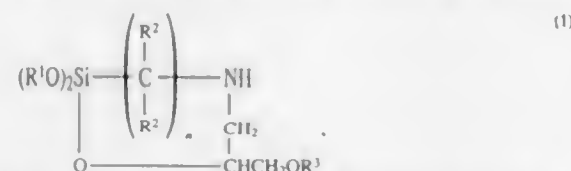
Original No. 4,855,351, dated Aug. 8, 1989, Ser. No. 234,730, Aug. 22, 1988. Division of Ser. No. 70,009, Jul. 6, 1987, Pat. No. 4,794,192. Application for reissue Jan. 23, 1995, Ser. No. 376,562

Int. Cl.⁶ C08K 5/35

U.S. Cl. 524—719

14 Claims

1. A method for improving adhesion to a substrate of a room temperature vulcanizable composition comprising a polyalkoxy-terminated polydiorganosiloxane and a catalytic amount of a curing catalyst, said method comprising incorporating therein an adhesion improving amount of a cyclic aminoalkylsilane having the formula



wherein R¹ is C₁₋₈ alkyl, each R² is independently hydrogen or C₁₋₄ primary or secondary alkyl, R³ is methyl or ethyl and n is 2 or 3.

Re. 35,224

HISTAMINE DERIVATIVES AS IMMUNE MODULATORS

Kenneth L. Melmon, Woodside; Murray Goodman, La Jolla; Manzoor M. Khan, San Carlos; Debra Marr-Leisy, Los Alamitos, and Michael Verlander, Rancho Palos Verdes, all of Calif., assignors to The Board of Trustees of the Leland Stanford Junior University, Stanford, Calif.

Original No. 4,996,221, dated Feb. 26, 1991, Ser. No. 2,781, Jan. 13, 1987. Application for reissue Feb. 26, 1993, Ser. No. 23,891

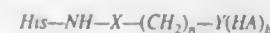
Int. Cl.⁶ A61K 31/415; C07D 233/64

U.S. Cl. 548—335.5

19 Claims

1. Histamine derivatives having binding specificity for H₁ or H₂ receptors of lymphocytes being characterized by being mono-substituted at the side chain amine of a histamine molecule with a substituent having an aliphatic chain of from 2 to 10 carbon atoms, wherein the alpha-carbon of the chain is substituted with oxo or alkyl of from 1 to 3 carbon atoms, said chain terminating in [hydrogen or] carboxamido, wherein the carboxamido nitrogen is substituted with alkyl of from 1 to 6 [amido] carbon atoms, tolyl or trifluoromethylphenyl, with the proviso that when said chain terminates in hydrogen, the chain length is 5 or 6 atoms.

17. Histamine derivatives having binding specificity for H₁ or H₂ receptors of lymphocytes and of the following formula



His-NH is a histaminyl residue;

X is CO, CH₂, or CHR, where R is an alkyl group of from 1 to 3 carbon atoms;

n is an integer from 0 to 10;

Y is CONHZ wherein Z is H; (CH₂)_mCH₃, where m is 0 to 10; phenyl; or a phenyl group substituted with methyl or halomethyl;

A is a physiologically acceptable counterion; and

b is an integer from 0 to 2.

Re. 35,225

FLUID RECOVERY SYSTEM

Steve A. Herweck, Nashua, and Theodore Karwoski, Hollis, both of N.H., assignors to Atrium Medical Corporation, Hudson, N.H.

Original No. 5,154,712, dated Oct. 13, 1992, Ser. No. 647,583, Jan. 28, 1991. Continuation of Ser. No. 255,764, Oct. 11, 1988, Pat. No. 4,988,342, which is a continuation-in-part of Ser. No. 20,449, Mar. 2, 1987, abandoned. Application for reissue Jul. 26, 1993, Ser. No. 97,986

The portion of the term of this patent subsequent to Jan. 29, 2008, has been disclaimed.

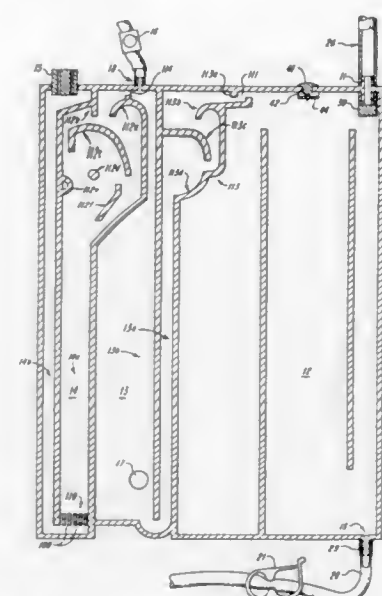
Int. Cl.⁶ A61M 1/00

U.S. Cl. 604—321

19 Claims

1. A vessel for aspirating and collecting vital fluid, such vessel comprising

- i) a plurality of walls formed of polymeric material and defining an interior chamber having at least first, second and third openings therein adapted for communication with the atmosphere, with a suction source, and with a vital fluid collection tube, respectively, said interior chamber being subdivided to provide a buffered volume of at least first, second and third successive intercommunicating sub-chambers having said respective first, second and third openings [herein] therein,
- ii) first and second water columns included in said first and second sub-chambers for providing during normal operation first and second pressure differentials in said interior chamber effective to establish a unidirectional draw at each said first and third opening toward said second opening while correcting changes in pressure to maintain a desired subatmospheric pressure range in said third sub-chamber,
- iii) said vessel having a volume and interior shape of intercommunicating passages between sub-chambers including [a self-bailing structure above said second water column comprising means for intercepting and returning to said second water



column water rising and water entrained in air bubbles, while

bidirectionally allowing free passage of air past said self bailing structure, and a port above said self-bailing structure between said second and third sub-chambers, for absorbing energy of abrupt pressure variations of said third sub-chamber, and being operative with said water columns to effectively maintain uniform said desired subatmospheric pressure range] means in upper portion of said vessel extending from said second to said third sub-chamber and configured to allow passage of air back and forth through said upper portion while protecting integrity of the water seal during patient breathing cycles and during application of suction due to outflow of collected fluids from said collection chamber, said third sub-chamber also having a fourth opening at a lower portion thereof and a filter disposed in a flow path between said third and fourth openings, wherein said fourth opening is a closable [outflow] outflow opening having a sterile connection for coupling to flow means, and flow means for fluid interconnection with said fourth opening to deliver collected vital fluid therefrom, whereby fluids collected in said third sub-chamber effectively define a further fluid seal and vital fluid collected in said third sub-chamber may be continuously drawn from below the surface at said fourth opening for reinfusion without introducing pressure irregularity in said third sub-chamber or interruption of said aspirating and collecting.

PLANT PATENTS

GRANTED APRIL 30, 1996

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

9,524

SHRUB ROSE PLANT NAMED 'AUSMOL'
David C. H. Austin, Albrighton, England, assignor to David Austin Roses Limited, England
Filed Mar. 14, 1995, Ser. No. 404,160
Claims priority, application France, May 20, 1994, 13475
Int. Cl.⁶ A01H 5/00

U.S. Cl. Pkt.—1 1 Claim

1. A new and distinct variety of rose plant of the shrub class, substantially as herein shown and described, characterized particularly as to novelty by its repeat flowering with rich yellow, old fashioned shaped flowers.

9,525

SHRUB ROSE PLANT NAMED 'AUSSAL'
David C. H. Austin, Albrighton, England, assignor to David Austin Roses Limited, England
Filed Mar. 14, 1995, Ser. No. 404,161
Int. Cl.⁶ A01H 5/00

U.S. Cl. Pkt.—1 1 Claim

1. A new and distinct variety of rose plant of the shrub class, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of its repeat flowering, with old-fashioned-shaped flowers that are generally rich, clear pink flowers, the color of the petals varying on each flower.

9,526

SHRUB ROSE PLANT NAMED 'AUSMAK'
David C. H. Austin, Albrighton, England, assignor to David Austin Roses Limited, England
Filed Mar. 14, 1995, Ser. No. 404,332
Claims priority, application France, May 20, 1994, 13477
Int. Cl.⁶ A01H 5/00

U.S. Cl. Pkt.—1 1 Claim

1. A new and distinct variety of rose plant of the shrub class, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of its repeat flowering of pale pink, scented, very full, old fashioned shaped flowers, the petals of which are quartered.

9,527

SHRUB ROSE PLANT NAMED 'AUSMUM'
David C. H. Austin, Albrighton, England, assignor to David Austin Roses Limited, England
Filed Jan. 1, 1995, Ser. No. 457,999
Claims priority, application United Kingdom, Nov. 4, 1994, AFP5/1620
Int. Cl.⁶ A01H 5/00

U.S. Cl. Pkt.—1 1 Claim

1. A new and distinct variety of rose plant of the shrub class, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of its petals having a copper color on the inside and a paler copper-yellow on the outside, dark foliage and good branching habit.

9,528

MINIATURE ROSE PLANT NAMED 'SAVEMBER'
F. Harmon Saville, Rowley, Mass., assignor to Nor'East Miniature Roses, Inc., Rowley, Mass.
Filed Dec. 27, 1994, Ser. No. 364,592
Int. Cl.⁶ A01H 5/00

U.S. Cl. Pkt.—10 1 Claim

1. A new and distinct variety of rose plant of the miniature rose class, substantially as shown and described.

9,529

PEACH TREE 'SUMMER ZEE'
Chris F. Zaiger, 929 Grimes Ave.; Leith M. Gardner, 1207 Grimes Ave.; Gary N. Zaiger, 1907 Elm Ave., and Grant G. Zaiger, 4005 California Ave., all of, Modesto, Calif. 95358
Filed Apr. 3, 1995, Ser. No. 415,849
Int. Cl.⁶ A01H 5/00

U.S. Cl. Pkt.—43.2 1 Claim

1. A new and distinct variety of peach tree, substantially as illustrated and described, characterized by its large size, vigorous upright growth and by being a productive and regular bearer of large, firm, yellow flesh, freestone fruit with good flavor and eating quality; the fruit is further characterized by having good handling and shipping quality, holding firm on the tree 7 to 8 days after maturity (shipping ripe), having an attractive red skin color and in comparison to its pollen parent 'Zee Lady' Peach (U.S. Plant Pat. No. 5,832), the new variety is approximately 4 weeks earlier in maturity.

9,530

'FRUTA DE ORO SEEDLESS' AVOCADO TREE
Juan A. Salas, Orotina, Costa Rica, assignor to Tropico De Oro S.A., Orotina Alajuela, Costa Rica
Filed Mar. 23, 1995, Ser. No. 409,853
Int. Cl.⁶ A01H 5/00

U.S. Cl. Pkt.—44 1 Claim

1. A new and distinct variety of avocado tree substantially as illustrated and described which is distinguished from all other known varieties by producing fruit which have no pit, stone, or other seeds in the flesh thereof and which are mature for commercial harvesting and shipment approximately mid May to mid July, in Orotina, Alajuela, Costa Rica in Central America.

9,531

+1 CHAMELAUCIUM UNCINATUM—'CASCADE JEWEL'
Timothy P. Angus, Faulconbridge, and Nicholas F. Derera, Winston Hills, both of, Australia, assignors to Newports Nurseries, Australia
Filed Mar. 16, 1995, Ser. No. 405,212
Int. Cl.⁶ A01H 5/00

U.S. Cl. Pkt.—54.1 1 Claim

1. A new and distinct *Chamelaucium uncinatum* plant substantially as shown and described herein, distinguished principally from other varieties of its type by fower color, flower size, floral tube outline, and growth habit.

9,532

NEW GUINEA IMPATIENS NAMED BFP-368 ROSE
Scott C. Trees, Arroyo Grande, Calif., assignor to Geo. J. Ball,
Inc., West Chicago, Ill.

Filed Apr. 14, 1995, Ser. No. 422,691

Int. Cl.⁶ A01H 5/00

U.S. Cl. Pkt.—87.6

1 Claim

1. A new and distinct cultivar of New Guinea Impatiens plant
named 'BFP-368 Rose' substantially as herein shown and
described, which:

- (a) exhibits attractive large dark rose colored flowers,
- (b) forms medium green foliage,
- (c) exhibits a good basal branching character, and
- (d) exhibits a medium upright growth habit.

- (a) exhibits attractive semi-double light rose florets,
- (b) forms medium green foliage with zonation, and
- (c) exhibits a medium self-branching growth habit in the absence
of a growth regulator.

9,533

GERANIUM PLANT NAMED 'FISRAIN'
Ingeborg Schumann, Albstadt, Germany, assignor to Floris
AG, Binningen, Switzerland

Filed Dec. 21, 1994, Ser. No. 360,347

Int. Cl.⁶ A01H 5/00

U.S. Cl. Pkt.—87.12

1 Claim

1. A new and distinct cultivar of geranium plant named Fisrain,
as illustrated and described.

9,534

GERANIUM PLANT NAMED 'BFP-825 SALMON ROSE'
Scott C. Trees, Arroyo Grande, Calif., assignor to Geo. J. Ball,
Inc., West Chicago, Ill.

Filed May 1, 1995, Ser. No. 431,722

Int. Cl.⁶ A01H 5/00

U.S. Cl. Pkt.—87.12

1 Claim

1. A new and distinct Geranium plant named 'BFP-825 Salmon
Rose', substantially as herein shown and described, which:

1. A new and distinct Geranium plant named 'BFP-901 Bright
Red', substantially as herein shown and described, which:

- (a) exhibits attractive semi-double bright red florets in a freely
flowering display,
- (b) forms attractive dark green foliage with zonation, and
- (c) exhibits a medium self-branching growth habit in the absence
of a growth regulator.

9,535

GERANIUM PLANT NAMED 'BFP-901 BRIGHT RED'
Scott C. Trees, Arroyo Grande, Calif., assignor to Geo. J. Ball,
Inc., West Chicago, Ill.

Filed May 1, 1995, Ser. No. 432,271

Int. Cl.⁶ A01H 5/00

U.S. Cl. Pkt.—87.12

1 Claim

PATENTS

GRANTED APR. 30, 1996

ERRATA

For CLASS	See PATENT NO.
206-276	5,511,680
414-407	5,511,687
473-290	5,511,778
473-246	5,511,779
473-309	5,511,780
473-286	5,511,785
473-327	5,511,786
473-329	5,511,787
473-213	5,511,788
473-202	5,511,789
473-201	5,511,790
473-354	5,511,791
294-149	5,511,846
430-383	5,512,103
134-200	5,512,129
264-790	5,512,146
204-632	5,512,173
435-320	5,512,421
205-777	5,512,489
544-239	5,512,571
556-472	5,512,662
548-101	5,512,687
548-232	5,512,688
548-235	5,512,689
556-428	5,512,701
333-219	5,512,868
347-259	5,512,949
369-440	5,513,121
378-980	5,513,252

PATENTS

GRANTED APRIL 30, 1996

GENERAL AND MECHANICAL

5,511,241 CHAIN MAIL GARMENTS IMPREGNATED WITH AN ELASTOMERIC MATERIAL

Guenther Ziegler, Omaha, Nebr., assignor to Azon Corporation, Council Bluffs, Iowa

Filed Nov. 14, 1994, Ser. No. 339,497

Int. Cl.⁶ A41D 13/10; 19/00

U.S. Cl. 2—2.5

9 Claims



1. A chain mail glove construction comprising:
a glove portion having an open end; and
a cuff portion connected to the open end of said glove portion, said cuff portion comprising a plurality of interconnected rows of wire rings which extend laterally around a wrist in encircling relation so that said cuff portion is expandable in diameter, said glove construction having only the cuff portion thereof impregnated with an elastomeric material, said elastomeric material normally maintaining said cuff portion in an unexpanded condition.

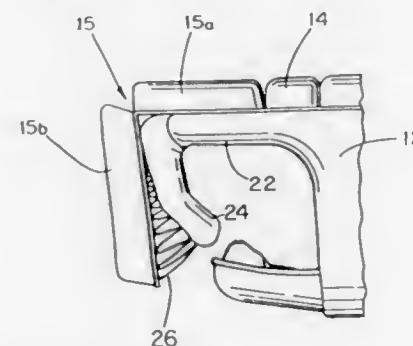
5,511,242 PROTECTIVE SPORTS GLOVE

Sandro Bianchi, 39 Oakville Road, Woodbridge, Ontario, Canada

Filed Jun. 2, 1995, Ser. No. 468,247

U.S. Cl. 2—16

9 Claims



1. A protective glove for sports comprising

a flexible palm portion affixed to a padded back portion, the palm portion extending to a plurality of finger stalls and the padded portion extending to a plurality of padded sections overlaying the finger stalls,

at least one of the finger stalls comprising an integral portion secured to the padded back portion and integral therewith to form a portion of the finger stall, and an isolated portion closed to form a sheath isolated from the padded section such that a gap is created between the isolated portion and the padded section, and

an elastic strap for connecting the isolated portion to the padded section, whereby when the finger stall is flexed at an intermediate point the padded section connected to the isolated portion remains in close proximity to the isolated portion but the gap therebetween increases, and when the finger stall is extended the gap decreases.

5,511,243

PROTECTIVE SPORTS GLOVE

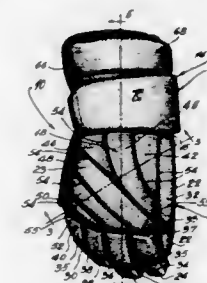
F. Kenneth Hall, Beaconsfield; Bertrand Dessureault; Sylvain Dufour, both of Repentigny, and Nicole Ranger, St. Lazare, all of, Canada, assignors to Sport Maska Inc., St. Laurent, Canada

Filed Feb. 10, 1995, Ser. No. 386,534

Claims priority, application Canada, Feb. 2, 1995, 2141702
Int. Cl.⁶ A41D 19/00

U.S. Cl. 2—16

8 Claims



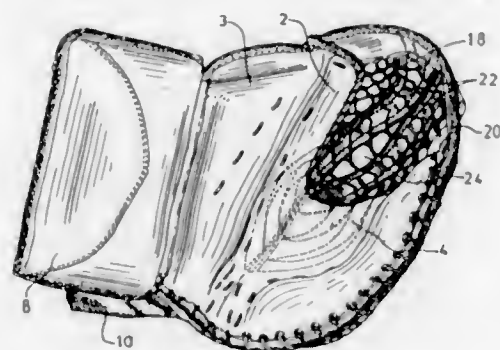
1. A protective glove having a grip portion and a cuff, wherein the grip portion includes an interior flexible shell conforming to the interior of a human hand with a thumb and at least an index finger, the grip portion including a dorsal side covered with elongated padded ribs crowded close together and arranged such as to provide full padded protection of the dorsal side, the thumb including an independent padded segment from the cuff to the distal end of the thumb with strategically located flexion zones, at least an elongated padded rib extending along the index finger interrupted by flexion zones and extending from the knuckle at the proximate end to the distal end of each finger; a first break line separating the padded finger rib from the metatarsal area of the hand extending along an axis coincident with the proximate knuckle of the finger, the metatarsal area being delimited by the first break line and the margin of the cuff in the longitudinal direction, and the inner and outer edges in the lateral direction, and a plurality of padded ribs fanning out from the proximate knuckle of the index finger to a

margin of the cuff and the outer edge and defining second break lines between each such padded rib in order to provide flexibility to the glove coincident with the ergonomics of the hand when moving from a stick gripping position at an acute angle to the stick and a normal position, and padded cuff segments extend beyond the cuff margin.

5,511,244
HOCKEY GOALTENDER'S GLOVE WITH SPLIT TRAP
 Brian H. Shkatani, Milton, Canada, assignor to Canstar Sports Groups, Inc., Ville Mont-Royal, Canada
 Filed Feb. 10, 1995, Ser. No. 386,538
 Claims priority, application Canada, Feb. 11, 1994, 2115526
 Int. Cl.⁶ A41D 13/10

U.S. Cl. 2—16

4 Claims



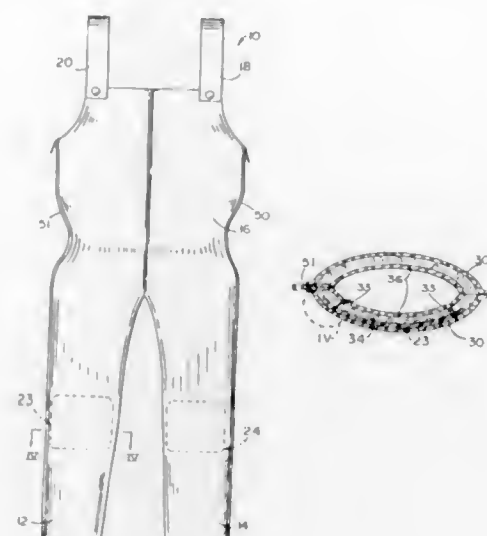
1. In a hockey goaltender's glove comprising a thumb area, a finger area, and a webbed pocket spanning between the thumb area and the finger area, the pocket having a top defined by a top web spanning from a tip of the thumb area to a tip of the finger area, and a bottom defined by an intersection of the thumb area with the finger area, the improvement comprising two web portions beside each other extending from approximately the middle of the top web down to the bottom of the pocket, tied via webbing such that they are separated from each other in at least a portion of the pocket, thus leaving a gap between said web portions, said gap being spanned by said webbing.

5,511,245
COLD WEATHER CLOTHING INCLUDING COEXTENSIVE FIBROUS INSULATION LAYER WITHIN SHELL AND FOAM INSERTS IN STRESS AREAS
 Christopher J. Hayes, Rockford, Mich., assignor to Specialty Sports Limited, Rockford, Mich.
 Filed May 11, 1994, Ser. No. 240,829
 Int. Cl.⁶ A41D 1/06

U.S. Cl. 2—79

10 Claims

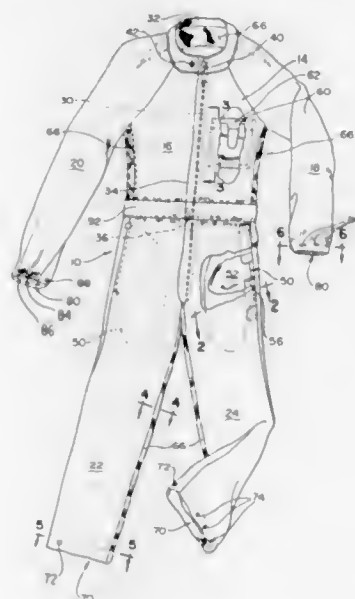
1. An insulated clothing article for cold weather use, comprising:
 an inner layer of fabric;
 an outer layer of fabric interconnected to said inner layer of fabric to define a shell;
 said shell having a cavity therein, such shell dimensioned so as to cover at least a portion of a wearer's body;
 fibrous insulation positioned in said cavity substantially coextensive with said shell to keep the wearer warm in those locations where the shell covers the wearer;
 at least one flexible polymeric foam sheet positioned in said cavity; and
 wherein said at least one foam sheet is substantially smaller in surface area than said outer layer of fabric, and said at least one foam sheet is positioned adjacent said fibrous insulation at at least one location where the clothing article experiences a significant amount of stress to preserve the insulative quality of the clothing at said at least one location without restricting movement of the wearer.



5,511,246
LOW LINT PROTECTIVE GARMENT
 Allen D. Farkas, Hazel Crest, Ill., and Daniel C. Robb, Liverpool, N.Y., assignors to Vallen Safety Supply Company, Houston, Tex.
 Filed Jul. 29, 1994, Ser. No. 283,032
 Int. Cl.⁶ A41D 13/02

U.S. Cl. 2—79

4 Claims



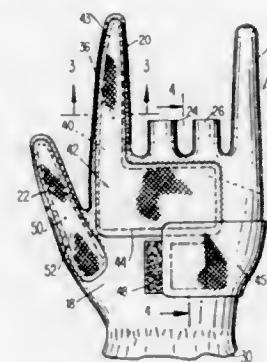
1. A protective garment for workers in environments requiring minimum contaminants, comprising:
 a body section including a torso section with two sleeves and two legs, said torso section having a front zipper opening extending to a neck opening, said sleeves at their ends having hand openings, and said legs at their ends each having leg openings, said body section being made of woven polyester; ventilation panels of higher permeability than the woven polyester on an upper portion of the torso section, on opposite sides of the torso section and along one side of each leg;
 each of said hand openings including
 a first elastic portion about a portion of the opening, an elastomeric button, and
 a plurality of buttonholes spaced around the other portion of the opening, whereby said hand opening may be adjusted

between a selected number of sizes by selectively engaging the elastomeric button with a selected one of the buttonholes; and
 an adjuster for conforming the waist of the torso section to different wearers, including:
 a second elastic portion about a portion of the waist of the torso section,
 a flap secured at one end to the waist of the torso section on the interior side of the body section and including a first securing means at the other end,
 a plurality of second securing means spaced about the waist of the torso section on the interior side of the body section, whereby the waist of the torso section may be adjusted between a selected number of sizes by selectively engaging the first securing means with a selected one of the second securing means.

5,511,247
SPORTS GLOVE WITH FOREFINGER STIFFENER
 Alvin Block, Palm Beach Gardens, Fla., assignor to John Cimba, Palm Beach Gardens, Fla.
 Filed Jun. 24, 1994, Ser. No. 267,116
 Int. Cl.⁶ A41D 19/00

U.S. Cl. 2—161.1

13 Claims



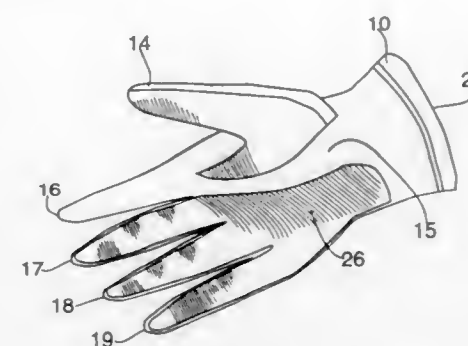
4. A device for weakening a player's power band grip on a handle of a movable sports implement, comprising:
 a) a power hand cover including an elongated, outstretched, forefinger sheath for receiving a forefinger of the player's power hand when worn, and a back portion for covering the back of the player's power hand; and
 b) forefinger stiffener means associated with the forefinger sheath and including a stiffener element having an elongated, rigid, non-bendable, extension extending along the forefinger sheath in a longitudinal direction, for maintaining constantly outstretched the forefinger sheath and the forefinger therein during movement of the implement, and a base integral with the extension, remote from the forefinger sheath, and juxtaposed with the back portion to at least partially overlie the back of the player's power hand.

5,511,248
ANTI-SLIP GLOVE
 John D. Widdemer, Gloversville, N.Y., assignor to Bali Leathers Inc., Johnstown, N.Y.
 Filed Mar. 24, 1995, Ser. No. 409,696
 Int. Cl.⁶ A41D 19/00

U.S. Cl. 2—161.3

19 Claims

1. An improved anti-slip glove, for being worn on a human hand, comprising:
 a palm part formed generally in the shape of a human hand and further defining a plurality of fingers;
 a back part, connected to said palm part, formed generally in the shape of a human hand and being further formed in an approximate mirror image of said palm part;



a thumb part formed generally in the shape of a human thumb and connected to at least a portion of said palm part;
 an anti-slip panel member affixed to at least a portion of said palm part, said anti-slip panel member selected to exhibit adhesive characteristics when brought in contact with the surface of an object the anti-slip glove is designed to be used to hold wherein;
 said anti-slip panel comprises an anti-slip film surface and a backing material.

5,511,249
CAP WITH CROWN OPENING
 Laura Higgins, Indianapolis, Ind., assignor to Jerry Piotrowicz, Castlewood, Ind.
 Filed Sep. 15, 1994, Ser. No. 306,410
 Int. Cl.⁶ A42B 1/04

U.S. Cl. 2—209.7

2 Claims



1. A cap for being worn over the hair on the head of a human being wearer,
 the cap having a cap body member formed into a generally hemi-spherical shape,
 the cap also having a crown portion at the apex of the body member; and the crown portion, when the cap body member is placed over the head of a wearer, is generally juxtaposed over the crown of the wearer's head, such that the crown portion of the cap body member is then in a general registry with the crown of the wearer's head,
 the cap body member providing support for the crown portion of the cap,
 the cap being provided with an opening having a continuous and generally circular perimeter in the crown portion of the cap, or slightly frontal thereof, the cap body member providing support for the portions of the crown portion adjacent the opening, and the opening being so located that those crown portions adjacent said opening will provide lateral support for the hair of a wearer when the hair is extended through the opening, laterally supporting the hair such as to establish a vertical orientation of the hair,
 the opening being about one inch in diameter, sufficient to accommodate a multiple-strand ponytail arranged bundle of hair in ponytail style tightly beld together,
 the opening having its rearmost portion extending into the cap crown portion, and the rearmost portion of the opening having

a width which is large enough to accommodate a multiple-strand ponytail arranged bundle of hair passing through the opening;

the cap body member being comprised of at least five gores of material which are connected along their side edges, and wherein each of the gores has a truncated generally triangular shape wherein the apex of each gore is cut off thereby creating an upper edge at the top of each gore, and wherein the upper edges of all the gores collectively form the continuous perimeter of the crown opening.

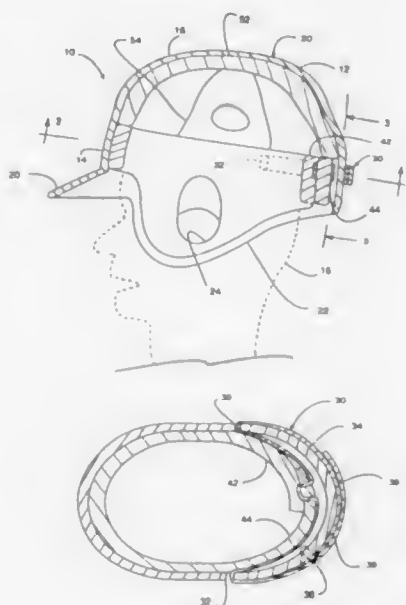
5,511,250

ADJUSTABLE PROTECTIVE HELMET

Michael R. Field, and Gregory D. Caldwell, both of Glenview, Ill., assignors to A-Star Sports Group, Inc., Des Plaines, Ill.
Filed Jan. 26, 1995, Ser. No. 378,545
Int. Cl.⁶ A42B 1/22

U.S. Cl. 2-418

7 Claims



1. An adjustable protective helmet, comprising the combination of
 - a substantially rigid outer bowl-shaped shell having a side wall sized both laterally and longitudinally larger than the user's head adapted thereby to fit loosely thereon and yet be spaced therefrom;
 - inner padding fitted inside of the shell adjacent the side wall and sized to fit on the user's head while yet providing a looser head-helmet fit than desired;
 - adjustment structure including
 - a flexible strap extended through circumferentially spaced slots in the shell side wall, said strap being extended inside of the shell next to the shell side wall between such slots, with the strap being extended therethrough to outside of the shell as underlying and overlying ends,
 - means securing the underlying strap end relative to the shell side wall,
 - said padding between the shell slots being free from connection with the shell side wall and the strap in this region overlying the padding between the padding and shell side wall and means coupling the strap and padding together, and
 - means to releasably secure the overlying strap end relative to underlying strap end, whereby tightening the strap via the overlying strap end from outside of the shell effectively snugs the padding against the user's head to establish the fit desired.

5,511,251

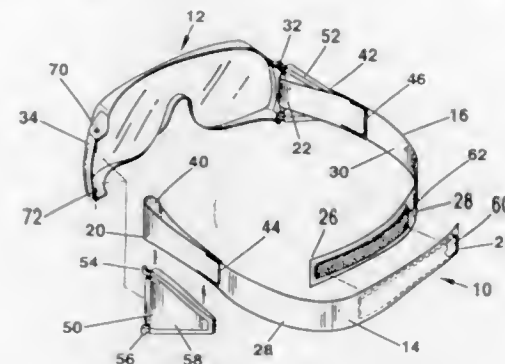
HEAD STRAP FOR SUNGLASSES

Yvonne J. Brakas, 12850 Opalocka Dr., Chesterland, Ohio 44026

Filed Nov. 3, 1994, Ser. No. 333,971
Int. Cl.⁶ A61F 9/02; G02C 3/00

U.S. Cl. 2-452

10 Claims



1. A head strap for utilization with a pair of glasses, the head strap comprising:

a left member and a right member, each of said members having a connection end and an attachment end, each of said members having an external surface and an internal surface, each of said members composed of an elastic material which allows for a substantial conformance of said members to the user's head, each of said members having a closed loop at the connection end which forms an elastic conformable pocket, said left member having a first attachment means located on said internal surface at said attachment end and said right member having a second attachment means located on said external surface at said attachment end, said first attachment means mating with said second attachment means thereby forming a continuous strap around the user's head from one end of the glasses to the other end of the glasses; and,

a left connection means and a right connection means, each of said connection means for connecting each of said members to the glasses, said left connection means corresponding to said left member and said right connection means corresponding to said right member, each of said connection means placed within and secured by said elastic conformable pocket of each of said members, wherein said left connection means and said right connection means are internal pieces, each of said insertable pieces having a flat central body insertable into said elastic conformable pocket of each of said members, each of said insertable pieces having an upward extending prong and a downward extending prong, each of said upward extending prongs and downward extending prongs releasably coupling with the glasses.

5,511,252

TOILET SEAT LIFTING HANDLE HAVING A SANITARY CAVITY

Gary A. Kreemer, Pickerington, Ohio, assignor to The Sanilift Company, Ltd., Pickerington, Ohio

Filed Jan. 13, 1995, Ser. No. 372,224
Int. Cl.⁶ A47K 13/10

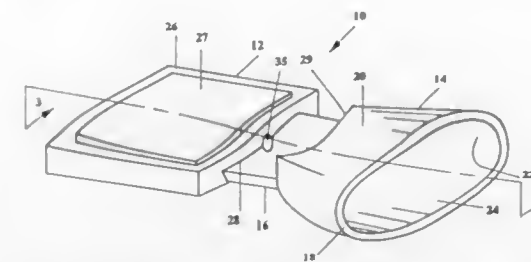
U.S. Cl. 4-246.1

9 Claims

1. A handle for lifting a toilet seat hinged to a toilet bowl, said handle comprising:

a) means for fastening a handle to a toilet seat; and

b) a toilet seat lifting end opposite a toilet seat attachment end, said toilet seat lifting end having an exterior surface surrounding an inner surface, said exterior surface having a finger opening communicating with said inner surface, said finger opening facing outwardly from said toilet bowl when said toilet seat is in a substantially horizontal position, said finger



opening being accessed by at least one of a user's fingers to lift and lower said toilet seat by pressing against said inner surface of said handle, said inner surface being shielded by said exterior surface from splashes created when one urinates into said toilet bowl and from aerosolized bacteria expelled from said toilet bowl when said toilet bowl is flushed, said toilet seat attachment adapted for fastening said handle to said toilet seat by said means for fastening, said finger opening having a dimension at least as large as a depth dimension of said inner surface, said inner surface having a smooth modified paraboloid shape which gradually converges from said finger opening toward said toilet seat attachment end of said handle, so that said inner surface can be easily cleaned from said finger opening of said handle, and said exterior surface of said toilet seat lifting end having a concave surface shaped to match an outermost edge of said toilet seat locating purposes.

5,511,253

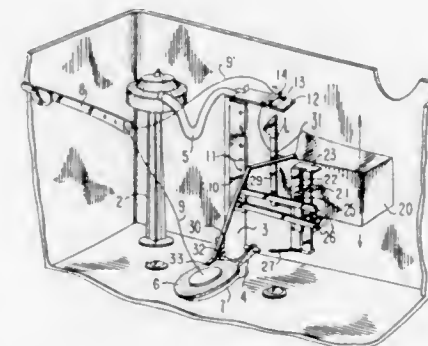
DUAL FLUSH SYSTEM FOR A TOILET TANK

Mario-Rodolfo Zamudio-Castillo; Francisco Vazquez-Acosta, and Francisco-Javier Melendez-Rodriguez, all of Nuevo León, Mexico, assignors to Sanitarios Azteca, Nuevo León, Mexico

Filed Jun. 21, 1994, Ser. No. 263,060
Int. Cl.⁶ E03D 1/14

U.S. Cl. 4-325

1 Claim



1. In a water closet comprising a toilet bowl and a toilet tank, including a water filling valve and an overflow tube coupled to the tank, and a buoyant flush stopper seated in a discharge opening in the tank, said stopper being operated by a flush lever connected thereto upon actuation of a flush lever;
 - a dual flush system for said toilet tank, to select a full or partial flush volume of water from said tank, comprising:
 - a latching plate coupled to said tube, having a latching aperture and a tilting gate pivotally mounted to said plate for closing and opening said aperture, said plate being connected to said lever to assume an open position with said lever in a first position;
 - a secondary buoyant float having two vertical parallel beams coupled thereto, defining a slide slot between them, a slide shoe coupled to a beam retained by the overflow tube, so that the secondary buoyant float is slidably guided by the parallel beams through the shoe in response to changes of water level in the toilet tank, the secondary buoyant float also having a latch member coupled thereto, said latch member being

adapted to pass through the latching aperture of the latching plate and be retained by the tilting gate for a total discharge of the tank when flushing solids, by operation of the flush lever to a first position which lifts only the stopper; and,

a shoe rod coupled to the secondary buoyant float, so as to push the stopper from a floating to a seated position to discharge a partial volume of water, by operation of the flush lever to a second position which lifts the tilting gate and releases the latch member from the latching plate and allows the buoyant float to descend in response to the level of water in said toilet tank, thus pushing said shoe rod against the stopper to interrupt the flush.

5,511,254

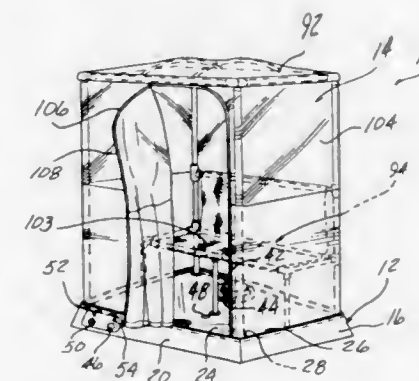
PORTABLE STEAM SAUNA

Michael P. O'Brien, Cape Coral, Fla., assignor to Evergreen Soft Spa, Inc., Berkley, Mich.

Filed Jul. 15, 1994, Ser. No. 275,518
Int. Cl.⁶ A61H 33/06

U.S. Cl. 4-532

16 Claims



1. A portable steam sauna comprising:
 - a base having a top surface for defining a floor of said steam sauna, and said base having a plurality of integrally formed closed-end receptacles;
 - a frame received by said receptacles of said base and having a plurality of detachable elongated framing members and coupling members wherein each of said coupling members releasably engages the ends of said elongated framing members for manually assembling and disassembling said frame so that said frame remains assembled when said steam sauna is in use while also allowing for the manual disassembly and reassembly of said framing members when said steam sauna is not in use, and said elongated framing members each having a longitudinal axis wherein said frame is manually assembled and disassembled by moving said framing members along said longitudinal axis toward and away from said coupling members wherein said coupling members releasably engage said framing members;
 - said frame forming four vertically extending side walls wherein three of said four side walls have seat framing members connected to said frame and extending across at least a portion of said three side walls;
 - a seat connected to and extending between said seat framing members;
 - a flexible and light weight enclosure material extending about the periphery of said frame for enclosing said frame and forming a single compartment, fully enclosed enclosure; and
 - means for producing steam within said enclosure, said steam producing means including a fluid container connected to said base, and means for heating a fluid in said fluid container for producing steam in said enclosure.

5,511,255
MEDICAL PATIENT SHIFTING DEVICE AND METHOD OF USE
 Peter Schuerch, 42 Bayview Ave., Quincy, Mass. 02169
 Filed Jan. 24, 1995, Ser. No. 377,393
 Int. Cl.⁶ A61G 12/00

U.S. Cl. 5—81.1

4 Claims

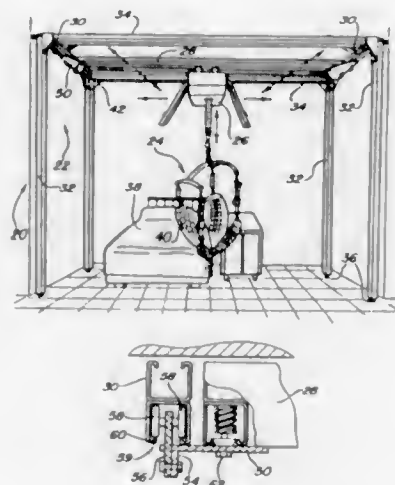


1. A patient shifting device comprising a thin flexible rotatable platform adapted to be placed under a drawsheet and patient on a first patient support to facilitate moving said patient by sliding over said platform to a second adjacent support, said platform including a port disposed at one end thereof and further including a two sided strap attached to said platform through said port, each of said strap sides having one of an opposing pair of separable fastener members, whereby said platform may be secured in a storable rolled condition by the engagement of said strap around said platform.

5,511,256
PATIENT LIFT MECHANISM
 Guido Capaldi, 816 South Hughes, Howell, Mich. 48843
 Filed Jul. 5, 1994, Ser. No. 270,996
 Int. Cl.⁶ A61G 7/10

U.S. Cl. 5—83.1

28 Claims



1. A patient lift assembly comprising:
 a frame structure comprising a pair of laterally extending bars each extending between two ends;
 a transverse bar supported on said two laterally extending bars and being free to move along and between said laterally

extending bars, said transverse bar supported on said laterally extending bars at a position below the top of said laterally extending bars;

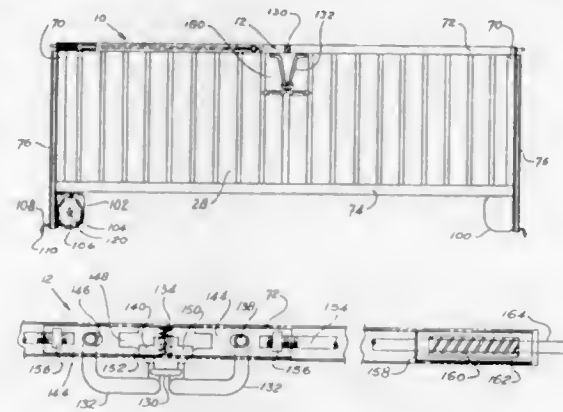
a patient lift structure mounted on said transverse bar, said patient lift structure being capable of lifting a patient vertically upwardly and lowering said patient vertically downwardly;

said transverse bar having two ends positioned between said laterally extending bars and at the same vertical height as said laterally extending bars such that the patient lift height available to said patient lift assembly is maximized; and
 four support legs are included in said frame, with one of said support legs being mounted at each said end of each of said laterally extending bars.

5,511,257
COUNTERBALANCED GATE FOR A HOSPITAL YOUTH CRIB AND METHOD FOR USING THE SAME
 Joseph W. Hannes, Franklin, Wis., assignor to The Brewer Company, Menomonee Falls, Wis.
 Filed Aug. 19, 1994, Ser. No. 293,532
 Int. Cl.⁶ A47D 7/02

U.S. Cl. 5—100

3 Claims



1. A counterbalanced side gate for a hospital youth crib having a crib frame, the side gate comprising:

a gate frame having an upper horizontal member parallel to a lower horizontal member and at least two vertical members connected between the upper and lower members;

at least one spring power reel attached to the gate frame; the spring powered reel having a spring powered cable having an end;

the cable end attached to the crib frame;

a pair of handles having upper ends and lower ends, the lower ends being pivotally mounted to a handle retainer and each upper end being pivotally mounted to a latch trigger;

a push button and a release button located within the upper horizontal member and biased in an outward position by a push button spring;

each latch trigger located adjacent to the release button and having a latch trigger slot for receiving the release button when the push button is in a spring biased position;

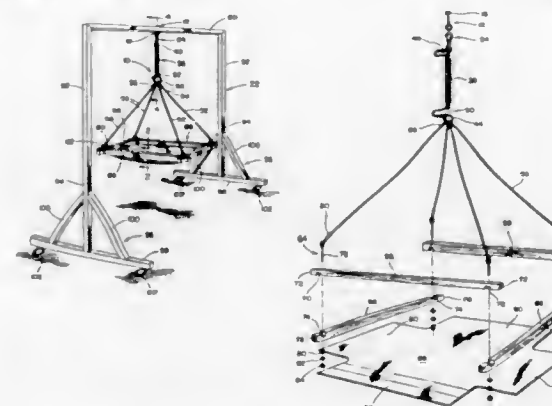
a latch rod connected to each latch trigger, each latch rod extending axially outward through the upper horizontal member and having a latch rod end extending through the horizontal member aperture formed within each end of the upper horizontal member;

each latch rod end engaging with a latch rod aperture formed within the crib frame.

5,511,258
BABY CRADLE
 Samuel P. Barr, Sr., 918 Second St., Katzebue, Ak. 99752
 Filed May 23, 1995, Ser. No. 448,113
 Int. Cl.⁶ A47D 9/00

U.S. Cl. 5—104

3 Claims



1. A baby cradle assembly comprising:

a baby cradle including a frame, a fabric material connected across said frame for supporting a child, four support lines connected to a ring at one end and extending from said ring to said frame at the other end;

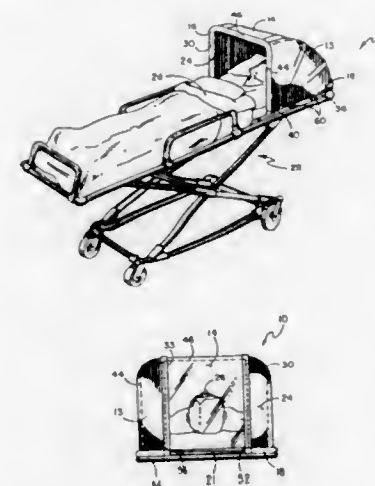
a spring support connected to said ring of said baby cradle,

a snap swivel for securing said baby cradle to a movable overhead support frame, said snap swivel including two parts rotatable with respect to each other for rotation of said baby cradle through 360° of rotation, an eye opening of said snap swivel being connected to said spring support, and safety means connecting said baby cradle to said snap swivel for providing a connection between said baby cradle and said snap swivel in the event of breakage of said spring support.

5,511,259
CANOPY FOR STRETCHER
 Joseph R. Tarara, 266 Orchard St., Millis, Mass. 02054
 Filed Feb. 16, 1995, Ser. No. 389,302
 Int. Cl.⁶ A47C 29/00

U.S. Cl. 5—414

3 Claims



1. In combination, a canopy structure for removable attachment to a stretcher, further including:

a first U-shaped member having first and second arm members and a top cross member having a first end and a second end, said top cross member disposed between said first and second arm members, said first arm member having a first free end

and a second end, said second arm member having a first free end and a second end, said second ends of said first and second arm members each connected, respectively, to said first and second ends of said top cross member, said junctions of said second ends of said first and second arm members with said first and second ends of said top cross member defining, respectively, a first junction point and a third junction point;

a first hinge member and a second hinge member;

a second U-shaped member having first and second arm members and a bottom cross member having a first end and a second end, said bottom cross member disposed between said first and second arm members, said first arm member having a first free end and a second end, said second arm member having a first free end and a second end, said second ends of said first and second arm members each connected, respectively, to said first and second ends of said bottom cross member, said junctions of said second ends of said first and second arm members with said first and second ends of said bottom cross member defining, respectively, a second junction point and a fourth junction point, said first free ends of said first arm members of said first and second arm members rotatably and hingeably attached together by said first hinge member, said first free ends of said second arm members of said first and second arm members rotatably and hingeably attached together by said second hinge member, said first U-shaped member rotatable to an upright position substantially perpendicular to said second U-shaped member when in its use mode and rotatable to a downward position substantially parallel to said second U-shaped member in its folded, non-use mode;

a canopy covering attached to said first and second U-shaped members having:

a first side panel defined as the portion of said canopy covering circumscribed by said first arm member of said first U-shaped member, a junction line between said first junction point and said second junction point, and said first arm member of said second U-shaped member, said first side panel being made of non-transparent material;

a second side panel defined as the portion of said canopy covering circumscribed by said second arm member of said first U-shaped member, a junction line between said third junction point and said fourth junction point, and said second arm member of said second U-shaped member, said second side panel being made of non-transparent material;

a central panel defined as the portion of said canopy covering circumscribed by a line joining said first junction point to said second junction point, a line joining said second junction point to said fourth junction point, a line joining said fourth junction point to said third junction point, and a line joining said third junction point to said first junction point, said central panel being made of transparent material; and
 means to removably attach said canopy structure to said stretcher.

5,511,260
ANTI-DECUBITUS MATTRESS PAD
 John C. Dinsmoor, III, Westminster; Grant C. Denton; Eric C. Jay, both of Boulder, and Richard R. Runkles, Englewood, all of Colo., assignors to RIK Medical, Boulder, Colo.
 Continuation of Ser. No. 4,137, Jan. 13, 1993, Pat. No. 5,303,436, which is a division of Ser. No. 756,320, Sep. 6, 1991, Pat. No. 5,201,780. This application Apr. 18, 1994, Ser. No. 229,369

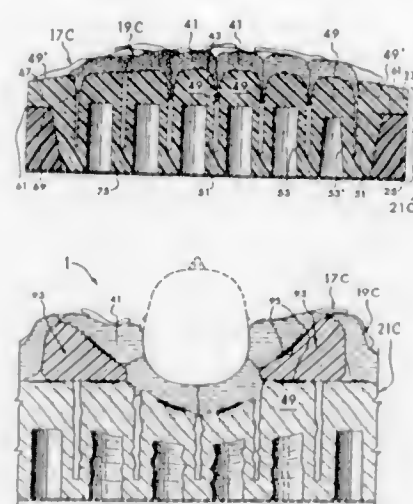
The portion of the term of this patent subsequent to Apr. 13, 2010, has been disclaimed.

Int. Cl.⁶ A61G 7/057; A47C 27/18

U.S. Cl. 5—451

57 Claims

1. A multi-layered pad primarily intended for use to reduce development of decubitus ulcers in a patient using the pad minimizing development of lateral shear forces on the patient as the patient moves over the pad, said multi-layered pad including:

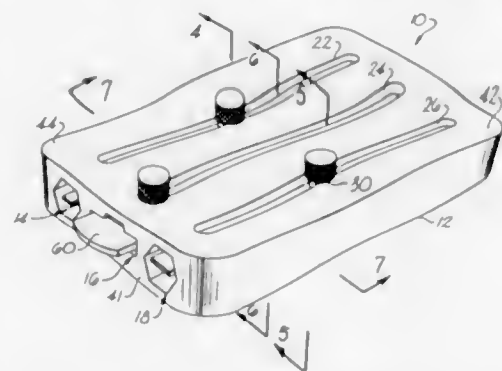


first and second layers, said first layer being positioned atop said second layer, said second layer including a bladder containing fluid and said first layer being a lateral shear reducing layer and including means for creating fold backs in said first, shear reducing layer wherein portions of said first layer fold back on and overlap one another above said second, fluid bladder layer and wherein said first and second layers have respective boundaries bounding respective areas and said pad further includes means for attaching said first and second layers to each other at at least one location within said respective boundaries of said first and second layers to limit any relative sliding movement between said first and second layers.

5,511,261
UTILITY TOOL
Walter W. Collins, P.O. Box 100, North, S.C. 29112
Filed Sep. 21, 1994, Ser. No. 310,047
Int. Cl.⁶ B26B 11/00

U.S. Cl. 7—158

15 Claims



1. A utility tool, comprising:

- an elongated body member having a first end and a second end opposite said first end, said elongated body member defining a first channel extending the length of said body member and being open to said first and second ends of said elongated body member;
- said elongated body member defining a second channel extending the length of said body member and being open to said first and second ends of said elongated body member;
- a first elongated tool member slidably carried in said first channel and having a first end and a second end opposite said first end, each of said first and second ends of said first elongated tool member being selectively extendable from said elongated body member; said first elongated tool member having a first cross-sectional shape;

a second elongated tool member separate and apart from said first elongated tool member slidably carried in said second channel and having a first end and a second end opposite said first end, each of said first and second ends of said second elongated tool member being selectively extendable from said elongated body member; said second elongated tool member having a second cross-sectional shape;

each of said first and second tool members being moveable in said first and second channels, respectively, between a retracted position substantially within said body member, to an extended position wherein one of said first and second ends extends outwardly from said body member;

said first channel including a second cross-sectional track of said second cross-sectional shape defined therein which extends the length of said elongated body member;

said first channel being configured for selectively carrying said second elongated tool member for sliding movement therein instead of said first elongated tool member; and

locking means associated with said first and second tool members for selectively fixing each of said first and second ends of said first and second tool members in said retracted position and in said extended position.

5,511,262**MULTI-FUNCTIONAL STATIONERY ASSEMBLY**

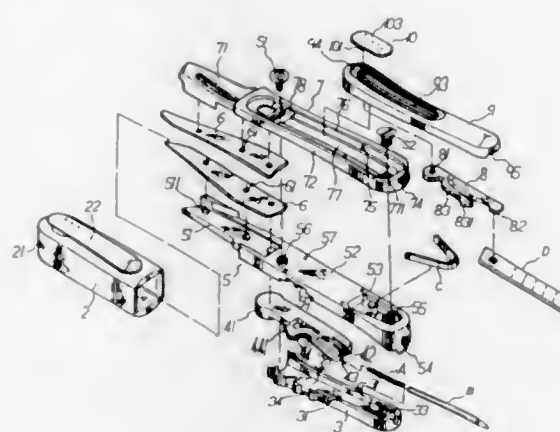
Huey-Tsair Horng, No. 370, Sec. 3, Tay Her Road, Chang Hua City, Taiwan

Filed May 31, 1995, Ser. No. 455,410

Int. Cl.⁶ B26B 11/00

U.S. Cl. 7—160

1 Claim



1. A multi-functional stationery assembly comprising:

- a scissors cover having a scissors blade notch in front end and a clip on a top surface;
- a ball pen side cover having a slot therein, a small guidance extending from a rear portion of said slot, a plurality of protruded rods disposed on an upper periphery and a plurality of gaps formed at an outer surface of said ball pen side cover;
- a pen body which has a first scissors positioning plate at front portion thereon disposed on top of said ball pen side cover;
- an art designing knife body which has a second scissors positioning plate at front portion thereon disposed on top of said pen body;
- a pen switch which is disposed between said ball pen side cover and said pen body containing a push button at a front end, an elastic slit at a rear end, a protruded rod extending from a rear end and a snapping rod at an outer edge;
- said first and second scissors positioning plates being disposed in an opposite angle;
- a first handle extending from a rear portion of said first positioning plate;
- a second handle extending from a rear portion of said second positioning plate;

- an upper surface of said first positioning plate and a lower surface of said second positioning plate having corresponding round posts respectively;
- an upper, rear portion of said pen body having a first receiving recess;
- a lower, rear portion of said knife body having a second receiving recess;
- a pen outlet being formed at a rear end of said pen body;
- a first handle extending from said first scissors positioning plate;
- a blade outlet being formed at a rear end of said knife body;
- a large screw socket being disposed at a rear portion of said pen body and a small screw socket being disposed at a middle portion of said pen body;
- a lower middle portion of said pen body having a snapping notch;
- an upper surface of a second handle which extends from said second positioning plate having two cylindrical recesses with a plurality of holes, a guide rail crossing a central portion of said second handle, and a screw hole formed at a rear portion of said second handle;
- a recess groove being formed in front of said guide rail;
- a scissors cover which is a semi-cylindrical sheath having a scissors blade notch in a front end therein and a clip on a top surface thereon;
- a small guidance which is formed in a rear portion of said pen side cover extending from a slot which is formed on an upper surface of said cover;

each scissors blade having a plurality of circular holes to match corresponding round posts on said first and second scissors positioning plates;

a side cover of art designing knife being disposed on top of said art designing knife body;

a positioning plate which is disposed between said art designing knife body and said side cover of art designing knife having a round hole at a front end, a positioning block at a rear end and an elastic rod with a side block extending from an inner side of said positioning plate;

said knife side cover matching and covering said cylindrical recess;

an interior of said knife side cover having a plurality of angled grooves and protrusions;

a cylindrical hole being formed in a front and middle portion of said knife side cover and a recess being formed in an upper portion of said cover;

a rear end of said cover having a blade notch;

a knife switch being disposed on top of said side cover of art designing knife.

5,511,263**LAUNDERING LIQUIDS PROCESS AND DECONTAMINATION FACILITY**

Gary L. Rehnert, Sr., 4319 Middle Rd., Allison Park, Pa. 15101

Continuation-in-part of Ser. No. 239,215, May 6, 1994, Pat. No. 5,421,048, which is a continuation-in-part of Ser. No. 58,244, May 10, 1993, Pat. No. 5,329,659. This application

May 2, 1995, Ser. No. 432,975

Int. Cl.⁶ D06F 35/00

U.S. Cl. 8—158

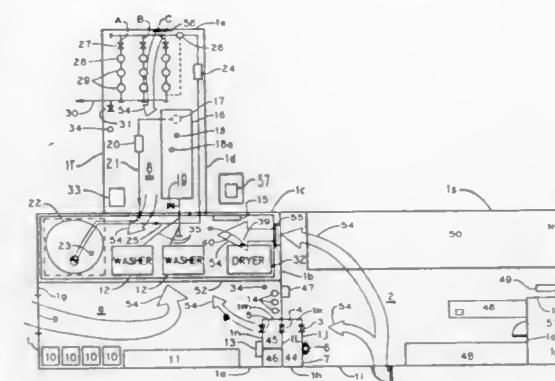
20 Claims

1. A laundering facility, comprising:

- (a) a washer area;
- (b) a washer and dryer for laundering contaminated clothing in said washer area;
- (c) a cleaning fluid filtering area;
- (d) a clean area for working on decontaminated clothes received from said washer area; and
- (e) means for automatically monitoring and controlling cleaning fluid quality discharged from said cleaning fluid filtering area to the outside environment.

14. A laundering method, comprising:

- (a) providing a containment area for receiving contaminated clothing;



- (b) providing a washer area in said containment area for washing, drying, and decontaminating said clothing in one room;
- (c) providing a clean area for working on decontaminated clean clothes received from said washer area;
- (d) providing a shower room separated by an airlock from said clean room; and
- (e) automatically monitoring and controlling cleaning fluid quality discharged from said washer area to the outside environment.

5,511,264**METHOD FOR DEODORIZING AND REFRESHING FOR DRY CLEANING**

Yukiko Nishioka, Kanagawa; Ichiro Kamiya, Tokyo; Ryoichi Shinjo; Yoshihiro Ishii, both of Kanagawa, and Koichi Kosaka, Tokyo, all of Japan, assigns to Ebara Corporation, Tokyo, Japan

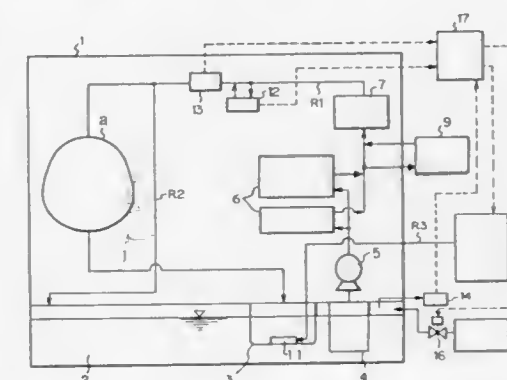
Division of Ser. No. 293,338, Aug. 24, 1994. This application

Jun. 7, 1995, Ser. No. 488,415

Int. Cl.⁶ D06F 43/08

U.S. Cl. 8—158

5 Claims



1. A method for refreshing dry cleaning petroleum group solvent used in a dry cleaning apparatus wherein the petroleum group solvent in a tank is supplied to a cleaning bath through a circulating pump and then is returned from said cleaning bath to said tank, said method comprising the steps of:

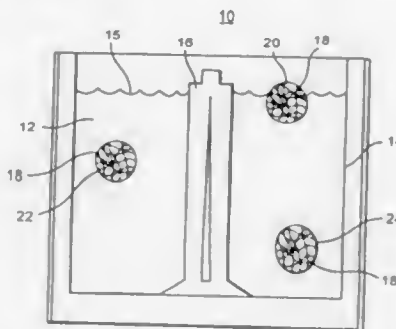
- oxidizing, decomposing and aggregating polluted matter by applying finely bubbled ozone gas into the solvent which includes the polluted matter dissolved out of laundry; and
 - removing the polluted matter and the ozone gas from the solvent by passing the solvent into which the ozone gas was applied through a filter and absorbent; and wherein
- the ozone gas is produced by electrical discharge in a gas in which oxygen density is 70 vol % or more, and the absorbent includes at least one of active carbon, active alumina and active clay so that the ozone gas in the solvent passing through the absorbent is decomposed and eliminated.

5,511,265

FABRIC CLEANING AID AND METHOD THEREOF
 Ralph N. Caputo, 2724 S. Yucca, Mesa, Ariz. 85202
 Filed Dec. 13, 1994, Ser. No. 355,063
 Int. Cl.⁶ D06F 39/00

U.S. Cl. 8—159

11 Claims



11. A cleaning aid for fabric washing machines using a liquid cleaning medium, the liquid having a top surface and bottom, the cleaning aid comprising:

- a first rubber scrubbing device having flexible rubber protrusions wherein the first rubber scrubbing device floats on the liquid top surface;
- a second rubber scrubbing device having flexible rubber protrusions wherein the second rubber scrubbing device is weighted such that it sinks below the liquid top surface; and
- a third rubber scrubbing device having flexible rubber protrusions wherein the third rubber scrubbing device is weighted such that it sinks to the liquid bottom.

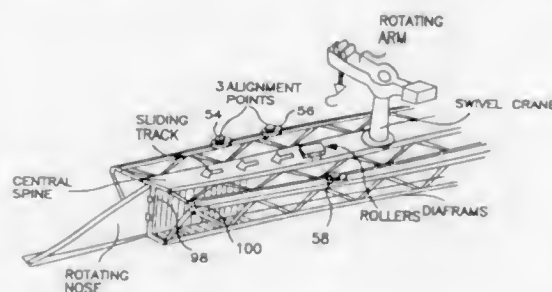
5,511,266

CONTINUOUS INCREMENTALLY ERECTING VIADUCT CONSTRUCTION SYSTEM
 Antonio A. Dinis, La Jolla, Calif., assignor to Bridgesys Corporation, San Diego, Calif.

Filed Dec. 6, 1994, Ser. No. 349,875
 Int. Cl.⁶ E01D 21/00

U.S. Cl. 14—2.5

17 Claims



1. A precast segmental viaduct construction system, comprising: an elongated erection and assembly vehicle for spanning between at least two viaduct piers and for moving between successive piers, said vehicle having a top deck, an elongated central longitudinal beam having a down facing elongated planar bottom support surface, a pair of elongated trusses secured to and inclined outward from said beam, and a pair of elongated longitudinal planar top support surfaces extending along opposite side edges of said top deck;

a plurality of jacks spaced along said vehicle for cooperatively engaging piers on which said vehicle is supported for positioning said vehicle relative to piers on which it is supported; and

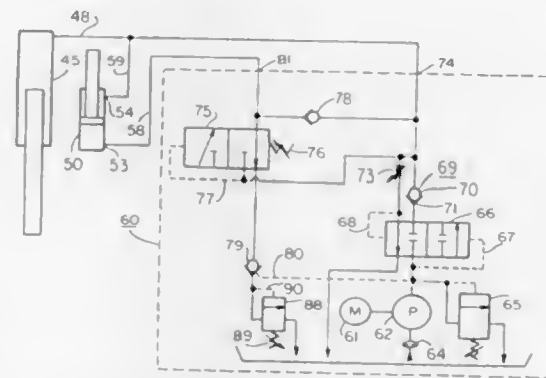
a support assembly for supporting said vehicle on a pier, said support assembly having jacks for selectively elevating and lowering the vehicle.

5,511,267

DOCK LEVELER HYDRAULIC CIRCUIT
 James C. Alexander, London, Canada, assignor to The Serco Corporation, London, Canada
 Continuation-in-part of Ser. No. 284,248, Aug. 2, 1994. This application Jan. 11, 1995, Ser. No. 371,565
 Int. Cl.⁶ E01D 1/00

U.S. Cl. 14—71.7

7 Claims



1. A hydraulic circuit for a dock leveler having a deck powered by a first hydraulic cylinder and lip powered by a second hydraulic cylinder, said hydraulic circuit comprising:

- a source of hydraulic fluid, an hydraulic power circuit coupled between said source of hydraulic fluid and said first hydraulic cylinder and said second hydraulic cylinder to control movement of said deck and said lip, said hydraulic power circuit including a pump to deliver fluid under pressure from said source of hydraulic fluid, first valve means operatively coupled to said pump to control fluid flow between said source and said first hydraulic cylinder and said second hydraulic cylinder, second valve means operatively coupled to said first valve means to control fluid flow between said source and said second hydraulic cylinder, a check valve operatively coupled to said second valve means to control fluid flow from said second valve means to said source, and a pressure relief valve coupling said check valve to said source of hydraulic fluid, said pressure relief valve controlling the rate of flow from said second hydraulic cylinder through said check valve as said deck raises and said lip retracts, and said pressure relief valve preventing a flow of fluid from said second hydraulic cylinder as said check valve closes to prevent said lip from drooping after said pump has supplied fluid under pressure through said second valve means to extend said lip.

5,511,268

CONSTRUCTION OF LARGE STRUCTURES BY ROBOTIC CRANE PLACEMENT OF MODULAR BRIDGE SECTIONS

James S. Albus, Kensington, Md.; Ken Goodwin, Alexandria, Va., and Yair Tene, N. Potomac, Md., assignors to The United States of America as represented by the Secretary of Commerce, Washington, D.C.

Filed Aug. 8, 1994, Ser. No. 286,965
 Int. Cl.⁶ E01D 15/12

U.S. Cl. 14—77.1

20 Claims

1. A crane capable of lifting and carrying modular bridge sections for overpass bridge construction, the crane comprising:

a first supporting leg frame including a first pair of supporting legs, each of said legs comprising structure providing mobility of said crane and having a first length;

a second supporting leg frame including a second pair of supporting legs, each of said legs comprising structure providing mobility of said crane and having a second length, longer than said first length; and

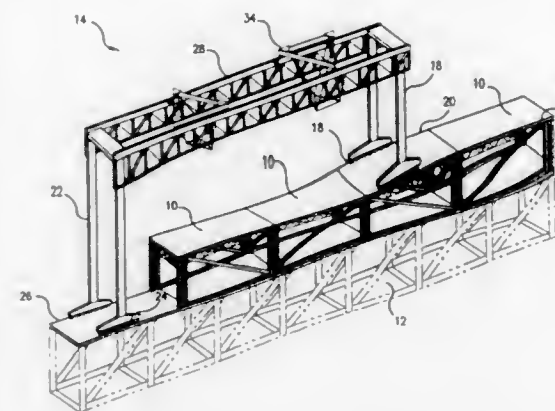
5,511,270

HAIR BRUSH

Eliahu Eliachar, 25 Yefe Nof Street, Haifa 34371; Omri Rothschild, 4 Abraham Lev Street, Tel Aviv 64284, and Roni Raviv, 7 Maccabi Street, Ness Ziona 70400, all of, Israel
 Filed Oct. 26, 1994, Ser. No. 329,468
 Int. Cl.⁶ A46B 13/02

U.S. Cl. 15—22.1

15 Claims



a plurality of trusses connected between said first and second pairs of supporting leg frames, said trusses supporting heavy-lift corner cables capable of lifting and carrying said modular bridge sections;
 wherein said first supporting leg frame is movable on an installed bridge section fixed to an existing section and wherein said second supporting leg frame is movable on said existing section.

1. An electrically powered vibrating hair brush comprising: an electric vibratory drive;

a handle portion; and

a brush head portion, driven by the vibratory drive,

the brush head portion comprising a base portion which lies generally in a plane and a multiplicity of bristles which extend outwardly from the base portion, generally perpendicular to the plane, said brush head portion being non-fixedly mounted onto the handle portion about a longitudinal axis, so as to permit both relative axial movement along said longitudinal axis and relative rotational movement thereabout, said electric vibratory drive being operative to provide vibration of the brush head portion both in the plane and in a plane perpendicular thereto and perpendicular to the longitudinal axis.

5,511,269

BATTERY POWERED TILE CLEANING APPARATUS
 Kay F. Watson, 395 NE, 21st St. #604, Miami, Fla. 33137
 Filed Dec. 5, 1994, Ser. No. 349,245

Int. Cl.⁶ A46B 13/02; 5/02; A47L 11/38

U.S. Cl. 15—22.1

6 Claims



1. A battery powered tile cleaning apparatus comprising:

a tubular wand having two ends;

a means for grasping and directing on one of said ends of said wand;

said means for grasping and directing comprising a pistol grip; an opening on the other of said ends of the wand;

a tubular wand extension having two ends and being concentrically located within and telescopically connected to the wand; the wand extension being axially translatable through the opening of the wand into extended and retracted positions;

motor means, comprising a direct current electric motor, positioned within the wand extension at the end of the wand extension distal from the means for grasping and directing;

a shaft means, attached to the motor means, extending beyond the end of the wand extension distal from the means for grasping and directing;

means for activating said motor means, said means for activating positioned in the wand and comprising at least one battery;

means for connecting the activating means and the motor means, said motor means comprising:

an on-off switch; and

a slow-fast switch connected to the on-off switch;

means for cleaning operatively attached to the shaft means;

means for releasably locking the wand extension in the extended and retracted positions;

means, engaging said shaft means, for causing reciprocating motion of the means for cleaning; a spring biased ball mounted in the shaft means for operatively connecting the means for causing reciprocating motion to the shaft means.

5,511,271

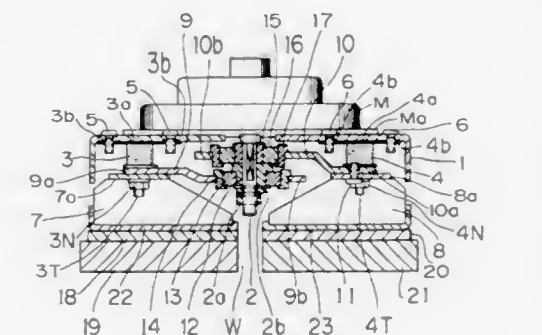
VIBRATION TYPE FLOOR SWEEPER

Osamu Shishido, and Yuichi Terada, both of Shizuoka, Japan, assignors to Amano Corporation, Kanagawa, Japan
 Filed Jul. 20, 1994, Ser. No. 277,967

Claims priority, application Japan, Jul. 30, 1993, 5-208818
 Int. Cl.⁶ A47L 11/12

U.S. Cl. 15—49.1

6 Claims



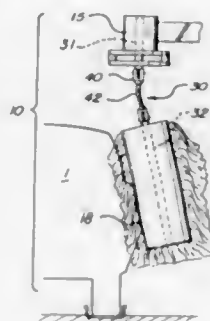
1. A vibration type floor sweeper comprising a mounting frame; a motor with shaft mounted on said mounting frame; two eccentric members oppositely fixed to said shaft; plate means slidably mounted on each of said eccentric members and extending outwardly therefrom in opposite directions from said shaft; said plate means having outer ends, vibration damping means interconnecting said plate means at said outer ends and said mounting frame; and a set of two pads or brushes having a laterally symmetrical irregular square configuration, said set of two pads or brushes being fixed to said plate means, each of said two pads or brushes being horizontal, but vibrated in opposite directions, by operation of said motor on said two eccentric members through rotation of said shaft.

5,511,272
PRE-ENGINEERED FAILURE LINK FOR BRUSH SHAFT
 Michael J. Belanger, Walled Lake, and Robert J. Wentworth, Farmington Hills, both of Mich., assignors to Belanger, Inc., Northville, Mich.

Filed Dec. 9, 1994, Ser. No. 352,657

Int. Cl.⁶ B60S 3/06

U.S. Cl. 15—53.3



1. In a vehicle-cleaning brush unit having a brush-supporting shaft depending from a support unit, an improved shaft structure comprising:

a brush shaft comprising separate first and second shaft portions connected to a brush and a support unit, respectively, and a removable sacrificial link connecting the first and second shaft portions to permanently deform under external bending load prior to the first and second shaft portions.

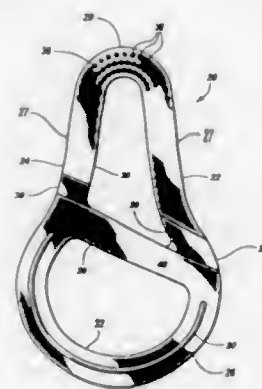
5,511,273
VARIABLE ENGAGEMENT TOOTHBRUSH
 David T. Carroll, Schofield, Wis., assignor to Preventive Dental Specialties, Inc., Rothschild, Wis.

Filed Aug. 22, 1995, Ser. No. 517,791

Int. Cl.⁶ A47L 13/12; A46B 5/02; 9/04

U.S. Cl. 15—105

7 Claims



1. A toothbrush comprising:

a front ring having two frontwardly extending front members connected by a front brush head member;
 b) a plurality of bristles which extend upwardly from the front brush head member;
 c) a rear ring;
 d) a center bar which extends between the front ring and the rear ring, wherein a front opening is defined between the front ring and the center bar, and the front opening is large enough to receive at least two human fingers therethrough, and wherein a rear opening is defined between the rear ring and the center bar, and the rear opening is large enough to receive at least two human fingers therethrough; and wherein the center bar defines an angle with one of the front members of less than 90 degrees, and defines an angle with the other of said two front

members which is greater than 90 degrees, to thereby define a wedge space, into which the fingers of a user may be inserted and wedged to thereby retain control of the toothbrush.

13 Claims

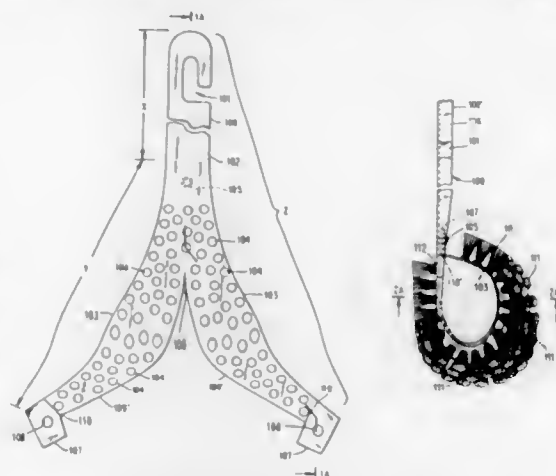
5,511,274
INTEGRALLY FUSED BRUSH CONSTRUCTION
 John C. Lewis, Jr., Salisbury, Vt., assignor to Tugel Industries, Inc., Forest Dale, Vt.

Filed Oct. 18, 1993, Ser. No. 137,537

Int. Cl.⁶ A46B 7/02; 3/04; 15/00

U.S. Cl. 15—160

4 Claims



1. A preassembly tufted construction comprising:
 a flat sheet of thermoplastic material including a first portion and a second handle portion, said first portion defined by first and second elongated sections, each section having a longitudinal curved edge, said sheet having a first surface mounting a plurality of mutually spaced integral monofilament tufts disposed at preselected sites on said sheet, said tufts covering at least part of the first portion of said sheet, a second surface of said sheet opposite the first surface being flat; and
 means carried by said first and second sections, at least at said curved edges, for assembly of the same into a three dimensional arcuate tufted construction by joining said edges of said first and second sections with said second handle portion such that said tufts extend radially from said first portion.

5,511,275
TOOTHBRUSH EXHIBITING THREE-DIMENSIONAL BRISTLE PROFILE AND END ROUNDED BRISTLES FOR IMPROVED INTERPROXIMAL CLEANING WITHOUT INCREASING GUM IRRITATION

Daniel W. Volpenhein, Mainville; Elizabeth J. Mueller, and Thomas J. Hall, both of Cincinnati, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 81,954, Jun. 23, 1993, abandoned,

which is a continuation of Ser. No. 865,771, Apr. 6, 1992,

abandoned, which is a continuation of Ser. No. 780,371, Oct.

23, 1991, abandoned, which is a continuation of Ser. No.

540,032, Jun. 19, 1990, abandoned. This application May 16,

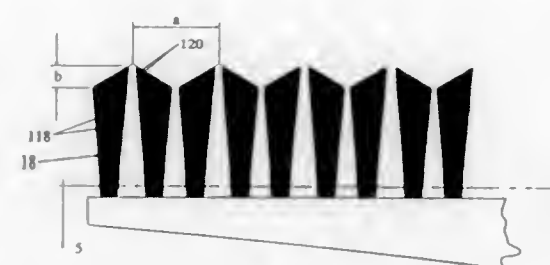
1995, Ser. No. 442,088

Int. Cl.⁶ A46B 9/04

U.S. Cl. 15—167.1

19 Claims

1. A toothbrush exhibiting superior interproximal cleaning without increasing gum irritation comprising:
 (a) an elongate member having a head portion;
 (b) a multiplicity of bristles, substantially all of said bristles being end rounded, said bristles being cut to form a distal end and an attachment end, the distal end of said bristles being ground while in a common plane, said bristles being moved



relative to each other so that the distal ends of said bristles, in combination, form a substantially aligned generally "V" shaped side profile, a plurality of peaks and a plurality of troughs, said peaks and troughs being defined by said generally "V" shaped side profile, a distance between adjacent peaks of from about 0.19 inches to about 0.23 inches, and a peak to trough distance of from about 0.09 inches to about 0.16 inches, the bristles further having a stiffness in the range from about 0.2 psi to about 0.08 psi and a Buttress Factor from about 0.8 to about 0.96, the attachment end of said bristles being cut to a common plane and secured to the head portion of the elongate member.

5,511,276
TOOTHBRUSH WITH REPLACEABLE BRISTLE CARRIER

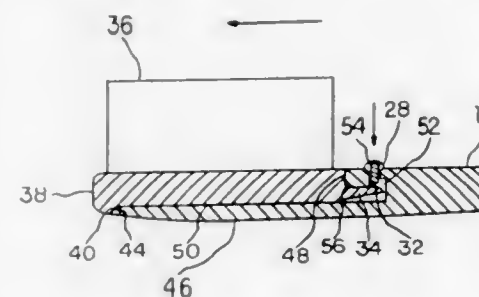
Kuo-Ming Lee, 12180 Ramona Ave. #12, Chino, Calif. 91710

Filed May 22, 1995, Ser. No. 447,110

Int. Cl.⁶ A46B 9/04; 5/02

U.S. Cl. 15—167.1

6 Claims



1. A toothbrush having detachable mated parts comprising:
 an elongated handle;

a one-piece bristle carrier including:

a bristle holder symmetric about the longitudinal axis of the handle,
 a front end normal to said longitudinal axis,
 a rear end normal to said longitudinal axis,
 a male latch portion attached perpendicularly to said rear end,
 a top surface with embedded bristles,
 two sliding side surfaces depending perpendicularly downward from said top surface,
 two oppositely inclined sliding surfaces extending upwardly from said sliding side surfaces and away from said longitudinal axis,
 two oppositely slightly beveled sliding surfaces extending downwardly from said inclined sliding surfaces and close to said longitudinal axis, and
 a flat bottom sliding surface fixed between said slightly beveled sliding surfaces, and;

a bristle carrier receptacle affixed to said elongated handle including:
 a front end wall normal to the longitudinal axis of the handle,
 a rear end wall normal to said longitudinal axis containing a male latch receiving portion,
 a top plane surface normal to said rear end wall,

two side walls depending perpendicularly downward from said top plane surface,
 two oppositely inclined side walls extending upwardly from said walls and away from said longitudinal axis,
 two oppositely slightly beveled side walls extending downwardly from said inclined side walls and close to said longitudinal axis, and
 a flat bottom wall fixed between said slightly beveled side walls;
 wherein said bristle carrier and said receptacle provide seven surfaces of sliding contact when mating.

5,511,277
TOOTHBRUSH

James A. Simonds, 3335 Scrub Oak Dr., Santa Rosa, Calif. 95404

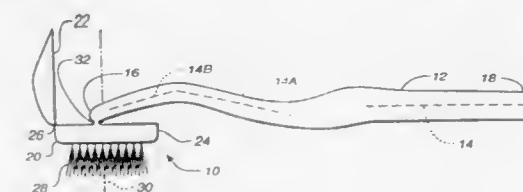
Continuation of Ser. No. 220,539, Mar. 31, 1994, abandoned, which is a continuation-in-part of Ser. No. 147,756, Nov. 5, 1993. This application Jun. 6, 1995, Ser. No. 470,645

Claims priority, application WIPO, Nov. 4, 1994, PCT/US94/12696

Int. Cl.⁶ A46B 9/04

U.S. Cl. 15—167.1

20 Claims

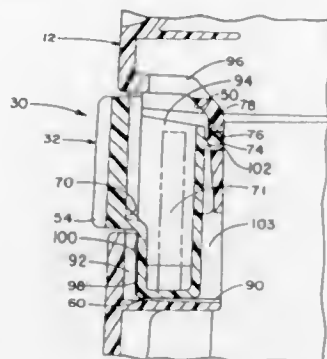


1. An articulate toothbrush comprising a handle, a brush and a hinge connection therebetween and wherein:

a. the handle comprises an elongate grasp, for grasping about the longitudinal axis thereof, and a brush support connected to one end of the grasp, extending away from the grasp generally in the direction of the longitudinal axis of the grasp and having a generally arch-shaped portion with a leg of the arch-shaped portion proximal to the grasp diverging from the longitudinal axis thereof and having a leg distal to the grasp that extends back toward the longitudinal axis at an acute angle therewith to the axis of rotation of the hinge connection with the brush.
 b. the brush comprises a head having a longitudinal axis that extends, in one direction, toward the grip, the head terminating in that direction at a heel, and, in the other direction, away from the grip, the head terminating in that direction at a toe, and having a top proximal to the hinge connection with the distal leg of the support and a bottom distal to the hinge connection with the support, the bottom having bristles depending therefrom and generally distributed therealong from the toe to the heel of the head and
 c. the hinge connection comprises a flexible hinge connecting the distal leg of the support and the top of the brush head, at an intermediate position between the heel and toe, the hinge being comprised of flexible plastic and having a narrow breadth in the direction parallel to the longitudinal axis of the head and a wide breadth in the direction transverse to the longitudinal axis of the brush head, relative to the breadth thereof parallel to the longitudinal axis of the brush head, whereby to create the hinge axis of rotation of the hinge connection, the hinge axis of rotation being generally normal to the longitudinal axis of the grasp and to the longitudinal axis of the brush head for relative pivotal movement therebetween within a range of movement extending over a predetermined acute angle arc from a position where the longitudinal axis of the brush head is parallel with the longitudinal axis of the grasp to move the heel of brush head toward the distal leg of the support over the predetermined acute angle arc.

5,511,278
CLEANER WITH SCENT DISPENSING
 Robert C. Shorthill, Canton, Ohio, assignor to The Hoover Company, North Canton, Ohio
 Filed Apr. 4, 1994, Ser. No. 222,250
 Int. Cl.⁶ A47L 9/00
 U.S. Cl. 15—246.2

5 Claims

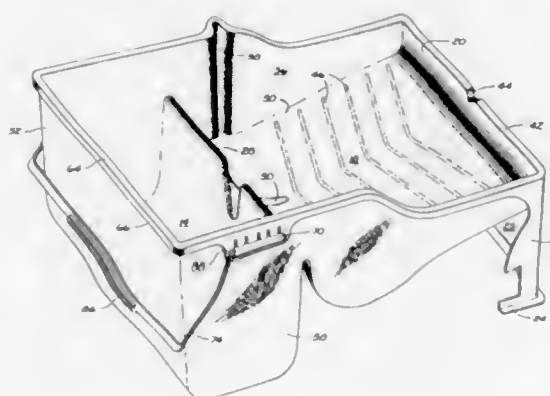


1. A scent dispensing arrangement for a vacuum cleaner including:

- a) a hard bag housing door of said vacuum cleaner;
- b) a depression formed in said hard bag housing door and having an opening;
- c) a scent dispenser slide mounted generally outwardly of said hard bag door and being capable of reciprocatory motion in said depression;
- d) said scent dispenser slide including a medallion portion substantially covering said depression opening;
- e) said scent dispenser slide inwardly mounting a scent tablet;
- f) said scent dispenser serving to at least partially obscure said opening during portions of its said reciprocatory motion;
- g) a flow of vacuum cleaning exhaust air flowing to said scent tablet through an exit port in said hard bag housing to receive scent for its flow; and
- h) said scent dispensing arrangement having no external venting downstream of said scent tablet so that said scented exhaust flow solely escapes directly, closely around the perimeter said medallion portion.

5,511,279
STACKABLE PAINT ROLLER PAN HAVING AN INTEGRAL PAINT RESERVOIR, A PAINT ROLLER PARKING DEVICE FOR A ROLLER WITH EXTENDED HANDLE, AND AN ADJUSTABLE ONE-HAND CARRYING HANDLE
 Nicholas W. Ippolito, 36 Gehrig St., Commack, N.Y. 11725
 Filed Aug. 29, 1994, Ser. No. 297,572
 Int. Cl.⁶ B65D 21/032; B44D 3/12
 U.S. Cl. 15—257.06

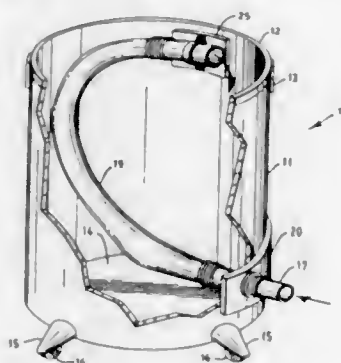
11 Claims



- a) a relatively deep paint reservoir;
- b) a relatively shallow, inclined roller ramp; and
- c) a paint dam separating said reservoir from said ramp, said paint dam having at least one paint draining passage for allowing paint to drain from said ramp into said reservoir, said dam having a side facing said ramp and having a curved surface to accommodate the curvature of a paint roller.

5,511,280
VACUUM CLEANER ASSEMBLY WITH LOW VACUUM INLET
 William C. Jankowski, P.O. Box 508, Orleans, Mass. 02653
 Filed Feb. 27, 1995, Ser. No. 394,601
 Int. Cl.⁶ A47L 5/36
 U.S. Cl. 15—327.2

10 Claims



1. An improved vacuum cleaner assembly of the type having a tank with a vertical wall and a base defining an accumulation area, a removable lid for sealing the tank, means for removably attaching the lid to the tank, means for evacuating air from the space within the tank, an outlet to exhaust air evacuated from the tank, movement means for providing mobility to the assembly, the improvement comprising:

- a vacuum inlet suited to connection to an external vacuum hose introduced through the vertical wall of said tank at the base of said vertical wall;
- a sealing means surrounding said vacuum inlet preserving liquid tight and air tight integrity of said vertical wall;
- an internal conduit means connected to said vacuum inlet confining and directing the flow of matter passing through said vacuum inlet to the top of said tank and discharging said matter in a generally downward direction into the accumulation area of said tank;
- whereby discharge of matter passing through the external vacuum hose, the vacuum inlet, and the internal conduit occurs high in the tank eliminating the problem of accumulated matter in the tank blocking the discharge of new matter entering the tank, and the connection of the external vacuum hose at the base of the tank produces insufficient mechanical advantage to enable the operator to capsize the vacuum cleaner assembly by pulling on the external vacuum hose,

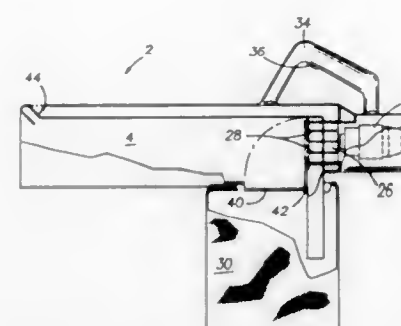
5,511,281
BLOWER VACUUM
 Craig D. Webster, Newcastle-upon-Tyne, United Kingdom, assignor to Black & Decker Inc., Newark, Del.
 Filed Mar. 23, 1995, Ser. No. 410,391
 Claims priority, application United Kingdom, Mar. 31, 1994, 9406532.3

Int. Cl.⁶ A47L 5/24

U.S. Cl. 15—330

11 Claims

1. A debris collecting apparatus including a debris conduit, one end of which debris conduit is an operating end and the other end of which debris conduit is adapted for attachment to a debris collecting container;

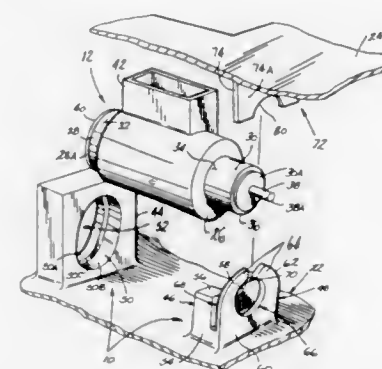


means for generating an entrained air flow at the operating end of the debris conduit into the debris conduit and means for comminution of the debris, characterised in that the means for generating the entrained air flow is arranged external to the debris conduit and the means for comminution of the debris is arranged within the debris conduit.

5,511,282
MOTOR MOUNTING ARRANGEMENT AND METHOD FOR A VACUUM CLEANER
 Eric R. Metzger, Sand Lake, and Gary L. Smith, Belding, both of Mich., assignors to Bissell Inc., Grand Rapids, Mich.
 Filed Apr. 13, 1995, Ser. No. 421,402
 Int. Cl.⁶ A47L 9/22

U.S. Cl. 15—412

22 Claims



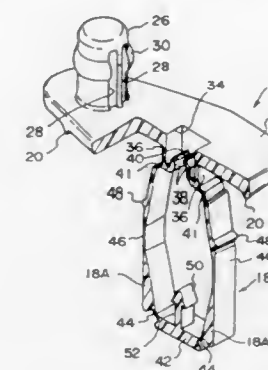
1. An arrangement for mounting a motor and fan unit for use in a vacuum cleaner, said mounting arrangement comprising:

- (a) a support substrate;
- (b) a support structure attached to said support substrate and defining an opening for receiving a first mounting portion on a first end of the motor and fan unit;
- (c) a support member attached to said support substrate and being spaced from said support structure, said support member having a recessed portion for receiving a second mounting portion on a second end of the motor and fan unit; and
- (d) a flexible locking tab attached to said support substrate and being disposed adjacent to said support member and movable between engaging and disengaging positions relative to the second mounting portion of the motor and fan unit, said locking tab having an opening for receiving the second mounting portion of the motor and fan unit when in said engaging position.

5,511,283
MATCLIP
 Akihiko Hirose, Zama, Japan, assignor to Illinois Tool Works Inc., Glenview, Ill.
 Filed Nov. 25, 1994, Ser. No. 348,936
 Claims priority, application Japan, Dec. 3, 1993, 5-064831 U
 Int. Cl.⁶ A47G 27/04

U.S. Cl. 16—8

18 Claims



1. A matclip for securing a floor mat to a floor carpet within an automotive vehicle, comprising:

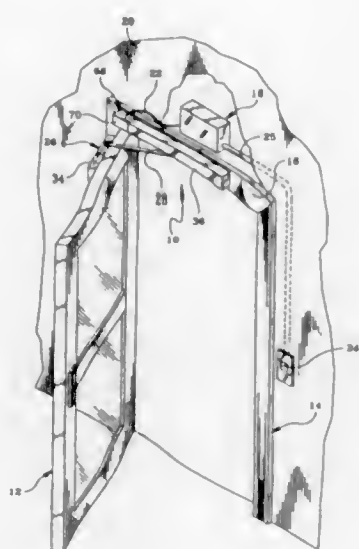
- a base plate disposed atop a floor carpet laid upon a vehicle floor panel, said floor carpet having a through-hole extending there-through;
- a leg, including at least one pair of leg members connected at first end portions thereof to, and which extend downwardly from, a lower surface of said base plate so as to be insertable through said through-hole defined within said floor carpet, and having means defined thereon for permitting said at least one pair of leg members to be foldable at intermediate portions thereof such that said intermediate portions of said at least one pair of leg members can move apart from each other;
- a connecting plate for connecting second end portions of said leg members, disposed opposite said first end portions thereof connected to said base plate, to each other;
- first engaging means disposed upon said connecting plate and extending toward said base plate;
- second engaging means disposed upon said leg for engaging said first engaging means of said connecting plate when said connecting plate is moved toward said base plate and said intermediate portions of said leg members are folded and moved apart with respect to each other; and
- a column mounted upon an upper surface of said base plate for insertion through an aperture of a floor mat to be secured to said floor carpet.

5,511,284
DOOR HOLD OPEN DEVICE
 Andrew Current, Oglesby, Ill., assignor to Schlage Lock Company, San Francisco, Calif.
 Filed May 30, 1995, Ser. No. 453,305
 Int. Cl.⁶ E05F 3/00; E05C 3/06; E05B 65/10
 U.S. Cl. 16—82

8 Claims

1. A door hold open device for maintaining a door swingably mounted on a door jamb in an open position, said door hold open device comprising:

- an elongate track housing mounted on the door jamb along a generally horizontal axis;
- a shaft disposed within the track housing, said shaft having a threaded middle portion and non-threaded outer end portions, said shaft extending along said horizontal axis and being mounted for free rotation about said axis;
- a slider block having a threaded bore threadably engaging said threaded portion of the shaft, said slider block being adapted



to move linearly along said horizontal axis and causing the axial rotational movement of said shaft as it moves linearly from side-to-side;
 an arm link pivotally connected at one of its ends to the slider block and pivotally connected at its other end to the door, the arrangement being such that upon manually opening and closing the door, the arm link moves the slider block linearly from side-to-side thereby causing the axial rotational movement of the shaft; and
 a clutch mechanism disposed adjacent the shaft, said clutch mechanism being selectively engagable with a non-threaded end of said shaft for preventing the rotation of the shaft thereby locking said slider block in a stationary position for maintaining the door in an open position.

5,511,285

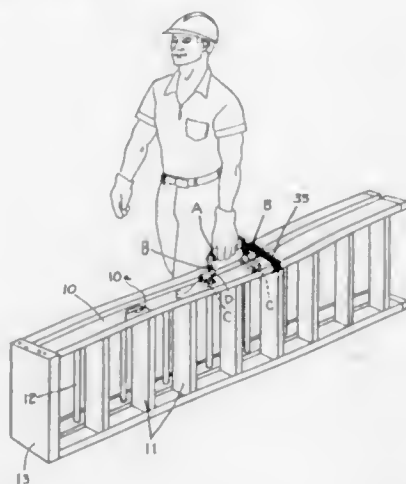
LADDER HANDLE ASSEMBLY

John B. Bush, 1117 Cleo Chapman, Sunset, S.C. 29685, and Randy G. Gilchrist, 632 W. Springwood Dr., Seneca, S.C. 29678

Filed Apr. 19, 1994, Ser. No. 229,809
 Int. Cl.⁶ E05B 7/00

U.S. Cl. 16—114 R

11 Claims



1. A handle assembly for carrying a ladder having parallel side rails comprising:
 an elongated hand gripping element having two ends;
 two depending legs having one end on each leg attached adjacent to said ends of said elongated hand gripping element

respectively; the other end of each depending leg having a first coupling and having a second coupling carried by a fastener bracket;
 said first coupling and second coupling forming a pivotal connection securing each depending leg to said fastener bracket; said fastener bracket being attachable to a side rail of said ladder;
 whereby said ladder can be carried by one hand of a user on the elongated gripping element secured to a side rail of the ladder.

5,511,286

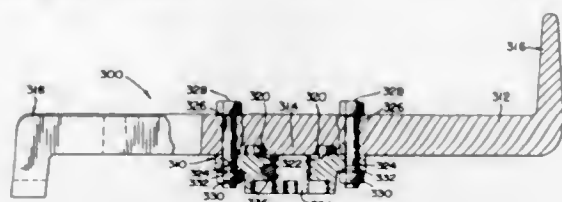
HANDLE WITH MODULAR HUB

Michael R. Williams, Houston; Richard D. Van Orsdale, The Woodlands; Orlando A. Mejia, Houston, and Don B. Wafer, Spring, all of Tex., assignors to FMC Corporation, Chicago, Ill.

Continuation-in-part of Ser. No. 968,615, Oct. 29, 1992, Pat. No. 5,404,615. This application Oct. 7, 1993, Ser. No. 133,689
 Int. Cl.⁶ E05B 1/00

U.S. Cl. 16—114 R

3 Claims



1. An apparatus for imparting rotational motion to a rotationally-operable device having a valve stem and shear pin assembly, the apparatus comprising:

a handle including an elongated arm, a hand grip attached to one end of the arm, yoke means attached to the distal end of the arm for engaging a hand grip of a second such handle and a hub section located between the hand grip and the yoke means;
 a modular hub means for connecting the handle to the rotationally-operable device;
 the hub means having internal voids adapted to engageably receive any one of a number of different valve stem and shear pin sizes and configurations;
 means for linking the hub means to the hub section to provide for the transfer of torque between the hub means and the handle; and
 means for removably securing the hub means to the hub section; whereby different hub means having different internal voids may be used to connect the handle to different valve stem and shear pin assemblies.

5,511,287

FURNITURE HINGE

Horst Lautenschläger, Reinheim, and Gerhard W. Lautenschläger, Wersau, both of, Germany, assignors to MEPLA-Werke Lautenschläger GmbH & Co. KG, Germany
 Filed Nov. 18, 1994, Ser. No. 342,145

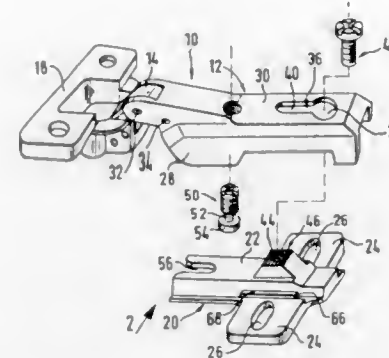
Claims priority, application Germany, Dec. 15, 1993, 43 42 744.8

Int. Cl.⁶ E05D 7/06; 7/04

U.S. Cl. 16—239

8 Claims

1. A cabinet hinge having a supporting wall-related part which is formed as an elongated sheet-metal supporting arm having a channel-shaped cross section, a hinge link coupling said supporting arm to a door-related part, a mounting plate on which said door-related part can be releasably and adjustably mounted, a cabinet carcass having a supporting wall to which the mounting plate can be fastened, the supporting arm having flanges that are at least partially astride the mounting plate and a web of the supporting arm having a cabinet-interior end having an elongated opening, a



screw, having a shaft, is driven through said elongated opening into the mounting plate and a tap is provided in the web of the supporting arm in which a threaded spindle is contained at the bottom end of which, on the mounting plate side, a holding head of increased diameter connected to the spindle by a neck of lesser diameter is inserted into a slot, which has an open end facing the link mechanism and is provided in the mounting plate and which laterally clutches the holding head on the threaded spindle side, and secures it against lifting away from the mounting plate, comprising said elongated fastening opening being located at a distance from the carcass-interior end of the supporting arm and being shaped as a slot having a pass-through opening of an enlarged diameter for the head of the mounting screw, said tap receiving the shaft of the mounting screw is provided in a projection reaching from the mounting plate toward the web of the supporting arm and having an end face in contact with the inner surface of the web, and that the supporting arm, when tightened by the mounting screw against the projection, is supported on the mounting plate in an area offset toward the carcass interior with respect to the area through which the mounting screw passes.

5,511,288

ADJUSTABLE LOOP CLAMP

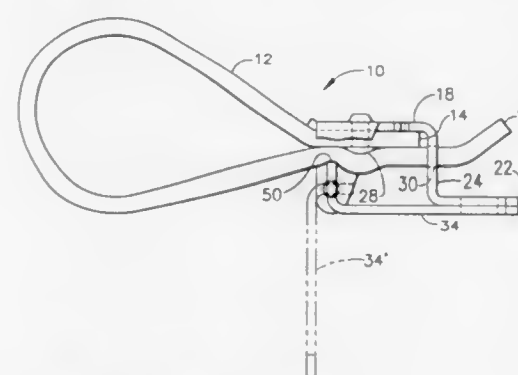
Glenn McAndrews, Lebanon, Ohio; James T. Hegge, Bellevue, Ky.; Christopher R. Koss, West Chester, Ohio; Michael A. Umney, Mason, Ohio, and Douglas J. Jones, Cincinnati, Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed Oct. 26, 1994, Ser. No. 329,747

Int. Cl.⁶ A44B 11/00; 21/00

U.S. Cl. 24—16 R

8 Claims



1. A clamp assembly comprising:

(a) a strap with first and second ends;
 (b) a base having an elevated platform, a lower platform, and a pair of opposing side supports, each of said pair of opposing side supports having a support aperture;
 (c) strap attaching means for securably affixing said first strap end to said base;

(d) strap receiving means for receiving said second end of said strap;
 (e) a locking cam having a handle portion, a cam portion, and pin protrusions, said pin protrusions pivotally engageable into said support apertures, allowing rotation of the locking cam into a position that engages the strap with the cam portion, locking the strap against the base while simultaneously contacting the handle portion against the lower platform; and
 (f) mount bolt receiving means in said lower platform and said handle portion, said mount bolt receiving means in said lower platform being in alignment with said mount bolt receiving means in said handle portion, for receiving a securable mount bolt to prevent the locking cam from disengagement.

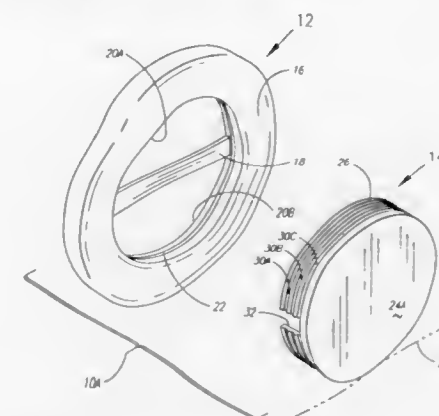
5,511,289

LOCKING BUCKLE

Patricia J. Melia, 11401 S. 257 E. Ave., Coweta, Okla. 74429
 Filed Mar. 31, 1995, Ser. No. 414,752
 Int. Cl.⁶ A44B 6/00

U.S. Cl. 24—66.9

7 Claims



1. A decorative buckle comprising:

a base removably receiving a substrate,
 a cover removably attachable to said base so that said substrate is locked between said base and said cover,
 said base being provided with an outside border, a bar extending between opposite sides of said outside border so that two openings are formed between the bar and the outside border, and said substrate being removably received by said openings in said base,
 an inwardly facing ridge being provided on said outside border, a perimeter lip being provided on said cover, said perimeter lip being provided with a plurality of outwardly facing grooves for removably receiving said ridge, and
 said cover being provided with a pair of gaps therein for removably receiving the bar.

5,511,290

ELASTIC CORD TENSIONING AND LENGTH ADJUSTING APPARATUS

David L. Perry, and Thomas S. Weaver, both of Essex Junction, Vt., assignors to D P Design, Inc., Williston, Vt.

Filed Jul. 18, 1994, Ser. No. 276,791

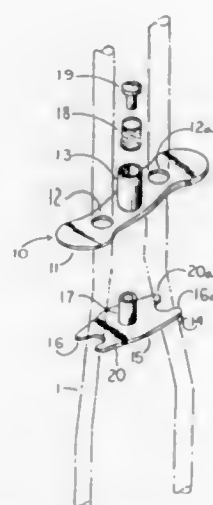
Int. Cl.⁶ F16G 11/00

U.S. Cl. 24—115 H

9 Claims

1. Apparatus for adjusting the length and/or tension of an elastic cord, comprising:

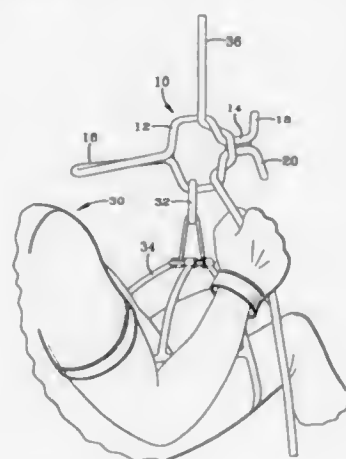
a support platform;
 said support platform having a plurality of apertures;
 said support platform further having a centerline projection tube located thereon;
 a locking mechanism;
 said mechanism comprising a base;



said base comprising cut outs at each end of said base;
said base further comprising a tubular extension for positioning
said tubular extension within said centerline projection tube of
said support platform; and
means for retaining said locking mechanism in position relative
to said support platform.

5,511,291

POWER BRAKE DESCENDER FOR RAPPELLING
Jeffrey W. Crawford, 10123 Loop Rd., Millersport, Ohio 43046
Filed Aug. 8, 1994, Ser. No. 286,962
Int. Cl.⁶ A63B 29/00; F16G 11/00
U.S. Cl. 24—129 R



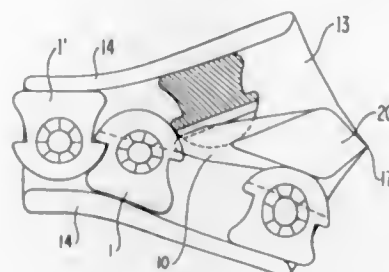
1. A rappelling descender comprising:
(a) an elongated ring having opposite longer sides and inter-
posed opposite shorter sides;
(b) a capstan attached to a first longer side of the ring; and
(c) an elongated, hand grippable handle extending at least sub-
stantially one palm width from a second longer side of the
ring, opposite the capstan, for clasping with a hand.

5,511,292
ZIPPER CLOSURE
Christian Covi, Ertzens, and Werner Steintechner, Jenbach,
both of, Austria, assignors to D. Swarovski & Co., Wattens,
Austria

Filed Jun. 28, 1995, Ser. No. 496,217
Int. Cl.⁶ A44B 19/00

U.S. Cl. 24—410

2 Claims



1. A zipper closure comprising a first and second row of teeth
formed on a first and second band, each band comprising an edge
bead or web, said teeth having free ends, each of which with a
channel formed therein, when said zipper closure being closed said
free ends of said first row of teeth extending into an area of
attachment of said teeth of said second row of teeth and vice versa,
whereby said channels receive said edge beads or webs, the zipper
closure further comprising a slider with a top cover plate and a
bottom cover plate connected by a cross-piece, said slider having a
wider front end and a narrower back end, said cross-piece having a
front end directed towards said wider front end of said slider and a
back end directed towards said narrower back end of said slider,
wherein said cross-piece is comprising a tapered projection extend-
ing beyond said back end of said cross-piece and directed towards
said narrower back end of said slider, whereby an opening of the
zipper closure said projection engages in said channels of said
teeth and an outwardly directed force is exerted onto said teeth.

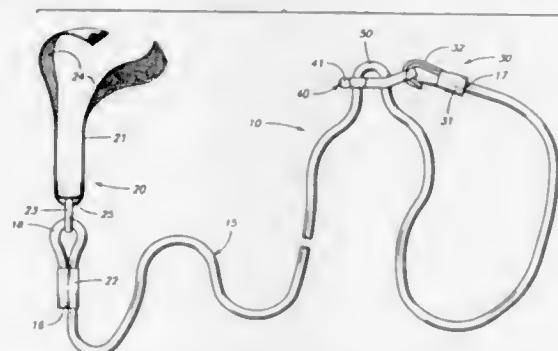
5,511,293

LEASH FOR FISHING RODS
Richard T. Hubbard, Jr., S. 19606 Cheney Plaza Rd., Cheney,
Wash. 99004, and Richard P. Beaty, 46966 McGuire Rd.,
Sardis, B.C., Canada

Filed Mar. 3, 1995, Ser. No. 397,888
Int. Cl.⁶ A44B 18/00; A01K 87/00; 97/00

U.S. Cl. 24—442

16 Claims



16. A leash for attachment between an article and a relatively
stationary surface, comprising:
an elongated elastic member including first and second ends and
resiliently stretchable between said first and second ends;
a strap connector at the first end adapted to be wrapped about
and attached to said article such as a fishing rod;
a clip at the second end of the elongated elastic member;

a keeper including a pair of elastic member receiving apertures
oriented transversely to the elastic member, and a clip anchor
point;

wherein the keeper is mounted to the elastic member between
the first and second ends, with the elastic member being
slidably threaded through both elastic member receiving aper-
tures;

the keeper being selectively adjustable along the length of the
elastic member at selected distances from the second end;
wherein the clip is attachable to the clip anchor point to form a
doubled section along the elastic member between the keeper
and clip, of an adjustable length for attachment to the rela-
tively stationary surface, the length of the doubled section
being variable with selective adjustment of the keeper along
the length of the elastic member to correspondingly vary the
overall length of the leash and resistance to tension along the
leash between the relatively stationary surface and the strap
connector.

5,511,294

APPARATUS FOR NEEDLING A NONWOVEN WEB
Ernst Fehrer, Auf der Gugl 28, A-4020 Linz, Austria

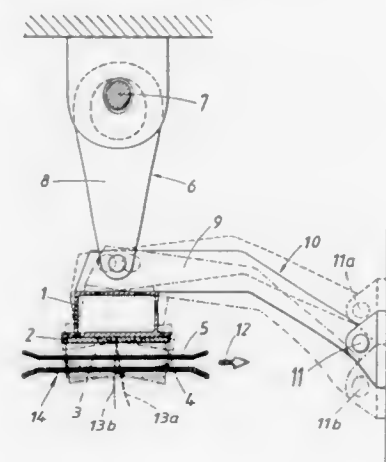
Filed Mar. 7, 1995, Ser. No. 399,731

Claims priority, application Austria, Mar. 23, 1994, 610/94

Int. Cl.⁶ D04H 18/00

U.S. Cl. 28—113

3 Claims



1. In an apparatus for needling a nonwoven web comprising
a needle board carrying a multiplicity of needles,
a web guide consisting of a web support, which is opposite to
said needle board, and a stripper extending between said web
support and said needle board, said web guide being adapted
to guide said nonwoven web in a direction of travel,
a rocker having a pivotal axis and secured to said needle board,
and
a slider crank mechanism pivoted to said rocker and operable to
reciprocate said needle board in a predetermined direction by
means of said rocker,
whereby said needles are operable to penetrate said nonwoven
web on said web support along paths having a mean inclina-
tion relative to said direction of travel of said nonwoven web
in said web guide,
the improvement comprising
means for adjusting said mean inclination of said paths of said
needles relative to said direction of travel.

5,511,295

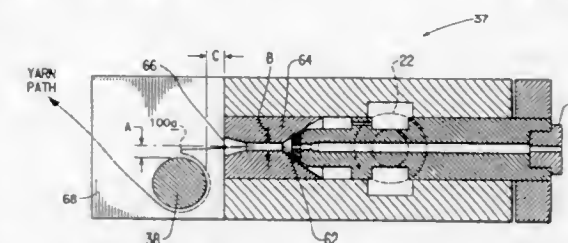
**SYSTEM FOR PREPARING HIGHLY COHERENT AIR
JET TEXTURED YARN**
Jagdish N. Shah, Hockessin, Del., assignor to E. I. Du Pont de
Nemours and Company, Wilmington, Del.

Filed Mar. 15, 1995, Ser. No. 405,041

Int. Cl.⁶ D02G 1/16

U.S. Cl. 28—254

9 Claims



1. In a system for texturing one or more yarns that includes a
source of supply for said yarns, a yarn treating jet positioned
between a feed roll and a nip roll through which yarn passes for
treating with pressurized fluid and means for taking yarn up onto a
package under tension, said jet including a body having inlet and
outlet ends connected by a central bore along a central axis, means
for introducing pressurized gas through a gas inlet into said bore
between said ends to contact yarn passing through the jet at a
location in said bore, said yarn and said gas following a path from
said outlet end of said jet, the improvement comprising: a baffle
located adjacent the yarn outlet end of the jet, said baffle having a
peripheral surface, the portion of said surface nearest said outlet
end being a distance of 0.1 to 4.0 minimum diameters of the bore
downstream of said location, the portion of said surface nearest
said central axis being a distance of from 0.7 to 2.5 of said
minimum diameters from said central axis said baffle providing a
guiding surface means for said yarn for sharply changing direction
of said yarn so as to a bend and for directing the yarn back through
said gas flowing in said path after said yarn leaves the outlet end of
the jet onto the guiding surfaces means of the baffle and back
through the gas following in said path toward said means for
taking yarn up onto a package.

5,511,296

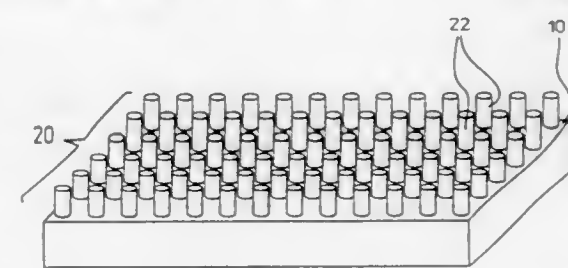
**METHOD FOR MAKING INTEGRATED MATCHING
LAYER FOR ULTRASONIC TRANSDUCERS**
J. Fleming Dias, and Mir S. Seyed-Bolorforosh, both of Palo
Alto, Calif., assignors to Hewlett Packard Company, Palo
Alto, Calif.

Filed Apr. 8, 1994, Ser. No. 225,127

Int. Cl.⁶ H01L 41/22

U.S. Cl. 29—25.35

17 Claims



1. A method of fabricating a transducer to enhance communica-
tion of acoustic waves with a medium comprising:
providing a piezoelectric member having a continuous piezo-
electric radiating surface, and
forming a patterned matching layer having a plurality of posts
containing layer material onto said continuous piezoelectric
radiating surface,
including applying and geometrically patterning material onto said
radiating surface and further including selecting said material and

selecting a layer geometry of posts containing matching layer material on a continuous surface of the piezoelectric member to achieve a desired acoustic impedance for transmitting acoustic waves between said medium and said piezoelectric member.

5,511,297

HORSESHOE CLIP RING CRIMPER APPARATUS

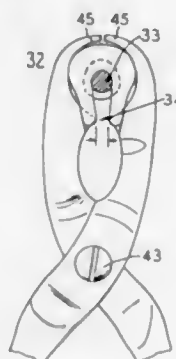
James L. Cross, 351 B E. 91st St., Chicago, Ill. 60619, assignor to James L. Cross, Chicago, Ill.

Filed May 31, 1994, Ser. No. 250,531

Int. Cl.⁶ B23P 19/04

U.S. Cl. 29—243.56

6 Claims



1. A crimper apparatus for replacing a horseshoe clip, the crimper apparatus comprising:

- a first handle;
- a curved jaw at one end of the first handle;
- a second handle pivotally connected to the first handle at a fulcrum;
- a corresponding curved jaw at one end of the second handle, the curved jaws forming a flat surface on one side and further forming an opening receiving the horseshoe clip;
- a recessed ledge constructed and arranged to support the horseshoe clip in a plane parallel to one side of the jaws, the recessed ledge formed in the flat surface; and
- an access notch formed in the flat surface.

5,511,298

DEVICE FOR SETTING A SELF-DRILLING CLAMPING FASTENER

Daniel Gasser, Rebstein, Switzerland, assignor to SFS Industrie Holding AG, Heerbrugg, Switzerland

PCT No. PCT/EP93/01044, § 371 Date Jan. 6, 1994, § 102(e) Date Jan. 6, 1994, PCT Pub. No. WO93/02322, PCT Pub. Date Feb. 4, 1993

PCT Filed Apr. 20, 1993, Ser. No. 175,375

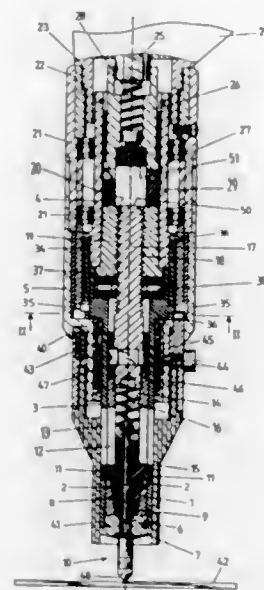
Claims priority, application Germany, May 6, 1992, 42 15 008.6

Int. Cl.⁶ B21J 15/26

U.S. Cl. 29—243.526

12 Claims

1. A device for setting a self-drilling clamping fastener (10), the device comprising an external housing (5); clamping jaws (2); a sleeve-shaped mounting member (1), said clamping jaws gripping a tension mandrel (9) of the clamping fastener and being retained in said sleeve-shaped mounting member (1); a rotary drive (25) having a motor drive (24); a drive sleeve (4) which is coupled to and being driven by the rotary drive in operation, said drive sleeve (4) having a threaded bore (20), said mounting member (1) having at an end thereof remote from said clamping jaws an external thread (18) engaged in said threaded bore; a guide sleeve (3); means for locking said mounting member (1) against rotation, said mounting member being axially displaceable in said guide sleeve (3) but retained secured against rotation in respect thereto, said guide sleeve (3) and said drive sleeve being coupled to each other by one of a force-fitting coupling and a form-fitting coupling in a



driving direction of rotation, said guide sleeve (3) and said drive sleeve (4) being rotatably mounted in said external housing (5), said external housing (5) being fixedly connected to a housing of said rotary drive; and detent members (40) displaceably positioned in said external housing (5) for locking said guide sleeve (3) against rotation for a fastener setting process which follows a drilling process, wherein said guide sleeve (3) together with said mounting member (1) are rotatably positioned in said external housing (5) in a fashion of a freewheel and in one direction only.

5,511,299

GEAR BOX VALVE HOUSING REPAIR

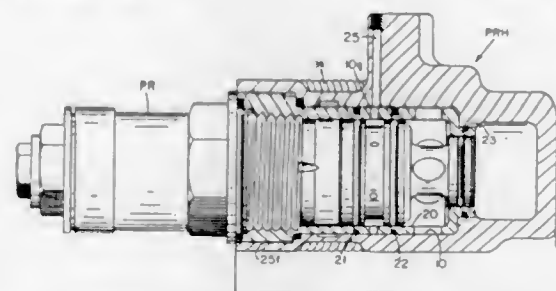
Elmer A. Stockton, Dallas, Tex., assignor to UNC Artex, Inc., Addison, Tex.

Filed Oct. 19, 1994, Ser. No. 325,802

Int. Cl.⁶ B23P 6/00

U.S. Cl. 29—402.11

4 Claims



1. A method of repairing a cylindrical cavity in a housing, said cavity having an original bore with a worn internal cylindrical sealing surface and a radial fluid port opening into said cylindrical sealing surface, comprising the steps of: machining said cavity to substantially enlarge the diameter thereof and to form internal threads in at least one end of the enlarged cylindrical cavity; forming a sleeve having an external surface snugly insertable in said enlarged cylindrical cavity and having external threads engagable with said internal threads, said sleeve having an internal bore dimensionally conforming to the diameter of the original bore of said cylindrical cavity; forming a pair of O-ring grooves around the circumference of said sleeve; mounting an O-ring seal in each O-ring groove of said sleeve; forming a radial bore in said sleeve intermediate said O-ring seals, the radial bore extending from the exterior of the sleeve to the internal bore of the sleeve;

inserting said sleeve in said cylindrical cavity and threadably engaging said internal and external threads to secure said sleeve in said cylindrical cavity with said O-ring seals straddling said radial port, thereby providing fluid communication between said radial port and the internal bore of said sleeve, and duplicating the original configuration of said cylindrical cavity.

5,511,300

APPARATUS AND METHOD FOR ASSEMBLING DISKS TO AN ARBOR

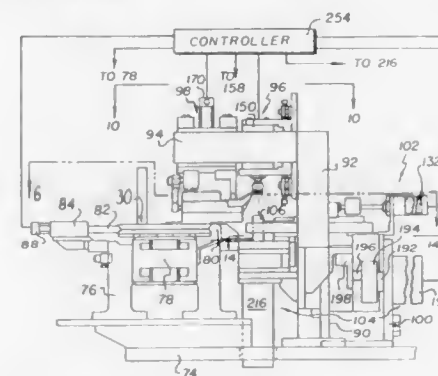
Gary E. Merz, Rochester; Dale C. Marshall, Hamlin, and Daniel D. Sutton, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 3, 1994, Ser. No. 285,374

Int. Cl.⁶ B23P 21/00

U.S. Cl. 29—407.08

14 Claims



12. A method for assembling an arbor having an axis and a plurality of radially extending protuberances for positioning a part and a part having a through opening for axially receiving the arbor, comprising the steps of:

- holding the arbor;
- sliding the part onto the arbor;
- applying axial force to the part at least at one point of application spaced radially from the axis while moving the point around the axis, thereby moving the part past the protuberances;
- measuring axial force applied to the arbor as an indication that the part has passed the protuberances; and
- ceasing the applying of force in response to the indication.

5,511,301

SELF RETAINING FASTENER

James T. McGuire, Byron, Ill., assignor to Textron Inc., Providence, R.I.

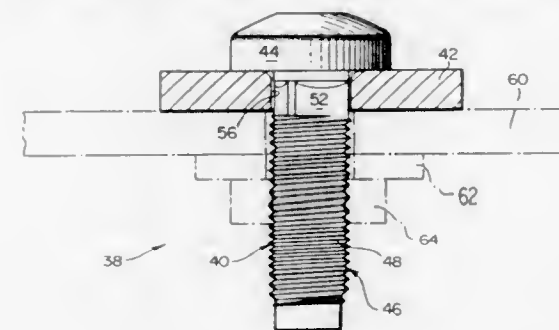
Filed Jul. 25, 1994, Ser. No. 279,435

Int. Cl.⁶ B21D 39/00; F16B 33/00; 43/00

U.S. Cl. 29—456

4 Claims

1. A method of preassembly and mounting a fastener to a



workpiece comprising the steps of:

- providing a workpiece of a predetermined thickness, said workpiece including an initially unthreaded aperture therethrough, said aperture having an inside diameter of a predetermined size;
- providing a fastener comprising a head portion and an elongated shank portion connected to said head portion, said shank portion having a threaded portion and an unthreaded portion, said threaded portion having a major diameter which is 5% to 30% greater than the inside diameter of the aperture in the workpiece, said unthreaded portion having an outside diameter which is less than the inside diameter of the aperture in the workpiece; and
- engaging said threaded portion of greater diameter with said aperture and threading said threaded portion of said fastener completely through said aperture until said unthreaded portion is housed within the aperture thereby forming partial threads on the inside of said aperture of said workpiece without materially enlarging or reducing the effective inside diameter of said aperture, such that the difference in said effective inside diameter and the major diameter of said threaded portion maintains the fastener preassembled with the workpiece.

5,511,302

METHOD OF PRODUCING A TAPE GUIDE FOR A DATA CARTRIDGE

Leif O. Erickson, River Falls, Wis.; Jay J. Ignaszewski, Woodbury, and David D. Madsen, Lakeland, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

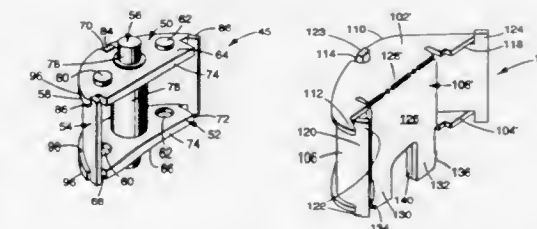
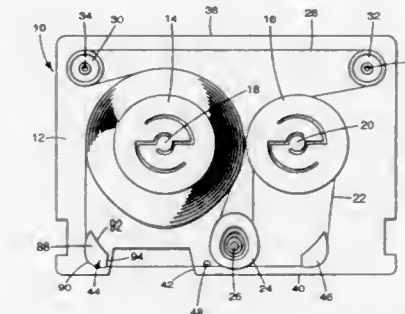
Division of Ser. No. 86,322, Jul. 1, 1993, Pat. No. 5,377,927.

This application Aug. 15, 1994, Ser. No. 290,531

Int. Cl.⁶ B23P 11/00; B21D 28/02

U.S. Cl. 29—521

8 Claims



1. A method for production of a tape guide for tape cartridge comprising the steps of:

- shearing a metal blank to make a top flange piece and a bottom flange piece each with a curved edge and having notches and a thickness;
- shearing a metal blank to make a rectangular tape surface piece having top and bottom edges which define, with the thickness of the flange pieces, the vertical height of the tape guide and having projecting tabs extending from the top and bottom edges;
- cold roll forming the tape surface piece to a radius of curvature slightly lower than the predetermined final radius of curvature

of the tape surface piece after assembly into a tape guide, wherein the surface piece, when curved, has a convex surface; attaching a post to the top and bottom flanges; interlocking the projecting tabs of the top and bottom edges of the tape surface piece with the corresponding notches of the top and bottom flange pieces wherein the tape surface piece acts as a spring that defines and helps hold together the tape guide; polishing the convex surface of the tape surface piece to a desired smoothness as a tape bearing surface.

5,511,303

INTERMEDIATE THICKNESS AND MULTIPLE FURNACE PROCESS LINE

George W. Tippins, and John E. Thomas, both of Pittsburgh, Pa., assignors to Tippins Incorporated, Pittsburgh, Pa. Continuation-in-part of Ser. No. 123,149, Sep. 20, 1993, Pat. No. 5,414,923, which is a continuation of Ser. No. 881,615, May 12, 1992, Pat. No. 5,276,952. This application Jan. 11, 1995, Ser. No. 371,408
Int. Cl.⁶ B21B 1/00; 13/22

U.S. Cl. 29—527.7

24 Claims

1. An intermediate thickness slab caster and inline hot strip and plate line comprising:

- a) an intermediate thickness continuous strip caster;
- b) an inline cutoff downstream of said caster for cutting an intermediate thickness slab to a desired length;
- c) a slab conveyor table inline with said cutoff;
- d) a slab transfer means adjacent said slab conveyor table operable transverse of said slab conveyor table;
- e) a feed and run back table positioned in communication with said slab transfer means;
- f) a slab collection and storage area adjacent said slab transfer means adapted to selectively receive slabs therefrom;
- g) a first rehear furnace positioned between said feed and run back table and said slab conveyor table;
- h) a second rehear furnace downstream of and adjacent said first rehear furnace and having an entry end inline with said slab conveyor table and an exit inline with said feed and run back table;
- i) a hot reversing mill means inline with said feed and run back table for reducing a slab on said feed and run back table to an intermediate product of a thickness sufficient for coiling in a number of flat passes; and
- j) a pair of coiler furnaces positioned inline with said feed and run back table, one located upstream of said hot reversing mill means and the other located downstream, said coiler furnaces capable of receiving and paying out said intermediate product as it is passed between said coiler furnaces and through said hot reversing mill means so as to be reduced to an end product.

5,511,304

AUTOMATED TEST PIN LOADING APPARATUS

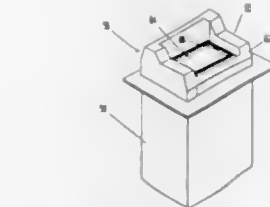
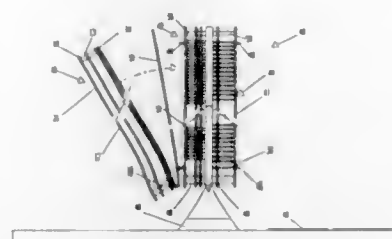
Allen Aksu, 1044 Santiago Dr., Newport Beach, Calif. 92660
Continuation of Ser. No. 922,569, Jul. 30, 1992, Pat. No. 5,307,560. This application Feb. 7, 1994, Ser. No. 192,378
Int. Cl.⁶ B23Q 5/22; G01R 31/26; H05K 3/00

U.S. Cl. 29—705

9 Claims

1. A machine for loading test probes into a plurality of test head plates having holes to receive said test probes, which machine comprises:

- a) a base frame;
- b) a plurality of lift motors fixedly attached to said base frame;
- c) an equal plurality of plate supports mounted in said base frame on slides permitting raising and lowering of each plate support in said machine;
- d) coplanar abutments on each of said plate supports forming a rest for one each of said plurality of test head plates;



- e) mechanical gears coupling one each of said plate supports to a respective one of said lift motors for raising and lowering of each plate support means in said machine independently of the others of said plate supports;
- f) a base plate beneath said plate support means and attached to said base frame by means for vibration of said base plate and plate support means.

5,511,305

CORE FINISH TOOL FOR COAXIAL CABLE AND ASSOCIATED METHOD

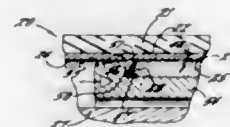
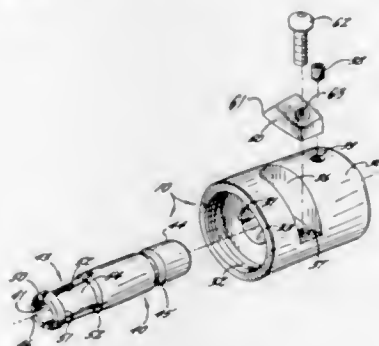
Mark A. Garner, Newton, N.C., assignor to CommScape, Cat-awba, N.C.

Filed Jun. 6, 1994, Ser. No. 254,163

Int. Cl.⁶ H01B 13/20

U.S. Cl. 29—828

30 Claims



21. A tool for removing a residue of dielectric material from an inside surface of a tubular outer conductor of a coaxial cable in preparation for splicing or terminating the coaxial cable, said tool comprising:

- a) an elongate body having a substantially cylindrical and hollow front portion, an outermost portion of said hollow front portion of said body being of a larger diameter than a longitudinally adjacent portion and defining a cutting member, said cutting member having a cutting edge, said hollow front portion having a plurality of longitudinal slots therein divid-

ing said cutting member into cutting member segments and also defining a plurality of arcuate segments connected to and extending rearwardly from the cutting member segments, each of said arcuate segments being of such resiliency as to be flexed radially inwardly by the tubular outer conductor of the cable when the elongate body is inserted therein so as to thereby impart an outward bias to the cutting member segments and apply a desired force for removal of residue from the inside surface of the outer conductor when the elongate metal body is retracted from the tubular outer conductor.

5,511,306

MASKING OF CIRCUIT BOARD VIAS TO REDUCE HEAT-INDUCED BOARD AND CHIP CARRIER PACKAGE WARP DURING WAVESOLDER PROCESS

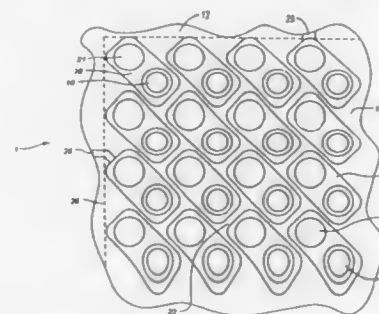
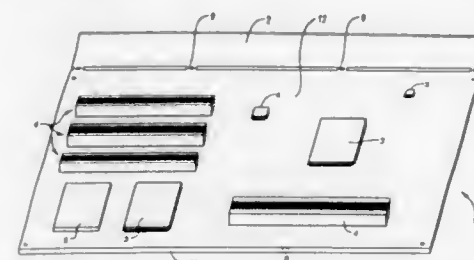
Ronald D. Denton, Spring; George H. Bumgardner, Cypress; Timothy M. McGuigan, Houston, and Andrew J. Mawer, Austin, all of Tex., assignors to Compaq Computer Corporation, Houston, Tex.

Filed Apr. 5, 1994, Ser. No. 222,899

Int. Cl.⁶ H05K 3/46

U.S. Cl. 29—840

7 Claims



1. A method of manufacturing a circuit assembly, comprising the steps of:

- constructing a printed circuit board, said circuit board comprising a stacked plurality of circuit patterns interposed by one or more insulating layers and a plurality of plated, open through vias interconnecting said circuit patterns, said printed circuit board having two opposed surfaces for receiving components, said circuit patterns and open through vias including circuit patterns and open through vias for receiving and connecting a ball grid array packaged component to a first surface of said printed circuit board, said ball grid array open through vias being located in a landing area defined by the border of said ball grid array packaged component;
- covering said ball grid array open through vias with an insulating material applied on the second surface of said printed circuit board without filling the vias;
- installing and soldering components, including a ball grid array packaged component, on said first surface of said printed circuit board;
- installing any components on said second surface of said printed circuit board; and

wavesoldering said second surface of said printed circuit board after installation of said components and covering said ball grid array open through vias.

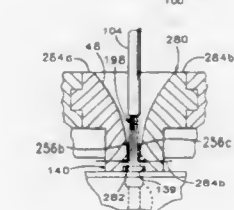
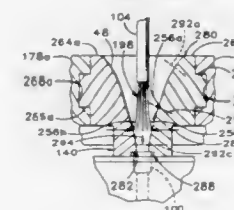
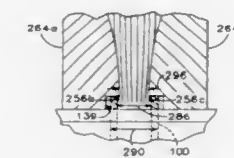
5,511,307

METHOD AND APPARATUS FOR ATTACHING A TERMINAL TO A WIRE END

William L. Reiersgaard, Portland; Andrew W. Knebel, Jr., Fairview; Curtis A. Davis, Portland; John M. Reiersgaard, Portland, and Lloyd E. Pelton, Portland, all or, Oreg., assignors to Gaard Automation, Inc., Portland, Oreg.
Filed Dec. 2, 1993, Ser. No. 161,135
Int. Cl.⁶ H01R 43/04; B23P 19/00

U.S. Cl. 29—863

10 Claims



1. A method for attaching an electrical contact to the conductive end of a wire comprising:

- (a) providing a crimping mechanism having at least a pair of opposed jaws movable relative to each other;
 - (b) providing a wire-positioning channel having respective forward and rearward ends, said forward end being of larger cross-sectional area than said rearward end;
 - (c) positioning a contact between said jaws;
 - (d) selecting a wire having a conductive end of cross-sectional area smaller than said forward end and larger than said rearward end;
 - (e) positioning said conductive end between said jaws by fully inserting said conductive end through said wire-positioning channel starting at said forward end; and
 - (f) closing said crimping mechanism in order to deformably attach said contact to said conductive end.
7. An apparatus for attaching an electrical contact to the conductive end of a wire comprising:
- (a) a crimping mechanism having at least a pair of opposed jaws movable relative to each other;
 - (b) a contact-positioning mechanism for positioning an electrical contact between said jaws;
 - (c) a wire-positioning guide forming a channel and mounted adjacent said crimping mechanism so that the conductive end of a wire inserted through said channel is positioned between said jaws for crimping attachment to said contact upon closure of said jaws; and
 - (d) said channel including at least a forward portion of generally funnel-like form and of progressively narrowing, inwardly curving shape.

5,511,308

METHOD AND APPARATUS FOR TURBINE BLADE REHABILITATION

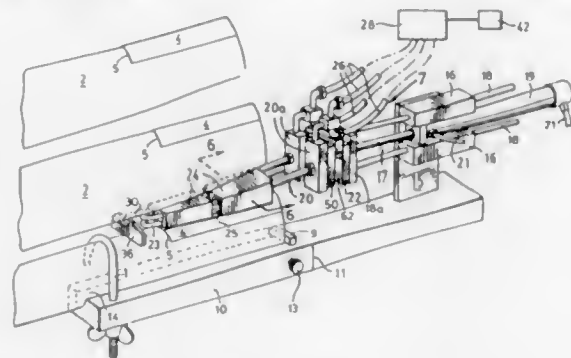
M. K. C. Ng, Oakville; J. T. C. Lee, Willowdale; G. C. Poon; L. S. Pulla, both of Mississauga; J. W. Prince, and W. J. Crowell, both of Toronto, all of Canada, assignors to Ontario Hydro, Toronto, Canada

Filed May 6, 1994, Ser. No. 239,067

Int. Cl.⁶ B23P 15/00

U.S. Cl. 29—889.1

12 Claims



1. A method of removing a shield affixed to a turbine blade by a brazing material comprising the steps of

attaching to the blade a shield stripping apparatus comprising means for gripping the blade, means for heating the brazing material, and means for removing the shield attached to the gripping means comprising movable shield engaging means for engaging the shield and means for moving the shield engaging means to strip the shield from the blade, heating the brazing material, determining when the brazing material is sufficiently hot to permit detachment of the shield from the blade, and detaching the shield from the blade.

5,511,309

METHOD OF MANUFACTURING A TURBINE AIRFOIL WITH ENHANCED COOLING

Brian K. Beabout, Coventry, Conn., assignor to United Technologies Corporation, Hartford, Conn.

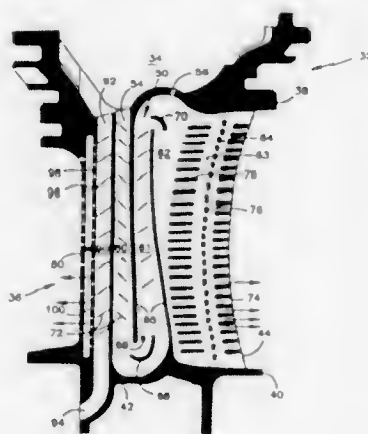
Continuation of Ser. No. 158,135, Nov. 24, 1993, abandoned.

This application Feb. 3, 1995, Ser. No. 382,823

Int. Cl.⁶ B23P 15/00

U.S. Cl. 29—889.72

4 Claims



1. A method of fabricating a gas turbine engine airfoil with a serpentine internal cooling air passage having an upstream portion, a downstream portion and a medial portion therebetween and a primary cooling air inlet communicating with said serpentine passage at said upstream portion, said method comprising the steps of:

casting said airfoil around a core supported by a core support rod, said core having the shape of said internal passage with said primary cooling air inlet, and around said core support rod protruding through said airfoil; removing said core and said core support rod from within said airfoil; and maintaining an opening formed as a result of removing said core support rod from protruding through said airfoil to allow cooling air to enter said passage at said medial portion of said passage.

5,511,310

FOLDING KNIFE

George C. Sessions, Milwaukie, and Bradford J. Parrish, Oregon City, both of Oreg., assignors to Fiskars Inc., Madison, Wis.

Continuation of Ser. No. 27,298, Aug. 18, 1994, Pat. No. Des. 366,408. This application Apr. 28, 1995, Ser. No. 430,235

Int. Cl.⁶ B26B 1/04

U.S. Cl. 30—161

22 Claims



1. A pocket folding knife comprising:

a knife blade;
a first handle section;
an opposed second handle section joined to the first handle section to form a handle having a cavity in which the blade is received when in stored position;
each handle section having a pair of oppositely facing inner and outer surfaces;
an elongated lock bar pivotally connected to the handle for movement between a first position in which the blade is locked in extended position, and a second position to permit pivotal movement of the blade to the stored position;
an elongated spring, biasing the lock bar into the first position, the spring having a free end effectively in contact with the lock bar and a distal end; and
means for removably joining the handle sections wherein such means comprises the distal end of the elongated spring.

5,511,311

KNIFE WITH SLIDING BASE

Walter W. Collins, P.O. Box 100, North, S.C. 29112

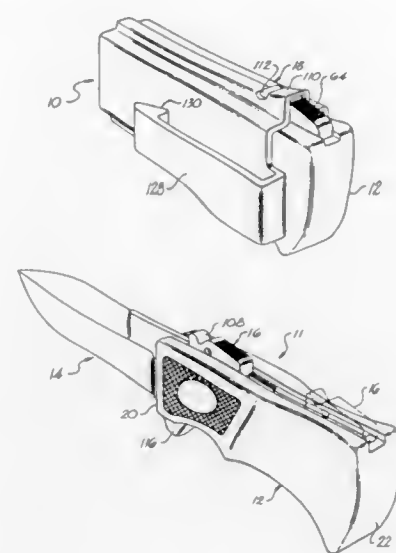
Filed Jan. 12, 1994, Ser. No. 180,880

Int. Cl.⁶ B26B 1/08; 29/02

U.S. Cl. 30—162

7 Claims

1. A sheath for carrying a knife, the knife having a handle with a retractable blade, said sheath comprising:
an elongated body member defining an elongated knife receptacle therein for receipt of a knife;
said body member including a first end and a second end opposite said first end, said first end being open to said knife receptacle; said body member defining a front wall and a rear wall spaced opposite said front wall; said front wall and said rear wall being separated by said knife receptacle; said body member further defining a first side wall and a second side wall spaced opposite said first side wall and being separated by said knife receptacle; said second side wall being of shorter length than said first side wall;
said first side wall defining a flange angled outwardly away from said knife receptacle at said first end of said body member; said flange defining across therein for locking receipt of a portion of the knife; and



said first side wall further defining an elongated channel therein adjacent said recess for receipt of a portion of the blade of the knife.

4. A knife and sheath combination, comprising:
a knife including a longitudinally extending knife blade;

an elongated knife handle defining a first end and a second end opposite said first end, said knife handle defining a longitudinally extending blade chamber therein for receipt of said knife blade;

said knife handle defining a blade passage at said first end of said knife handle, said blade passage being in communication with said blade chamber, said knife blade being movable with respect to said knife handle between an extended position extending outwardly from said handle through said knife passage and a retracted position substantially within said blade chamber;

a locking member connected to said knife blade for moving to a release position to allow movement of said knife blade with respect to said knife handle between said extended and retracted positions;

a sheath having an elongated body member defining an elongated knife chamber therein for receipt of said knife handle and said knife blade;

said body member including a first end and a second end opposite said first end, said first end being open and communicating with said knife chamber;

a locking member engagement structure connected to said body member for engaging said locking member, such that upon withdrawal of said knife handle from said knife chamber, said locking member engagement structure engages said locking member to cause said locking member to move to said release position such that said knife blade is extended from said knife handle as said knife is withdrawn from said sheath.

5,511,312

HINGE MORTISE CUTTER TOOL

David W. Hobbs, 1 Cawnpore Cottages, Fletching, Uckfield, East Sussex, England

Filed Nov. 25, 1994, Ser. No. 344,966

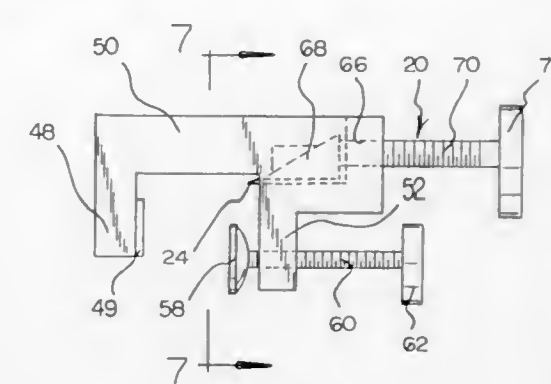
Int. Cl.⁶ B25D 3/00; B27M 3/00

U.S. Cl. 30—167.1

5 Claims

1. A hinge mortise cutter apparatus for cutting a hinge mortise into an edge of a door, comprising:

a mortise outline cutter assembly adapted for placement on the edge of the door for cutting a mortise outline in the edge of the door and adapted for removal from the door after the mortise outline has been cut, wherein the mortise outline has a predetermined length, wherein said mortise outline cutter assembly includes a mortise-outline cutter blade, a support



block which supports said mortise-outline cutter blade, wherein said support block includes a bottom portion adapted to support said mortise-outline cutter blade and a top portion adapted to receive percussive strikes,

an alignment assembly, connected substantially perpendicularly to said support block, for maintaining said mortise-outline cutter blade in a substantially perpendicular orientation with respect to the edge of the door, wherein said alignment assembly is adapted to simultaneously contact said support block and a side of the door adjacent to the portion of the edge of the door contacted by said mortise-outline cutter blade, wherein said support block includes two projection portions that project past the side of the door, and said alignment assembly includes two channels adapted to receive said two projection portions of said support block, and

a screw-controlled mortise cutter assembly adapted to be placed over the mortise outline on the edge of the door and over a portion of two sides of the door adjacent to the edge, wherein a portion of the screw-controlled mortise cutter assembly is placed in registration with the mortise outline on the edge of the door, such that a screw-controlled blade assembly can be advanced in a plane parallel to the edge below the edge so that a blade edge, which is part of said screw-controlled blade assembly, cuts out a mortise from the edge of the door, wherein said blade edge has a predetermined length substantially equal to the predetermined length of the mortise outline, wherein said screw-controlled mortise cutter assembly includes a bracket assembly adapted to fit over a portion of the edge of the door adjacent to said mortise outline and adapted to contact portions of the two sides of the door adjacent to said mortise outline, wherein said bracket assembly includes a guide portion adapted for guiding said screw-controlled blade assembly in a plane parallel to the edge of the door as said screw-controlled blade assembly cuts into the door to form the mortise, and a clamp assembly, supported by said bracket assembly, adapted for clamping said bracket assembly onto the door,

wherein said bracket assembly includes a first projecting portion, a transverse portion connected to said first projecting portion, and a second projecting portion connected to said transverse portion, said transverse portion includes a pair of opposed groove portions adapted to receive complementary tongue portions of said screw-controlled blade assembly, wherein said groove portions serve as said guide portion adapted for guiding said blade edge of said screw-controlled blade assembly in a plane parallel to the edge of the door as said blade edge cuts into the door to form the mortise, and said clamp assembly includes a clamping foot adapted to contact a side of the door, wherein said groove portions extend along said transverse portion of said bracket assembly in a plane parallel to the edge of the door, a screw portion connected to said clamping foot, and a handle portion connected to said screw portion, wherein said transverse portion of said bracket assembly includes a threaded channel, and said screw-controlled blade assembly includes said blade edge, a blade-support block supporting said blade edge, a threaded shaft connected to said blade-support block and passing

through said threaded channel of said transverse portion of said bracket assembly, and a handle connected to said threaded shaft, and
wherein said second projecting portion of said transverse portion a threaded channel that is complementarily threaded to receive said screw portion of said clamp assembly.

5,511,313

PNEUMATIC POWERED PINKING SHEARS

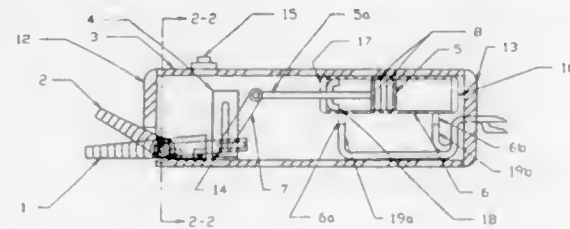
Patricia D. Yoder, 12950 E. Maple Ave. A14, Aurora, Colo. 80012, and Andrew D. McGraw, Denver, both of Colo., assignors to Patricia D. Yoder, Aurora, Colo.

Filed Dec. 22, 1994, Ser. No. 362,658

Int. Cl.⁶ B26B 13/00

U.S. Cl. 30—228

13 Claims



1. A power pinking device, comprising:

- (a) A hollow casing;
- (b) means for providing a source of compressed gas;
- (c) pneumatic power drive means;
- (d) a stationary lower cutting blade secured to said hollow casing, which lower cutting blade has a serrated cutting edge having a plurality of teeth of predetermined height;
- (e) an upper movable cutting blade pivotally connected to said stationary blade and having a serrated cutting edge having a plurality of teeth of predetermined height, whose teeth are positioned to interdigitate with the teeth of said lower cutting blade in a serrated shearing action; and
- (f) means for operatively coupling said upper blade to said pneumatic power drive means for oscillation of said upper blade when said pneumatic power drive means is actuated, said means comprising a connecting rod having a distal end and a proximal end, which connecting rod is fixably attached to said piston at its proximal end; a connecting arm having a distal end and a proximal end; a slotted connecting arm guide; wherein said connecting rod defines a bore in its distal end for receiving a pin that permits movable attachment of said connecting arm hingeably with respect to said connecting rod; said connecting arm defines bores in both its distal and proximal ends for receiving pins that permit movable attachment of said connecting arm hingeably with respect to said connecting rod and with respect to said upper cutting blade; the movement of said connecting arm being constrained in a vertical path by the slot of said connecting arm guide.

5,511,314

GARDEN SHEARS

Shoel-Shin Huang, No. 668, Sec. 4, Yen Hal Rd., Fu Shing Hsiang, Chang Hua Hsien, Taiwan

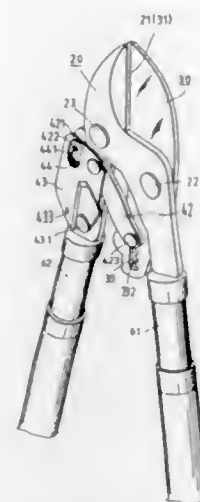
Filed Jun. 16, 1995, Ser. No. 491,573

Int. Cl.⁶ B26B 13/00

U.S. Cl. 30—251

1 Claim

- 1. A pair of garden shears comprising:
 - a fixed jaw provided integrally at an upper portion thereof with a cutting part and at a midsegment thereof with a first pivoting pin and a second pivoting pin, said fixed jaw further provided with a lower segment fastened with a hand grip;
 - a movable jaw fastened pivotally with said first pivoting pin of said fixed jaw and provided integrally at an upper portion



- thereof with a cutting blade, said movable jaw further provided at a lower end thereof with a support arm having a toothed retainer;
- a rocking arm fastened pivotally at a top end thereof with said second pivoting pin of said fixed jaw and further fastened at a bottom end thereof with a hand grip;
- a connection rod fastened pivotally with said rocking arm and provided at one end thereof with a spindle engageable with said toothed retainer of said support arm of said movable jaw, said connection rod further provided at another end thereof with a support arm having a through hole;
- a fastening cover having a C-shaped cross section and fastened at an open end thereof with said rocking arm, said fastening cover provided at a closed end thereof with a pin; and
- a tension spring provided at a top end thereof with a retaining means engageable with said through hole of said support arm of said connection rod, said tension spring further provided at a bottom end thereof with a retaining means engageable with said pin of said fastening cover.

5,511,315

CHAIN SAW WITH REINFORCING AND CUTTING ATTACHMENT

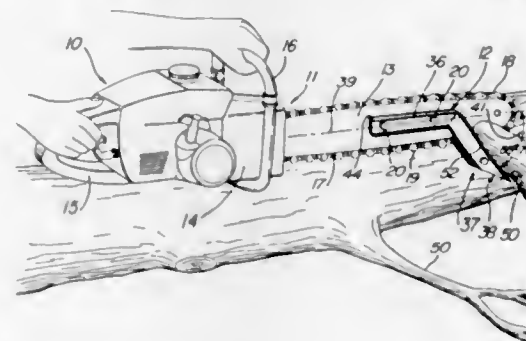
Ruben N. Raya, 946 W. Brook St., Santa Ana, Calif. 92703

Filed Oct. 11, 1994, Ser. No. 323,371

Int. Cl.⁶ B23D 57/02; 59/00

U.S. Cl. 30—371

6 Claims



- 1. A hand-held, chain saw, comprising:
 - a.) a saw blade holder, defining a longitudinal major axis and a minor axis, and including an end-tipped portion;
 - b.) a cutting chain rotatably mounted on the saw blade holder;
 - c.) a pair of spaced apart cutting bars mounted on each side of the saw blade holder and secured thereto against longitudinal and vertical movement by means including bolts, nuts, spacers, lock washers and a spacing nut, each cutting bar defining a support portion and a single angle portion, the cutting bars

being interconnected along their support portions and angle portions and removably mounted in a parallel oriented, opposed registry on each side of the blade holder, the angle portions projecting downwardly from the blade holder and beyond its lower edge to form therebetween a twin-shaped, bight angle which may be set from about 55° to about 70° defined between the longitudinal axis and a support portion of the cutting bar, the cutting bars being sufficiently spaced apart from each other and the saw blade holder to accommodate movement of the cutting chain, the twin-shaped, interconnected bight angles of the cutting bars forming a partial guard between a user and a cutting operation; whereby during use:

- i. foliage, including branches and brush are drawn into and compressed in the twin-shaped bight angles by forward movement of the cutting chain, thereby stabilizing the foliage within the bight angles while aligning and guiding the foliage into a stable and efficient cutting position;
- ii. the force exerted on the material by the cutting chain during cutting produce stresses whose magnitude and direction are transferred from the bight angles to the support portions of the cutting bars;
- iii. the cutting bars reinforce the blade holder, and distribute the stresses thereon during use;
- iv. the distance between the bight angle and the end-tipped portion of the saw blade holder may be varied from about two inches to about eight inches; and,
- v. the size of the foliage cut may be increased up to about three inches in diameter as the distance between the bight angle and the end-tipped portion of the saw blade holder is increased from about two inches to about eight inches.

5,511,316

STENCIL FOR CUTTING SANDPAPER

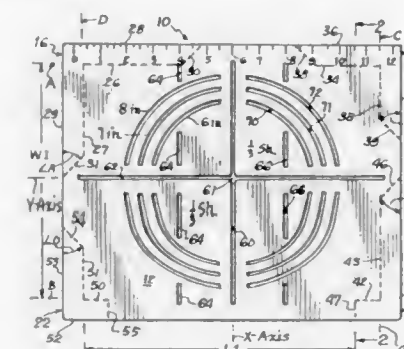
Rory T. Fischer, 1202 8th, Imperial Beach, Calif. 91932, and Eric S. Fischer, 818 B Ave., Coronado, Calif. 92118

Filed Sep. 22, 1994, Ser. No. 310,333

Int. Cl.⁶ G01B 3/00

U.S. Cl. 33—1 F

11 Claims



1. A stencil for cutting sandpaper comprising:

- a sheet of material having a predetermined thickness T1 and a predetermined peripheral shape, said sheet having a top surface and a planar bottom surface that has at least a first, a second, and a third downwardly extending corner lip having a predetermined height H1 that is substantially equal to the height of a predetermined number of sheets of sandpaper; said corner lips each having a first inner edge and a second inner edge which intersect each other at a substantially 90 degree angle;
- the first inner edge of said first corner lip and the first inner edge of said second corner lip substantially lie in a vertical plane A and the first inner edge of said third corner lip substantially lies in a vertical plane B that is parallel to vertical plane A and they are spaced a predetermined distance W1 apart;
- the second inner edge of said second corner lip and the second inner edge of said third corner lip substantially lie in a vertical plane C and the second inner edge of said first corner lip

substantially lies in a vertical plane D that is parallel to vertical plane C and they are spaced a predetermined distance L1 apart; and
means in said sheet of material for guiding the cutting of a standard sized sheet of sandpaper into two equal rectangular pieces.

5,511,317

AUTOMATIC SIGHTING DEVICE FOR A PROJECTILE LAUNCHER

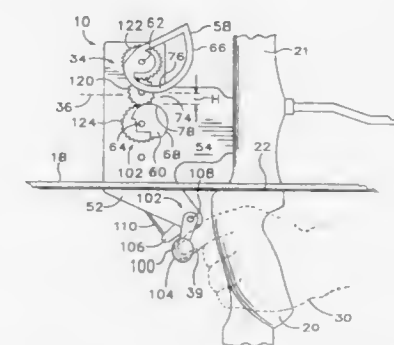
Ivan C. Allen, 2894 Columbia Blvd., St. Helena, Oreg. 97051

Filed Apr. 22, 1994, Ser. No. 231,111

Int. Cl.⁶ F41G 1/467

U.S. Cl. 33—265

22 Claims



1. A sighting device, mounted to a projectile launcher, to facilitate accurate delivery of projectiles at a target, the target having an apparent height at the sighting device in a line of sight from the user through the sighting device to the target, the sighting device comprising:

- a sighting element having a first mark and a second mark, and having an adjustable height substantially perpendicular to the line of sight, said height defined by the distance between said first and second marks;
- a sighting member having an outer periphery, said outer periphery being of a predetermined irregular cross-sectional shape and having a surface therearound;
- an adjustment mechanism coupled to said sighting member to selectively position said surface of said sighting member in the line of sight so that a portion of said surface of said sighting member selectively forms one of said marks of said sighting element, thereby adjusting said height of said sighting element to match substantially the apparent height of the target; and
- a targeting mechanism responsive to said adjustment mechanism to displace said sighting element in a substantially vertical plane.

5,511,318

ADJUSTABLE CROSS HAIR ASSEMBLY

Davy S. Logan, Post Office Box 116, Orono, Me. 04473

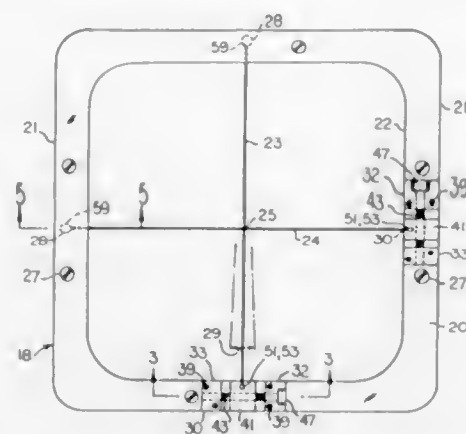
Filed Nov. 3, 1994, Ser. No. 333,646

Int. Cl.⁶ F41G 1/42

U.S. Cl. 33—298

15 Claims

- 1. A cross hair assembly comprising an annular frame;
 - a first cross hair extending across said frame, a second cross hair extending across said frame in orthogonal relation to said first cross hair;
 - a fixed anchorage on said frame for each cross hair;
 - an adjustable anchorage on said frame for each cross hair;
 - each cross hair having a first end connected to the associated fixed anchorage, and a second end connected to the associated adjustable anchorage;



each said adjustable anchorage comprising a slidable anchorage element slidably mounted on said frame for adjusting movements normal to the direction taken by the associated cross hair; and
said adjustable anchorages being independently adjustable to vary the intersection point of the cross hairs.

5,511,319

VEHICLE COMPASS CORRECTION CIRCUIT

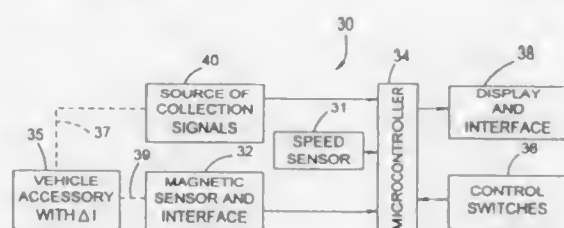
Steven L. Geerlings, Zealand, and Mark J. Bussis, Hudsonville, both of Mich., assignors to Prince Corporation, Holland, Mich.

Filed Aug. 29, 1994, Ser. No. 297,699

Int. Cl.⁶ G01C 17/38

U.S. Cl. 33—356

23 Claims



1. A vehicle compass correction circuit for correcting for vehicle generated varying interfering magnetic fields comprising:

- a vehicle accessory providing a varying magnetic field of an intensity sufficient to cause a compass display error;
- a compass circuit including a magnetic field sensor and display for displaying direction indicating information detected by said magnetic field sensor; and
- a source of correction signals coupled to said compass circuit to provide correction signal information corresponding to vehicle generated magnetic field disturbances from said vehicle accessory, wherein said compass circuit responds to said correction signals to display a corrected heading corresponding to a heading unaffected by the vehicle accessory generated magnetic field disturbance.

5,511,320

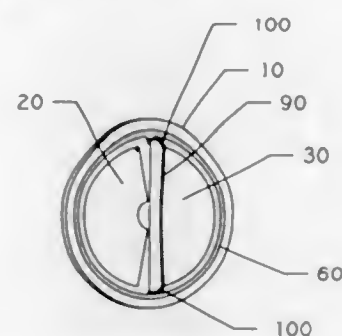
ANGLE MEASUREMENT DEVICE EMPLOYING ANGLE SENSOR AND ELECTRONICS WITH LEAD CIRCUITRY INTEGRALLY FORMED ON A PRINTED CIRCUIT BOARD

Jeffrey C. Heldel; Bradley D. Carlson, both of Glendale, and Warren W. Stansberry, Peoria, all of Ariz., assignors to Cline Labs, Inc., Phoenix, Ariz.

Continuation-in-part of Ser. No. 45,046, Apr. 8, 1993, abandoned. This application May 23, 1994, Ser. No. 247,301
Int. Cl.⁶ G01C 9/20

U.S. Cl. 33—366

3 Claims



1. An integral resistive angle measurement device consisting essentially of the following elements:

- a single printed circuit board having front and back surfaces;
- a pair of sensor plates formed on the back surface of said single printed circuit board;
- a single cylindrically-shaped cap sealed to said back surface of said single printed circuit board so as to cover said pair of sensor plates, said cap retaining a volume of resistive sensor fluid in contact with a portion of each one of said pair of sensor plates;
- a metallic sealing ring surrounding said pair of sensor plates, said metallic sealing ring being electrically insulated from said pair of sensor plates, said single cylindrically-shaped cap being sealed to said metallic sealing ring by soldering;
- a flat metallic web mounted on said back surface of said printed circuit board between said pair of sensor plates, said flat metallic web being positioned perpendicular to said single printed circuit board, and said flat metallic web including at least one opening therein for permitting communication of said resistive fluid across said flat metallic web; and
- electronic circuitry mounted only on said front surface of said single printed circuit board, said electronic circuitry being responsive to incremental angular rotation of said angle measurement device for providing an output signal representative of an angle of rotation of said angle measurement device.

5,511,321

LINEAR ENCODER

Günther Nelle, Bergen, Germany, assignor to Dr. Johannes Heidenhain GmbH, Traunreut, Germany

Continuation of Ser. No. 264,538, Mar. 23, 1994, abandoned.
This application Jul. 26, 1995, Ser. No. 507,741

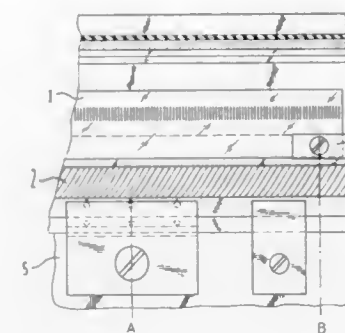
Claims priority, application Germany, Jun. 23, 1993, 43 20 728.6

Int. Cl.⁶ G01B 1/00

U.S. Cl. 33—704

6 Claims

1. A linear encoder for use in a machine for manufacturing workpieces having a coefficient of thermal expansion approximately between $2.5 \times 10^{-6} \text{ K}^{-1}$ and $3.5 \times 10^{-6} \text{ K}^{-1}$, the machine having two movable relative to each other objects, said linear encoder being designed for measuring a relative position of the two objects, and said linear encoder comprising a scale having a coefficient of thermal expansion approximately between $2.5 \times 10^{-6} \text{ K}^{-1}$ and $3.5 \times 10^{-6} \text{ K}^{-1}$, selected to substantially correspond to the coefficient of thermal expansion of the workpieces to be manufactured.



tured on the machine, said scale being attachable to one of the two objects, and a device for scanning said scale and attachable to another of the two objects.

5,511,323

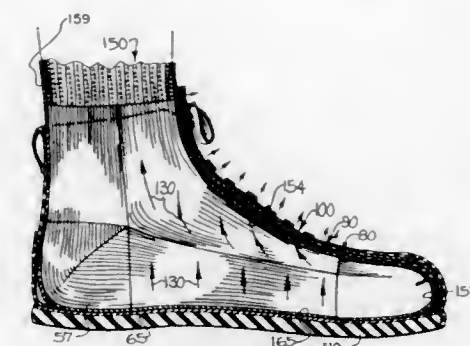
FOOTWEAR FOR FACILITATING THE REMOVAL AND DISSIPATION OF PERSPIRATION FROM THE FOOT OF A WEARER

Ray E. Dahlgren, P.O. Box 660614, Arcadia, Calif. 91066
Division of Ser. No. 906,702, Jun. 30, 1992, Pat. No. 5,365,677. This application Nov. 7, 1994, Ser. No. 314,215

Int. Cl.⁶ A43B 7/06; 23/26; 23/00; A41B 11/00

U.S. Cl. 36—3 A

55 Claims



1. Footwear for providing added comfort to the wearer by facilitating the removal and dissipation of perspiration from the foot of the wearer, said footwear comprising a knitted sock and a shoe,

said knitted sock comprising a toe portion and an instep portion adjacent thereto, said toe portion comprising a hydrophilic knit fabric and said instep portion comprising a hydrophobic knit fabric so that perspiration from the toe portion of the foot of the wearer is absorbed by said hydrophilic knit toe portion and wicked therefrom by said hydrophobic knit instep portion of said knitted sock;

said shoe comprising a tongue assembly overlying and contacting said hydrophobic knit instep portion, said tongue assembly comprising an outer layer, an intermediate layer, and an inner layer;

said outer layer being constructed of a hydrophilic fabric; said intermediate layer being constructed of a hydrophilic fabric with a medial portion constructed of a hydrophobic fabric, said intermediate layer being positioned beneath said overlying outer layer and in contacting engagement therewith; said inner layer being constructed of a hydrophilic fabric, being positioned beneath said intermediate layer and being in contacting engagement therewith; and

said inner layer adapted to overlie and be in contacting engagement with the knit instep and toe portions of said knitted sock so that perspiration from said knit instep and toe portions is absorbed by said inner layer and wicked therefrom by said contacting engagement with the intermediate layer medial portion and thereby transferred to said overlying outer layer of said tongue assembly of said shoe for evaporation therefrom to the atmosphere.

5,511,324

SHOE HEEL SPRING

Roosevelt Smith, P.O. Box 3184, Flint, Mich. 48502

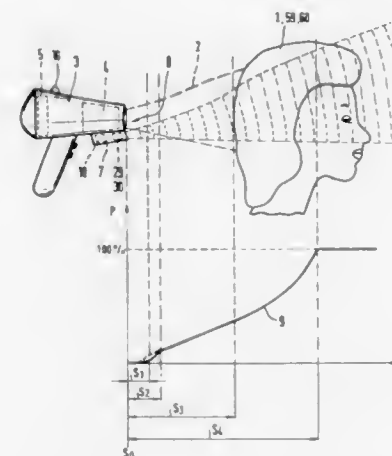
Filed Apr. 1, 1994, Ser. No. 169,226

Int. Cl.⁶ A43B 13/28

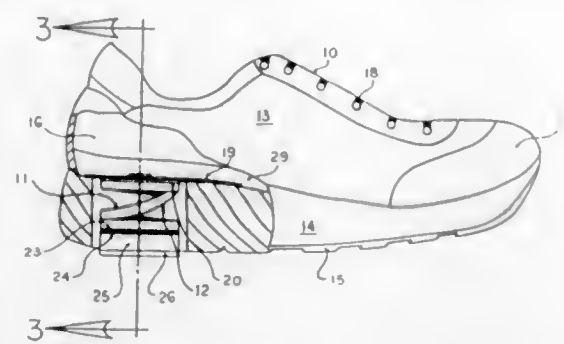
U.S. Cl. 36—27

1 Claim

- 1. A shoe comprising: an upper, a wedge shaped sole, and a spring assembly within the sole under a heel area; the sole having an outsole; a main hole bored completely through the sole and the outsole; the spring assembly located within the main hole, the spring assembly consisting of a heel protector, a compression spring, a cushion member, first, second, and third discs, and fastening means connecting the assembly together, the assembly float-



1. A process for treating an object by a hot air flow directed on the object by a hand-held air blower provided with a heating device and a fan, comprising the steps of determining a distance between the air blower and the object; and controlling the heating device proportionally as the function of the thusly determined distance so that a given temperature of hot air flow on the object remains constant substantially independent from the distance between the air blower and the object.



ing freely inside the main hole such that the assembly is secured to the shoe only by the forces of the foot and the ground;

the heel protector being larger than the main hole, and being located inside the foot receiving area of the shoe, above the sole,

the discs, spring, and cushion member having diameters smaller than the main hole,

the first disc being located between the heel protector and the spring,

the second and third discs being located between the spring and the cushion member,

the cushion member having a lower extremity protruding out past the outsole.

5,511,325

SHOE WITH A HEEL-MOUNTED CENTRAL ROTARY CLOSURE

Rudolf Hiehlinger, München, Germany, assignor to Puma AG, Germany

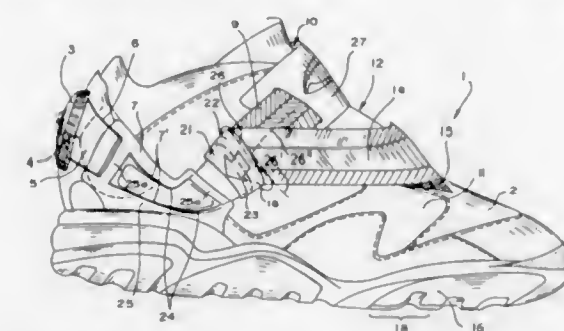
Filed May 27, 1994, Ser. No. 249,357

Claims priority, application Germany, May 28, 1993, 9308037 U

Int. Cl.⁶ A43B 11/00

U.S. Cl. 36—50.1

16 Claims



1. Shoe having an upper, formed of a flexible material, which is opened and closed by a central rotary closure to which at least one tightening element is coupled, the at least one tightening element being guided over guide elements on the shoe; wherein the central rotary closure is arranged on a heel portion of the upper in an area above a location at which a heel bone of a wearer is received; wherein the at least one tightening element has a tightening section running from the central rotary closure around each side of the heel portion of the shoe and being coupled at each side of the upper with at least one strap which runs over an instep area of the upper between the tightening sections; wherein the at least one strap has sections which span the instep area between locations at which a wearer's and metatarsophalangeal joints are received, said sections crossing each other as they span the instep area, each being fastened at a frontal portion of a respective side of the shoe opposite that at which it is coupled to a respective tightening section.

5,511,326

ROTATING DISK-TYPE DITCHER

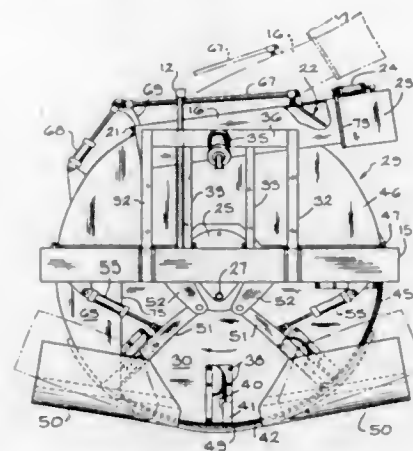
Sylvester J. Liebrecht, Jr., Rte. #2, 17771, Continental, Ohio 45831

Filed May 9, 1994, Ser. No. 240,115

Int. Cl.⁶ E02F 5/08

U.S. Cl. 37—93

19 Claims



1. A ditcher assembly for forming longitudinal ditches through soil in a given area comprising

a prime mover for moving said assembly in a line of travel corresponding to the line of the longitudinal ditch desired,

a rotary soil removing disk mounted in said assembly,

said disk having a generally vertical planar orientation generally transverse to said line of travel,

a housing within which said disk is rotated comprising a lower shroud and an upper shroud mated therewith,

power supply means for rotationally driving said soil removing disk,

said disk having a front face facing the direction of travel of said assembly,

said disk comprising a series of soil gathering scoops spaced about the circumferential edge of said front face,

a lower front portion of said lower shroud facing the direction of travel of said assembly being open to expose the lower portion of said rotary disk,

a soil cutting edge and plow section positioned centrally in said line of travel at the bottom of said open lower shroud for cutting in advance of said rotary disk by which soil being cut is fed in loosened condition to the path of movement of said scoops,

means for selectively setting the cutting depth of said cutting edge and plow section,

an adjustably orientable chute means overlying said disk for receipt of soil conveyed and discharged from said scoops for directing the cut soil to preselectable locations relative to the line of travel of said assembly, and

a pair of vertically adjustable side sloping blades positioned to cut a selectable steepness in the sidewalls of ditch passes being formed.

5,511,327

WHEELED SNOW SHOVELLING DEVICE

Marlin G. Jurkowski, and Kevin S. Jurkowski, both of 41609 Belknap, Clinton Twp., Mich. 48038

Filed Sep. 14, 1994, Ser. No. 305,551

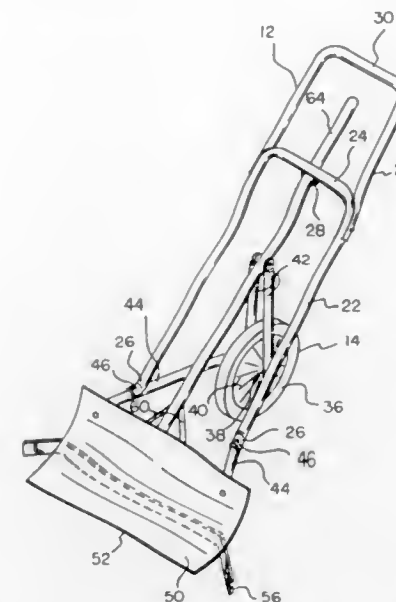
Int. Cl.⁶ E01H 5/02

U.S. Cl. 37—285

5 Claims

2. A cart mounted snow shovelling device comprising:

a cart having a handle formed in a generally A-shaped configuration with a lowermost extent and an upper portion, the cart including a cross bar having a circular ring extending from the crossbar, the cart including a wheel with an axle positioned at



its axis, the wheel including a pair of vertical support bars, one end of each of the vertical support bars is affixed to the axle, the wheel also including a pair of horizontal braces having free ends affixed to its axle, the lowermost extent of the handle being coupled to the braces; and

a snow shovel having a scoop formed as a generally rectangular shaped member and molded into a semi circular configuration, the scoop having two side ends, a rear surface of the scoop being coupled to the free ends of the horizontal braces of the cart wheel, the scoop having a wooden shaft affixed to its rear surface, the shaft extending through the circular ring on the cross bar of the handle, the other ends of the vertical support bars being coupled to the shaft.

5,511,328

HAND-OPERATED SNOW PLOW WITH ADJUSTABLE BLADES

Joseph C. Fingerer, 27 Ledbury St., North York, Ontario, Canada, and Ephraim I. Alon, 55 Shelborne Avenue, Toronto, Ontario, Canada

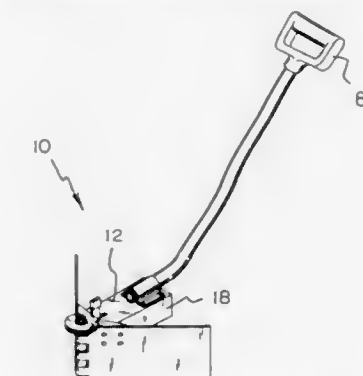
Filed Oct. 17, 1994, Ser. No. 323,765

Int. Cl.⁶ E01H 5/02

U.S. Cl. 37—285

2 Claims

1. A hand-operated snow plow with adjustable blades for plow-



ing from an area comprising, in combination:

a rigid housing having a V-shaped front wall, a top wall and a bottom wall coupled to the front wall, and a pair of opposed side walls interconnecting the front wall, top wall, and bottom wall to define a hollow interior and a rear opening for allowing access to the interior, and a central axis defined there-

through from the midpoint of the apex of the front wall to the center of the rear opening;

a pair of rigid rectangular blades each having a front surface coated with a layer of a non-stick material for preventing snow from adhering thereto, a rear surface, and periphery interconnecting the front surface with the rear surface with the periphery further having a pair of opposed vertical short edges and a pair of opposed horizontal long edges and with a short edge of each blade pivotally coupled to the apex of the front wall;

a pair of elongated adjusting plates each having a planar and generally circularly-shaped interior portion and an elongated tapered exterior portion extended outwards from the interior portion with each interior portion pivotally coupled to the apex of the front wall and further including a first, a second, and a third slot peripherally formed thereon and with each exterior portion coupled to a separate blade against the rear surface thereof;

a spring-loaded locking lever coupled to the top wall at a location securable within the slots of the adjusting plates for allowing fixed and independent angular positioning of the blades for thereby enabling them to be placed in a plurality of plowing positions, the locking lever positionable within the first slot of one of the adjusting plates for placing the associated blade in a position such that an acute angle is formed between the blade and the central axis of the housing, the locking lever further positionable within the second slot of one of the adjusting plates for placing the associated blade in a position such that a perpendicular angle is formed between the blade and the central axis of the housing, the locking lever further positionable within a third slot of one of the adjusting plates for placing the associated blade in a position such that an obtuse angle is formed between the blade and the central axis of the housing; and

a rigid handle having a horizontal short leg coupled to the top wall of the housing near the rear opening thereof and a long leg extended upwards therefrom and away from the housing and terminated at a handgrip for allowing a user a firm hold for plowing.

5,511,329

BACKHOE MOUNTING MECHANISM

Roger D. Mickelson, West Burlington, Iowa, assignor to Case Corporation, Racine, Wis.

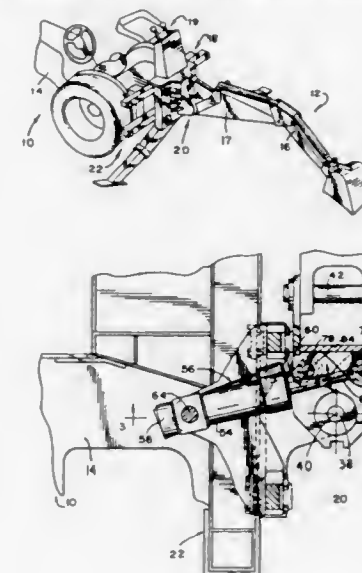
Filed Dec. 30, 1994, Ser. No. 367,089

Int. Cl.⁶ E02F 3/28; 3/76

U.S. Cl. 37—468

9 Claims

1. A mechanism for mounting a backhoe assembly including a



material handling unit to an off-highway implement having a movable frame, said mounting mechanism comprising:

a support attachment for mounting said backhoe assembly to the implement frame for pivotal movement about a first generally vertical pivot axis, said support attachment having said material handling unit connected thereto; and

first and second drivers for moving said support attachment in opposite directions about said axis, each driver having a first end articulately connected to said frame and a second end connected to said support attachment by a pin defining a second generally vertical axis that extends generally parallel to said first vertical pivot axis, and wherein a self-aligning bearing is capively carried by and between said second end and a respective pin of each driver to compensate for vertical misalignment between said first and second vertical axes of the support attachment and pin.

5,511,330

LOUVER SIGN TRANSMISSION SYSTEM

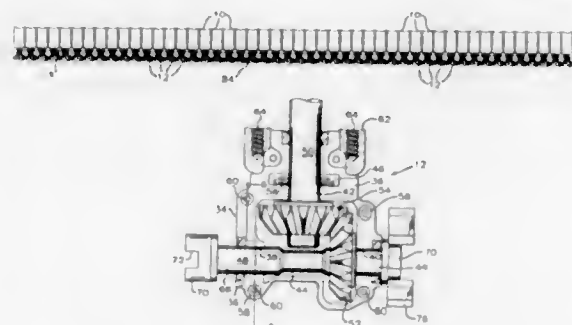
Dale I. Havens, 11101 Devils Lake Hwy., Addison, Mich. 49220

Filed Mar. 10, 1995, Ser. No. 402,465

Int. Cl.⁶ G09F 11/02

U.S. Cl. 40—505

7 Claims



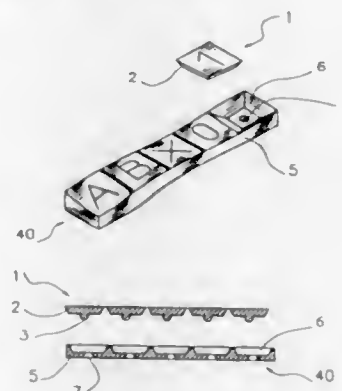
1. A louver type sign transmission system for a louver sign comprising a plurality of parallel, rotatable, adjacent louvers each having a plurality of indicia receiving surfaces and ends, comprising, in combination, an elongated support frame having first and second sides, a plurality of transmissions mounted on said frame on a common side thereof in side-by-side relationship, each of said transmissions including a drive shaft drivingly connected to an output shaft, said drive shafts and said output shafts of said transmissions each having an axis of rotation and the axes of rotation of said drive shafts of said transmissions being substantially coincident and parallel to the length of said frame, said axes of said output shafts being substantially perpendicular to said axes of said drive shafts and said output shafts extending through said frame, each of said transmissions' drive shafts having an exteriorly accessible input end portion and an output end portion, a torque transmitting connector mounted upon each drive shaft end portion, said torque transmitting connectors mounted upon said drive shafts' input end portions drivingly interconnecting with said torque transmitting connectors mounted upon said drive shafts' output end portion of an adjacent transmission whereby a plurality of adjacent transmission drive shafts are operatively interconnected, a motor drivingly connected to one of said drive shaft end portions for rotating said interconnected drive shafts, and a louver end support mounted upon each transmission output shaft supporting a louver end, whereby said transmissions' drive shafts rotate the louver end associated therewith upon rotation of said drive shafts.

5,511,331
CODED MARKER SUPPORTS AND DEVICE FOR A POSITIONING OF CODED MARKERS
Flavio Morosini, 18, rue du Rouvlon, F-54800 Hatrize, France
Continuation of Ser. No. 752,696, Aug. 29, 1991, abandoned.
This application May 17, 1994, Ser. No. 243,969
Claims priority, application France, Mar. 3, 1989, 89 02795; Italy, Feb. 28, 1990, 43510/90

Int. Cl.⁶ G09F 3/00

U.S. Cl. 40—316

24 Claims



1. A marker support (40, 41, 42, 43) for supporting a marker comprising an oblong plate (5) having at least two contiguously aligned recesses (6) having the shape of frustums of pyramids, wherein bases of the frustums of pyramids form a top plane of the oblong plate (5) and wherein a length of a side of the bases is equal to a width of the oblong plate (5), and wherein a locking member (7) formed by a conical hole is provided in a center of a bottom of each of the recesses (6);

at least two aligned identification elements (1), wherein each of the identification elements has a shape of a frustum of a pyramid matching a shape of each of the recesses (6) and includes a locking projection (3) attached to a face disposed opposite to a base of each of the identification elements, wherein each of the identification elements is fixed to the oblong plate (5) by means of the locking projection (3) formed by a spheroidal protrusion, matching the respective locking member (7) of the oblong plate (5) and wherein the base of each of the identification elements is inscribed with a distinctive sign.

5,511,332

CORNICHE ASSEMBLY

Charles B. Sturkle, Jefferson, and David J. Stabile, Atlanta, both of Ga., assignors to Miller/Zell, Inc., Atlanta, Ga.

Filed Sep. 1, 1994, Ser. No. 299,538

Int. Cl.⁶ G09F 3/18

U.S. Cl. 40—642

21 Claims

6. A cornice assembly for holding a graphics display for a display fixture, comprising an adaptor, a mounting plate attached to said adaptor, a fascia plate having an upper edge portion and lower edge portion, said fascia plate releasably attached to said mounting plate, a first decorative molding releasably attached to said upper edge portion, a second decorative molding releasably attached to said lower edge portion, and said fascia plate including guide means for releasably retaining said graphics display.

5,511,333

PAINTBALL CLIP MAGAZINE

Kenneth R. Farrell, 19202 SE. 184 St., Renton, Wash. 98058

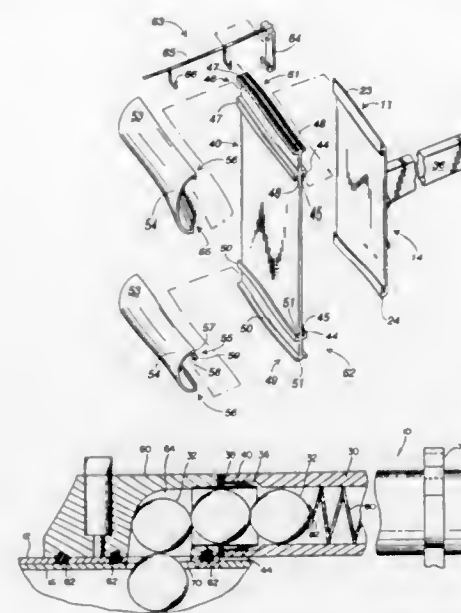
Filed Feb. 23, 1995, Ser. No. 393,544

Int. Cl.⁶ F41B 11/02

U.S. Cl. 42—49,01

15 Claims

1. A removable magazine for a projectile gun, comprising:



a removable housing for containing a plurality of projectiles in series and defining an opening at one end for releasing the projectiles;

mounting means connected to the gun for removably mounting the housing to the gun;

a unitary direction mechanism at the one end of the housing allowing insertion of the projectiles into the housing and for selectively preventing release of the projectiles, wherein the unitary direction mechanism has a peripheral edge and a plurality of resilient, flexible fingers directed inwardly from the edge, the fingers being biased to a substantially closed position; and,

a deactivating mechanism attached to the mounting means and adapted for cooperative engagement with the unitary direction mechanism so as to deactivate the unitary direction mechanism allowing release of the projectiles whenever the housing is mounted on the gun.

5,511,334

LOCK-ACTION MUZZLE LOADER

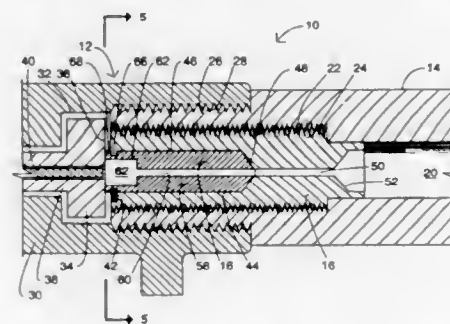
Henry C. Ball, 1315 Fairmont, Greensboro, N.C. 27403, and Millard C. Marion, Greensboro, N.C., assignors to Henry C. Ball, Greensboro, N.C.

Filed Oct. 3, 1994, Ser. No. 317,210

Int. Cl.⁶ F41C 9/08

U.S. Cl. 42—51

40 Claims



19. A muzzle-loading firearm, said firearm comprising:

(a) a breech loading receiver including a locking mechanism movable between an open position and a locked position;

(b) a barrel having a breech end engaging said receiver and a bore extending from said breech end for receiving a powder charge;

(c) a firing module receiving plug within the breech of said barrel;

(d) a firing module insertable within said module receiving plug within the breech end of said barrel, said firing module including: (i) a generally cylindrical body having a back end and a front end, wherein the front end of said body is tapered inwardly; (ii) an igniter chamber at the back end of said body; and (iii) an axially aligned flame bore extending from said igniter chamber to the front end of said body; and

(e) an ejector adapted to eject said firing module from said receiver.

5,511,335

FISHING LURE

Alexander G. Langer, 94 St. Rose St., Jamaica Plain, Mass. 02130

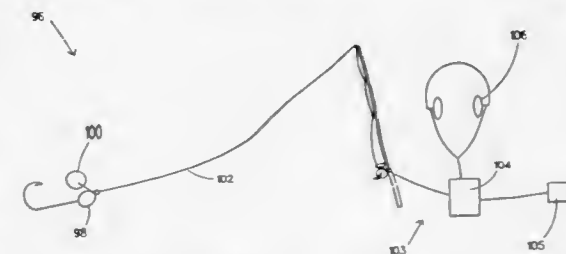
Filed Jul. 13, 1993, Ser. No. 90,922

The portion of the term of this patent subsequent to Jul. 13, 2013, has been disclaimed.

Int. Cl.⁶ A01K 85/00

U.S. Cl. 43—4

19 Claims



1. A fishing lure comprising:

a plurality of sensors, disposed on the lure, for sensing the presence of an object about the lure, each of said sensors for providing at least one sensor signal to indicate the presence of the object;

a first transmitter, disposed on the lure and coupled to each of said plurality of sensors, said transmitter for receiving each of the sensor signals from said plurality of sensors and for transmitting a transmitter signal corresponding to said sensor signals wherein a first one and a second one of said plurality of sensors are provided as image sensors, said first image sensor having a field of view disposed in a first direction and said second image sensor having a field of view disposed in a second direction; and

a display, wherein said first and second image sensors provide video sensor signals to said display.

5,511,336

FISHING ROD HOLDER

Christopher Bishop, Sir Sam's Ski Area, Box 180, Haliburton, Ontario, Canada

Continuation-in-part of Ser. No. 225,056, Apr. 11, 1994, abandoned. This application Jun. 13, 1994, Ser. No. 259,109

Int. Cl.⁶ A01K 97/10

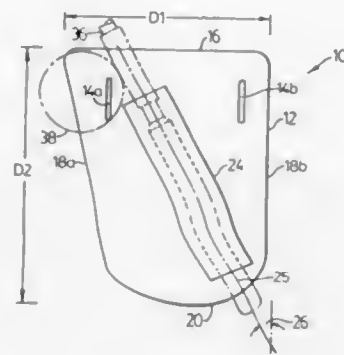
U.S. Cl. 43—21.2

13 Claims

1. A fishing rod holder comprising:

(a) a hip support plate member having an inner surface, a top and a bottom, and front and rear edges, said inner surface being shaped to rest against a wearer's hip and providing a substantial area of support for said holder against the wearer's hip, said inner surface being adapted to be worn in a substantially vertically extending direction with said front and rear edges facing substantially frontwardly and rearwardly respectively;

(b) said hip support plate member including attachment means therein adapted to cooperate with a wearer's belt to be supported by such belt,



- (c) an elongated hollow member mounted on said hip support plate member, said hollow member having an elongated opening therethrough and including an encircling side wall, said opening having an axis;
- (d) said axis having a forward slope from a vertical line along the plate member and an outward slope from the vertical line when said holder is worn on the belt of said wearer with said inner surface of hip support plate member being substantially in a vertical plane;
- (e) said forward slope being between 20° and 45° from the vertical line and said outward slope being between 10° and 30° from the vertical line.

5,511,337

ACTIVE FISHING LINE BRAKE

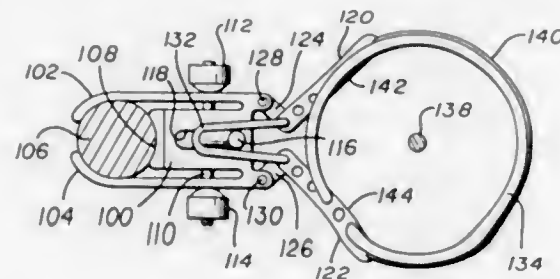
Benkt-Olov Nilsson, Linnarhultsvägen 9a, 424 55 Angered, Sweden

Filed Sep. 9, 1994, Ser. No. 303,615

Int. Cl.⁶ A01K 87/00

U.S. Cl. 43—25

20 Claims



1. An arrangement for fishing comprising:
- a rod that extends in a longitudinal direction and has a holding end and a tip;
 - a reel that holds fishing line and is mounted on the rod at the holding end;
 - a line-braking device that is mounted as a single unit on the rod and comprises:
 - a main body;
 - a pair of clamping arms that are rotatable relative to the main body about an axis that extends substantially in the longitudinal direction;
 - at least one guide ring that is securely attached to at least one of the clamping arms;
 - actuating means for rotating the clamping arms and thereby for switching the line-braking device between a free-running configuration, wherein the clamping arms are separated and the fishing line extends without contact through each guide ring, and a locking configuration, wherein the fishing line is clamped between the clamping arms; and
 - spring means for biasing the clamping arms into the free-running configuration.

5,511,338

SPOON FISHING LURE ASSEMBLY

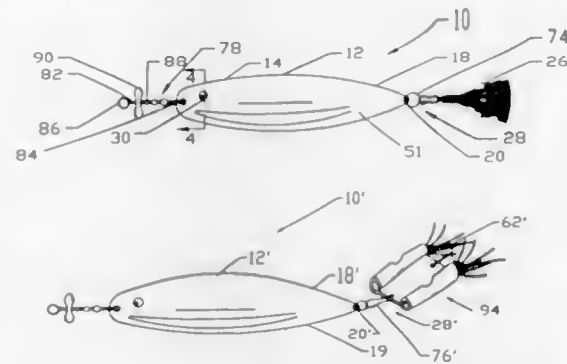
Joseph Costanzo, 1931 Southern Blvd. NW. Apt. 5, Warren, Ohio 44482

Filed Oct. 6, 1994, Ser. No. 319,228

Int. Cl.⁶ A01K 85/01; 85/14

U.S. Cl. 43—42.28

13 Claims



1. A spoon fishing lure assembly comprising:
- (a) a body member formed from a thin rigid material and having a front end and a rear end, said front end having a front aperture therethrough, said body member having a face side and a rear side substantially parallel said face side;
 - (b) a fishing hook;
 - (c) means for connecting said fishing hook to said body member;
 - (d) a first simulated eye assembly comprising a base, a transparent cover having a dome portion received in said front aperture and a rim portion extending outwardly of said dome portion, said rim portion secured to said base, said base and said cover defining a chamber, said first simulated eye assembly including a ball freely disposed in said chamber; said dome portion of said simulated eye assembly positioned in said front aperture toward one of said sides of said body member, one of said base and said rim portion having an outer circumference greater than the circumference of said front aperture, one of said base and said rim portion secured to the other of said sides of said body member; and
 - (e) means for securing and sealing said first simulated eye assembly to said body member.

5,511,339

RODENT TRAP

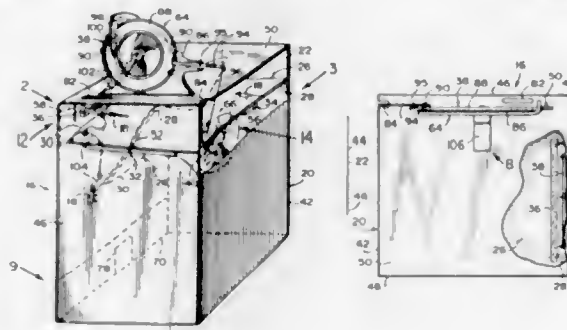
Vance R. Pencheon, Christ Church, St. Kitts, St. Kitts/Nevis

Filed Aug. 16, 1994, Ser. No. 291,204

Int. Cl.⁶ A01M 23/10

U.S. Cl. 43—74

7 Claims



1. A trap for rodents which comprises:
- a) a cabinet having an upper entrance to allow the rodents to enter and a lower chamber to retain the rodents, said cabinet being box shaped and including a front wall having the upper entrance therethrough, a rear wall, a pair of side walls, a bottom wall, and a top wall;

- b) a platform having a first end and a second end;
- c) means for pivotally mounting said platform across its center between the first end and the second end within said cabinet, said pivotally mounting means is an elongated horizontal shaft extending through the center of said platform and into said side walls of said cabinet;
- d) means for maintaining said platform in a normally horizontal position, with its first end level with the upper entrance of said cabinet, said horizontal maintaining means including a magnetic metal bar mounted to the underside of said platform at the first end thereof, and a magnet mounted to the interior surface on said front wall of said cabinet to contact said magnetic metal bar when said platform is in the normally horizontal position;
- e) a bait bag suspended in said cabinet directly above the second end of said platform, opposite from the upper entrance to attract the rodents onto the second end of said platform;
- f) means activated by the rodents eating at said bait bag, for pivoting the second end of said platform downwardly, so that the rodents will drop into the lower chamber of said cabinet and be retained therein;
- g) means activated by the first end of said platform pivoting upwardly, for returning said platform to its normal horizontal position, after the rodents drop into the lower chamber of said cabinet; and
- h) a sensitive switch having a contact strip and a plurality of prongs, said sensitive switch is mounted on the interior surface of said rear wall above the second end of said platform, in which said bait bag is suspended therefrom in front of the prongs, so that when the rodents start eating at said bait bag one of the prongs will be pressed back against the contact strip to activate said pivoting means.

5,511,340

PLANT GROWING ROOM

Malcolm G. Kertz, P.O. Box 426, Bridge City, Tex. 77611

Continuation-in-part of Ser. No. 777,479, Oct. 17, 1991, Pat.

No. 5,166,870, and a continuation-in-part of Ser. No. 672,736,

Mar. 21, 1991, Pat. No. 5,171,683, which is a continuation of

Ser. No. 207,405, Jun. 14, 1988, abandoned, which is a

continuation-in-part of Ser. No. 21,408, Mar. 4, 1987, Pat. No.

4,908,315, said Ser. No. 777,479 is a division of Ser. No.

365,585, Jun. 13, 1989, abandoned, which is a continuation-

in-part of Ser. No. 207,405, Jun. 13, 0, which is a

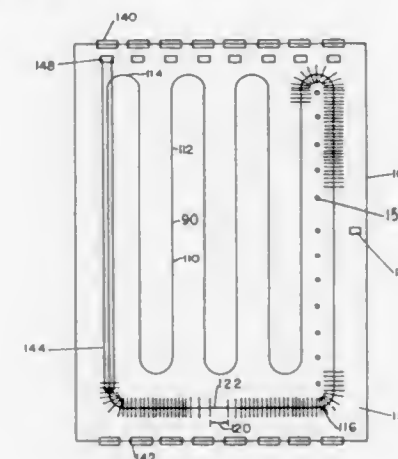
continuation-in-part of Ser. No. 21,408, Jun. 13, 0. This appli-

cation Sep. 10, 1992, Ser. No. 943,264

Int. Cl.⁶ A01G 31/02

U.S. Cl. 47—65

16 Claims



1. An enclosure having a floor, walls and roof for growing plants therewithin, comprising:
- a track supported above the floor;
 - a plurality of rack members movably supported by said track;

each of said rack members supporting at least one growing sheet having means for supporting and growing the plants; and means for moving said rack members along said track; each growing sheet comprising:

- a sheet of translucent support material sized to support the growing plants;
- a plurality of lengths of second material affixed to said sheet at predetermined locations to form a plurality of rows of growing cells adapted to support and grow the growing plants;
- said rows being affixed to said sheet so as to allow areas above said growing cells for the plants to grow; and
- means for supporting said sheet in a vertical position.

5,511,341

GOOD NEIGHBOR HOUSE PLANT WATERING SYSTEM

Jessica Payne, P.O. Box 217, Orangeburg, N.Y. 10962

Filed Mar. 9, 1995, Ser. No. 401,112

Int. Cl.⁶ A01G 25/00

U.S. Cl. 47—79

13 Claims



1. A user-adjustable house plant irrigation system, comprising:
- a. an air-tight water reservoir having a removable fill plug, the fill plug having means for adjusting the inlet of atmospheric air into the reservoir; the water reservoir further having
 - b. at least one water outflow valve having means for user adjustability; and the irrigation system further having
 - c. means for transferring water from the outflow valve to a houseplant to be irrigated; and wherein further
- the means for adjusting the inlet of atmospheric air is a fill plug having threaded relationship with a matching threaded receptacle aperture in the reservoir, for user rotation of the threaded fill plug between a fully closed air tight position and a fully open position for refilling the reservoir with water, such that fill plug rotation positions intermediate between full open and full closed permit user control of flow of atmospheric air into the reservoir.

5,511,342

FLOWER-POTS FORMING A MODULAR STRUCTURE

Giovanna Maso, Nove, Italy, assignor to Abruzzovasi Srl, Cel-

lino Attanasio (TE), Italy

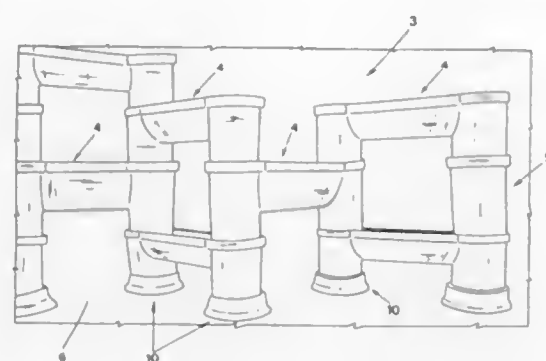
Filed Nov. 22, 1994, Ser. No. 346,201

Int. Cl.⁶ A01G 9/02

U.S. Cl. 47—83

8 Claims

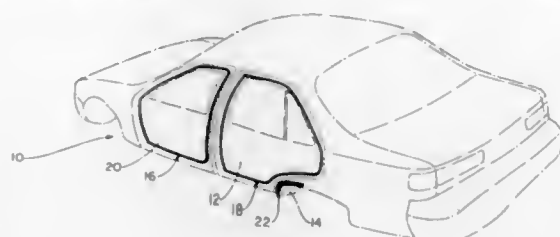
1. A flower pot adapted to be connected together with other flower pots to form a modular plant support comprising:
- a container element including axially spaced apart cylindrical members each having a central axis in a common plane, each member having a hollow interior volume, an open top and a closed bottom portion, the open top formed with an upper rim



5,511,344
MOLDED WHEELHOUSE SEAL FOR AUTOMOTIVE VEHICLES
Ronald E. Dupuy, Wabash, Ind., assignor to GenCorp Inc., Fairlawn, Ohio
Continuation of Ser. No. 96,347, Jul. 22, 1993. This application Nov. 4, 1994, Ser. No. 334,636
Int. Cl.⁶ E06B 7/232

U.S. Cl. 49—496.1

3 Claims



portion having a stepped profile of a selected depth and the closed bottom portion having a stepped profile of a selected height, the rim portion and bottom portion being coaxial with the central axis of the corresponding cylindrical member, the bottom portion being sleeveable in mating relationship with the rim portion of a cylindrical member of another of said container elements; and

a channel element having an open top and hollow interior interconnecting the cylindrical members along an axis perpendicular to the central axes of said cylindrical members, the channel being located in spaced relation from the bottom portion by a distance at least equal to the height of said bottom portion.

5,511,343

SEALING DEVICE INCLUDING A TUBULAR SECTION ELEMENT IN PARTICULAR FOR A MOTOR VEHICLE

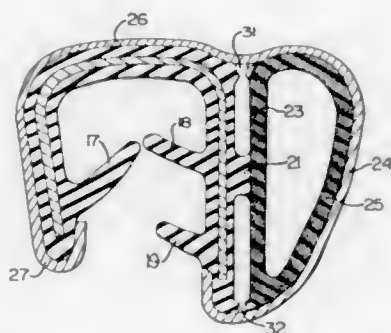
Henri Guillon, Le Bois Saint-Maurice-sur-Fessard, France, assignor to Hutchinson, Paris, France
PCT No. PCT/FR93/00225, § 371 Date Aug. 26, 1994, § 102(c) Date Aug. 26, 1994, PCT Pub. No. WO93/17888, PCT Pub. Date Sep. 16, 1993

PCT Filed Mar. 8, 1993, Ser. No. 295,638

Claims priority, application France, Mar. 10, 1992, 92 02836
Int. Cl.⁶ E06H 7/16

U.S. Cl. 49—479.1

4 Claims



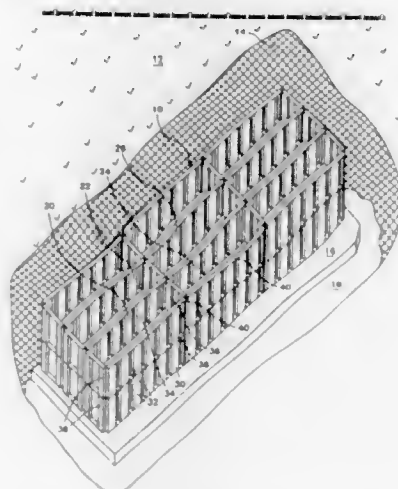
1. A sealing device comprising a fixing element for fixing the sealing device to a support in a motor vehicle and a tubular element for cooperating in a sealed manner with a moving portion of the motor vehicle, said tubular element extending along a side wall of the fixing element and being connected to said side wall by longitudinal bridging strips provided substantially at opposite ends and in the middle of said side wall, said bridging strips provided at the opposite ends of the side wall being interrupted in discrete zones to facilitate forming the sealing device into a curved shape.

5,511,345
UNITARY MOLDED PLASTIC STRUCTURAL MEMBER, LID FORM AND LAWN CRYPT CONSTRUCTED FROM SAME

Dale C. Jones, and Michael A. Lacy, both of Conyers, Ga., assignors to Vantage Products Corporation, Conyers, Ga.
Filed Jul. 13, 1993, Ser. No. 90,677

Int. Cl.⁶ E04H 13/00; E04C 2/32
U.S. Cl. 52—136

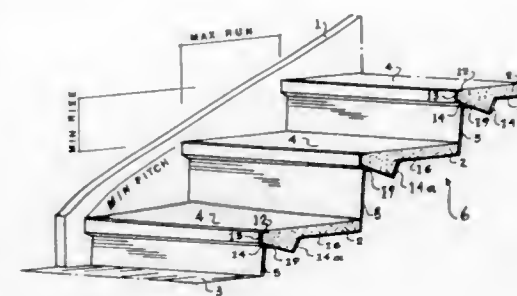
15 Claims



1. A burial crypt comprising:
(a) adjacent burial chambers, each burial chamber being defined by a plurality of vertical walls, the uppermost portion of the vertical walls defining an upper ledge; and

(b) a lid placed on the upper ledge of each respective burial chamber, thereby covering each respective burial chamber, the lid constructed from a unitary molded lid form filled with concrete reinforcing elements and concrete, the lid form including:

- (i) a solid bottom;
- (ii) side walls extending upward from the solid bottom, the side walls and bottom together defining a concrete-receiving recess; and
- (iii) socket means on an interior surface of the lid form for restraining the concrete reinforcing elements, the socket means comprising spaced saddle sockets extending upward from the solid bottom and the concrete reinforcing elements comprising concrete reinforcing bars and individual bars.



90 degrees, said second side being approximately three times the length of said first side, said second side having a second end connected to a first end of a third side at an angle of 116.565 degrees, said third side being approximately three times the length of said second side and a fourth side having a first end connected to a second end of the third side at an angle of approximately 90 degrees, said fourth side having about half the length of said third side; said handle portion B having three sides, said sides including a first side having a first end connected to a second end of the fourth side of ladle portion A at an angle of 116.565 degrees and being about 3.13 times the length of the fourth side of ladle portion A, a second side having a first end connected to a second end of the first side of handle portion B at an angle of about 96 degrees and being about six-sevenths the length of the first side of handle portion B, and a third side having a first end connected to a second end of the second side of handle portion B, said third side forming an angle of 26.565 degrees with an imaginary horizontal line and said third side of handle portion B being about the same length as the length of the first side of ladle portion A.

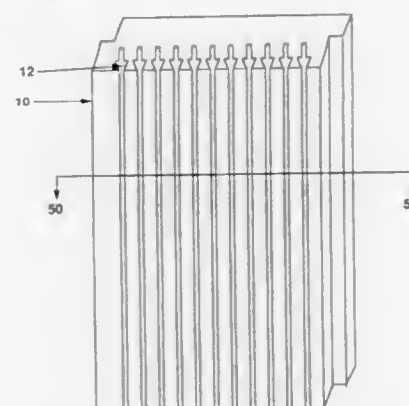
5,511,346
THERMOPLASTIC FOAM INSULATION AND DRAINAGE BOARD AND METHOD OF USING IN BELOW-GRADE APPLICATIONS
Linda L. Kenworthy, Gahanna, Ohio, assignor to The Dow Chemical Company, Midland, Mich.

Filed Aug. 24, 1994, Ser. No. 295,368

Int. Cl.⁶ E02D 19/12; E04C 2/32; 2/10

U.S. Cl. 52—169.5

6 Claims



1. A rigid, thermoplastic foam board, the board defining a plurality of channels extending therein from a face of the board, the channels being generally unidirectionally oriented along the board, the channels extending into the board through relatively narrow first openings at the face into relatively wide first zones, the channels further extending into the board from the first zones through relatively narrow second openings into second zones, the first and second zones being adapted to convey water from one end of the channels to the other end, the first openings each having a width of from 1/8 inch to 1/4 inch, the first zones each having a maximum width of from 1/4 inch to 3/4 inch, and the second openings each having a width of from 1/8 inch to 1/4 inch.

5,511,347
ADJUSTABLE SHEET METAL MOULDS FOR STEEL AND PRECAST CONCRETE STAIRS
Horst G. W. Schwarz, 7089 President Drive, Niagara Falls, Ontario, Canada

Filed Nov. 7, 1994, Ser. No. 335,166

Int. Cl.⁶ E04F 11/00

U.S. Cl. 52—182

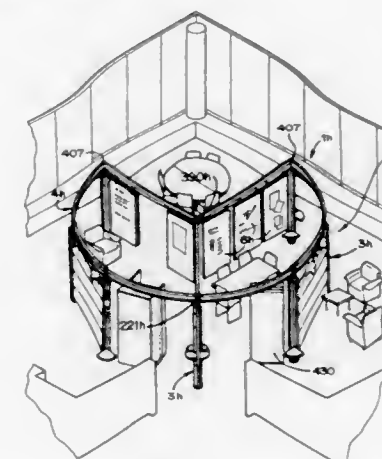
16 Claims

1. A universal tread and riser pan form useful for building a step of a stairway, said pan form having a geometric cross-sectional shape with one portion A similar to a dipper or ladle and a second portion B which is referred to as the handle portion; said ladle portion A having four sides, said sides including a first side having a length and being horizontal, said first side having a first end connected to a first end of a second side at an approximate angle of

5,511,348
FURNITURE SYSTEM
Paul T. Cornell, Grand Rapids, Mich.; Robert J. Luchetti; Gregg R. Draudt, both of Cambridge, Mass.; Kurt S. Boden, San Francisco, Calif., and Linda K. Zimmer, Eugene, Oreg., assignors to Steelcase Inc., Grand Rapids, Mich.
Continuation-in-part of Ser. No. 480,219, Feb. 14, 1990, abandoned. This application Oct. 8, 1991, Ser. No. 774,563
Int. Cl.⁶ E04B 2/00

U.S. Cl. 52—239

43 Claims



1. A furniture based partition system particularly adapted for use in open plans, and the like, comprising:
an overhead support disposed in a generally horizontal orientation;
a plurality of overhead support columns disposed in a generally vertical orientation; each of said columns having a lower portion thereof adapted to abut a floor surface of an associated building room, and an upper portion thereof connected with said overhead support to rigidly interconnect the same, such

that said columns are adapted to be freestanding on the floor surface, and support said overhead support within the building room at a predetermined overhead elevation, with the floor surface beneath said overhead support being generally unobstructed to facilitate user passage thereunder;

a plurality of individual panels, each being shaped to partition the building room, and having a generally rigid, lightweight construction which permits easy, manual, bodily translation of the same by an adult user; each of said panels includes a connector mounted thereon which detachably connects the same with said overhead support in a manner in which each of said panels hangs downwardly from said overhead support in a generally vertical orientation, and is readily and easily removable therefrom by the user; and

an open sided hanger supported on said overhead support, and detachably engaging the connector of said panels to permit each of said panels to be manually lifted and detachably hung directly on said overhead support at various locations therealong.

5,511,349

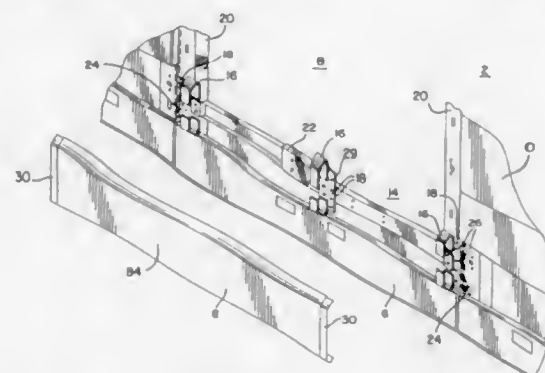
RACEWAY CABLE RETENTION AND ACCOMMODATION APPARATUS

James O. Kelley, Spring Lake, and John G. Otto, Grandville, both of Mich., assignors to Herman Miller, Inc., Zeeland, Mich.

Continuation of Ser. No. 971,335, Nov. 4, 1992, Pat. No. 5,383,318. This application Aug. 9, 1994, Ser. No. 288,150
Int. Cl.⁶ E04B 2/00

U.S. Cl. 52—287.1

22 Claims



1. A panel system, comprising:

- a cover extending along a first direction;
- a first post;
- a second post spaced from said first post;
- a connection piece, wherein said connection piece is connected to said first post and said second post; and
- a C-shaped bracket, wherein said C-shaped bracket is mounted to said connection piece and said cover is attached to said C-shaped bracket, wherein said C-shaped bracket comprises a blocking element attached thereto and having a structure to pivot about an axis perpendicular to said attached cover so as to cover a gap defined by said C-shaped bracket.

5,511,350

BLOCK WALL SYSTEM

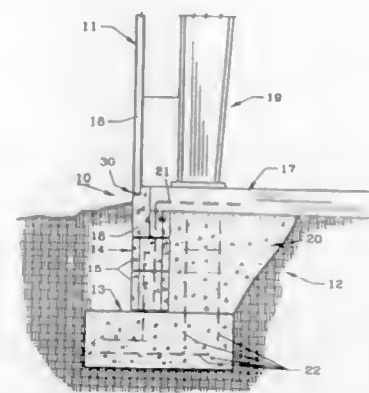
Kirk N. Nivens, Lot 4A, Seabrook Point, Seabrook, S.C. 29940
Continuation of Ser. No. 147,293, Nov. 15, 1993, abandoned.
This application Feb. 13, 1995, Ser. No. 387,449

Int. Cl.⁶ C02D 27/00

U.S. Cl. 52—293.3

16 Claims

- 1. A construction wall top block of uniform composition comprising: a face section, said face section having rear, front, top, bottom, and first and second side surfaces, a support section, said



support section defining a vertical channel, said channel extending the entire height of said support section, said support section having rear, front, top, bottom, and first and second side surfaces, the longitudinal length of said support section less than the longitudinal length of said face section, said front surface of said support section joined to said rear surface of said face section, said first side surface of said support section flush with said first side surface of said face section, a horizontal extension, said horizontal extension longitudinally extending from said first side surface of said support section and having a depth less than the depth of said support section, said bottom surface of said support section flush with said bottom surface of said face section, said support section having a height less than said face section wherein said first side surface of said face section, said first side surface of said support section and said horizontal extension for complementary reception of second side surfaces of an adjacent wall top block.

5,511,351

DRAINAGE SYSTEM FOR DECKS

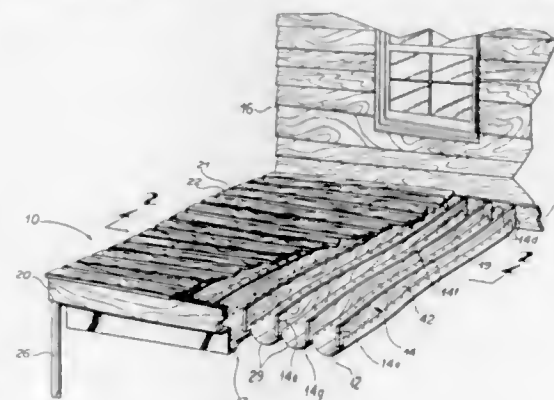
Grant M. Moore, 3599 Aaron Sosebee Rd., Cumming, Ga. 30130

Filed Sep. 29, 1993, Ser. No. 129,428

Int. Cl.⁶ E04B 1/70

U.S. Cl. 52—302.1

14 Claims



- 1. A deck drainage system for mounting between adjacent joists of a deck assembly, said joists having lower portions comprising a plurality of water channeling members respectively formed from a substantially flexible web material and having side edges and distal and proximal ends, said water channeling members being substantially identical to each other and of essentially uniform width, length, and thickness, said water channeling members being arranged side-by-side in succession and having said side edges of adjacent of said water channeling members mounted to the lower portion of said joists in overlapping relationship, with said water channeling members being concaved along their upper surfaces and convexed along their lower surfaces, said concaved and convexed surfaces extending between adjacent deck joists; said joists

having adjacent opposed vertical side surfaces and said side edges of each of said water channeling members being secured to the respective vertical sides surfaces of two adjacent deck joists to incline said water channeling members and thereby direct collected water toward the ends of said water channeling members; and including a high back gutter disposed adjacent to said distal ends of said water channeling members for collecting the water directed toward said ends and for covering said distal ends of said water channeling members.

means for connecting said sash means to said frame means, said means for connecting being of sufficient strength so as to allow said sash means to move relative to said frame means.

5,511,352

DECKING SYSTEM AND CLIPS THEREFOR

Stephen L. Jones, P.O. Box 124, 8 Merriam Rd., Princeton, Mass. 01541

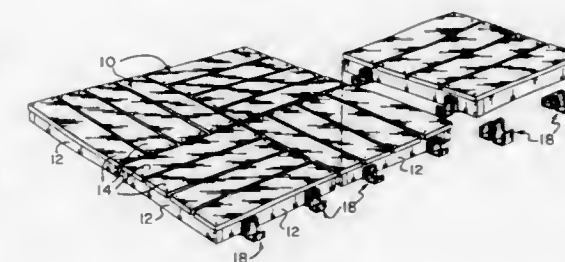
Continuation of Ser. No. 159,716, Nov. 30, 1993, abandoned.

This application Nov. 28, 1994, Ser. No. 345,165

Int. Cl.⁶ E04D 1/00

U.S. Cl. 52—536

21 Claims



5,511,352

OPERABLE GLASS BLOCK WINDOW

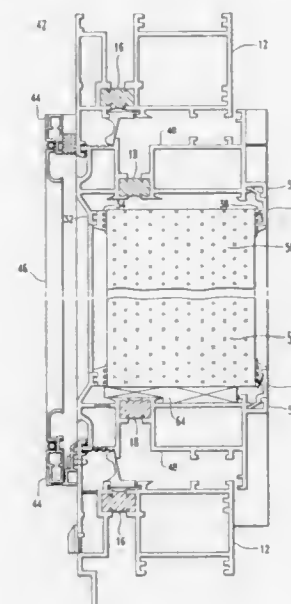
Bernard C. Sholton, Coral Gables, Fla., assignor to Glenn Sholton, Coral Gables, Fla.

Filed Dec. 20, 1991, Ser. No. 811,769

Int. Cl.⁶ E04B 5/46

U.S. Cl. 52—306

8 Claims



1. An operable glass block window, comprising:

- window frame means sized for insertion into an opening in a structure;
- a plurality of glass blocks interconnected to form a panel;
- resilient spacer means;
- window sash means having an exterior flange and an interior lip, said window sash means being of sufficient depth and strength for carrying said panel of glass blocks as a glazing material, said window sash means being of sufficient height and width to carry said resilient spacer means at the bottom thereof in a manner to support said panel of glass blocks and to allow for expansion of said panel of glass blocks on the other three sides;
- a glazing strip positioned between said exterior flange and said panel of glass blocks;
- a glazing wedge;
- a glazing bead, said glazing bead and said glazing wedge being positioned to cooperate with said interior lip to urge said panel of glass blocks against said glazing strip and said exterior flange to form a weather tight seal; and

- 1. A self-supporting portable decking system placeable directly on the ground and being formed of a plurality of individually detachable decking panels and connectors therefor comprising:

each of the decking panels having a horizontal decking surface and frame members exposed at and projecting downwardly from the underside of the panel, the frame members extending along and adjacent to the edges of the panel, and at least one surface member attached to and spanning the frame members thereby to define the decking surface;

a plurality of connectors for connecting adjacent edges of adjacent panels, each of the connectors comprising a pair of upwardly open, parallel channels, each channel having an inner wall, an outer wall, and a bottom wall connecting the inner and outer walls;

the inner walls of the channels being connected in spaced relation to each other;

the inner and outer walls of each channel being substantially parallel with each other;

the space between the inner wall and the upper end of the outer wall of each channel being less than the space between the inner and outer walls at the lower ends thereof and being configured to enable a frame member having a width corresponding to the width of the channel at the bottom of the channel to be urged downwardly into the channel;

the walls of the channels being sufficiently flexible and being spaced as to yield outwardly when a frame member having width corresponding to the width of the channel at the bottom of the channel is inserted downwardly into the channel, the walls being resilient to grip the frame member;

the connector being a separate member from the panels and enabling connection of frame members of adjacent panels at any location along the frame members, the connector further enabling detachment of the frame member by relative upward withdrawal of the frame member from the channel;

whereby a plurality of said panels can be connected in a self-supporting, free-standing, edge-to-edge array on a substantially horizontal supporting surface;

the frame members of adjacent deck panels being received in a pair of channels of at least one of said connectors to define said array.

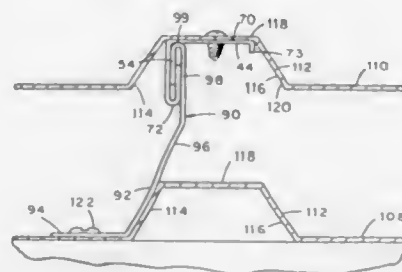
5,511,354 SUPPORT CLIP FOR ROOFING PANELS AND ASSOCIATED SYSTEM

Carson J. Eldson, Jonesborough, Tenn., assignor to Lilly's Die-Tool & Mfg. Corp., Abington, Va.

Continuation of Ser. No. 609,176, Nov. 5, 1990, Pat. No. 5,127,205. This application Jul. 6, 1992, Ser. No. 908,470. The portion of the term of this patent subsequent to Jul. 7, 2009, has been disclaimed.

Int. Cl.⁶ E04D 1/34

U.S. Cl. 52—544



5. A roof system which comprises first and second layers of contiguous interconnected roof panels, each roof panel having a plurality of upwardly projecting elongate reinforcing ribs extending in spaced-apart side-by-side adjacency along the panel, and means for movably supporting said second layer of interconnected roof panels in spaced-apart relation above said first layer of interconnected roof panels to accommodate longitudinal movement of said second layer relative to said first layer.

5,511,355 CONSTRUCTION ELEMENT

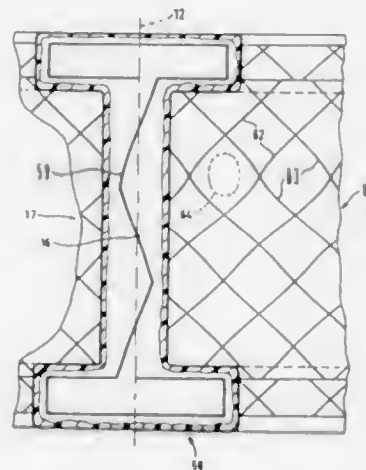
Gerhard Dingler, Industriest., W-7472 Halterbach, Germany

Filed Apr. 6, 1992, Ser. No. 864,105

Int. Cl.⁶ E04C 3/29

U.S. Cl. 52—729.5

74 Claims



1. An elongate construction element, made of plastic which has a first, low modulus of elasticity, and having a lamination of a material which has a second, significantly higher modulus of elasticity inside the construction element, and at least one system plane associated with the construction element, along which plane the construction element has essentially homogeneous characteristics and is essentially homogeneously constructed, comprising the improvement wherein:

- a) the lamination lies on both sides of the system plane and crosses through the latter at least at one point;
- b) the cross-sectional areas of the lamination and the plastic are inversely proportional functions of the effective moduli

of elasticity of the plastic and of the lamination so that the flexural rigidities of the cross-sectional areas are essentially equal and

c) the lamination is at least essentially continuous.

5,511,356 MODULE COMPRISED OF FIBER MATS

Adolf Schultz, Glinde, Germany, assignor to Gossler Feuerfest- und Isoliertechnik GmbH, Reinbek, Germany

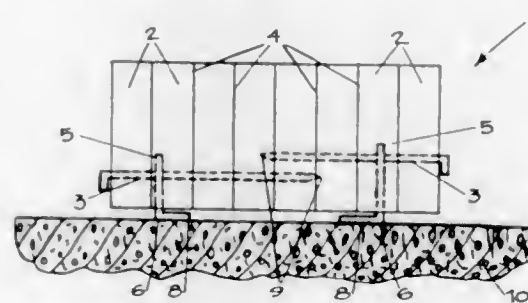
Continuation of Ser. No. 153,478, Nov. 16, 1993, abandoned, which is a continuation of Ser. No. 828,887, Jan. 29, 1992, abandoned. This application Feb. 2, 1995, Ser. No. 384,439

Claims priority, application Germany, Jun. 13, 1990, 9006687 U

Int. Cl.⁶ E04B 1/00

U.S. Cl. 52—746.1

8 Claims



1. A method of producing an insulation system comprised of a plurality of modules, each module comprised of a plurality of fiber mats, at least one fastening element and at least one transverse rod, for insulating surfaces selected from the group of roofs, walls, ceilings, and floors, said method comprising the steps of:

- a) arranging a plurality of fiber mats adjacent to one another to form a rectangular body;
- b) providing at least one fastening element comprising a perforated plate with a plurality of bores distributed randomly and closely adjacent to one another over a surface of said plate;
- c) connecting said at least one fastening element to a surface to be insulated;
- d) positioning said rectangular body on said at least one fastening element such that said perforated plate extends into said rectangular body parallel to said adjacent fiber mats;
- e) pushing at least one transverse rod into said rectangular body so as to extend transverse to said adjacent fiber mats and parallel to the surface to be insulated;
- f) securing said at least one transverse rod at said at least one fastening element by pushing said at least one transverse rod into one of said bores to thereby connect said rectangular body to the surface to be insulated; and
- g) repeating steps a) to f).

5,511,357 APPARATUS FOR CONTROLLING THE POSITION OF AN ENVELOPE IN AN INSERTER MACHINE

David J. Ricketts, Essex, and Keith J. Yates, Hertfordshire, both of, England, assignors to Pitney Bowes plc, Harlow, England

Filed Dec. 19, 1994, Ser. No. 359,157

Int. Cl.⁶ B65B 57/04; 5/04; 5/06

U.S. Cl. 53—55

8 Claims

1. An inserter machine comprising means for feeding an envelope withdrawn from a storage tray to a flap device capable of opening the envelope flap and forwarding the envelope along a deck with its base edge leading and its open flap trailing, encoder means connected for rotation in synchronization with one or more rolls forming part of the forwarding means, the machine also

5,511,359 METHOD AND APPARATUS FOR MAKING TAGGED INFUSION PACKAGES

Alan G. Kenney, Cambridge, England, assignor to A.G. (Patents) Limited, London, England

PCT No. PCT/GB92/00265, § 371 Date Oct. 12, 1993, § 102(e)

Date Oct. 12, 1993, PCT Pub. No. WO92/14649, PCT Pub.

Date Sep. 3, 1992

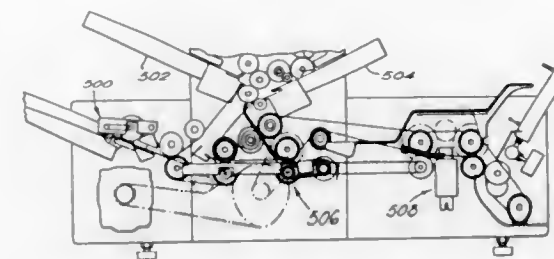
PCT Filed Feb. 14, 1992, Ser. No. 104,135

Claims priority, application United Kingdom, Feb. 14, 1991, 9103156

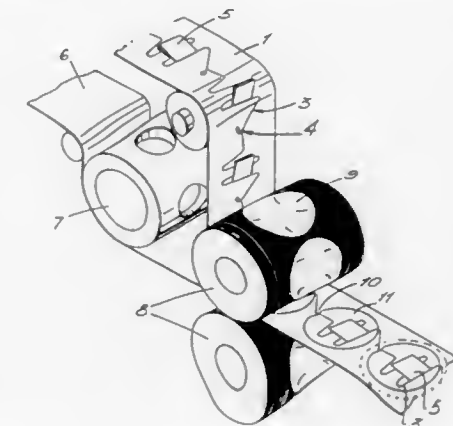
Int. Cl.⁶ B65B 29/04; 61/14

U.S. Cl. 53—413

25 Claims



having a means for disconnecting drive to the envelope to stop the envelope at a stuffing station, and a wetter arrangement whereby the envelope flap can be wetted prior to sealing and flap closure, wherein an envelope stop is provided in a flap closure mechanism, the stop being adjustable in position without operator intervention in response to information provided by the encoder means or by data fed into a keyboard on the machine.



5,511,358 SECURING SMALL BAGS TO BELT-LIKE MEMBER

Yoshikazu Morita, Shigeharu Iwauchi, and Tamotsu Ogiso, all of Tokyo, Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

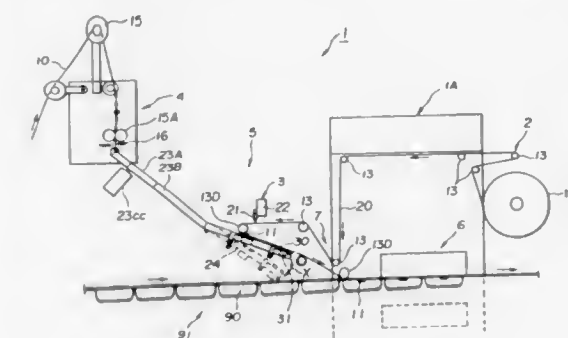
Filed Feb. 27, 1995, Ser. No. 394,965

Claims priority, application Japan, Feb. 28, 1994, 6-030241

Int. Cl.⁶ B65B 61/00

U.S. Cl. 53—128.1

38 Claims



1. An apparatus for successively securing a plurality of small bags to a first belt-like member via an adhesive layer, comprising: a transportation path for transporting the plurality of small bags one by one towards said first belt-like member; and an attaching apparatus for simultaneously attaching a plurality of

small bags on said transportation path to the first belt-like member along the feeding direction of the first belt-like member, wherein said attaching apparatus comprises a stopper which stops each of said small bags in the middle of said transportation path and a pusher separate from said stopper, which pusher compresses each of said small bags so stopped to the adhesive layer of said first belt-like member and wherein a plurality of said attaching apparatuses are provided along said transportation path, wherein said stopper comprises an end plate to block said transportation path, a side plate to pivot said end plate towards said transportation path, and an axis to support the side plate in a rotatable manner, said stopper being rotatable about said axis.

5,511,360 CONTAINER FOR RECEIVING HEAD SHRINKING FILM AND METHOD FOR FORMING A SPILL-RESISTANT COVER THEREFOR

William J. Bakker, R.R. #1, Orangeville, Ontario, Canada, and N. A. Williams, Don Mills, Canada, assignors to William J. Bakker, Mississauga, Canada

Continuation of Ser. No. 873,844, Apr. 27, 1992, Pat. No.

5,249,410. This application Jul. 12, 1993, Ser. No. 89,462

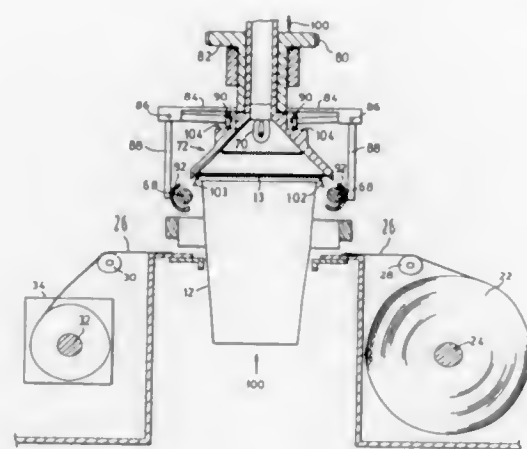
Int. Cl.⁶ B65B 53/02

U.S. Cl. 53—442

15 Claims

1. A method of forming a spill resistant top cover on a container having an open top, using a device having a radiant energy source, the method comprising:

- selecting a heat shrinkable thin film made from generally transparent plastic;
- adapting at least a portion of said heat shrinkable thin film to become more absorbent to radiant energy than a transparent thin film;
- manually positioning said container relative to said device wherein said more absorbent portion can be exposed to said source of radiant energy; and



placing said heat shrinkable thin film over the top of said container wherein said more absorbent portion hangs over an upper side edge of said container, subjecting said more absorbent portion of said heat shrinkable thin film to said source of radiant energy wherein said more absorbent thin film absorbs said radiant energy, creating heat, which causes said thin film to shrink around said rim and form a spill resistant cover over said open top of said container.

5,511,361

ENCAPSULATION METHOD

Erich W. Sauter, Washington Crossing, Pa., assignor to Warner-Lambert Company, Morris Plains, N.J.

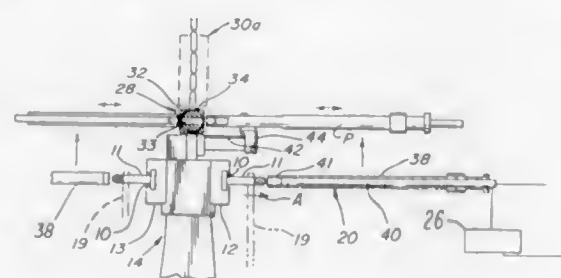
Division of Ser. No. 927,066, Aug. 7, 1992, Pat. No. 5,317,849.

This application Jan. 12, 1994, Ser. No. 180,550

Int. Cl.⁶ B65B 43/42

U.S. Cl. 53—467

15 Claims



1. A method of encapsulation of elongated, substantially cylindrical, solid objects within a gelatin covering, said method comprising the steps of:

providing pairs of hollow gelatin capsule portions, each having an open end and a closed end, a substantially identical internal and external cross-section and an internal cross-section substantially equal to the cross-section of said substantially cylindrical, solid objects and each having a substantially identical outer profile, the combined length of the pair of capsule portions being at least equal to the length of an object being encapsulated;

feeding said objects to an object holding station;

depositing said objects at said holding station;

positioning said capsule portions with the open ends facing towards the ends of an object deposited at said holding station; and

encapsulating each said object deposited at said holding station by relatively moving said capsule portions onto said object and into a position in which said open ends are in abutting relationship.

5,511,362

BOX SEALING METHOD AND APPARATUS

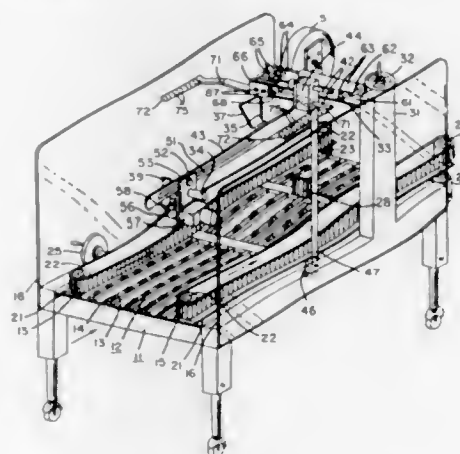
Shigeru Morita, Iruma; Hiroshi Ishida, Tsurugaoka, and Isao Hirano, Saltama, all of Japan, assignors to Nippon Flute Co., Ltd., Japan

Filed Nov. 24, 1993, Ser. No. 156,750

Int. Cl.⁶ B65B 43/26

U.S. Cl. 53—491

12 Claims



1. A box closing and sealing apparatus operable to close and seal the top of a box having a body with an upper open portion, front inner box flap, back inner box flap, and left and right outer box flaps, said box sealing apparatus comprising:

a frame;

means operably connected to said frame for conveying the box body along a conveyance path;

a stop member movable between a retracted position removed from said conveyance path and a blocking position;

means operably connected to said frame for folding the front inner box flap into an upper opening plane of the box body, said front inner box flap folding means including a body positioned generally above and at a generally central position of said conveyance path such that as said box body is advanced along said conveyance path, said body of said front inner box flap folding means contacts said front inner box flap;

means operably connected to said frame for folding the back inner box flap into the upper opening plane of the box body, said back inner box flap folding means movable between a position removed from said conveyance path to a generally central position of said conveyance path;

means operably connected to said frame for folding the left and right outer box flaps into the upper opening plane of the box body, said means for folding the left and right outer flaps including opposed first and second body members movable between opposing positions lateral to said conveyance path of said box body and a opposing positions slightly above and

adjacent to a generally central position of said conveyance path such that when said first and second body members are caused to move from said opposed lateral positions to said position adjacent a generally central position of said path, said left and right outer flaps are caused to occupy a position across said upper opening plane of said box body; and

means operably connected to said frame for sealing facing edges of the left and right outer flaps after said left and right outer flaps are moved into said position across said upper opening plane of said box body.

5,511,363

VERTICAL CYCLICALLY OPERATING FLAT SACK MACHINE

Klaus Doede, Verl, Germany, assignor to Klockner Hansel GmbH, Hannover, Germany

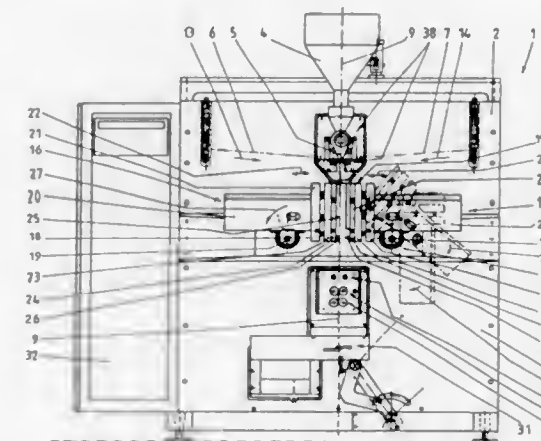
Filed Apr. 19, 1994, Ser. No. 230,159

Claims priority, application Germany, Apr. 22, 1993, 43 13 205.7

Int. Cl.⁶ B65B 9/06

U.S. Cl. 53—552

12 Claims



1. Vertical cyclically working flat sack machine (1) for packaging flowable or pourable materials or objects in flat sacks formed from opposed foil sheets aligned in a common vertical foil plane comprising a machine frame, means for feeding the foil sheets into the machine, a measurer (3) with filling means (5) mounted to the machine frame for depositing flowable materials between the foils, a deflector (8) for guiding the foils into an opposed parallel relationship positioned on opposite sides of the measurer and filling means, a sealer (15) positioned below the filling means and adapted to engage and seal the foils together, a discharge device (29) downstream from the sealer, and longitudinal and transverse cutters positioned adjacent the discharge device, the sealer (15) including two symmetrically fashioned units (16, 17) positioned on opposite sides of the foil plane, each comprising a pivot spar (18, 18'), a sealer spar support (20, 20') mounted to each pivot spar, a sealer spar (21, 21') mounted to each pivot spar support, and a heating plate (23, 23') and a clamping plate (24, 24') mounted on and supported by each sealer spar, with each clamping plate having elongated longitudinal and transverse sealing tools (25, 25', 26, 26') mounted thereupon, wherein the units (16, 17) each are movable horizontally toward and away from the foil plane to enable the units to be pivotable from a sealing position extending parallel to the foil plane (9) when the units are moved away from the foil plane, about a pivot axis (19, 19') approximately 90° with respect to the foil plane into a fitting and cleaning position, wherein the sealing tools and the clamping plates are positioned mainly above a horizontal plane connecting the pivot axes displaced from the foil plane and filling means to facilitate cleaning and replacement of the sealing tools.

5,511,364

APPARATUS FOR PACKING PRODUCTS IN PREFORMED BAGS

Avraham Y. Levi, 757 Decorah La., St. Paul; Michel M. Rouache, 880 Cheri La., and Shimon Arosh, 2554 Whitfield Dr., both of Mendota Heights, all of Minn. 55120

Filed Dec. 5, 1994, Ser. No. 349,242

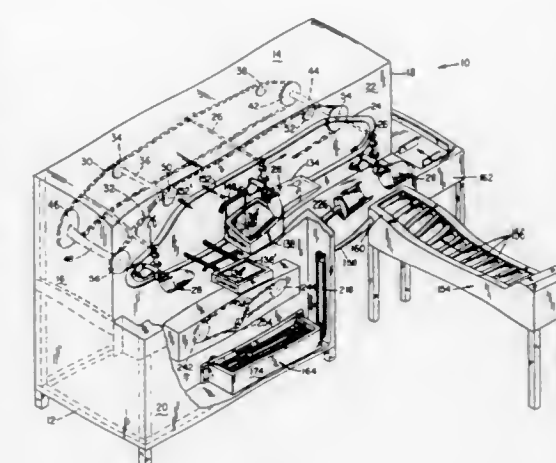
Int. Cl.⁶ B65B 43/26

U.S. Cl. 53—570

11 Claims

1. A packaging machine for packing products in pre-formed bags, comprising:

(a) a frame;



(b) an endless chain disposed about sprocket wheels mounted to the frame so that the chain defines first and second flights;

(c) means supported by the frame for continuously driving the endless chain about the sprocket wheels in an orbital path without arresting the movement of said endless chain during the packing operation;

(d) bag gripping means carried by the endless chain for picking up a topmost bag from a stack of pre-formed bags as the bag gripping means is traversing one of the first and second flights and for sequentially carrying the bags to a bag filling station in the other of the first and second flights; and

(e) a bag filling station at which bags carried by the bag gripping means are filled with a plurality of products arranged in corresponding groups, the products in each group being arranged sequentially relative to one another, means for holding said products a stationary while bag carried by the bag gripping means is being drawn over the group of products disposed at the bag filling station as the bag gripping means moves continuously in the other of the first and second flights.

5,511,365

MOWER HEAD ROLLER ASSEMBLY

James Rice, 22008 Vine Rd., Brier, Wash. 98036

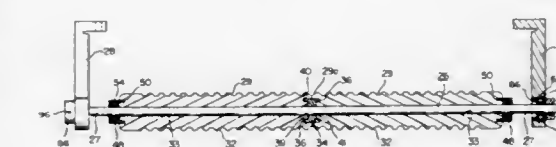
Division of Ser. No. 277,249, Jul. 18, 1994, This application

Apr. 7, 1995, Ser. No. 418,791

Int. Cl.⁶ A01D 34/62

U.S. Cl. 56—7

18 Claims



1. A mower head comprising:

a frame;

a cutting reel rotatably attached to the frame; and

at least one roller assembly attached to said frame, said roller assembly including:

a roller body extending along said frame and positioned to move along the ground in the vicinity of said reel, said roller body having a pair of opposed ends;

a shaft extending longitudinally through said roller body having a pair of opposed end sections that extend away from said opposed ends of said roller body, said shaft being mounted to said roller body so as to rotate in unison with said roller body; and

a pair of bearing assemblies, each said bearing assembly coupled to one of said opposed ends of said shaft for rotatably coupling said shaft to said frame and further being coupled to

said frame so as to be seated in a specific plane and further being able to rotate in two dimensions relative to said specific plane.

5,511,366

WATER BODY CLEANING APPARATUS AND METHOD

George L. Roth, 1501 Atlantis Dr., Apopka, Fla. 32703

Filed Feb. 22, 1995, Ser. No. 392,255

Int. Cl.⁶ A01D 44/00

U.S. Cl. 56—8

14 Claims



1. A water-body-cleaning apparatus comprising:
 - a first earth-anchored vehicle at a desired distal position relative to a body of water;
 - a second earth-anchored vehicle at a desired proximal position on a shore of the body of water;
 - a first winch with selective brake resistance and motorized rotation on the first earth-anchored vehicle;
 - a second winch with selective brake resistance and motorized rotation on the second earth-anchored vehicle;
 - an aquatic tool;
 - a positioning line attached to a distal end of the aquatic tool and wound onto the first winch;
 - the positioning line being extended intermediate the distal end of the aquatic tool and the first winch;
 - a drag line attached to a proximal end of the aquatic tool and wound onto the second winch;
 - the drag line being extended intermediate the proximal end of the aquatic tool and wound onto the second winch; and
 - a load-removal means on the second earth-anchored vehicle.

5,511,367

LAWN MOWER HAVING ADDITIONAL IMPROVED TRIM FEATURE

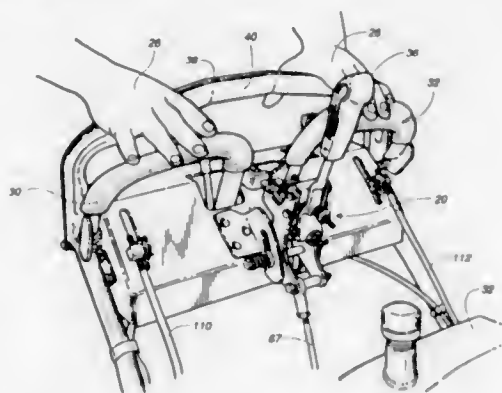
James R. Powers, Conyers; John W. Wilder, McDonough; Frank H. Hancock, Jr., McDonough, and Amos G. Hill, McDonough, all of Ga., assignors to The Actava Group, Inc., McDonough, Ga.

Continuation-in-part of Ser. No. 84,031, Jun. 28, 1993. This application Aug. 1, 1994, Ser. No. 283,710

Int. Cl.⁶ A01D 34/68

U.S. Cl. 56—11.2

11 Claims



1. A lawn mower capable of traveling in a straight forward direction and also turning left and right under the control of an operator, said lawn mower comprising:

- a frame;
- an internal combustion engine mounted to said frame;
- at least one vegetation cutting blade;
- means for rotatably driving said blade by said engine;
- first and second drive wheels rotatably mounted relative to said frame, for propelling said frame relative to the ground from rest to a forward speed;
- first and second drive train means for transferring power from said engine to corresponding first and second drive wheels to cause each of said first and second drive wheels to rotate from rest to a set forward speed;
- first and second speed control means, each independently movable from a neutral position to set forward position, said first and second speed control means independently controlling the amount of forward speed of said first and second drive wheels; and
- first and second stop means for setting said set forward positions of said first and second speed control means, to allow said operator to independently limit the amount of speed obtained by said drive wheels, said first and second stop means adjustable relative to each other and together comprising:
 - a) a trim control body mounted relative to said frame; and
 - b) a stop plate mounted relative to said trim control body and defining first and second stop cams each defining corresponding first and second stop surfaces for limiting the forward travel of said first and second speed control means, said stop plate being movable by an operator relative to said trim control body to allow said operator to adjust the positions of said first and second stop surfaces relative to each other, in order to independently adjust the first and second set forward speeds of said first and second drive wheels.

5,511,368

ROUGH TERRAIN HYDRAULIC MOWER ATTACHMENT

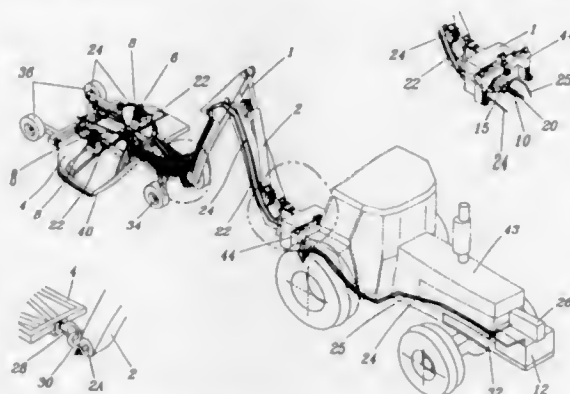
Norman E. Kocher, R.R. 2, Box 95, Lawrenceville, Ill. 62439

Filed Jan. 20, 1995, Ser. No. 375,600

Int. Cl.⁶ A01D 34/64

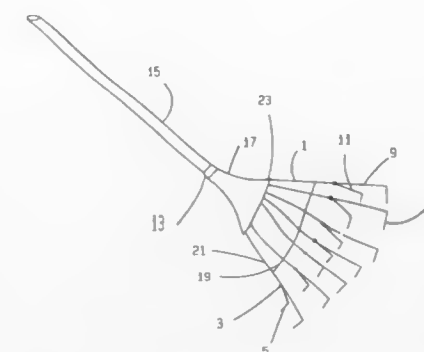
U.S. Cl. 56—15.2

5 Claims



1. A rough terrain mower assembly comprising:
 - a) a mower and a boom which can be towed by a vehicle; wherein the assembly will tolerate variations in ground elevations between said tractor and said mower, and a connecting means of connecting said mower and said boom;
 - b) said mower having a frame with a front end and a rear end, at least one blade mounted to said frame, and at least one hydraulic motor mounted on said frame to rotate said at least one blade, said mower supported by at least two wheels mounted on said front end and at least two wheels mounted on said rear end;
 - c) said boom having first and second sections pivotally connected to each other, each section of said boom having a forward end and a rearward end, wherein the forward end of said first section is connectable to said vehicle, the rearward

- end of said section is connectable to said mower, and the rearward end of said first section is pivotally connected to the forward end of said second section; and
- d) said connecting means for connecting said mower to said boom comprising an eye bolt means secured to said front end of said frame extending forwardly thereof, a pin means extending through an aperture on rearward end of said second section of said boom, and a clevis means for connecting said pin means and said eye bolt means together.



5,511,369

CHUTE TO PREVENT CLUMPING OF GRASS EJECTED FROM A MOWER

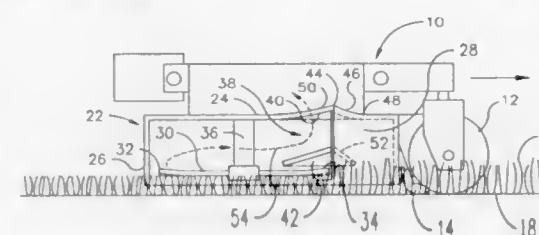
Frank Cerminara, Jr., 3482 Limekiln Pk., Chalfont, Pa. 18914

Filed Nov. 21, 1994, Ser. No. 342,885

Int. Cl.⁶ A01D 35/26

U.S. Cl. 56—320.2

10 Claims



1. A chute for a grass mower that employs a hood having a protective top and side wall that are spaced from the cutting blade of the mower and wherein the side wall has two spaced-apart edges extending downwardly from the top wall to form a cut out portion between said edges, said chute comprising the formation of a tapered portion in the top wall that extends in an upward direction from a point that is spaced inwardly along an upper edge of the side wall which is adjacent to a first one of said edges of said side wall toward a point that is above a top portion of the first one of said edges and wherein said tapered portion in the top wall forms an upper portion of the chute, the top of the side wall of the hood that is positioned below said tapered top wall being connected to the tapered top wall portion of the hood and having the same taper as the taper formed in the top wall said chute having a lower portion extending from the inner surface of said protective side wall and being spaced below and having the same taper as said taper formed in the top wall, said tapered upper and lower portions of said chute and the side wall extending between said upper and lower tapered portions providing a chute for receiving cut grass from the cutting blade and directing it through said cut out portion in an upward fan-shaped pattern away from said mower onto the ground without forming lines of clumped grass thereon.

5,511,370

DOUBLE RAKE

Thakorrbhai G. Patel, 10980 Rice Field Pl., Fairfax Station, Va. 22039

Filed Apr. 26, 1994, Ser. No. 233,316

Int. Cl.⁶ A01D 7/06

U.S. Cl. 56—400.16

11 Claims

1. A rake head, comprising:
 - a) a plurality of tine stems, each said tine stem including at least one upper leg tine segment terminating in an upper leg end and at least one lower leg tine segment terminating in a lower leg end; each said upper leg tine segment and said lower leg tine segment extending from each said tine stem from a common connection point;
 - b) a rake support member that holds said plurality of tine stems at an angle on a single plane;
 - c) a means for connecting each said upper and lower leg tine segments to said tine stems at said common connection point;

- d) a means for attaching said plurality of tine stems to said rake support member;
- e) a means for attaching a rake handle to said rake support member; and wherein said at least one upper leg tine segment and said at least one lower leg tine segment are of different lengths.

5,511,371

SYSTEM FOR INCREASING THE PRODUCTION OF SPINNING MACHINES

Christoph Kaufmann, Uster, Switzerland, assignor to Zellweger Luwa AG, Switzerland

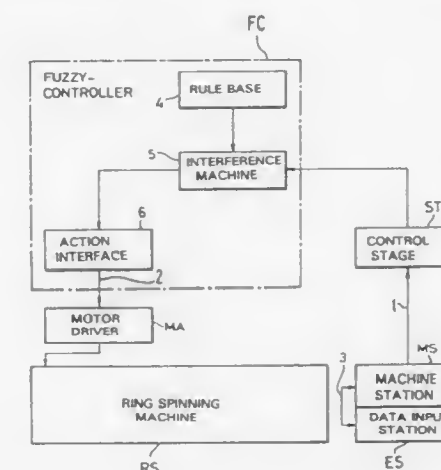
Filed Jul. 14, 1994, Ser. No. 274,783

Claims priority, application Switzerland, Jul. 14, 1993, 02108/93

Int. Cl.⁶ D01H 13/14

U.S. Cl. 57—264

7 Claims



1. A system for regulating the operation of a spinning machine to optimize its production, comprising:
 - sensors for measuring parameters relating to the operation of a spinning machine;
 - a control system responsive to the measured parameters for generating control variables having an unambiguous mathematical relationship to respective measured parameters;
 - means for entering other parameters which are not measurable with sensors; and
 - a fuzzy logic controller which receives the control variables generated by said control system and other parameters which do not exhibit an unambiguous mathematical relationship to control variables, for a generating regulated variable for controlling the operation of the spinning machine.

5,511,372

TRANSPORT VEHICLE FOR SLIVER CANS

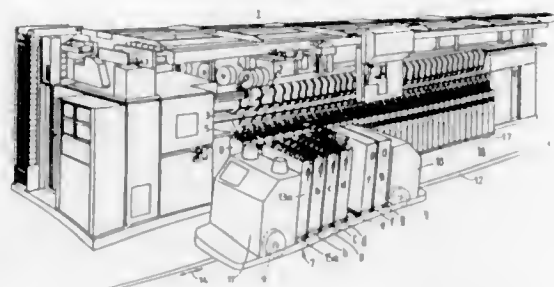
Hans-Peter Liedgens, Mönchengladbach, Germany, assignor to W. Schlafhorst AG & CO, Mönchengladbach, Germany
Filed Jul. 15, 1994, Ser. No. 276,168

Claims priority, application Germany, Jul. 15, 1993, 43 23 726.6

Int. Cl. 6 D01H 9/10; 9/14

U.S. Cl. 57—281

5 Claims



1. A transport vehicle for transporting a plurality of sliver cans between a can delivery station, work stations of a sliver processing textile machine, and a discharge station for empty cans, the transport vehicle traveling in a travel direction, the transport vehicle comprising:

an undercarriage defining a plurality of can parking places for sliver cans on the transport vehicle;

a plurality of can exchange mechanisms, each including a carriage supporting a respective one of the sliver cans, said carriage being slidable on said undercarriage transversely to a travel direction of the transport vehicle;

motor means for slidingly driving each of said carriages on said undercarriage; and

a can manipulating device operatively associated with each of said carriages for displacing the sliver cans, setting them down and receiving them on a respective one of said carriages; and mechanical coupling means coupling said can manipulating device with said carriage such that, when said carriage is displaced relative to said undercarriage, said can manipulating device displaces the can relative to the carriage and said can manipulating device reaches an end of said carriage when said carriage reaches a fully shifted position relative to said undercarriage for exchanging the can.

5,511,373

METHOD AND APPARATUS FOR PIECING A SLIVER AND AT LEAST ONE OF A LEADING YARN AND A BOBBIN YARN

Susumu Banba, Kyoto, Japan, assignor to Murata Kikai Kabushiki Kaisha, Kyoto, Japan

Filed Jan. 24, 1995, Ser. No. 377,307

Claims priority, application Japan, Jan. 25, 1994, 6-023754

Int. Cl. 6 D01H 5/28; 7/92

U.S. Cl. 57—328

5 Claims

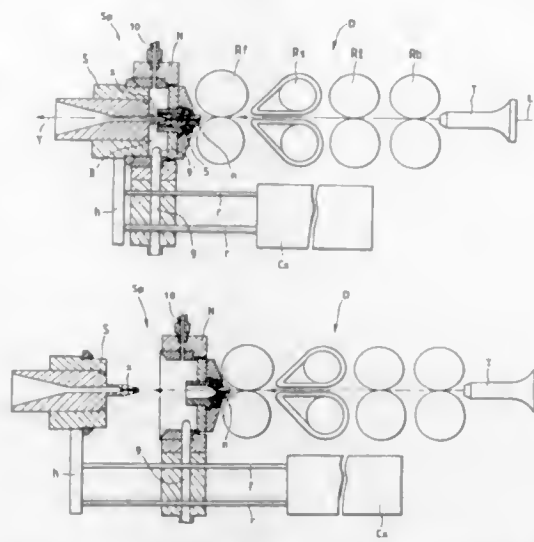
1. A yarn piecing method utilizing a turning air flow for piecing a sliver and at least one of a leading yarn and a bobbin yarn on a take-up side, comprising:

providing a nozzle member having a surface and a spindle member having a surface and a hollow spindle, establishing a relative spacing between the nozzle member and the spindle member,

inserting at least one of a leading yarn and a bobbin yarn on a take-up side into the hollow spindle of the spindle member relatively spaced from the nozzle member,

decreasing the relative spacing between the spindle member and the nozzle member so that at least a portion of the surface of the spindle member and at least a portion of the surface of the nozzle member mutually form an air chamber,

generating a compressed air flow,



directing the compressed air flow into the air chamber, and supplying sliver to at least one of the leading yarn and the bobbin yarn,

whereby the sliver and at least one of the leading yarn and the bobbin yarn are pieced together.

5,511,374

HIGH PRESSURE AIR SOURCE FOR AIRCRAFT AND ENGINE REQUIREMENTS

Marvin R. Glickstein, North Palm Beach; James T. Dixon, and Donald M. Podolsky, both of Jupiter, Fla., assignors to United Technologies Corporation, Hartford, Conn.

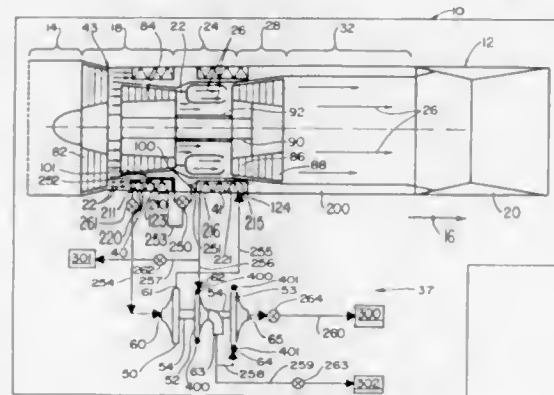
Division of Ser. No. 189,569, Jan. 31, 1994, Pat. No. 5,452,573.

This application Jan. 31, 1995, Ser. No. 381,248

Int. Cl. 6 F02C 6/08; 7/18

U.S. Cl. 60—39.02

12 Claims



1. A method for producing cooled air at relatively high, medium, and low pressures for use with components of a vehicle, said method comprising:

providing at least one gas turbine engine in said vehicle, said engine having in serial flow arrangement a low pressure compressor and a high pressure compressor, said low pressure compressor for compressing ambient air to produce compressed air at a first pressure and said high pressure compressor for compressing air at said first pressure to produce compressed air at a second pressure, said high pressure compressor having an interstage bleed for extracting air therefrom at a third pressure significantly greater than the first pressure and significantly less than the second pressure and said high pressure compressor having an exit stage bleed for extracting air therefrom at a bleed pressure essentially equal to the second pressure;

diverting a portion of said compressed air from said high pressure compressor through one of said bleeds;
cooling the portion in a cooled flow path that is cooled with some of said compressed air at said first pressure;
compressing the portion to a fourth pressure significantly higher than said second pressure;
cooling said portion at said fourth pressure, thereby producing cooled, relatively high pressure air for cooling components of said vehicle;

expanding a first part of said portion, thereby producing cooled, relatively medium pressure air for cooling components of said vehicle; and,

expanding a first amount of said first part, thereby producing cooled, relatively low pressure air for cooling components of said vehicle.

5,511,375

DUAL FUEL MIXER FOR GAS TURBINE COMBUSTOR

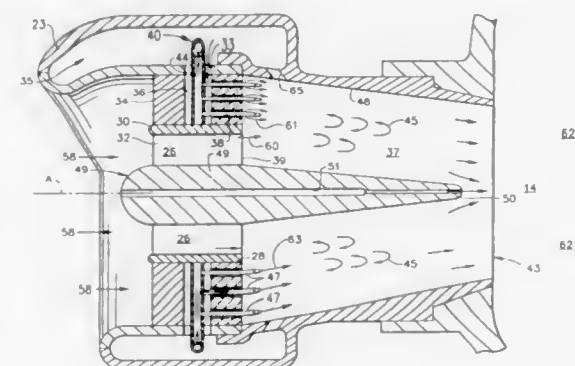
Narendra D. Joshi, and Edward E. Ekstedt, both of Cincinnati, Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed Sep. 12, 1994, Ser. No. 304,341

Int. Cl. 6 F02C 3/20; F23R 3/36

U.S. Cl. 60—39.463

15 Claims



1. An apparatus for premixing fuel and air prior to combustion in a gas turbine engine, comprising:

(a) a linear mixing duct having a circular cross section defined by a wall;

(b) a shroud surrounding the upstream end of said mixing duct, said shroud having contained therein a gas fuel manifold and a liquid fuel manifold, each of said manifolds being in flow communication with a gas fuel supply and a liquid fuel supply, respectively, and control means;

(c) a set of inner and outer annular counter-rotating swirlers adjacent the upstream end of said mixing duct for imparting swirl to an air stream, said outer annular swirlers including hollow vanes with internal cavities, wherein the internal cavities of said outer swirler vanes are in fluid communication with said gas fuel manifold and said liquid fuel manifold, and said outer swirler vanes having a plurality of fuel passages therethrough in flow communication with said internal cavities to inject gas fuel and/or liquid fuel into said air stream; and

(d) a hub separating said inner and outer annular swirlers to allow independent rotation thereof;

wherein high pressure air from a compressor is injected into said mixing duct through said swirlers to form an intense shear region, and gas fuel and/or liquid fuel is injected into said mixing duct from said outer swirler vane passages so that the high pressure air and the fuel is uniformly mixed therein, whereby minimal formation of pollutants is produced when the fuel/air mixture is exhausted out the downstream end of said mixing duct into the combustor and ignited.

5,511,376

AXISYMMETRIC VECTORING NOZZLE

William K. Barcza, Palm City, Fla., assignor to United Technologies Corporation, Hartford, Conn.

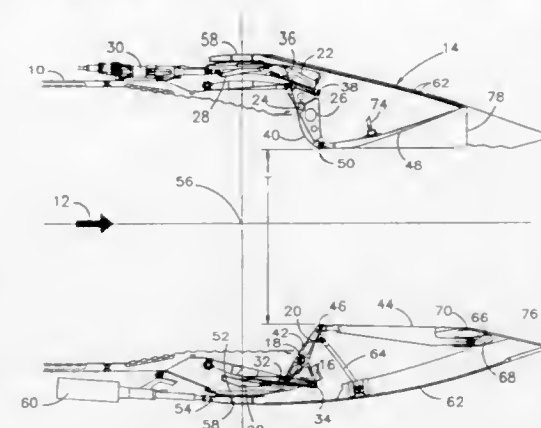
Continuation of Ser. No. 115,484, Aug. 31, 1993, abandoned.

This application Nov. 1, 1994, Ser. No. 333,113

Int. Cl. 6 F02K 1/12; B64C 15/02

U.S. Cl. 60—230

13 Claims



1. An axisymmetric vectoring convergent/divergent nozzle for a gas turbine engine, comprising:

a static structure for axial flow of gas therethrough;

a plurality of outboard flap supports on said static structure;

a plurality of N outboard convergent flaps, each pivotally supported on one of said outboard flap supports;

a plurality of inboard flap supports on said static structure;

a plurality of N inboard convergent flaps, each pivotally supported on one of said inboard flap supports, said inboard convergent flaps located between adjacent outboard convergent flaps on the inboard side thereof in sealing contact therewith;

throat drive means for simultaneously rotating said outboard convergent flaps and said inboard convergent flaps around their respective supports;

a plurality of outboard divergent flaps universally secured to the aft end of said outboard convergent flaps;

a plurality of inboard divergent flaps universally secured to the aft end of said inboard convergent flaps;

a plurality of overlapping external flaps;

a plurality of support links, each support link pivotally secured to one of said external flaps at one end and pivotally secured to one of said outboard convergent flaps and inboard convergent flaps at the other end; and

divergent drive means for positioning said external flaps.

5,511,377

ENGINE AIR/FUEL RATIO CONTROL RESPONSIVE TO STEREO EGO SENSORS

Allan J. Kotwicki, Sterling Heights, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Aug. 1, 1994, Ser. No. 283,434

Int. Cl. 6 F01N 3/20

U.S. Cl. 60—274

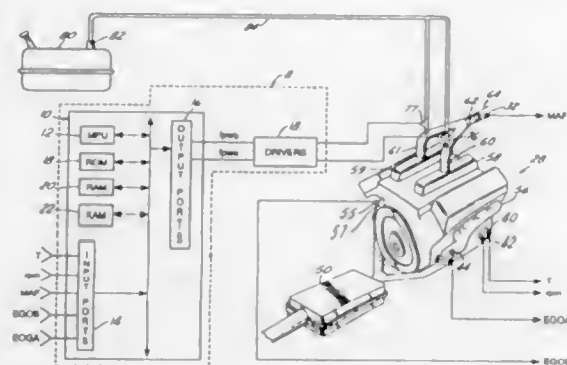
17 Claims

1. An air/fuel control method responsive to first and second exhaust gas oxygen sensors each coupled to respective first and second engine banks, comprising the steps of:

combining output signals from the first and second sensors and deriving, a first feedback signal from said combination;

generating a first modified feedback signal by modifying said first feedback signal in response to a difference between said output signals from the first and second sensors;

generating a second modified feedback signal by modifying said first feedback signal in response to said difference between said output signals from the first and second sensors; and



adjusting fuel delivered to the first bank in response to said first modified feedback signal and adjusting fuel delivered to the second bank in response to said second modified feedback signal.

5,511,378

MODULATING AIR/FUEL RATIO

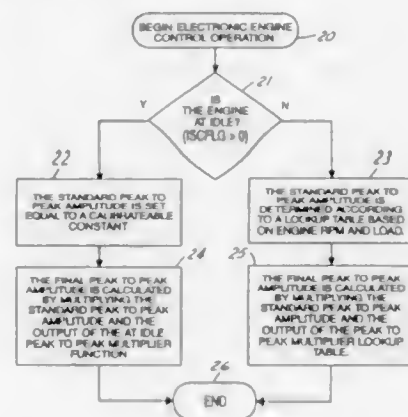
Michael P. Lindlbauer, Canton, and Terry W. Childress, Clinton Township, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed May 5, 1995, Ser. No. 435,302

Int. Cl.⁶ F01N 3/20

U.S. Cl. 60—274

4 Claims



1. A method of controlling air to fuel ratio peak to peak amplitude in operation of an internal combustion engine having a catalyst including the steps of:

- determining whether the engine is at idle;
- if yes, setting a standard peak to peak amplitude equal to an idle calibrateable constant multiplied by a first function of catalyst temperature; and
- if no, setting the standard peak to peak amplitude equal to a non-idle calibrateable constant multiplied by a second function of catalyst temperature.

5,511,379
PROCESS FOR THE PRESERVATION OF PRODUCTS AT LOW TEMPERATURE IN AN INSULATED CHAMBER, INSTALLATION FOR PRACTICING THE PROCESS, INSULATED CHAMBER AND CONTAINER FOR SUCH A CHAMBER

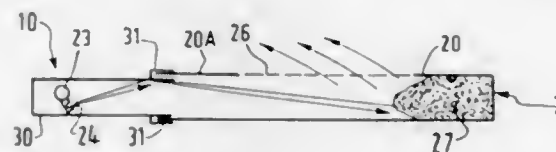
Claude Gibot, Clichy Sous Bois, and Philippe Bouguet, Fosses, both of, France, assignors to Carboxyque Francaise, Puleaux, France

Filed Aug. 4, 1994, Ser. No. 285,718

Int. Cl.⁶ F25D 3/12

U.S. Cl. 62—602

9 Claims



1. A dry ice holder for use in a thermally insulated container, said dry ice holder comprising a generally parallelepipedic configuration having a front face, a first side wall adjacent the front face, a bottom wall, an apertured upper wall, an injector disposed in the holder, adjacent the first side wall and having at least one injection orifice oriented in a direction away from the side wall, and a connecting means extending outwardly from the front face for releasable connection to a line for supplying liquid CO₂.

5,511,380

HIGH PURITY NITROGEN PRODUCTION AND INSTALLATION

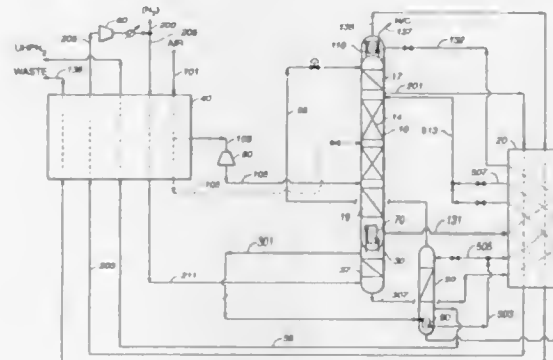
Bao Ha, Vacaville, Calif., assignor to Liquid Air Engineering Corporation, Houston, Tex.

Filed Sep. 12, 1994, Ser. No. 312,248

Int. Cl.⁶ F25J 3/02

U.S. Cl. 62—646

20 Claims



1. In a process for producing a nitrogen product from the cryogenic separation of air in a first distillation column wherein a feed air stream is compressed, cooled by indirect heat exchange and expanded to produce a feedstream at about the dew point of the feedstream which is separated into a nitrogen-enriched vapor overhead and an oxygen-enriched bottoms liquid, wherein a nitrogen-enriched vapor stream is withdrawn from the upper portion of the first distillation column, rewarmed and compressed to an elevated pressure; the improvement to produce ultra-pure nitrogen which comprises:

- recycling at least a portion of the compressed withdrawn nitrogen-enriched stream to the bottom portion of a second column operating at a higher pressure than the first distillation column to produce an overhead stream substantially free of heavy contaminants and condensing at least a portion of the overhead stream substantially free of heavy contaminants by indirect heat exchange against at least a portion of the oxygen-enriched bottoms liquid;

withdrawing a portion of the overhead stream substantially free of heavy contaminants from the second column; flowing at least a portion of the withdrawn overhead stream substantially free of heavy contaminants from the second column to a reboiler located below a stripping zone in a third column where it at least partially condenses to form a condensed stream substantially free of heavy contaminants and flowing at least a portion of the condensed stream substantially free of heavy contaminants into the third column at a point above the stripping zone; and withdrawing an ultra-high purity nitrogen product substantially free of light impurities and heavy contaminants from the third column.

5,511,381

AIR SEPARATION

Paul Higginbotham, Guildford, United Kingdom, assignor to The BOC Group plc, Windlesham, England

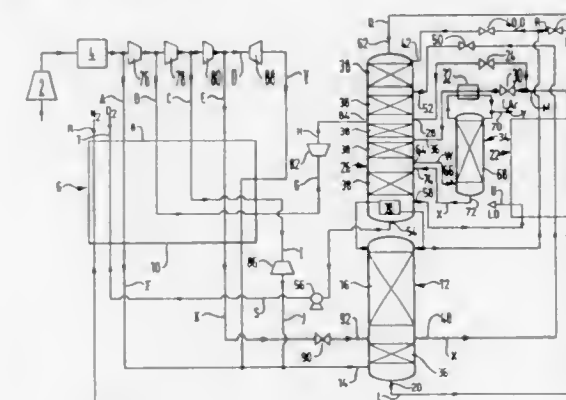
Filed Mar. 15, 1995, Ser. No. 404,799

Claims priority, application United Kingdom, Mar. 16, 1994, 9405072

Int. Cl.⁶ F25J 3/04

U.S. Cl. 62—646

9 Claims



1. A method of separating air, comprising: cooling a first compressed air stream to a temperature suitable for its separation by rectification; separating nitrogen from the cooled first air stream in a higher pressure rectification column; employing directly or indirectly a stream of oxygen-enriched liquid air withdrawn from the higher pressure column as a feed stream to a lower pressure rectification column; withdrawing a liquid stream from an intermediate mass exchange region of the higher pressure rectification column and introducing the liquid stream into the lower pressure rectification column as a further feed stream; separating the said feed streams into nitrogen and oxygen in the lower pressure rectification column; withdrawing oxygen and nitrogen products from the lower pressure rectification column and employing them to cool incoming air for separation by indirect heat exchange therewith; collecting a liquid nitrogen product from the lower pressure rectification column; separating an argon product in a further rectification column from an argon-enriched oxygen stream withdrawn from the lower pressure rectification column; cooling a second compressed air stream, expanding the cooled second air stream in a first expansion turbine and introducing the resulting expanded second air stream into the lower pressure rectification column; cooling a third compressed air stream and expanding the cooled third air stream in a second expansion turbine; introducing the resulting expanded third air stream into the higher pressure rectification column;

5,511,382

PROCESS AND INSTALLATION FOR THE CRYOGENIC PURIFICATION OF HYDROGEN

Catherine Denis, Champigny Sur Marne; Pierre Gauthier, Fresnes, and Jean-Claude Villard, Echirolles, all of, France, assignors to L'Air Liquide, Societe Anonyme Pour L'Etude et L'Exploitation des Procédes Georges Claude, Paris, France

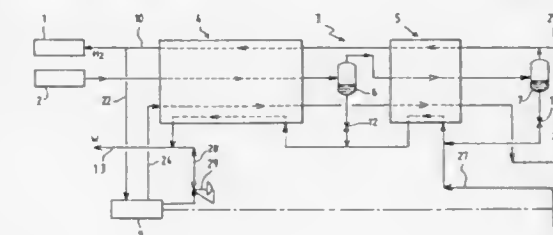
Filed Oct. 18, 1994, Ser. No. 322,444

Claims priority, application France, Oct. 26, 1993, 93 12730

Int. Cl.⁶ F25J 3/00

U.S. Cl. 62—619

12 Claims



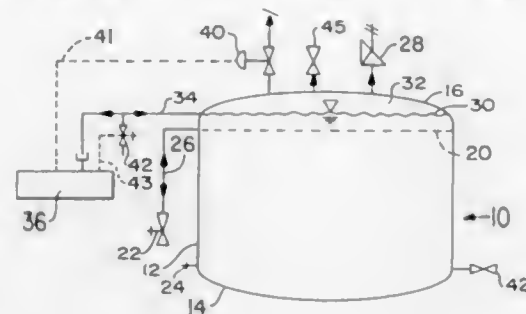
1. In a process for the cryogenic purification of impure hydrogen, which comprises: cooling impure hydrogen under a low pressure PO to a temperature sufficiently low to condense a predetermined proportion of impurities, by heat exchange in a thermal heat exchange line having a warm end and a cold end with purified hydrogen and with a residual fraction containing expanded preliminarily condensed impurities to a low pressure P1, supplying auxiliary cold by the expansion of purified hydrogen in a turbine with gas bearings, and adding the expanded hydrogen to the light impurities expanded at the cold end of the heat exchange line; the improvement wherein the turbine is supplied with the gas leaving its bearings, after cooling of this gas in the heat exchange line, and a leakage flow of hydrogen at a labyrinthine seal of the turbine is withdrawn under a pressure slightly less than an interstitial pressure Pi which prevails between a rotor and a stator of the turbine.

5,511,383
METHOD AND APPARATUS FOR MAINTAINING THE LEVEL OF COLD LIQUID WITHIN A VESSEL
 Don H. Coers, Naperville; Ronald C. Weber, Brookfield, and Richard J. Kooy, Western Springs, all of Ill., assignors to Chicago Bridge & Iron Technical Services Company, Oak Bridge, Ill.

Filed Jul. 18, 1994, Ser. No. 276,539
 Int. Cl.⁶ F17C 7/04

U.S. Cl. 62—48.1

30 Claims



1. A method for limiting the level of cold liquid within a vessel, said method comprising the steps of:

- sensing the expansion of cold liquid to a predetermined level within said vessel; and
- maintaining the temperature of the liquid by releasing vapor from the vessel as a result of sensing cold liquid at said predetermined level.

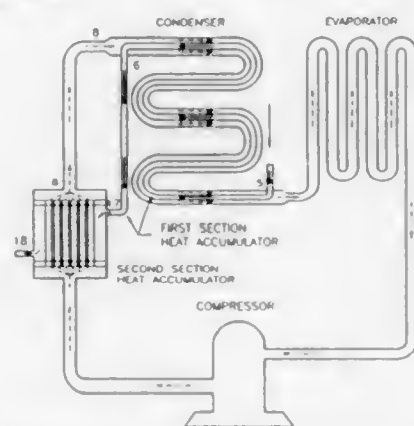
5,511,384
METHOD AND APPARATUS FOR HEAT ACCUMULATION FROM REFRIGERATION MACHINE
 Pichit Likitcheva, 28/1 Sol Chuasawan, Udomsuk Praves, Bangkok 10260 THX

Filed Jan. 11, 1995, Ser. No. 371,355
 Claims priority, application United Kingdom, Jan. 13, 1994, 9400589

U.S. Cl. 62—59

Int. Cl.⁶ F25D 3/00

4 Claims



1. An apparatus for heat accumulation from a refrigeration machine comprising a first section apparatus for heat accumulation from the refrigeration machine connected to a second section apparatus for heat accumulation from a refrigeration machine connected in series, in which:

- the first section apparatus for heat accumulation from a refrigeration machine comprises:
 - a preliminary heat accumulation tube which is smaller in diameter and inserted inside a first refrigerant tube of the condenser of the refrigeration machine such that both its ends emerge outside said first refrigerant tube of the condenser at the regions where the first refrigerant tube enters and leaves said condenser;

- a feeding tube for the preliminary heat accumulation tube which at one end is connected to one end of said preliminary heat accumulation tube emerging from said region in which said first refrigerant tube leaves said condenser and at another end is used as an inlet to feed lower temperature heat carrying fluid used to accumulate heat, into said preliminary heat accumulation tube;

- a discharge tube for the preliminary heat accumulation tube which at one end is connected to one end of said preliminary heat accumulation tube emerging from said region in which said first refrigerant tube enters into said condenser and at another end is used as an outlet to discharge higher temperature heat carrying fluid used to accumulate heat out of said preliminary heat accumulation tube; and

- an inlet and an outlet for said first refrigerant tube of said condenser;

b) the second section apparatus for heat accumulation from a refrigeration machine comprises:

- a second refrigerant tube a part of which is increased in its cross sectional area and/or increased in its total internal and external wall surfaces relative the remainder of the tube;

- a primary heat accumulation tube which is constructed to enclose said part of said second refrigerant tube which is increased in its cross sectional area and/or increased in its total internal and external wall surfaces relative the remainder of the tube, and constructed to have a space between its internal wall surface and the external wall surface of said part of said second refrigerant tube which is increased in its cross sectional area and/or increased in its total internal and external wall surfaces, and also constructed to have an inlet and an outlet for said space;

- a feed tube for said primary heat accumulation tube which at one end is connected to said inlet for said space of said heat accumulation tube and at another end is used as an inlet to feed lower temperature heat carrying fluid used to accumulate heat into said space of said primary heat accumulation tube;

- a discharge tube for the primary heat accumulation tube which at one end is connected to said outlet for said space of said primary heat accumulation tube and at another end is used as an outlet to discharge higher temperature heat carrying fluid used to accumulate heat out of the said space of said primary heat accumulation tube; and

- an inlet and an outlet for said second refrigerant tube;

c) the connection is made by connecting said discharge tube for the preliminary heat accumulation tube to said feeding tube for the primary heat accumulation tube and by connecting the outlet for said second refrigerant tube to the inlet for said first refrigerant tube of said condenser.

5,511,385
INDEPENDENT COMPARTMENT TEMPERATURE CONTROL FOR SINGLE-PACK OPERATION

Diane G. Drew, Suffield, and Douglas L. Christians, Vernon, both of Conn., assignors to United Technologies Corp., Hartford, Conn.

Filed Dec. 23, 1994, Ser. No. 363,736
 Int. Cl.⁶ F25D 9/00

U.S. Cl. 62—172

21 Claims

1. An aircraft environmental control system for conditioning and controlling air supplied to two or more compartments on the aircraft, the environmental control system comprising:

- a first source of air;
- a second source of air;
- first refrigeration pack means for conditioning the air from the first source of air and for supplying an amount of first conditioned air at a predetermined temperature at a first entrance duct to a first compartment on the aircraft;

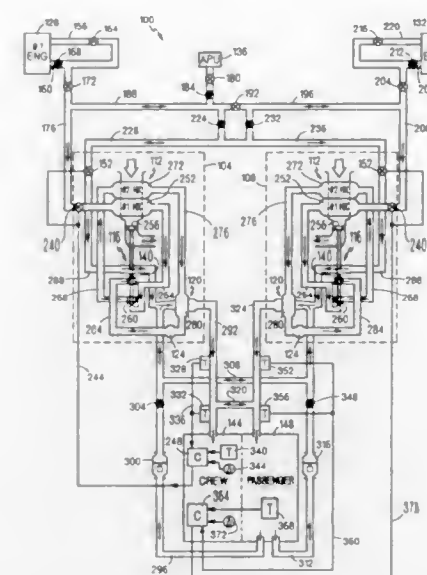
- second refrigeration pack means for conditioning the air from the second source of air and for supplying an amount of second conditioned air at a predetermined temperature at a second entrance duct to a second compartment on the aircraft;

5,511,386
ADJUSTABLE PITCH CONDENSATE DRAIN WITH INTEGRAL OVERFLOW
 Jeffrey S. Russ, Creve Coeur, Mo., and James M. McKallip, Lafayette, N.Y., assignors to Carrier Corporation, Syracuse, N.Y.

Filed Nov. 23, 1994, Ser. No. 344,139
 Int. Cl.⁶ F25D 21/14

U.S. Cl. 62—285

5 Claims



e. first valve means for regulating the amount of the air from the first source provided in a first valve duct and input to the first refrigeration pack means;

f. second valve means for regulating the amount of the air from the second source provided in a second valve duct and input to the second refrigeration pack means;

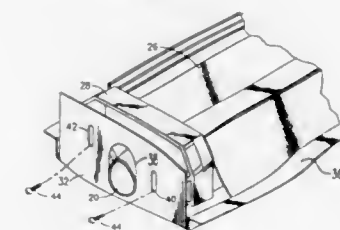
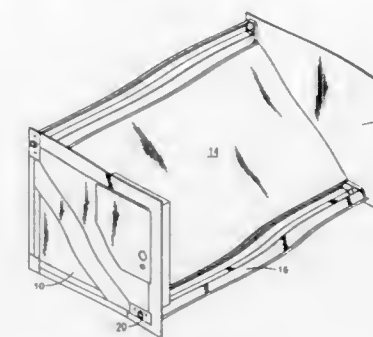
g. first crossover duct means for intermixing the first conditioned air from the first refrigeration pack means with the second conditioned air from the second refrigeration pack means prior to the first conditioned air being supplied in the first entrance duct to the first compartment on the aircraft and prior to the second conditioned air being supplied in the second entrance duct to the second compartment on the aircraft;

h. first temperature controller means for controlling the predetermined temperature of the first conditioned air supplied to the first compartment on the aircraft independent of the predetermined temperature of the second conditioned air supplied to the second compartment on the aircraft;

i. second temperature controller means for controlling the predetermined temperature of the second conditioned air supplied to the second compartment on the aircraft independent of the predetermined temperature of the first conditioned air supplied to the first compartment on the aircraft;

j. wherein in an event of inoperability of the first refrigeration pack means and operability of the second refrigeration pack means, the first temperature controller means comprises means for controlling the first valve means for regulating the amount of air from the second source and providing the regulated air to the first entrance duct where it mixes with the second conditioned air and is provided to the first compartment on the aircraft; and

k. wherein in an event of inoperability of the second refrigeration pack means and operability of the first refrigeration pack means, the second temperature controller means comprises means for controlling the second valve means for regulating the amount of air from the first source and providing the regulated air to the first entrance duct where it mixes with the second conditioned air and is provided to the first compartment on the aircraft.



1. Fan coil condensate drain pan for use in a fan coil unit having a cabinet, and in which the drain pan can be pitched for either right side discharge or left side discharge; comprising:

an elongated trough having an open upper side, right and left end caps closing off ends of said trough, and right and left drain nipples that project through the right and left end caps, respectively;

said trough having right and left mounting brackets to be supported by the cabinet and to which the right and left end caps of said trough are fastened; each said bracket having a vertically elongated drain slot through which the respective drain nipple projects, the slot permitting vertical play of the associated end cap between upper and lower limits; and at least one vertically elongated fastener slot through which a fastener device engages the respective end cap for retaining said end cap at a selected position between said upper and lower limits.

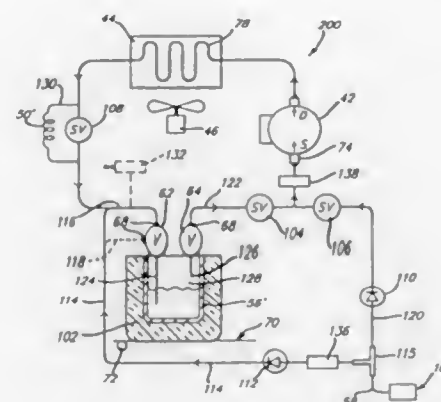
5,511,387
REFRIGERANT RECOVERY SYSTEM
 Theodore E. Tinsler, Sidney, Ohio, assignor to Copeland Corporation, Sidney, Ohio
 Continuation of Ser. No. 56,717, May 3, 1993, abandoned.
 This application Jan. 17, 1995, Ser. No. 373,466
 Int. Cl.⁶ F25B 45/00

U.S. Cl. 62—292

13 Claims

1. A refrigerant recovery system for recovering contaminated refrigerant from a refrigeration system, said refrigerant recovery system comprising:

storage means for receiving said contaminated refrigerant; means for cooling the storage means, said means for cooling including an evaporator tank comprising heat exchange coils which substantially surround said storage means;



means for reducing the pressure within the storage means to a predetermined level, said means for reducing pressure including a vacuum pump positioned such that it is not in a direct flow path as defined between said refrigeration system and said storage means; and
valving means for selectively evacuating said storage means either alone or in combination with said direct flow path; whereby the refrigerant recovery system is operable to receive and contain the recovered refrigerant within said storage means and is further operable to prevent said pump from being directly contaminated by said recovered refrigerant.

5,511,388

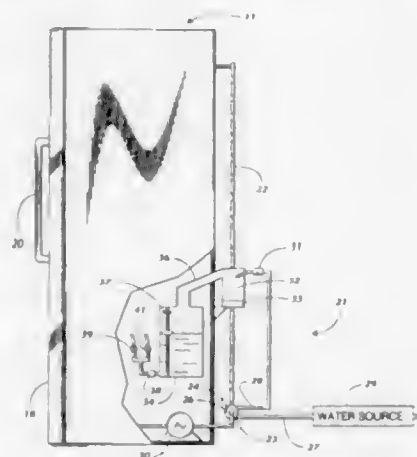
WATER DISTILLATION UNIT FOR A REFRIGERATOR

James E. Taylor, 3833 Woelke Rd., Seguin, Tex. 78155; Robert J. Alderman, 1408 Brookstone, San Antonio, Tex. 78248, and James P. Barrett, 1104 Edge Cliff Dr., Bedford, Tex. 76022

Filed Mar. 22, 1994, Ser. No. 215,914
Int. Cl.⁶ C02F 1/04; F24F 3/14

U.S. Cl. 62—389

35 Claims



1. A household refrigerator having a water source, a chilled compartment, a freezer, an ice maker, and a water dispenser, the improvement therein of:

water distilling means for generating distilled water for dispensing as drinking water and for forming ice, said water distilling means comprising:
a boiler for receiving water from said water source and means for heating water to a temperature sufficient to boil water in said boiler and to generate steam from the boiled water;
a distilled water collection chamber;
condenser means in communication with said boiler for receiving and condensing the steam generated from boiling the water in said boiler and passing the distilled water to said

collection chamber, said condenser means disposed in heat exchange relationship with respect to said chilled compartment;
means for transporting the distilled water under pressure from said distilled water collection chamber selectively to said water dispenser or said ice maker; and
control means for detecting the amount of water in said collection chamber and controlling the actuation of said distilling means.

5,511,389

ROTARY COMPRESSOR WITH LIQUID INJECTION

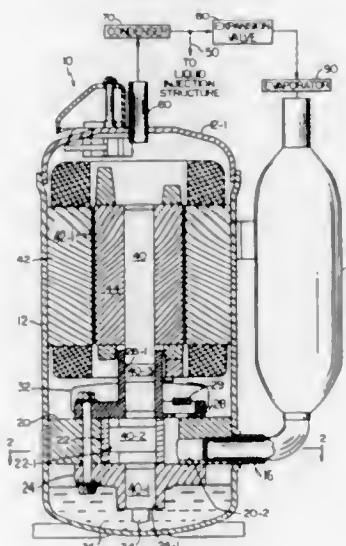
James W. Bush, Skaneateles; Alexander D. Leyderman, and Donald Yannascoll, both of Manlius, all of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.

Filed Feb. 16, 1994, Ser. No. 197,418

Int. Cl.⁶ F25B 31/00

U.S. Cl. 62—505

6 Claims



1. In a refrigeration system containing refrigerant and serially including a high side rotary compressor, a condenser, expansion means and an evaporator said compressor comprising:
shell means having a first end and a second end;
cylinder means containing pump means including a vane and a piston coacting with said cylinder means to define suction and compression chambers;
said cylinder means being fixedly located in said shell means near said first end;
first bearing means secured to said cylinder means and extending towards said first end;
second bearing means secured to said cylinder means and extending towards said second end;
motor means including rotor means and stator means;
said stator means fixedly located in said shell means between said cylinder means and said second end and axially spaced from said cylinder means and said second bearing means;
eccentric shaft means supported by said first and second bearing means and including eccentric means operatively connected to said piston;
said rotor means secured to said shaft means so as to be integral therewith and located within said stator so as to define therein an annular gap;
suction means for supplying gas to said pump means;
discharge means fluidly connected to said pump means via said annular gap and sealed to said shell means;
liquid refrigerant injection port opening into said compression chamber;
restricted delivery means for delivering liquid refrigerant at condenser pressure to said injection port;

5,511,391
ORNAMENTAL GEM AND METHOD OF MANUFACTURING THE SAME
Hubert Verstraeten, Luxembourg, Luxembourg, assignor to Gebrüder Niessing GmbH & Co., Vreden, Germany
Filed Mar. 1, 1994, Ser. No. 204,118
Claims priority, application Germany, Mar. 10, 1993, 9304010 U

Int. Cl.⁶ A44C 9/00; B23P 13/00
U.S. Cl. 63—15

4 Claims



1. A method of manufacturing an ornamental ring-shaped metal gem formed of a wire maze, said method comprising the steps of:
providing die means including a cylindrical bottom portion, an outer tubular element supported on said bottom portion, and a mandrel insertable into said tubular element and supported on said bottom portion against a stop surface, said mandrel having an outer diameter smaller than an inner diameter of said tubular element by an amount corresponding to a width of the wire maze of which the ring-shaped metal gem is formed;
forming, on said mandrel, a wire weave having a length exceeding a thickness of the manufactured ring-shaped metal gem; thereafter, inserting said mandrel, together with the wire weave, into said tubular element; and
applying pressure to the wire weave to form the ring-shaped metal gem.

5,511,392
METHOD AND APPARATUS FOR ADJUSTING THE STITCH LENGTH ON A CIRCULAR KNITTING MACHINE

Masatoshi Sawazaki, Kobe; Takao Shibata, Osaka; Yoshiaki Igarashi; Kiyoshi Hayashi, both of Kobe, and Naganori Ueda, Kashiwara, all of Japan, assignors to Precision Fuku-hara Works, Ltd., Japan

Filed Nov. 3, 1994, Ser. No. 333,851

Claims priority, application Japan, Nov. 4, 1993, 5-301323
Int. Cl.⁶ D04B 15/36

U.S. Cl. 66—54

20 Claims

1. In a circular knitting machine including knitting instrumentalities including stitch forming means for forming stitches of a predetermined length to produce a knit fabric, said knitting instrumentalities including yarn feeding means for feeding at least two yarns to said stitch forming means, said stitch forming means being arranged in a predetermined spatial relationship, the length of the stitches being determined by the spatial relationship between said stitch forming means and such spatial relationship being subject to being changed in the operation of said knitting machine, the combination therewith of automatic stitch length adjustment means for adjusting the spatial relationship of said stitch forming means comprising

means for detecting tension in the at least two yarns and for generating a signal indicative of the tension detected, said detecting means including a circular member mounted for rotation and having at least two yarn guides through which the

said piston coacting with said injection port to permit delivery of liquid refrigerant to said compression chamber for a portion of each compression cycle whereby compressed gas passing from said pump means to said discharge means via said annular gap cools said motor means.

5,511,390

PENDANT LOCKET HOLDER FOR KEYS AND OTHER ARTICLES

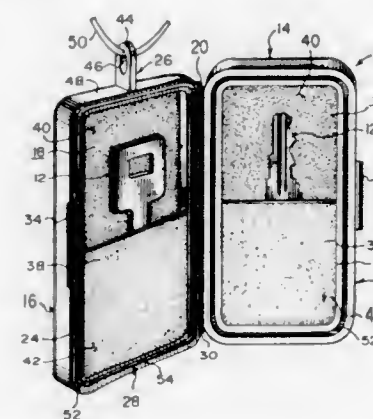
Mon Dod Mah, 1316 E. 64th Avenue, Vancouver B.C., Canada

Filed Aug. 12, 1994, Ser. No. 289,430

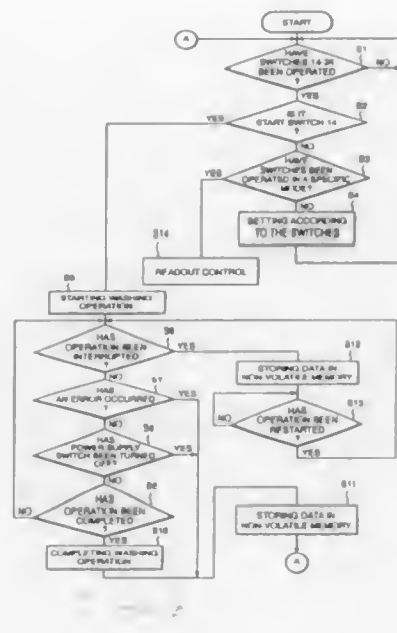
Int. Cl.⁶ A44L 13/00; A45L 11/32

U.S. Cl. 63—1.1

8 Claims



1. A pendant locket holder for keys and other articles comprising:
a) a casing being a pair of complementary half-sections with each said half-section having a recessed chamber;
b) means flexibly connecting longitudinal edges of said half-sections together, whereby said half-sections may be moved from a substantially coplanar relationship in an open position of said casing to a closed position, wherein said half-sections are in a juxtaposed relationship, said flexible connecting means being a hinge integral with the longitudinal edges of said half-sections, to facilitate movement thereof between the open and closed positions of said casing;
c) means on opposite longitudinal edges of said half-sections, for releasably holding the same in the juxtaposed relationship when said casing is in the closed position, said releasable holding means being a snap-lock fastener having a rib projecting from one said half-section and a latch projecting from other said half-section, so that when said casing is in the closed position, said latch will engage with said rib to hold together said half-sections in the juxtaposed relationship;
d) means formed within each said recessed chamber in each said half-section of said casing for retaining the keys and other articles therein, each said retaining means being a pocket covering about half of said recessed chamber in one said half-section of said casing, so that the keys and other articles can be inserted within said pockets;
e) means for suspending said casing from about the neck of a person, so that the person will always maintain access to the keys and other articles held within said retaining means in said casing, and
f) means for sealing the inner mating perimeters of said half-sections when said casing is in the closed position with said half-sections in the juxtaposed relationship, so that the keys and other articles will be protected from dust and moisture therein.



5,511,398

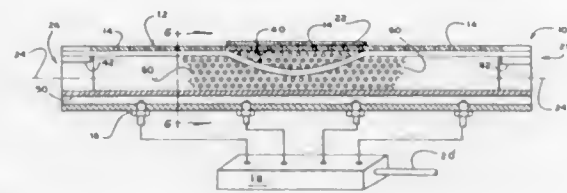
DYE APPLICATOR

John S. Samilo, Ringgold, Ga., assignor to Tapistron International, Inc., Ringgold, Ga.

Continuation-in-part of Ser. No. 228,727, Apr. 18, 1994, Pat. No. 5,404,605. This application Apr. 3, 1995, Ser. No. 415,442 Int. Cl.⁶ D06B 1/08

U.S. Cl. 68—200

16 Claims

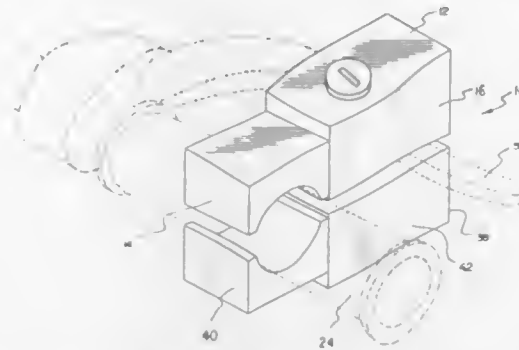


1. A dye applicator for dyeing a textile, comprising:
an elongate container defining an external surface thereon and an internal chamber therein, the elongate container having a first opening for receiving into the internal chamber dye under pressure and a second opening in the container extending from an inlet at the internal chamber to an outlet at the external surface of the elongate container for releasing the dye from the internal chamber into the textile;
a sealing ribbon fixed to the elongate container and disposed within the internal chamber of the container, the sealing ribbon having a buoyancy and being configured such that when the internal chamber is charged with dye under pressure, (1) the sealing ribbon is biased away from the inlet of the second opening by the buoyancy of the sealing ribbon when the textile is placed against the outlet of the second opening, and (2) the sealing ribbon is biased by the pressure of the dye against the inlet of the second opening when the outlet of the second opening is uncovered; and
a diffuser located within the elongate container between the first opening and the sealing ribbon for diverting flow of dye from the sealing ribbon.

5,511,399
MOTORCYCLE THROTTLE CLAMP
Todd E. Lynn, 35687 Rolf, Westland, Mich. 48185
Filed Apr. 11, 1995, Ser. No. 420,146
Int. Cl.⁶ B62H 5/18

U.S. Cl. 70—19

3 Claims



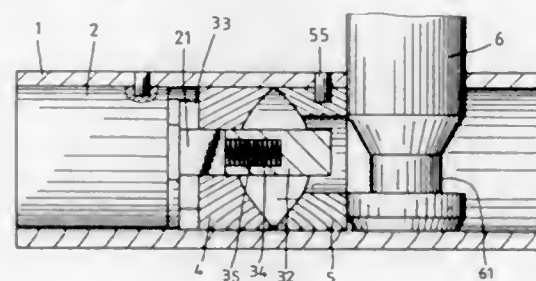
1. A motorcycle throttle clamp for preventing operation of a throttle mounted on handlebars of vehicles, such as motorcycles and all terrain vehicles comprising, in combination:
an upper block having a first rectangular portion and a second rectangular portion, the first portion having an upper surface and a lower surface, the lower surface having a semi-circular indentation therein, the semi-circular indentation adapted to engage a round tubular handlebar of a motorcycle, the second portion having an upper surface and a lower surface, the second portion having a first locking component, the first locking component having a pair of apertures formed through the lower surface of the second portion, the first locking component having a key-hole in the upper surface of the second portion for the receipt of a key for orienting the first locking component between a locking orientation and an unlocking orientation;
a lower block having a first rectangular portion and a second rectangular portion, the first portion having an upper surface and a lower surface, the upper surface having a semi-circular indentation therein, the semi-circular indentation adapted to engage a round tubular handlebar of a motorcycle, the second portion having an upper surface and a lower surface, the upper surface of the second portion having a second locking component, the second locking component formed as notches on a pair of shafts upwardly extending from the upper surface of the second portion, the pair of shafts defining a motorcycle throttle receiving means therebetween and adjustably positionable through the pair of apertures of the first locking component of the upper block with the notches effecting the coupling between the first and second locking component.

5,511,400

LOCK MECHANISM FOR USE IN A SECURING DEVICE
Ding-Chiang Ma, No. 40, Lane 121, Hai Huan Street, Tainan, TaiwanFiled Oct. 7, 1994, Ser. No. 319,588
Int. Cl.⁶ E05B 67/24

U.S. Cl. 70—38 R

1 Claim



1. A lock mechanism comprising:
(a) an elongate lock housing member extending in a longitudinal direction, said lock housing member having a sidewall portion coaxially encircling an axial bore;
(b) a fixed member fixedly received within said axial bore of said lock housing member, said fixed member having a fixed member through opening extending in said longitudinal direction and a fixed member cam surface formed as an undulating annulus having at least one depressed segment and at least one protruding segment;
(c) a sliding member slidably and rotatably received within said axial bore of said lock housing member, said sliding member having a sliding member through opening substantially aligned coaxially with said fixed member through opening, said sliding member having a sliding member cam surface opposing said fixed member cam surface for contiguous interface therewith, said sliding member cam surface being formed as an undulating annulus having at least one depressed segment and at least one protruding segment;
(d) a lock rod assembly slidably and substantially transversely received in said lock housing member, said lock rod assembly having a recessed portion;
(e) an engaging member coaxially coupled to said sliding member, said engaging member having an elongate shank portion for releasably engaging said recessed portion of said lock rod assembly and a head portion for preventing longitudinal displacement of said shank portion relative to said sliding member, said shank portion being inserted through said sliding member through opening to be rotatively fixedly coupled therewith; and
(f) a lock core coaxially coupled to said engaging member for reversibly actuating the rotation thereof, said engaging member being resiliently biased in said longitudinal direction.

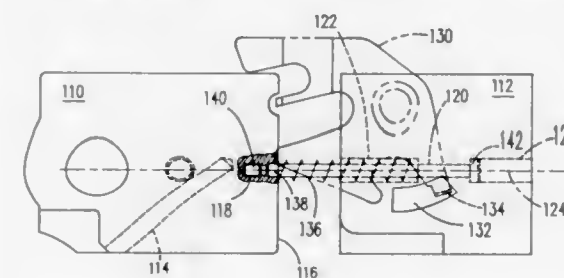
5,511,401

LOCK BOLT AND DEADBOLT INTERCONNECTION MECHANISM

Harold L. Brooks; Thomas R. Clark, both of Lexington, and Donald H. Schmidt, Versailles, all of Ky., assignors to Mas-Hamilton Group, Lexington, Ky.
Filed Mar. 18, 1994, Ser. No. 210,331
Int. Cl.⁶ E05B 37/00

U.S. Cl. 70—303 A

13 Claims



1. A lock and deadbolt assembly combination comprising:
a combination lock having an extendable lock bolt;
a deadbolt assembly comprising an extendable deadbolt; said lock bolt and said deadbolt aligned for movement along axes of movement, said axes disposed at least in parallel relation; said lock bolt and said deadbolt interconnected by a lost motion interconnection comprising a shaft having two ends, extending between said lock bolt and said deadbolt, a compression spring disposed intermediate said lock bolt and said deadbolt, said spring partially compressed to urge separation of said lock bolt and said deadbolt; at least one of said lock bolt and said deadbolt displaceable relative to said shaft and parallel to said shaft;
said shaft ends passing through at least a portion of said lock bolt and said deadbolt, at least one of said shaft ends at least partially surrounded by a retaining member engageable with a

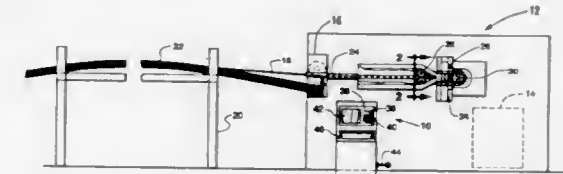
portion of said lock bolt or said deadbolt and retained to be not withdrawable from said lock bolt or said deadbolt; whereby movement of said lock bolt in a direction away from said deadbolt moves said ends and said deadbolt is moved by said shaft in the same direction as said lock bolt movement and movement of said lock bolt toward said deadbolt further compresses said spring and urges said deadbolt to a position away from said lock bolt.

5,511,402
OPTIMIZING CONTROLLER
Kenneth A. Kauffman, RR 34, Box 13 Pisgah Rd., York, Pa. 17406

Filed Dec. 16, 1994, Ser. No. 358,014
Int. Cl.⁶ B21C 51/00; B21D 7/024

U.S. Cl. 72—14.8

8 Claims



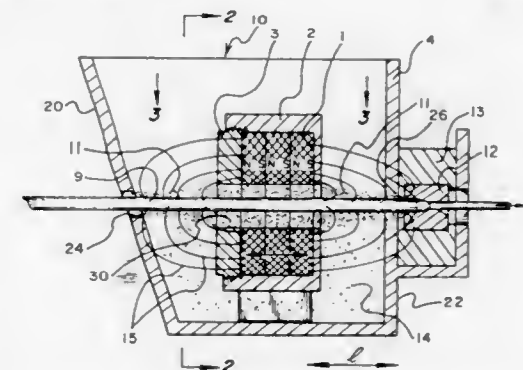
1. An optimizing controller operationally interfaced through a cable means in electronically connected combination with a stirrup bending machine to form an infed straight rod stock bar into various bent rod stock piece output profile shapes, and a computer program means in said controller adapted to drive said stirrup bender whereby a combination of different individual bent rod stock profile product output pieces in multiple counts may be delivered from each of said infed rod stock bars to thereby cumulatively utilize the linearly dimension of said straight rod stock bars closely consistent with the minimum tail piece wastage capability of said stirrup bending machine in the production utilization thereof for delivery of bent profile shapes from each of such infed rod stock bars and thereby minimize the stirrup bender tail piece wastage consistent with the stirrup bender minimum dimensional tail piece handling capabilities.

5,511,403
APPARATUS AND METHOD FOR MAGNETICALLY APPLYING A LUBRICANT

Mark D. Krymsky, Philadelphia, Pa., assignor to WM Technologies, Camden, N.J.
Continuation-in-part of Ser. No. 102,287, Aug. 5, 1993, abandoned. This application Oct. 13, 1994, Ser. No. 322,266
Int. Cl.⁶ B21C 09/02

U.S. Cl. 72—42

16 Claims



1. A method of drawing a wire through a die, which comprises: passing said wire into a container filled with a dry magnetic lubricant;

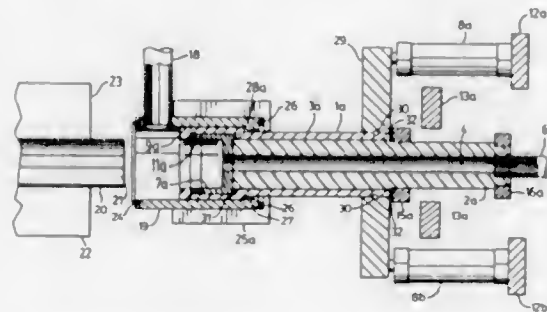
magnetizing said wire by passing the same through a magnetic field provided by a magnet means, said magnet means including adjustment means for varying the distance between said magnet means and said die;
attracting said magnetic lubricant to said magnetized wire, and directing said magnetic lubricant to said die by passing said wire through said die.

5,511,404
SEAL HEAD FOR TUBE EXPANSION APPARATUS
Gerrald A. Klages, Woodstock; Frank S. Krasnicki, Kitchener, and Murray R. Mason, Woodstock, all of Canada, assignors to TI Corporate Services Limited, London, England
Continuation of Ser. No. 106,728, Aug. 16, 1993, Pat. No. 5,357,774, which is a continuation of Ser. No. 860,553, Mar. 30, 1992, Pat. No. 5,235,836, which is a continuation of Ser. No. 489,109, Mar. 6, 1990, abandoned. This application May 24, 1994, Ser. No. 248,828

U.S. Cl. 72—62

Int. Cl. B21D 39/08

15 Claims

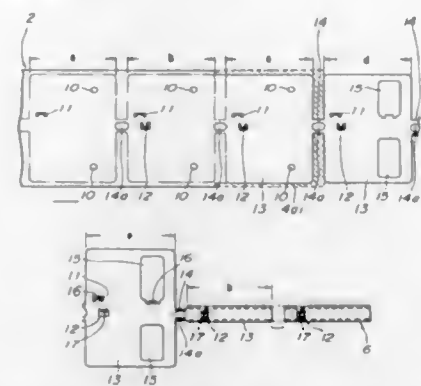


1. An apparatus for filling a tube with fluid comprising:
 - a) a hollow shaft, said hollow shaft having a forward end, a rearward end, and a longitudinal axis, said hollow shaft including:
 - i) a rod having a forwardly open longitudinal bore for rearwardly communicating with a fluid source; and
 - ii) a sleeve disposed outward of said rod;
 - b) tube sealing means, adjacent the forward end of said shaft, for sealing the tube when said shaft is advanced into engagement with the tube, said tube sealing means including:
 - i) an elastomeric ring between a surface of said rod and a surface of said sleeve; and
 - ii) displacing means for axially displacing said rod and said sleeve relative to each other for axially compressing and decompressing, and for radially expanding and contracting said elastomeric ring to engage and disengage said tube;
 - c) a powered shaft reciprocating means for advancing and retracting the forward end of said shaft parallel to said longitudinal axis into and out of engagement with the tube;
 - d) fluid control means, for communicating with the fluid source, for filling and pressurizing the tube when said shaft is advanced into engagement with the tube and said tube sealing means seals the tube, and for depressurizing and draining fluid from the tube before said shaft is retracted;
 - e) wherein said tube sealing means is adapted to seal an outer surface of the tube, said surface of said sleeve and said surface of said rod are disposed forwardly and rearwardly of said elastomeric ring, respectively, and said elastomeric ring extends radially inwardly to engage an outer surface of said tube when compressed between the sleeve and rod rings; and
 - f) wherein said means for axially displacing said rod and sleeve relative to each other comprises a stop element engaged by one of said rod and sleeve as the shaft is moved in one direction along said longitudinal axis so that said one of said rod and sleeve is stopped against further movement and further movement of the other of said rod and sleeve displaces said rod and sleeve relative to each other.

5,511,405
SHUTTER MANUFACTURING METHOD
Shuichi Kikuchi, Miyagi, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed May 2, 1994, Ser. No. 235,978
Claims priority, application Japan, May 11, 1993, 5-109099
Int. Cl. B21D 28/06

U.S. Cl. 72—337

13 Claims

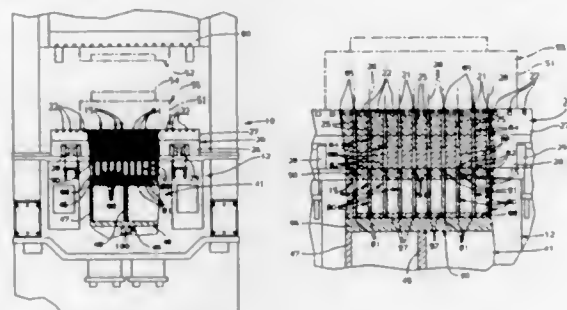


1. A method of forming a plurality of shutters, comprising the steps of:
 - feeding an elongate metal sheet in a given feeding longitudinal direction;
 - applying punching processing to said metal sheet to successively form a plurality of shutter blanks having a length thereof in said longitudinal direction, each of said shutter blanks having a forward edge and a rearward edge extending about transverse to the length, said rearward edge of a first shutter blank being connected at an end of a connecting portion having an opposite end connected to a forward edge of a second adjacent shutter blank, said connecting portion having first and second longitudinal sides intermediate opposed edges of said adjacent shutter blanks;
 - forming a reinforcing rib between said ends of said connecting portions where said ends adjoin adjacent shutter blanks;
 - applying bending processing successively to said shutter blanks for establishing a final configuration of said shutters;
 - removing said connecting portions; and
 - further including, at a time prior to said step of removing, a step of pressing said reinforcing rib flat.

5,511,406
SPLIT CUSHION PIN SYSTEM FOR ROLLING BOLSTER
Lubomir M. Panasiuk, Warren; David J. Heide, Allen Park, and Raymond P. Lievens, Sterling Heights, all of Mich., assignors to General Motors Corporation, Detroit, Mich.
Filed May 4, 1994, Ser. No. 238,829
Int. Cl. B21D 24/08

U.S. Cl. 72—453.13

6 Claims



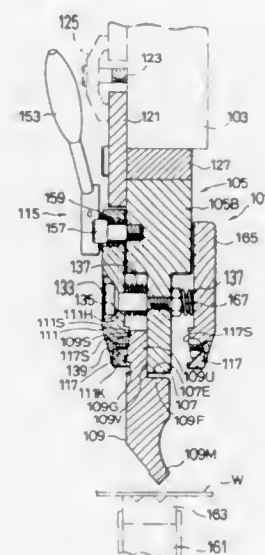
1. A machine comprising:
 - a cushion slidably mounted in the machine;
 - a rolling bolster movable into and out of the machine;
 - a forming tool removably mounted on the rolling bolster;

a plurality of pins extending through the machine selectively engaging the cushion and the forming tool, including a cushion pin carried within the machine and engaging the cushion such that the cushion provides movement to the cushion pin and a cushion pin extension carried within the rolling bolster and engageable with the forming tool, the cushion pin being separate from and selectively engaging the cushion pin extension and providing movement thereto.

5,511,407
UPPER TOOL FOR PRESS BRAKE
Susumu Kawano, Kanagawa, Japan, assignor to Amada Metreco Company, Limited, Kawagawa, Japan
Continuation-in-part of Ser. No. 239,323, May 6, 1994. This application Jun. 17, 1994, Ser. No. 259,981
Int. Cl. B21D 37/04

U.S. Cl. 72—482.91

19 Claims



1. An upper tool for a press brake mounted in an upper tool holder between a support plate and an upper-tool clamping member, said support plate being arranged on a lower part of a holder body in said upper tool holder attached on an underside of an upper table of said press brake, said upper-tool clamping member being pivotally mounted to said holder body and being capable of pressing said upper tool against said support plate, said upper tool comprising:
 - a contact surface which is capable of contacting with a lower end surface of said support plate;
 - a sliding surface which is capable of sliding on one of a front surface and a rear surface of said support plate; and
 - a slanted surface for pivoting said upper-tool clamping member to increase a clamp force of said upper tool due to said upper-tool clamping member when said upper tool is raised with respect to said support plate, so as to decrease a distance H between said contact surface and said lower end surface of said support plate;

wherein, when an upper surface of said engaging groove is supported by an engaging projection provided in said upper-tool clamping member, said distance H between said lower end surface of said support plate and said contact surface of said upper tool can be calculated by a following expression:

$$H = (B^2 \cdot P) / (A^2 \cdot k \cdot \tan \theta)$$

wherein A represents a dimension of distance from a pivot center of said upper-tool clamping member through an elastic means for pressing said member;

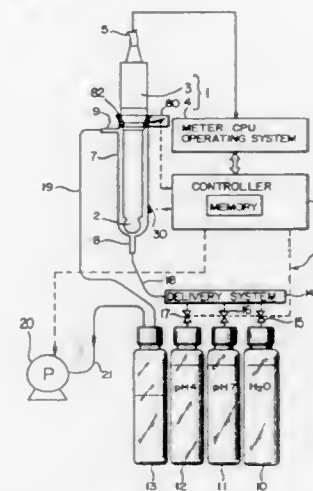
B represents a mean distance from said pivot center through a pressing point at which said upper-tool clamping member presses said upper tool against said support plate;

P represents a pressing force by which said upper tool is pressed against said support plate;
K represents an elastic coefficient of said elastic means; and
 θ represents a slant angle of said slanted surface, with respect to said sliding surface.

5,511,408
AUTOMATIC CALIBRATING APPARATUS FOR LABORATORY ION CONCENTRATION METER
Nobuki Yoshioka, and Hiromi Ohkawa, both of Kyoto, Japan, assignors to Horiba, Ltd., Kyoto, Japan
Filed Jul. 28, 1993, Ser. No. 98,508
Claims priority, application Japan, Jul. 30, 1992, 4-059520 U
Int. Cl. G01N 37/00; 27/416

U.S. Cl. 73—1 R

10 Claims



1. An automatic calibrating apparatus for supporting a separate portable measuring instrument with a portable sensor member comprising:
 - a hollow storage receptacle, independent of the measuring instrument, having a cavity with an entrance opening annular seal dimensioned to removably suspend a sensor member within the receptacle;

determining means for determining the insertion of the sensor member into the storage receptacle including a switch member;

an inlet conduit attached to the storage receptacle;

an outlet conduit attached to the storage receptacle wherein the inlet conduit is attached to the storage receptacle adjacent the bottom of the cavity and the outlet conduit is attached to the storage receptacle adjacent an upper side surface of the cavity;

means for storing separate fluids including a calibration solution and a washing solution;

means for selectively applying the fluids to the inlet conduit for delivery to the hollow storage receptacle;

means for activating a calibration procedure when enabled by the determination of the determining means that a sensor member is mounted in the storage receptacle, including means for coordinating which includes a controller operatively connectable to the separate portable measuring instrument, for coordinating first, the introduction of the washing solution into the receptacle and the subsequent removal of the washing solution, and second, the introduction of the calibration solution and removal of the calibration solution;

means for storing a measurement signal from the sensor member during the presence of the calibration solution;

means for automatically comparing the measurement signal with a stored reference value and providing a corresponding adjustment of the sensor member output signal; and

means for removably connecting the controller with the measuring instrument to permit the corresponding adjustment of the sensor member output signal.

5,511,409

MEASUREMENT OF EMISSION LEVELS IN A GAS STREAM

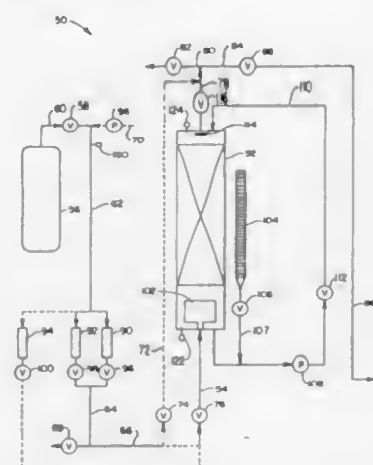
Kent S. Knaebel, 8000 McKittrick Rd., Plain City, Ohio 43064

Filed Sep. 19, 1994, Ser. No. 308,668

Int. Cl.⁶ B01D 53/04; 53/30

U.S. Cl. 73—28.04

34 Claims



1. A method for determining the amount of a volatile organic compound (VOC) or acid vapor contaminant emitted in a gas stream being vented at a specified pressure from an emission source, said method comprising the steps of:

- providing a medium within a vessel having an inlet port coupled in fluid communication with said gas stream for receiving said gas stream at an inlet pressure, and an outlet port for exhausting the gas stream passed through the vessel, said medium being a bed of solid particles effective for separating substantially all of said contaminant from a defined amount of said gas stream;
- determining an initial mass, m_i , of said medium;
- maintaining the inlet pressure of said vessel at said specified pressure of said gas stream being vented from the emission source;
- passing through said medium during a time interval, t , said defined amount of said gas stream to concentrate said contaminant in said medium;
- determining a final mass, m_f , of said medium and said contaminant concentrated therein; and
- determining the amount of said contaminant emitted per unit time in said gas stream according to the expression:

$$\frac{m_c}{t}$$

where m_c is mass of said contaminant concentrated in said medium defined as the difference $m_f - m_i$.

5,511,410

RESILIENCY TESTING DEVICE FOR TENNIS BALLS

Charlie R. Sherts, 70 Washington St., #302, Norwalk, Conn. 06854

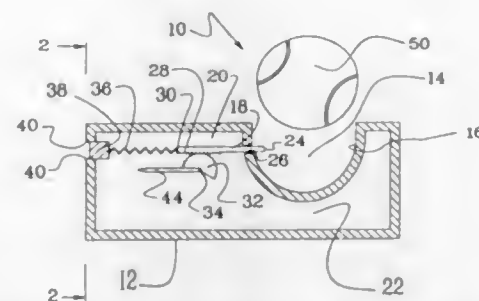
Filed Oct. 12, 1994, Ser. No. 321,810

Int. Cl.⁶ G01N 3/48

U.S. Cl. 73—81

21 Claims

- A sports ball testing device, comprising:
 - a housing defining a receiving area for receiving a ball to be tested;
 - a moveable member extending into said receiving area for contacting and exerting a compressing force on said ball against a resisting force exerted by said ball;
 - urging means for exerting an urging force on said moveable member in a direction effective for urging said moveable member to exert the compressing force on said ball;



- adjusting means for adjusting the urging force exerted by said urging means so as to provide for various testing ranges;
- indicating means coupled to said urging means for indicating the value of the resisting force in response to the physical configuration of said urging means when the equilibrium is reached between the compressing force and the resisting force.

5,511,411

OIL CONSUMPTION METER

John Zegray, R.R. #2, Marion Bridge, Nova Scotia, Canada

Continuation of Ser. No. 76,211, Jun. 14, 1993, abandoned.

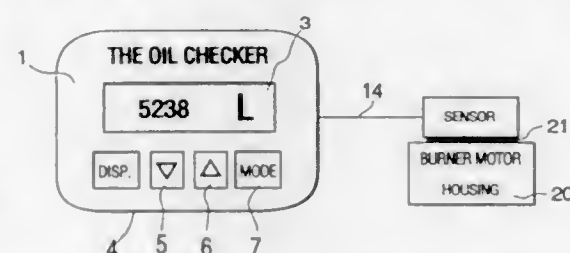
This application Sep. 15, 1994, Ser. No. 306,738

Claims priority, application Canada, Feb. 11, 1993, 2089328

Int. Cl.⁶ G01F 1/00

U.S. Cl. 73—861

11 Claims



1. In combination, a retrofittable, non-invasive fuel consumption meter and a combustion apparatus having a fuel pump driven by a burner motor incorporating a motor housing, said consumption meter comprising:

- a sensor externally mounted on said motor housing to sense changing magnetic fields produced by said burner motor during operation thereof to generate a signal indicating burner motor operation;
- a memory for storing user entered data representing the rate of fuel consumption of said apparatus;
- a microprocessor connected to said sensor and responsive to said signal and to said stored data in said memory to calculate the accumulated fuel consumption of said apparatus over successive periods of operation; and
- display means for displaying said accumulated fuel consumption as calculated by said microprocessor.

5,511,412

METHOD OF DIAGNOSING AN IDLE SPEED CONTROL SYSTEM

Samuel Campbell, III, Southfield, and Kenneth J. Wenzel, Farmington Hills, both of Mich., assignors to Chrysler Corporation, Auburn Hills, Mich.

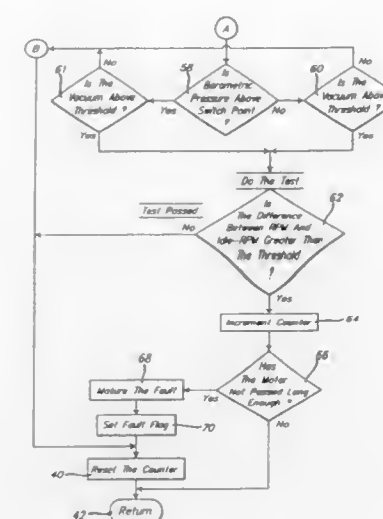
Filed May 4, 1994, Ser. No. 238,097

Int. Cl.⁶ G01M 15/00; F02D 41/16; F02M 3/00; F02B 23/00

U.S. Cl. 73—117.3

20 Claims

1. A method of diagnosing an idle speed control system for an internal combustion engine in an automotive vehicle, said method comprising the steps of:



determining whether a plurality of predetermined conditions are met for the idle speed control system;

ending the method if the predetermined conditions are not met for the idle speed control system;

determining whether a difference between an engine speed and a target idle speed is greater than a predetermined threshold value if the predetermined conditions are met for the idle speed control system; and

concluding that the idle speed control system is functioning properly if the difference is not greater than the predetermined threshold value.

5,511,413

METHOD AND DEVICE FOR DETERMINING THE LOAD CONDITION OF PARTICLE FILTERS

Wolfgang Pfister; Walter Blaschke, both of Esslingen; Erwin Burner, Adelberg; Heinrich Wacker, Wilhelm/Teck, and Peter Steiner, Aichwald, all of, Germany, assignors to J. Eberspächer, Esslingen, Germany

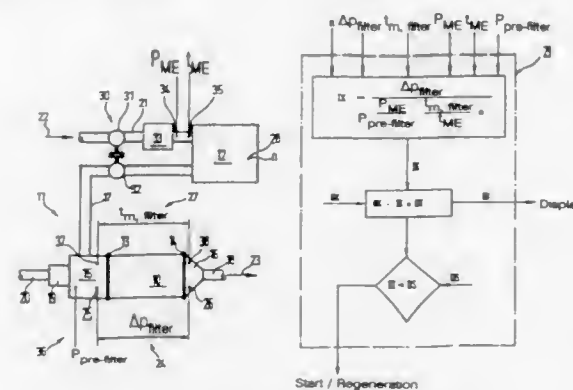
Filed Sep. 8, 1993, Ser. No. 118,021

Claims priority, application Germany, Sep. 9, 1992, 42 30 180.7

Int. Cl.⁶ G01M 15/00

U.S. Cl. 73—118.1

18 Claims



1. A method for determining a load condition of a particle filter used in an exhaust gas system of a diesel engine, the method comprising the steps of:

- measuring a pressure of an exhaust gas flow adjacent an upstream side of the particle filter;
- measuring a temperature of the exhaust gas flow in the particle filter;
- measuring a speed of rotation of the diesel engine;

calculating an actual characteristic value from said measured pressure upstream of said particle filter, said temperature, and said speed of rotation of the diesel engine;

determining a limit characteristic value representing a load condition of the particle filter resulting in an unacceptable power loss of the diesel engine; and

comparing the actual characteristic value with the limit characteristic value and carrying out a regeneration process on the particle filter when a difference between the characteristic value and the limit characteristic value is sufficiently small;

said calculating of said actual characteristic value uses pressure values from only the upstream side of the particle filter.

5,511,414

METHOD OF ANALYZING GEAR SETS

Yasuhiko Nakamura, Higashihiroshima; Kenji Okuda, Iwakuni, and Takeo Bando, Hatsukaichi, all of, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

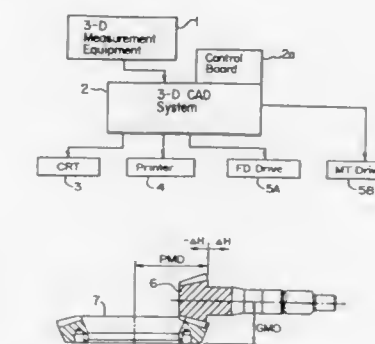
Filed Sep. 30, 1993, Ser. No. 128,693

Claims priority, application Japan, Sep. 30, 1992, 4-286591

Int. Cl.⁶ G01M 13/02; G06F 15/00; 17/50

U.S. Cl. 73—162

11 Claims



1. A gear set analyzing method comprising the steps of:

providing a gear set having a first gear and a second gear, each gear having a number of gear teeth;

measuring any of the gear teeth of the first gear to provide measured tooth surface data for said first gear;

measuring any of the gear teeth of the second gear to provide measured tooth surface data for said second gear;

determining curved first gear tooth surface data, representative of a curved first gear tooth surface, from said measured tooth surface data for said first gear;

determining curved second gear tooth surface data, representative of a curved second gear tooth surface, from said measured tooth surface data for said second gear;

generating a model of the first gear from said curved first gear tooth surface data and standard dimensional data of the gear set;

generating a model of the second gear from said curved second gear tooth surface data and the standard dimensional data of the gear set;

simulating rotation of said model of the first gear and of said model of the second gear in an intermeshing state;

determining a first contact angle through which said second gear rotates and a second contact angle through which said first gear rotates when said first gear tooth surface and said second gear tooth surface contact each other;

calculating an intermeshing transitional error from the first contact angle, the second contact angle, the number of gear teeth of said first gear and the number of gear teeth of said second gear;

determining tooth bearing regions of the gear teeth; and

outputting information relating to said intermeshing transitional error and said tooth bearing regions.

5,511,415

GAS FLOW AND TEMPERATURE PROBE AND GAS FLOW AND TEMPERATURE MONITOR SYSTEM INCLUDING ONE OR MORE SUCH PROBES

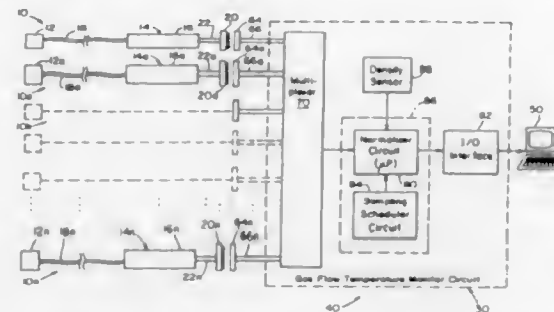
Rajesh M. Nair, Nashua, N.H.; Vivek Mansingh, Santa Clara, Calif., and Raouf A. Ismail, Concord, Mass., assignors to Cambridge Aeroflow, Inc., Shirley, Mass.

Filed Jan. 18, 1994, Ser. No. 182,654

Int. Cl.⁶ G01F 1/68

U.S. Cl. 73-204.11

6 Claims



1. A multi-point gas flow and temperature sensing system comprising:

- a gas flow temperature monitor;
- a plurality of precalibrated gas flow temperature probes connectable to said gas flow temperature monitor, each said probe including:

- sensor means for sensing the ambient gas cooling rate and temperature proximate said sensor means;
- an elongated flexible cable connected on one end to said sensor means for transmitting gas cooling rate and temperature signals from said sensor means;
- a prenormalizer circuit provided on each probe and connected on the other end of said cable, said prenormalizer circuit including means for storing the calibration constants for each probe relative to said gas cooling rate signal from said sensor; means for transmitting said temperature signal, said gas flow rate signal, and said calibration constants to said gas flow temperature monitor; said gas flow temperature monitor including a normalizer circuit for applying said calibration constants to said gas cooling rate signal for providing a normalized gas flow measurement.

5,511,416

WIDE RANGE LAMINAR FLOW ELEMENT

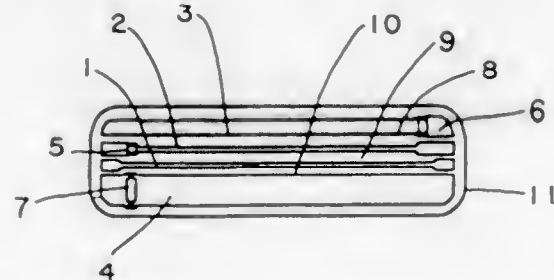
Ali Shambayati, Tucson, Ariz., assignor to Alicat Scientific, Inc., Tucson, Ariz.

Filed Sep. 15, 1993, Ser. No. 121,350

Int. Cl.⁶ F15D 1/00; G01F 5/00

U.S. Cl. 73-204.21

8 Claims



1. A laminar flow element for use in a laminar flow meter, said laminar flow element comprising:

- first and second end plates;
- a first substantially rectangular plate, located between said first and second end plates, defining a first unobstructed substan-

tially rectangular fluid flow channel defined by a first aperture extending through said rectangular plate, said rectangular plate comprising a plurality of additional substantially rectangular fluid flow channels formed therein by a plurality of additional apertures extending through said rectangular plate, each of said additional channels being substantially parallel to said first channel and having a removably attached blocking means associated therewith to block a flow of fluid through a cross section of said respective additional channel unless said blocking means is removed,

whereby said blocking means may be removed from one or more of said additional channels, so that various fluid flow rates may be passed through a cross section of said first channel and cross sections of said one or more of said plurality of additional channels while ensuring laminar flow conditions along at least a portion of said first channel and said one or more of said plurality of additional channels.

5,511,417

METHOD AND ARRANGEMENT IN MEASUREMENT OF HUMIDITY, IN PARTICULAR IN RADIOSONDES

Ari Paukkunen, Vantaa, Finland, assignor to Vaisala Oy, Vantaa, Finland

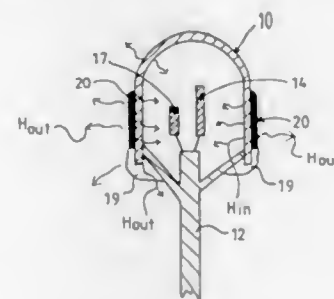
Filed Sep. 27, 1994, Ser. No. 313,017

Claims priority, application Finland, Sep. 29, 1993, 934267

Int. Cl.⁶ G05D 22/02; G01N 27/02; G01W 1/08

U.S. Cl. 73-335.03

11 Claims



1. Method for measurement of relative humidity by using a humidity detector (14), in particular in radiosondes (100), in which humidity detector (14) an active material is used whose electric properties are a function of the amount of water absorbed by said material, in which method said detector (14) is heated so as to remove any ice, frost or condensed humidity gathered on its face or in its vicinity, in which method the temperature (T) of the humidity detector (14) and of the ambient temperature (T_a) are detected by appropriately positioned temperature detectors and these quantities are utilized along with the differences between both such temperatures as correction factors or compensation values in the computing of the humidity measurement values (U), and in which method the humidity detector (14) is protected by means of a mechanical shield construction (10) arranged around the detector, characterized in that said shield construction (10) is heated to a temperature higher than the ambient temperature so that no substantial condensing or freezing of humidity takes place on the humidity detector (14) or on the structures in the vicinity of same.

5,511,418

METHOD FOR MEASUREMENT OF RELATIVE HUMIDITY, IN PARTICULAR IN RADIOSONDES, AND HUMIDITY DETECTORS THAT MAKE USE OF THE METHOD

Veijo Antikainen; Ari Paukkunen; Lars Stormbom, all of Vantaa; Hannu Jauhainen, Espoo, and Jorma Pankala, Ylönkylä, all of, Finland, assignors to Vaisala Oy, Vantaa, Finland

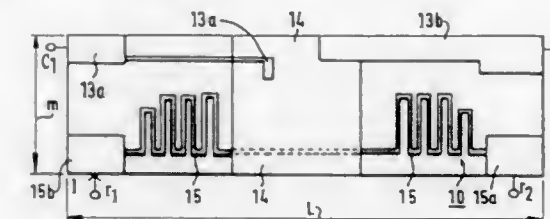
Continuation of Ser. No. 294,327, Aug. 23, 1994, Pat. No. 5,485,747. This application Jun. 6, 1995, Ser. No. 467,160

Claims priority, application Finland, Aug. 23, 1993, 933702

Int. Cl.⁶ G01N 25/56; G01W 1/00

U.S. Cl. 73-335.03

13 Claims



1. Method for measurement of relative humidity by using a capacitive humidity detector (10), in particular in radiosondes, in which detector, between capacitor plates with each capacitor plate connected to a different output terminal, an insulating material (12) is used whose permittivity is a function of the amount of water vapor absorbed by said insulating material (12), and in which method said detector capacitance (C_M) is heated, in time, periodically by means of electric current (I) in order to reduce or remove the adverse effects of any ice, frost, or condensed humidity deposited on the face or in the environment of the detector, in which method the detecting of the detector capacitance (C_M) is carried out without measurement of the detector temperature after detecting the capacitance between the output terminals, and in which method the heating period (t_h) of the detector is a fraction of the measurement cycle T_o of the detector, and the detecting (t₃ . . . t₄) of the detector capacitance (C_M) is carried out after the heating cycle (t_h) in the final stage of the measurement cycle T_o after the detector (10) has had time to be stabilized after said heating period (t_h) and to cool down substantially to the temperature of its environment, at which time the detector shows a correct humidity reading (RH_M), where the method is characterized in that:

the ratio of the duration of the measurement cycle T_o to the duration of the heating cycle t_h is selected from the range of T_o/t_h=10 . . . 3000.

5,511,419

ROTATIONAL VIBRATION GYROSCOPE

William C. Dunn, Mesa, Ariz., assignor to Motorola, Schaumburg, Ill.

Division of Ser. No. 810,043, Dec. 19, 1991, Pat. No. 5,377,544. This application Aug. 1, 1994, Ser. No. 283,342

Int. Cl.⁶ G01P 9/04

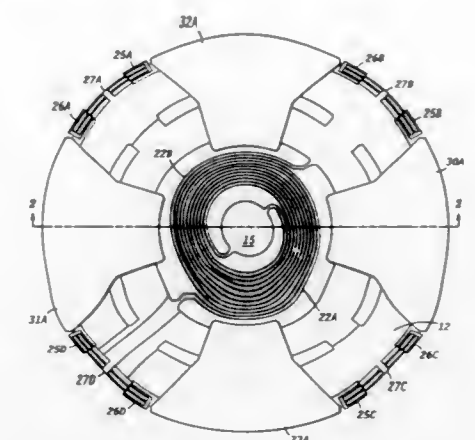
U.S. Cl. 73-504.08

3 Claims

1. A method of operating a rotational vibration gyroscope including a mounting post fixedly attached to a base and defining a first axis, a rotor positioned in a plane perpendicular to the post, springs affixed at one end to the post and at another end to the rotor, and mounting the rotor for oscillatory rotary movement about the post, oscillatory motion driving apparatus mounted adjacent to the rotor, and sensing apparatus, positioned adjacent to the rotor and defining second and third axes mutually perpendicular to each other and to the first axis, comprising the steps of:

supplying signals to the driving apparatus to produce oscillatory motion in the rotor about the first axis;

utilizing the sensing apparatus to sense movement of the rotor about the third axis, produced by Coriolis forces reacting to movement of the gyroscope about the second axis and to



sense movement of the rotor about the second axis, produced by Coriolis forces reacting to movement of the rotor about the third axis; and supplying signals to the sensing apparatus to maintain the rotor approximately centered while simultaneously measuring the Coriolis forces on the rotor.

5,511,420

ELECTRIC FIELD ATTRACTION MINIMIZATION CIRCUIT

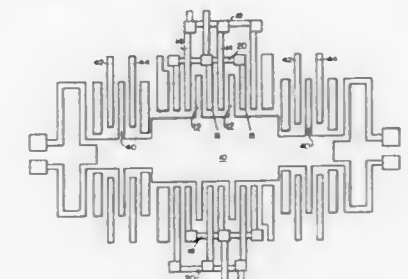
Yang Zhao, North Andover, and Stephen Lewis, Reading, both of Mass., assignors to Analog Devices, Inc.

Filed Dec. 1, 1994, Ser. No. 347,703

Int. Cl.⁶ G01P 15/125

U.S. Cl. 73-514.18

16 Claims

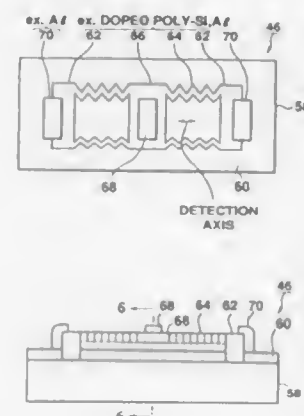


1. A sensor comprising:

- a sensing differential capacitor having a first sense electrode, a second sense electrode, and a third sense electrode, with the third sense electrode forming a first sense capacitor of the sensing differential capacitor with the first sense electrode and a second sense capacitor of the sensing differential capacitor with the second sense electrode, and with the capacitances of the first sense capacitor and the second sense capacitor being variable in response to a force applied to the sensor;
- means for coupling the first sense electrode to a first carrier signal and the second sense electrode to a second carrier signal of the same frequency, with the first carrier signal being 180 degrees out of phase with the second carrier signal;
- a buffer having an input coupled to the third sense electrode; and

a low-pass filter coupled to the first sense electrode, the second sense electrode, and the output of the buffer, so that the filter is disposed between the first sense electrode and the output of the buffer and between the second sense electrode and the output of the buffer.

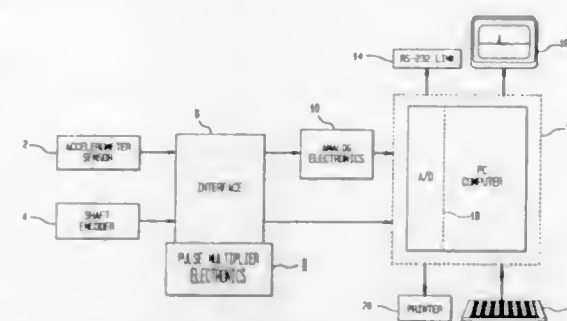
5,511,421
ACCELERATION SENSOR
Koichi Kudo, Kyoto, Japan, assignor to Rohm Co., Ltd., Japan
Filed Jul. 8, 1993, Ser. No. 88,735
Claims priority, application Japan, Jul. 8, 1992, 4-206086;
Oct. 15, 1992, 4-277129; Apr. 15, 1993, 5-088425
Int. Cl. G01P 15/08
U.S. Cl. 73-514.32 19 Claims



1. An acceleration sensor having a semiconductor substrate, comprising:
 - a bridge structure formed on said semiconductor substrate, said bridge structure including:
 - a weight having a predetermined mass; and
 - a direction regulating member for regulating the direction of deflection of said weight which is produced when an acceleration is applied thereto, to a predetermined direction which is approximately parallel to a surface of said semiconductor substrate; and
 - a plurality of metal-insulator-semiconductor type elements which are formed in said semiconductor substrate in the direction of deflection of said weight, an output of each of said metal-insulator-semiconductor type elements being controlled by the deflection of said weight.

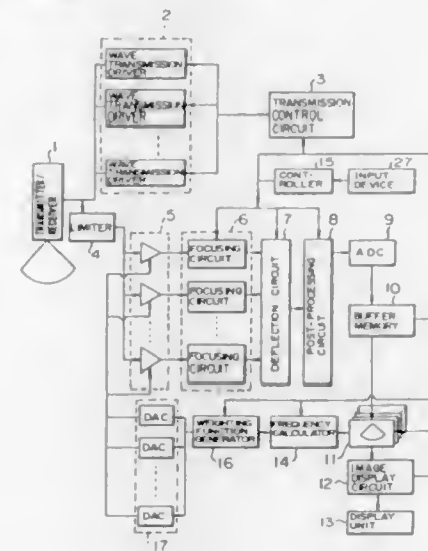
5,511,422
METHOD AND APPARATUS FOR ANALYZING AND DETECTING FAULTS IN BEARINGS AND OTHER ROTATING COMPONENTS THAT SLIP
Walter C. Hernandez, Falls Church, Va., assignor to Monitoring Technology Corporation, Fairfax, Va.
Filed Apr. 9, 1993, Ser. No. 45,604
Int. Cl. G01M 13/02; G01M 13/04; G01N 29/12
U.S. Cl. 73-593 43 Claims

1. A method for analyzing an operating rotary machine having interacting components that slip, said interacting components comprising at least a first component rotating asynchronously with respect to a second component, said first component being an asynchronous component and said second component being a synchronous component comprising the steps of:
 - a. acquiring a machine signal from said rotary machine, said machine signal having a plurality of interaction elements generated by said interacting components;
 - b. conditioning said machine signal to produce a conditioned signal;



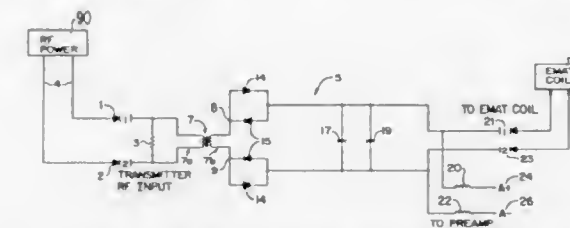
- processing said conditioned signal by forming products of certain ones of said elements for providing a processed signal phase locked to said synchronous component;
- averaging said processed signal over a plurality of data records to produce an averaged signal comprised of averaged signal elements; and
- analyzing said averaged signal elements for locating extrema of said averaged signal thereby determining attributes of said asynchronous component.

5,511,423
ULTRASONIC DIAGNOSTIC APPARATUS AND METHODS THEREFOR
Takashi Sugiyama, and Jun Kubota, both of Nagareyama, Japan, assignors to Hitachi Medical Corporation, Tokyo, Japan
Filed Jul. 11, 1994, Ser. No. 273,429
Claims priority, application Japan, Jul. 13, 1993, 5-195251;
Jul. 13, 1993, 5-195252
Int. Cl. G01N 29/00
U.S. Cl. 73-602 17 Claims



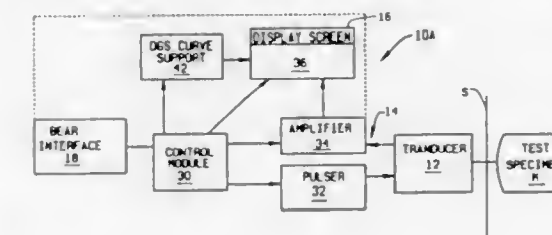
1. An ultrasonic diagnostic apparatus comprising:
 - transmission means for transmitting ultrasonic waves into a body under inspection;
 - means for receiving said ultrasonic waves reflected from a region to be diagnosed in said body under inspection to form a received wave signal;
 - means for processing said received wave signal to form an image;
 - means for preserving a weighting function;
 - means for changing said weighting function with reference to the magnitude of said received wave signal; and
 - means for weighting at least one of the amplitude of said transmitted ultrasonic waves and the amplitude of said received wave signal based on said changed weighting function.

5,511,424
REMOTE PREAMPLIFIER AND IMPEDANCE MATCHING CIRCUIT FOR ELECTROMAGNETIC ACOUSTIC TRANSDUCER
Daniel T. MacLauchlan; Karl C. Henderson, and John H. Flora, all of Lynchburg, Va., assignors to The Babcock & Wilcox Company, New Orleans, La.
Filed Feb. 15, 1994, Ser. No. 196,661
Int. Cl. G01N 29/04
U.S. Cl. 73-609 12 Claims



1. A circuit for an electromagnetic acoustic transducer having a coil, a radio frequency power source and detection means for detecting signals transmitted by the coil, the circuit comprising:
 - input means operatively connected to the radio frequency power source for receiving the radio frequency power;
 - a matching transformer having a primary side and a secondary side, the primary side of the matching transformer being operatively connected to the input means;
 - diode means operatively connected to the secondary side of the matching transformer;
 - connection means operatively connected with the diode means and the coil of the electromagnetic acoustic transducer for providing the radio frequency power to the coil and for receiving a signal transmitted by the coil;
 - preamplifier input means operatively connected to the connection means for receiving the signals transmitted by the coil;
 - blocking means operatively connected between the preamplifier input means and the connection means for blocking the radio frequency power;
 - a first transformer operatively connected to the preamplifier input means;
 - a first pair of diodes operatively connected in parallel between the preamplifier input means and the first transformer, one diode being in a direction opposite to the other diode;
 - a preamplifier operatively connected to the first transformer;
 - a second transformer operatively connected to the preamplifier; and
 - output means operatively connected to the second transformer and the detection means for outputting the signal transmitted by the coil to the detection means.

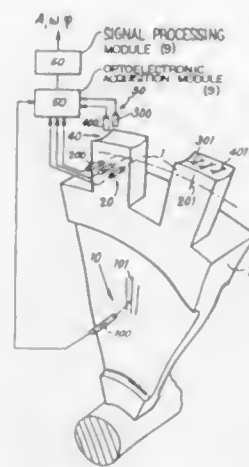
5,511,425
FLAW DETECTOR INCORPORATING DGS
Wolf-Dietrich Kleinert, Bonn, Germany; John M. Cuffe, Centre County, Pa.; Theodore L. Ballenger, Mifflin County, Pa.; Alan D. Weiner, Perry County, Pa., and Mark H. Feydo, Mifflin County, Pa., assignors to Krautkramer-Branson, Inc., Lewistown, Pa.
Filed Dec. 9, 1993, Ser. No. 164,210
Int. Cl. G01N 29/04
U.S. Cl. 73-627 11 Claims



1. A method of performing ultrasonic flaw testing of a material with ultrasonic flaw test apparatus comprising:
 - generating an electrical pulse having defined pulse characteristics and supplying said electrical pulse to a transducer means said transducer means being selectable from among a plurality of transducer means;
 - converting the electrical signal to an ultrasonic pulse by the transducer means; propagating the ultrasonic pulse through the material or assembly, the pulse producing echoes when it encounters flaws or discontinuities in the material as it propagates therethrough;
 - receiving the echoes back at said transducer means;
 - converting the received echoes by said transducer means back into a reply electrical signal;
 - processing the reply electrical signal into a visual display signal representing the amplitude of the echoes for a range of propagation times (distances) of the ultrasonic pulse into the material;
 - visually displaying the processed electrical signal; and,
 - generating a gate signal which is visually displayed with the processed electrical signal, the displayed gate signal corresponding to a maximum amplitude value which represents the maximum flaw size allowable for the test, whereby if the displayed amplitude of the processed electrical signal exceeds the maximum amplitude value the material fails the test, generating the gate signal including emulating a series of DGS curves for the transducer means used during the test to take into account test parameters related to the transducer means and the material so that after an initial calibration is performed using a selected transducer means and a selected reference reflector prior to a test, valid test results are obtained with the transducer means regardless of the distance of the subsequent reflections, generating said gate signal including storing a series of DGS curves for each transducer means which may be selected, the DGS curves providing a gain factor by which the gate signal is uniform throughout for the entire range of propagation times, each series of DGS curves including information relating both to the near range operation of the transducer means and a gain value required to bring the amplitude of a processed reply electrical signal to a predetermined amplitude value, and storing the DGS curves includes creating a DGS table for each type of transducer means used with the apparatus, the table including a series of entries relating to near field distance, amplitude, and the delay velocity associated with the transducer, the type of crystal used in the selected transducer means to convert electrical signals to ultrasonic pulses and vice versa, and the diameter and operating frequency of the crystal whereby the relationship between the displayed amplitude of the processed electrical signal and the gate signal is readily determined so the user can readily ascertain if a flaw test is passed or failed by the material.

5,511,426
PROCESS AND DEVICE FOR MEASURING OPERATING TURBINE BLADE VIBRATIONS
Michel Clement, Vernon, and Jacky Roubet, St Marcel, both of France, assignors to Societe Europeenne de Propulsion, Suresnes, France
Filed Sep. 2, 1993, Ser. No. 116,357
Claims priority, application France, Sep. 3, 1992, 92 10536
Int. Cl. G01H 9/00 37 Claims

1. A method for optically measuring vibrations in rotating turbine blades, each of said turbine blades being mounted on a hub integral with a shaft of a turbine wheel, each said blade comprising at least one flank disposed in a plane parallel to the midplane of said hub and a topside disposed in a plane parallel to the tangent plane of said hub, said turbine wheel moving with a specified speed of rotation, said method comprising the steps of:



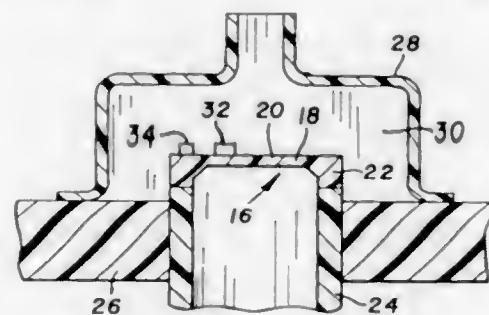
generating three reference signals in response to the detection of the passing of a first marking made on said hub of the turbine wheel by a first optical detector;
detecting the passing of at least a third marking made on said top side of said blade, by a third optical detector and generating measurement signals in response thereto, said blade undergoing oscillation;
determining a plurality of time offsets between respective ones of each of said reference signals and each of said measurement signals, each said time offset being, in the absence of oscillations of said blade, equal to one of zero or a specified constant value; and
calculating the amplitude, frequency and phase components of transverse and torsional blade vibrations from said plurality of time offsets.

5,511,427 CANTILEVERED MICROBEAM TEMPERATURE SENSOR

David W. Burns, Minneapolis, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Jul. 21, 1993, Ser. No. 94,775
Int. Cl.⁶ G01L 19/04

U.S. Cl. 73—708



1. A sensing device comprising:
a substantially rigid substrate;
a vibratory element composed of a semiconductor material and having first and second opposite end regions, fixed to the substrate along said first end region to support the vibratory element in cantilever fashion for oscillation relative to the substrate at a natural resonant frequency that varies in response to changes in the temperature of the vibratory element;
an oscillating means for driving the vibratory element in a mechanical oscillation relative to the substrate; and
a resonant frequency sensing means for sensing the resonant frequency and for generating an output representing the temperature, based on said natural resonant frequency; and

wherein:

the resonant frequency sensing means comprises a position sensing means for sensing the position of the vibratory element relative to the substrate, and generating a periodic position signal indicating the position of the vibratory element as it oscillates; and
the oscillating means for driving the vibratory element in a mechanical oscillation relative to the substrate further comprises the oscillating means receiving the position signal and controllably adjusting the frequency of the periodic mechanical oscillation in response to variations in the position signal frequency, toward coincidence with said natural resonant frequency.

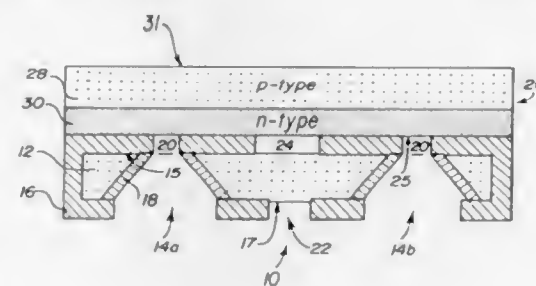
5,511,428 BACKSIDE CONTACT OF SENSOR MICROSTRUCTURES

Howard D. Goldberg, Somerville, and Martin A. Schmidt, Reading, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Jun. 10, 1994, Ser. No. 257,716
Int. Cl.⁶ H01L 29/96

U.S. Cl. 73—777

43 Claims



1. A microelectromechanical sensor body and support structure for backside contact of the sensor body, comprising:

a support wafer substrate having at least one through-wafer via with a lateral span on an order of microns and vertically extending from a front surface to a back surface of the support wafer substrate, the lateral via span at the front surface being more narrow than the lateral via span at the back surface, an insulating film covering at least a portion of the support wafer substrate and covering sidewalls of the vias with the lateral via span at the front surface being open, and

a sensor body wafer substrate adapted to define a mechanical sensor microstructure, the sensor body wafer substrate comprising a plurality of substrate regions, each of the support wafer substrate through-wafer vias corresponding to a substrate region and at least one of the substrate regions being circumscribed by an edge of the mechanical sensor microstructure and an isolating border region, the sensor body wafer substrate having a front surface bonded to the front surface of the support wafer substrate, such that contact of the front surface of the sensor body wafer substrate may be made through a support wafer substrate via from the back surface of the support wafer substrate, contact made through one of the support wafer substrate through-wafer vias to the corresponding one of the sensor body substrate regions being isolated and thereby prevented from making contact to any other sensor body substrate region except through the sensor microstructure.

5,511,429 METHOD AND SYSTEM FOR MEASURING THREE-DIMENSIONAL DISPLACEMENT

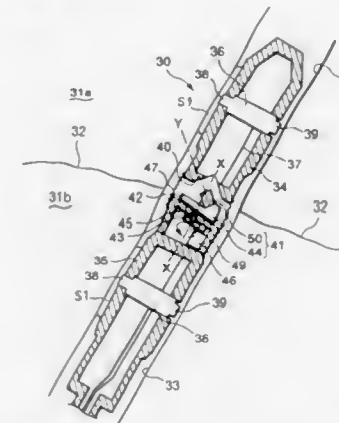
Masayuki Kosugi, Ibaraki, and Akio Tamai, Chiba, both of Japan, assignors to Obayashi Corporation, Osaka, and Agency of Industrial Science and Technology, Tokyo, both of Japan

Filed Jul. 19, 1994, Ser. No. 277,520
Claims priority, application Japan, Dec. 8, 1993, 5-308277; Mar. 14, 1994, 6-042830

Int. Cl.⁶ G01B 5/00

U.S. Cl. 73—784

26 Claims



1. A method of measuring three-dimensional displacement of a mass, comprising the steps of:
providing a displacement indicating means comprising a first cylindrical member for indicating at least a fraction of three-dimensional displacement of the mass by arranging the first cylindrical member at one side of a discontinuous surface of the mass in a bore hole in the mass, the bore hole extending across the discontinuous surface of the mass;
arranging a measuring means for measuring displacement so as to be free to displace relative to said mass and in opposition to said displacement indicating means; and
measuring relative three-dimensional displacement of the mass by detecting displacement of the displacement indicating means relative to the measuring means with the measuring means.

5,511,430 METHOD AND DEVICE FOR DETECTING THAT THE DESIGN LOADS OF AN AIRCRAFT HAVE BEEN EXCEEDED

Thierry Delost, Pibrac; Olivier Regis, and Patrick Schuster, both of Toulouse, all of France, assignors to Aerospatiale Societe Nationale Industrielle, Paris, France

Filed Nov. 29, 1994, Ser. No. 350,082
Claims priority, application France, Dec. 6, 1993, 93 14584
Int. Cl.⁶ G01M 5/00

U.S. Cl. 73—802

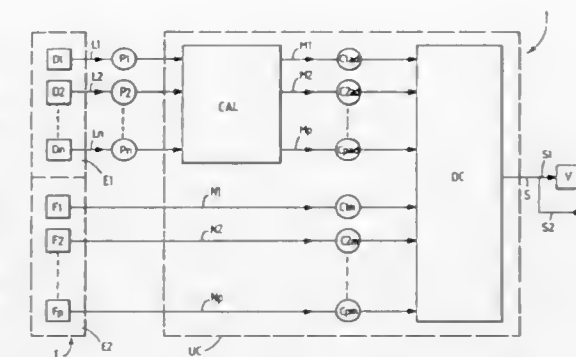
10 Claims

1. Method for detecting that design loads of an aircraft have been exceeded during moment of landing, necessitating a structural inspection of the said aircraft being invoked, comprising:

in a step preliminary to the moment of landing:
defining load criteria (C1, C2, . . . , Cp), which are measurable on the aircraft and representative of effective loads to which the aircraft is subjected; and
determining laws of variation of allowable values (C1ad, C2ad, . . . , Cpad) of these load criteria, (C1, C2, . . . , Cp) as a function of input parameters (P1, P2, . . . , Pn) measurable on the aircraft; and

at the moment of landing:

measuring values of the said input parameters (P1, P2, . . . , Pn) and of the said load criteria (C1, C2, . . . , Cp);



calculating, on the basis of the said laws of variation and of the said measured values of the input parameters, allowable values (C1ad, C2ad, . . . , Cpad) of the said load criteria (C1, C2, . . . , Cp);
comprising for each of the said load criteria (C1, C2, . . . , Cp), measured effective value (C1m, C2m, . . . , Cpm) with calculated allowable value (C1ad, C2ad, . . . , Cpad); and
determining, on the basis of the result of the various comparisons, whether a structural inspection has to be carried out.

5,511,431 STRUCTURE TESTING MACHINE

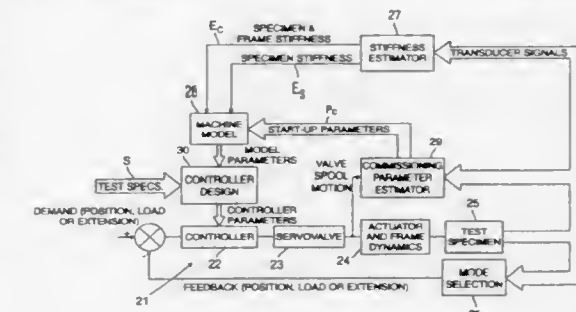
Christopher E. Hinton, Wheatley, United Kingdom, assignor to Instron Limited, Buckinghamshire, United Kingdom

Filed Sep. 23, 1994, Ser. No. 310,871
Claims priority, application United Kingdom, Sep. 24, 1993, 9319788

U.S. Cl. 73—806

Int. Cl.⁶ G01N 3/00

10 Claims



1. A structure testing machine for carrying out, on a test structure, a cyclic loading test which requires applying to the structure in the direction of a predetermined axis of the structure a cyclic amplitude varying test load which cyclically passes through a reference test load amplitude between a first test load amplitude which is positive relative to the reference test load amplitude and a second test load amplitude which is negative relative to the reference test load amplitude under the control of a monitored control system which forms part of the machine and which has a forward path which includes an actuator which is supported by a machine frame and which upon actuation applies to the test structure the cyclic amplitude varying test load in the direction of the predetermined axis, and a controller responsive to a controller input signal and to controller parameters to apply to the actuator an actuating signal to cause the actuator to subject the test structure to the cyclic amplitude varying test load which produces dimensional changes in the test structure in the direction of the predetermined axis, characterized by the provision of an adaptive control loop which comprises a stiffness estimator which generates, from the dimensional changes in the test structure, adaptive control signals representative of the structure stiffness and adaptive control signals representative of the combined stiffness of the actuator, actuator support frame and the test structure, and further characterized by

a second mechanical speed-change mechanism which is disposed between said intermediate shaft and said speed-change shaft at a location axially apart from said first speed-change mechanism and comprises plural speed-change gear trains including plural driving gears mounted on said intermediate shaft and plural driven gears mounted on said speed-change shaft, said speed-change shaft being driven to rotate exclusively by said intermediate shaft through said second mechanical speed-change mechanism.

5,511,437

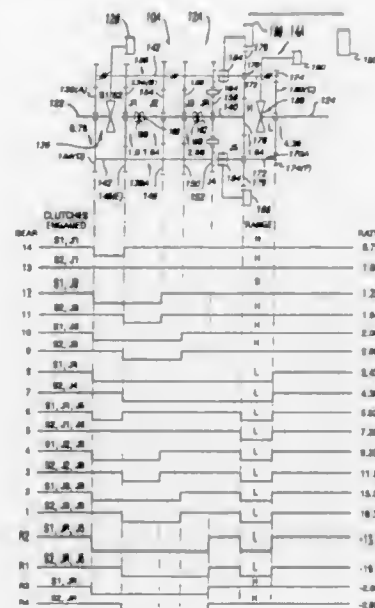
COMPOUND VEHICULAR TRANSMISSION

Eugene R. Braun, Royal Oak, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Continuation-in-part of Ser. No. 86,149, Jul. 1, 1993, Pat. No. 5,385,066. This application Aug. 2, 1994, Ser. No. 284,926
Int. Cl.⁶ F16H 37/00; 3/02

U.S. Cl. 74—331

13 Claims



1. A compound vehicular transmission for providing a plurality of selectable speed ratios, the transmission including a main section having an input shaft selectively coupleable via a first pair of gears to a main countershaft, the main countershaft being selectively coupleable via a second pair of gears to an intermediate shaft having an output gear fixed for rotation therewith, and an auxiliary section including an auxiliary countershaft coaxially disposed relative to the main countershaft, the transmission comprising:

an auxiliary drive gear in continuous meshing engagement with the output gear, the auxiliary drive gear being selectively coupleable to the auxiliary countershaft so as to reduce spin back speed of the intermediate shaft.

5,511,438

POSITIONER

Yuichi Aki, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed May 26, 1994, Ser. No. 249,213

Claims priority, application Japan, May 31, 1993, 5-154489

Int. Cl.⁶ F16H 25/24

U.S. Cl. 74—424.8 A

5 Claims

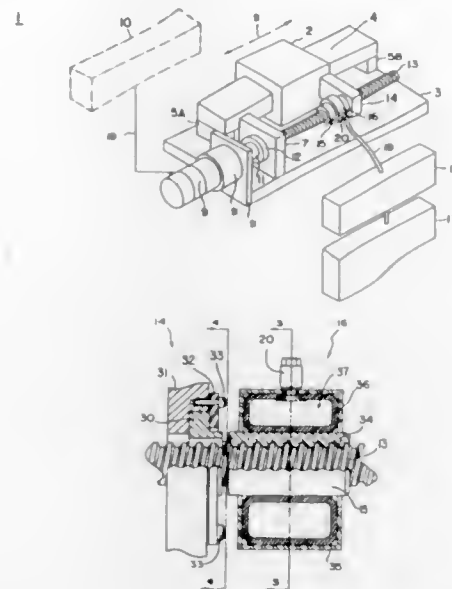
1. A positioner comprising:

a feed screw;

a feed nut threadably engaged with said feed screw;

slot means formed in said feed nut for rendering said feed nut resiliently flexible in a diametrical direction; and

a pressure control means including fluid chamber means disposed about said feed nut for applying a force which flexes said feed nut inwardly and increases the pressure applied to said feed screw by said feed nut.



5,511,439

PUSHING MECHANISM

Jose M. Las Navas Garcia, Paseo de la Castellana, 28046 Madrid, Spain

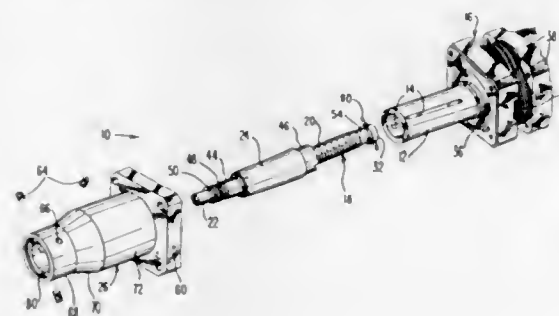
Filed Jan. 26, 1995, Ser. No. 378,526

Claims priority, application Spain, Jul. 22, 1994, 9401635

Int. Cl.⁶ F16H 25/20

U.S. Cl. 74—424.8 R

15 Claims



1. A pushing mechanism comprising:

a hollow tube having a pair of diametrically opposed axially extending slots;

motor means connected to the tube for rotating the tube;

a thrust shaft having a first end with a pair of pins which respectively extend into the pair of slots and are slidable along the pair of slots with relative axial movement between the shaft and the tube, the shaft having a threaded portion adjacent the first end and an opposite second end with a threadless portion;

a nut for threadably receiving the threaded portion of the shaft; and

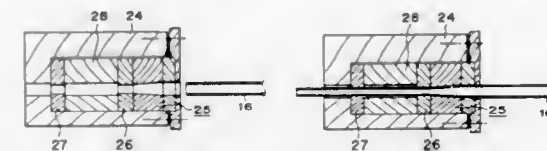
a housing connected to the motor means for rotatably and axially fixing the nut, the nut being axially and rotatably fixed to the housing so that rotation of the tube causes axial movement of the shaft in the nut, the threadless portion having a length which extends at least partly beyond the housing for axial movement of the threadless portion beyond the housing.

5,511,440

METHOD OF MANUFACTURING A HOLLOW STEERING SHAFT AND HOLLOW STEERING SHAFT
Yasushi Watanabe, Kiyoshi Okubo, and Koichi Yokoi, all of Maebashi, Japan, assignors to NSK Ltd., Tokyo, Japan
Filed Aug. 10, 1994, Ser. No. 288,073Claims priority, application Japan, Aug. 25, 1993, 5-230740
Int. Cl.⁶ B62D 1/16; B21C 1/22

U.S. Cl. 74—492

2 Claims



1. A hollow steering shaft manufactured by the steps of passing part of a blank tube having a circular cross section through a preliminary shaping die and then through a finishing shaping die to form a pair of arcuate portions and a pair of flat portions in said blank tube, said arcuate portions and said flat portions being arranged circumferentially and alternately, each of said preliminary shaping die and said finishing shaping die comprising:

a drawing taper portion having cross-sectional areas which become smaller in a direction in which said blank tube is pushed;

a land portion formed on an end of said drawing taper portion having the smallest cross-sectional area, said land portion being adapted to squeeze said blank tube to form said blank tube into a predetermined shape,

the land portion of said preliminary shaping die comprising a pair of first concave curve surface portions having a smaller radius of curvature and a pair of second concave curve surface portions having a larger radius of curvature, said first and second concave curve surface portions being arranged circumferentially and alternately, and

the land portion of said finishing shaping die comprising a pair of third concave curve surface portions and flat portions, said third concave curve surface portions and said flat portions being arranged circumferentially and alternately.

5,511,441

LOCKING/UNLOCKING MANIPULATION MECHANISM DISPOSED ON THE HANDLEBARS OF BABY CARRIAGE

Yuichi Arai, Tokyo, Japan, assignor to Combi Corporation, Tokyo, Japan

Filed Sep. 28, 1993, Ser. No. 127,369

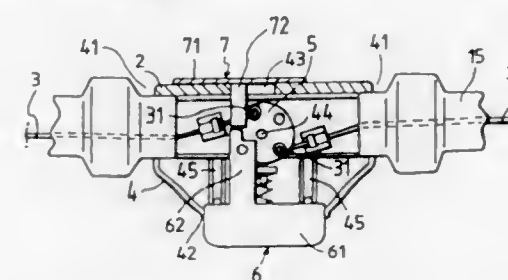
Claims priority, application Japan, Oct. 27, 1992, 4-080170

U

Int. Cl.⁶ B62B 7/08; 9/20

U.S. Cl. 74—501.6

11 Claims



1. A manipulation mechanism provided on the handlebars of a baby carriage for locking and unlocking a pair of locking means of said carriage, comprising:

a housing;

a single wire moving pulley rotatably supported in said housing, said pulley having a pair of wires wound at least partially therearound, first ends of the wires being connected to said

pulley and opposite second ends of the wires being adopted to be respectively connected to said pair of locking means;

a manipulation button including a main body and a drive plate extending from the main body into said housing and engaged with a portion of said pulley, said button being slidably fitted in said housing so that a portion of said main body is exposed outside said housing, inward movement of said button causing said pulley to rotate and attendantly the wires to respectively unlock the pair of locking means; and

a sliding prevention stopper slidably disposed in said housing, said stopper including a sliding prevention plate extending therefrom and into said housing so that a distal end of said prevention plate can be selectively placed in contact with said drive plate to prevent said button from being moved.

5,511,442

CONTROL SYSTEM WITH BOWDEN WIRE ASSEMBLY END CLIP

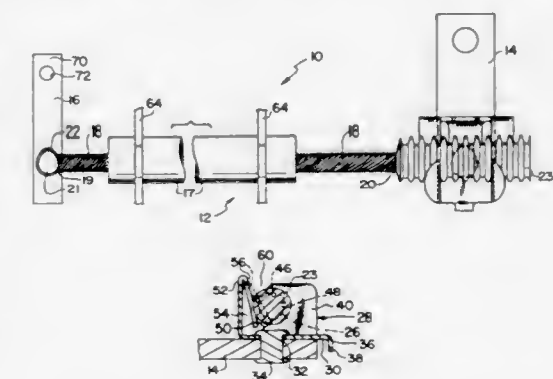
Omar D. Tame, W. Bloomfield, Mich., assignor to Atoma International, Inc., Newmarket, Canada

Filed Sep. 2, 1994, Ser. No. 299,645

Int. Cl.⁶ F16C 1/22

U.S. Cl. 74—502.6

8 Claims



1. A remote control system for a vehicle comprising:

a flexible Bowden wire assembly having an outer sheath and a wire movably mounted within said sheath so as to expose proximal and distal ends of said wire extending from proximal and distal ends of said sheath respectively,

a first actuator mounted for movement in a first location,

a second actuator mounted for movement in a remote second location,

said sheath being extended between said first and said second locations and having the proximal end thereof fixed in spaced relation to said first actuator and the distal end thereof fixed in spaced relation to said second actuator,

one of the ends of said wire being fixed to one of said actuators, the other of the ends of said wire having an elongated member fixed thereto so as to extend axially therefrom, said elongated member having a series of axially spaced annular grooves formed in its exterior periphery, and

a clip pivotally carried by the other of said actuators constructed and arranged to receive and retain said elongated member in a selected position of axial adjustment with respect thereto, said clip being formed of sheet metal and comprising:

a base wall coupled to said other actuator,

separate first and second support walls each being bent outwardly from said base wall along respective bend lines disposed transversely with respect to the direction of axial adjustment so as to provide rigid transverse support for said elongated member, said support walls being in spaced relation with respect to one another in the direction of axial adjustment, and

a side wall bent outwardly from said base wall so as to extend in generally the same direction as said support walls, said side wall being bent along a bend line extending longitudinally

with respect to the direction of axial adjustment and disposed generally transverse to said support walls so as to provide rigid longitudinal support for the elongated member, said support walls, said base wall and said side wall being constructed and arranged to define a cavity extending in an axial direction of the wire, said cavity being open opposite said base wall,

said side wall including a resilient camming surface structure integrally formed therewith and extending into said cavity so as to define a holding channel between said resilient camming surface structure and said support walls,

said support walls defining a pair of biting edges spaced so as to engage surfaces defining a corresponding pair of annular grooves of said series of annular grooves at a selected axial position with respect to said elongated member,

a width of said holding channel being less than a width of said elongated member when said resilient camming surface structure is in an unbiased condition, said holding channel width being expanding upon movement of said resilient camming surface structure within said cavity to a biased condition, said elongated member being disposed within said expanded holding channel such that said resilient camming surface structure exerts a spring force thereagainst in a direction transverse to the axial direction of the wire so that said biting edges engage said surfaces defining a corresponding pair of annular grooves at said selected axial position, thereby holding said elongated member against movement in the axial direction of the wire.

5,511,443

CABLE WINDOW LIFTER WITH A DRIVING UNIT
Bernd Muekhoff, Ebersdorf, Germany, assignor to Brose Fahrzeugteile GmbH & Co. KG, Coburg, Germany

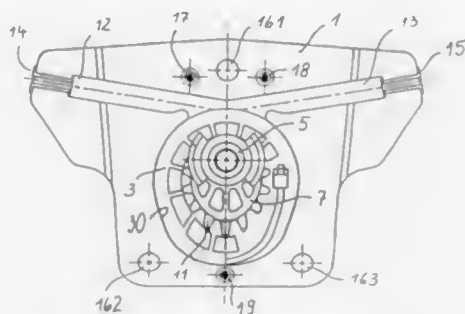
Filed Nov. 16, 1994, Ser. No. 340,720

Claims priority, application Germany, Nov. 26, 1993, 43 40 842.7

Int. Cl.⁶ G05G 1/08

U.S. Cl. 74—505

8 Claims



1. A cable window lifter with a driving unit comprising:
 - a cable drum with an internal gear disposed around an interior portion;
 - a pinion gear seated within the interior portion of the cable drum, wherein the pinion gear includes teeth that engage the internal gear of the cable drum, and wherein the pinion gear is driven by driving means selected from the group consisting of manually operated and motorized driving means; and
 - a drive housing accommodating the cable drum and the pinion gear therein, wherein the cable drum and pinion gear are supported in an axial direction on a wall portion of the housing, and wherein the drive housing includes:
 - a support core disposed within the housing and interposed between a portion of the internal gear of the cable drum and a portion of the pinion gear teeth.

5,511,444 SHOCK-ABSORBING BICYCLE HANDLEBAR ASSEMBLY

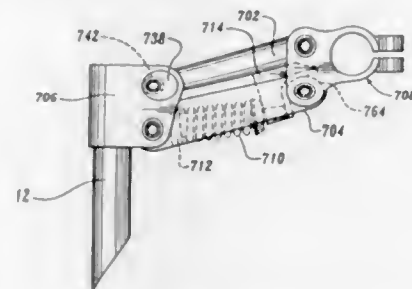
Elvind Clausen, and James D. Atsop, both of Bellingham, Wash., assignors to Softride, Inc., Bellingham, Wash.

Continuation-in-part of Ser. No. 45,984, Apr. 9, 1993, Pat. No. 5,285,697, which is a continuation-in-part of Ser. No. 982,229, Nov. 25, 1992, Pat. No. 5,253,544, which is a continuation of Ser. No. 760,621, Sep. 19, 1991, abandoned, which is a continuation-in-part of Ser. No. 648,173, Jan. 30, 1991, abandoned. This application Feb. 14, 1994, Ser. No. 196,868

Int. Cl.⁶ B62K 21/14

U.S. Cl. 74—551.2

13 Claims



1. A bicycle handlebar support assembly for interconnection between a handlebar and a front fork assembly, the support assembly comprising:
 - (a) a head unit adapted to be secured to the front fork assembly;
 - (b) a first linkage member having a front end, and a tail end wherein said tail end is pivotally attached to said head unit;
 - (c) handlebar clamp means for mounting the handlebar attached to the front end of said first linkage member;
 - (d) a biasing means, coupled to said first linkage member, for upwardly biasing said handlebar clamp means; and
 - (e) a first bearing pin coupled to said head unit and the tail end of said first linkage, said first bearing pin being adapted for movement relative to said head unit to change the position of said first linkage relative to said head unit, wherein said first bearing pin includes a pinhead engaged within a first bore in said head unit and a first pin extension eccentrically attached to said pinhead, said pin extension extending inwardly from said pinhead to engage the tail end of said first linkage, such that rotation of said pinhead within the bore changes the position of the first pin extension relative to the head unit.

5,511,445

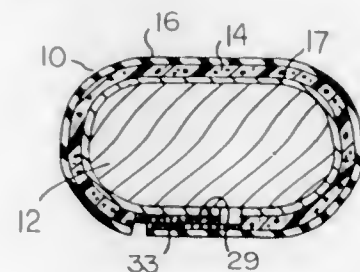
FLEXIBLE HAND GRIP FOR HANDLES
Robert C. Hildebrandt, R.D. 2, Box 2165, Brunswick, Me. 04011

Filed Oct. 11, 1994, Ser. No. 320,909

Int. Cl.⁶ G05G 1/06

U.S. Cl. 74—558.5

3 Claims



1. A flexible hand grip installable around a handle; said hand grip comprising a multi-ply band that includes a first core sheet of flexible foam material having first and second major faces;

a second flexible surface sheet formed of rubber, said second surface sheet being laminated to said first face of the core sheet;

a third flexible surface sheet formed of a woven fabric, said third surface sheet being laminated to said second face of the core sheet;

said core sheet having a first end edge (21) and a second end edge (19);

said second flexible surface sheet extending from said first end edge of the core sheet to a point beyond the second end edge of the core sheet, to form a first attachment tab (31);

said third flexible surface sheet extending from said second end edge of the core sheet beyond the first end edge of the core sheet to form a second attachment tab (27);

a first patch of fibrous hook and loop material on said first attachment tab contiguous to said second end edge of the core sheet;

a second patch of fibrous hook and loop material on said second attachment tab contiguous to said first end edge of the core sheet; and

said first and second patches being formed of mating interlocking fibers, whereby the patches adhere together when the multi-ply band is wound around a handle in a direction normal to the end edges of said core sheet.

5,511,446

FLYWHEEL ASSEMBLY

Koji Kajitani; Hirotaka Fukushima; Manoru Okubo; Naoki Yanagida; Mitsuhiko Takenaka; Mitsuo Touji, and Kozo Yamamoto, all of Neyagawa, Japan, assignors to Kabushiki Kaisha Daikin Seisakusho, Neyagawa, Japan

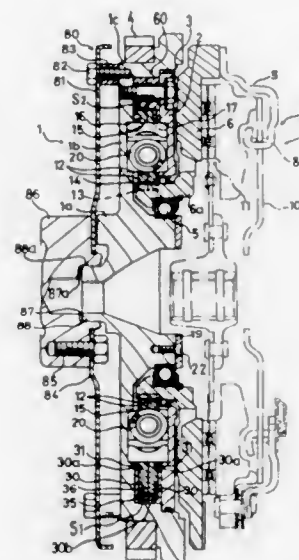
Continuation of Ser. No. 938,863, Sep. 1, 1992, Pat. No. 5,355,747. This application May 20, 1994, Ser. No. 246,955

Claims priority, application Japan, Sep. 4, 1991, 4-70801; Sep. 4, 1991, 3-70802; Sep. 4, 1991, 3-70803; Sep. 4, 1991, 3-70804; Sep. 4, 1991, 3-70805; Sep. 18, 1991, 3-237926; Nov. 8, 1991, 3-292954

Int. Cl.⁶ F16F 15/22; G05G 1/00

U.S. Cl. 74—573 F

7 Claims



1. A flywheel assembly, comprising:
 - a first flywheel having a central hub which is rotatably engaged with a recessed end of an engine crankshaft;
 - a second flywheel rotatably supported by said first flywheel;
 - a viscous damping mechanism located between said first and second flywheels for damping torsional vibrations therebetween; and
 - a plate for absorbing bending oscillations from said engine, a central portion of which is fixed to said crankshaft, said plate

having a plurality of radially extending arms circumferentially equidistant, and ends of said arms being fixed to said first flywheel periphery.

5,511,447

AUTOMATIC RATCHET BLOCK

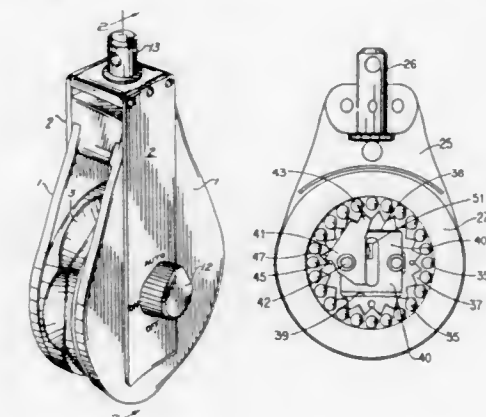
Peter E. Galloway, 26 Friendlee La., Wilton, Conn. 06897, and Peter L. Wilson, 722 Silvermine Rd., New Canaan, Conn. 06840

Continuation-in-part of Ser. No. 905,725, Jun. 29, 1992, Pat. No. 5,319,997. This application Mar. 18, 1994, Ser. No. 214,853

Int. Cl.⁶ G05G 1/00; B66D 1/14

U.S. Cl. 74—577 S

1 Claim



1. A ratchet block adapted for self-locking, said ratchet block including

a frame having an upper end, a sheave mounted within said frame for movement toward and away from said upper end, said sheave having sheave teeth extending radially inwardly, a ratchet assembly fixedly mounted within said frame in operative relationship with said sheave, said ratchet assembly including a ratchet arm pivotally mounted for engagement with said sheave teeth when said sheave is in a position away from said upper end, pressing means pressing said ratchet arm toward interengagement with said sheave teeth, and releasing means pressing said ratchet arm away from said interengagement when said sheave is in a position toward said upper end, said releasing means including a pin mounted on said frame and a pin-engaging member on said ratchet arm positioned for cooperative engagement with said pin to press said ratchet arm away from said sheave teeth when said sheave is in a position toward said upper end.

5,511,448

POWER TRANSFER APPARATUS FOR FOUR-WHEEL DRIVE AUTOMOTIVE VEHICLE

Osamu Kameda; Masami Masuno; Yoshitaka Nomoto, and Youichi Hiraoka, all of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Oct. 25, 1994, Ser. No. 329,100

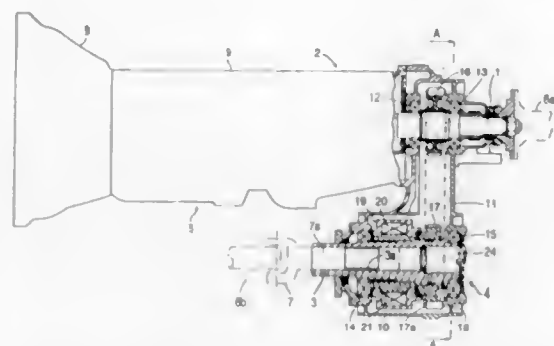
Claims priority, application Japan, Oct. 26, 1993, 5-267316; Feb. 24, 1994, 6-026451

Int. Cl.⁶ B60K 17/35; F16H 57/02

U.S. Cl. 74—665 GE

17 Claims

1. A driving power transfer apparatus, having a primary output shaft for providing driving power for a rear propeller shaft and a secondary hollow output shaft arranged in parallel with the primary output shaft for providing driving power for a front propeller shaft, for four-wheel drive automotive vehicles, said driving power transfer apparatus comprising:



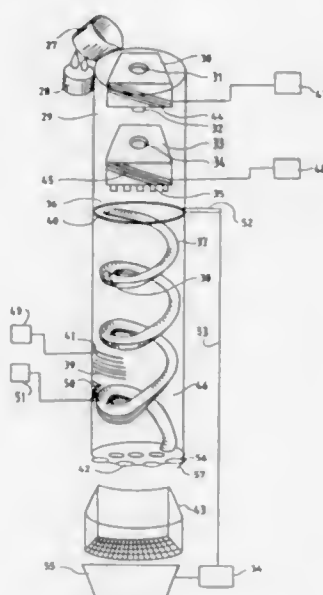
power transmission means operationally coupled to the primary output shaft for putting out driving power from the primary output shaft;

a sliding yoke providing splined joint between the secondary output shaft and the front propeller shaft; and

power transfer means, supported on the secondary output shaft, for variably transmitting said driving power to the secondary output shaft from said power transmitting means.

5,511,449
MATERIALS AND METHODS FOR PRODUCING SHOT OF VARIOUS SIZES AND COMPOSITIONS
 Jeffrey J. Felgenbaum, 7339 N. Karlov Ave., Lincolnwood, Ill. 60465

Filed Oct. 24, 1994, Ser. No. 327,645
 Int. Cl.⁶ B22F 9/06
 U.S. Cl. 75—341 19 Claims



1. An apparatus for the manufacture of shot comprising:

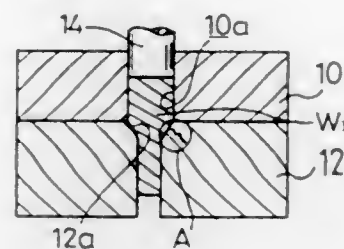
a binary reservoir system capable of altering a flow of molten shot material comprising a primary reservoir with a single exit orifice and a secondary reservoir located below said primary reservoir, said secondary reservoir having a plurality of exit orifices, each of said exit orifices of said secondary reservoir having a diameter less than that of said single exit orifice in said primary reservoir;

a tube wrapped with resistance wire located below and adjacent said binary reservoir system, said tube having a plurality of orifices suitable for shot expulsion at an end of said tube distal from said reservoir system, each of said orifices being covered on its exterior by a rubber lid;

one or more helical tracks disposed in said tube; and

means for capturing shot expelled from said apparatus on a continuous basis.

5,511,450
METHOD OF MANUFACTURING FORMING DIE
 Yulchi Nagao, Sayama, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
 Filed Dec. 27, 1994, Ser. No. 363,818
 Claims priority, application Japan, Dec. 27, 1993, 5-333406
 Int. Cl.⁶ B21C 3/02
 U.S. Cl. 76—107.1 6 Claims



1. A method of manufacturing a forming die composed of a die member and a reinforcing ring for applying compressive forces radially inwardly to the die member, comprising the steps of:

(a) simulating tensile stresses applied to elements divided from the die member;

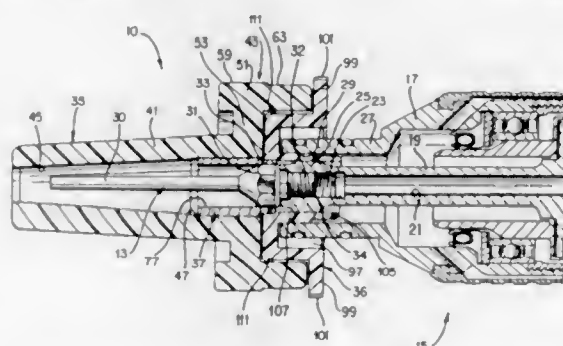
(b) specifying a fracture region of the die member based on the simulated tensile stresses;

(c) determining an inner circumferential configuration of the reinforcing ring to cooperate with the die member in producing compressive stresses in the die member to counteract tensile stresses in said fracture region;

(d) forming the reinforcing ring with said inner circumferential configuration; and

(e) fitting said reinforcing ring with said inner circumferential configuration over said die member.

5,511,451
WRENCH
 Mark E. Steen, Chino Hills, Calif., and Robert P. Gill, Rapid City, S. Dak., assignors to Chiron Vision Corporation, Irvine, Calif.
 Filed Oct. 28, 1994, Ser. No. 344,983
 Int. Cl.⁶ B25B 13/06
 U.S. Cl. 81—55 14 Claims

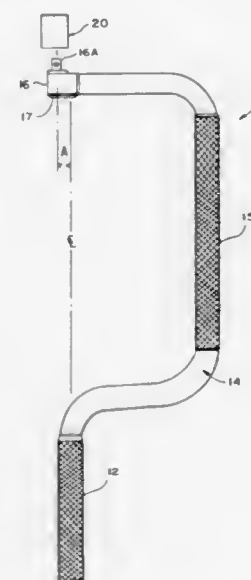


1. A wrench for attaching a tip having a threaded shank and a non-circular portion to a tool including a housing having a non-circular interior end and a rotatable shaft within the housing having a non-circular exterior segment and a threaded bore, said wrench comprising:

a hub including a projection and an opening extending through said projection, at least a portion of said opening being defined by a non-circular inner wall adapted to matingly receive the non-circular exterior segment of the shaft, and at least a portion of said projection having an outer non-circular section adapted to be matingly received within the non-circular interior end of the housing so that said projection engages the shaft and the housing to thereby prevent rotation of the shaft relative to the housing; and

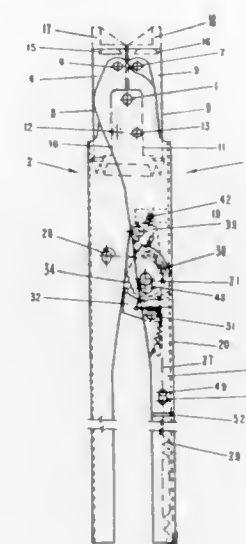
a rotary part being rotatable independently of said hub and including a passage for receiving the tip, said passage being generally aligned with said opening of said hub, at least a portion of said passage being defined by a non-circular interior wall positioned rearward of said non-circular inner wall and said outer non-circular section of said hub, said non-circular interior wall of said passage being adapted to matingly receive the non-circular portion of the tip so that rotation of said rotary part causes the threaded shank of the tip to be screwed into the threaded bore of the shank.

5,511,452
RATCHET SPEED HANDLE
 Douglas R. Edmonds, 926 Silver Leaf Pl., Loveland, Colo. 80538
 Filed Oct. 21, 1994, Ser. No. 326,863
 Int. Cl.⁶ B25B 13/46; B25G 1/00
 U.S. Cl. 81—73 1 Claim



1. A speed handle tool having a working end, an opposite end having a grip portion, and single offset crank handle, wherein said tool further comprises a ratchet drive secured to said working end; wherein said ratchet drive includes a mounting stud for attachment of a socket thereto; wherein said mounting stud includes a first longitudinal axis; wherein said grip portion includes a second longitudinal axis; wherein said offset crank handle includes a third longitudinal axis; wherein said first, second and third longitudinal axes are parallel to each other; wherein said first longitudinal axis is offset from said second longitudinal axis approximately 0.25 to 0.5 inch; and wherein said second longitudinal axis is located between said first and third longitudinal axes.

5,511,453
PLIERS FOR MOUNTING PURPOSES
 Rainer Neumann, Herten, and Dieter Schwalm, Bielefeld, both of Germany, assignors to Vulkan Lokring GmbH & Co. KG, Herne, Germany
 Filed Aug. 19, 1994, Ser. No. 293,042
 Claims priority, application Germany, Aug. 20, 1993, 9312480 U; Sep. 25, 1993, 43 32 710.9
 Int. Cl.⁶ B25B 7/12
 U.S. Cl. 81—362 8 Claims



1. A pliers for mounting purposes comprising:

two plier portions;

a first pivot connection for pivotally connecting said two plier portions;

each said plier portion comprised of a jaw base body and a grip of a length that is a multiple of the length of said jaw base body;

a first one of said grips divided into a first section and a second section, said first section located between said jaw base body and said second section and being shorter than said second section;

a second pivot connection for pivotally connecting said first section and said second section;

said second pivot connection comprising a pivot bolt extending parallel to a pivot axis of said first pivot connection;

a sprocket wheel rotatably connected to said pivot bolt;

a ratchet wheel with an outer toothing rotatably connected to said pivot bolt;

said sprocket wheel and said ratchet wheel positioned axially adjacent to one another on said pivot bolt and fixedly connected to one another;

a chain having a first end connected to the second one of said grips;

a tension spring for connecting a second end of said chain to said second section of said first grip;

said chain guided from said second grip across said sprocket wheel so as to be engaged by said sprocket wheel to said second section, where said chain extends in a longitudinal direction of said second section toward said tension spring;

a spring-biased follower pawl connected to said second section such that upon a closing movement of said second section said sprocket wheel and said ratchet wheel perform a rotational movement resulting in closing of said pliers;

said outer toothing of said ratchet wheel extending over the entire circumference of said sprocket wheel;

a spring-biased locking pawl for engaging said outer toothing, said locking pawl allowing a rotation of said ratchet wheel in a first direction during closing of said pliers, but preventing a rotation of said ratchet wheel in a second direction counter to said first direction; and

- a quadrilateral is formed by said support structure, said crossmember, and said first and second actuators;
- (d) an arm member projecting outwardly from the second portion of said first actuator and disposed in a generally parallel fashion and in close proximity to said crossmember;
- (e) sensor means consisting of a single sensor for determining when a change in the shape of the quadrilateral occurs wherein the single sensor is secured to said arm member into moveable contact with the crossmember and wherein said crossmember is pivotally connected to the actuation ends of said actuators and said single sensor comprises means for detecting angular displacement of said crossmember relative to said actuators; and
- (f) means for powering said actuators in response to said single sensor.

5,511,460

STROKE LIMITER FOR HYDRAULIC ACTUATOR PISTONS IN COMPRESSION RELEASE ENGINE BRAKES

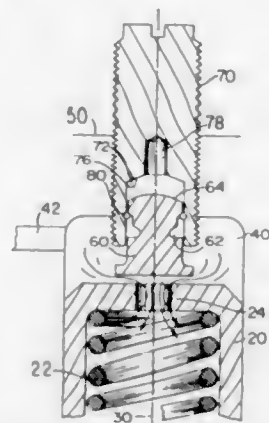
Dennis R. Custer, West Granby, Conn., assignor to Diesel Engine Retarders, Inc., Wilmington, Del.

Filed Jan. 25, 1995, Ser. No. 377,902

Int. Cl.⁶ F15B 15/22; F02D 13/04

U.S. Cl. 91—401

15 Claims



1. Apparatus for limiting the stroke of a piston in a hydraulic actuator cylinder due to introduction of pressurized hydraulic fluid into said cylinder adjacent an end surface of said piston, said end surface being substantially perpendicular to the axis along which said piston moves in response to said pressurized hydraulic fluid, and said end surface having an aperture through which hydraulic fluid can escape from said cylinder when said aperture is opened, said aperture comprising:

- a piston follower member movably mounted in said cylinder between said end surface and an end of said cylinder which faces said end surface, said member being movable relative to said cylinder and said piston substantially parallel to said axis, a first end of said member being disposed adjacent said end surface and being shaped to selectively close said aperture and thereby prevent hydraulic fluid from escaping from said cylinder via said aperture, and a second end of said member which faces away from said first end being shaped to selectively bear on said end of said cylinder and thereby enable said member to act as a stop for stopping motion of said piston toward said end of said cylinder when said end surface contacts said first end and said second end contacts said end of said cylinder; and

a stop structure for limiting the amount by which said member can travel with said piston away from said end of said cylinder so that when said stop structure is operative, said member is prevented from continuing to move away from said end of said cylinder with said piston and said aperture is accordingly opened to release hydraulic fluid from said cylinder and thereby prevent said piston from continuing to move in response to hydraulic fluid pressure in said cylinder.

der and thereby prevent said piston from continuing to move in response to hydraulic fluid pressure in said cylinder.

5,511,461

ACTUATOR WITH SLIDE TABLE

Hiroshi Miyachi; Mitsutoshi Araki; Yoshiteru Ueno, and Norihide Yamase, all of Ibaraki, Japan, assignors to SMC Kabushiki Kaisha, Tokyo, Japan

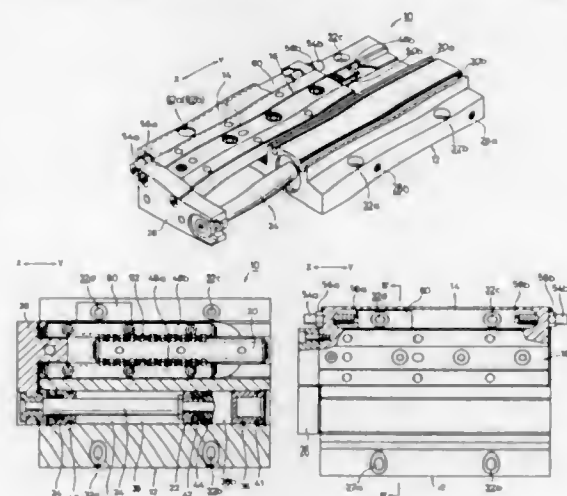
Filed Apr. 14, 1995, Ser. No. 422,161

Claims priority, application Japan, May 18, 1994, 6-103921

Int. Cl.⁶ F01B 31/14

U.S. Cl. 92—13.5

2 Claims



1. An actuator comprising:

- a cylinder body having a pair of fluid ports defined therein;
- a piston movably disposed in said cylinder body;
- a piston rod coupled to said piston for displacement in an axial direction of said cylinder body in response to movement of said piston in said cylinder body;
- a guide rail disposed laterally on one side of said cylinder body and extending from one end of said cylinder body to an opposite end thereof in the axial direction of said cylinder body;
- a slide table disposed for displacement along said guide rail;
- an end block coupled to an end of said slide table and supporting a distal end of said piston rod;
- a set of members for limiting a range of relative displacement of said cylinder body and said slide table; and
- a cover disposed on and extending along a side edge of said slide table in covering relation to said members, said cover being integrally attached to said slide table and movable in unison with said slide table when said slide table is displaced along said guide rail.

5,511,462

DIAPHRAGM ACTUATOR

Kenji Itoi; Akira Endo, and Yosuke Okayasu, all of Gunma, Japan, assignors to Mitsuha Electric Manufacturing Co., Ltd., Gumma, Japan

Filed Sep. 16, 1994, Ser. No. 306,891

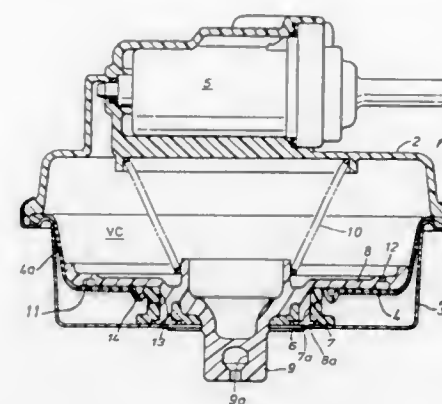
Claims priority, application Japan, Nov. 11, 1993, 5-307317

Int. Cl.⁶ F16J 3/02

U.S. Cl. 92—99

4 Claims

3. A diaphragm actuator having a diaphragm and a retainer plate with improved sealing and tension distribution capabilities, said actuator comprising:
- a casing including first and second cup shaped housing halves;
- a diaphragm including a peripheral part clamped between said casing halves, and a central opening, and defining at least one enclosed chamber in cooperation with said first casing half;



conduit/valve means for selectively introducing negative pressure into said enclosed chamber;

- a disk-shaped retainer plate having a planar first major surface facing away from said enclosed chamber and continuously engaging a surface of said diaphragm facing said enclosed chamber, and a central boss closely fitted into said central opening of said diaphragm;
- a plurality of through holes formed in said retainer plate and arranged annularly and concentrically about the central boss, said through holes extending from the enclosed chamber through the planar first major surface to the surface of said diaphragm;
- an annular recess substantially concentric to the central boss on the first major surface of said retainer plate for interconnecting said plurality of through holes such that a pressure decrease in the enclosed chamber is uniformly transmitted through said recess to said diaphragm for securing said diaphragm to said retainer plate; and
- coupling means provided at a free end of said central boss and adapted to be coupled to an object to be actuated.

5,511,463

STRUCTURE FOR MOUNTING AND SEALING A PISTON SLEEVE WITHIN AN ACTUATOR BODY

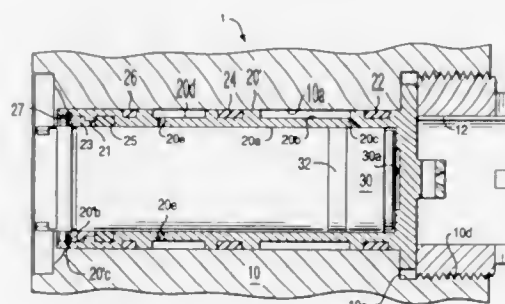
Elmer A. Stockton, 4611 Bretton Bay La., Dallas, Tex. 75287

Filed Oct. 19, 1994, Ser. No. 326,028

Int. Cl.⁶ F01B 11/02

U.S. Cl. 92—171.1

3 Claims



1. An aileron actuator assembly comprising:

- an actuator body having a bore for receiving a piston sleeve;
- said piston sleeve telescoped into said actuator body bore, the piston sleeve having a bore for receiving a piston;
- means for rigidly securing only an inner end of said piston sleeve within said bore;
- a plurality of axially spaced seals disposed between an exterior of said piston sleeve and said actuator body bore;
- port means between two of an innermost of said axially spaced seals for supplying pressurized fluid to said piston sleeve bore;

a cylindrical piston element inserted in said piston sleeve bore and axially shiftable relative thereto;

said piston having an inner end portion engageable by pressurized fluid supplied through said port means;

a primary seal near the inner end of said piston engageable with said piston sleeve bore at a location axially outward of the innermost of said axially spaced seals;

a secondary seal mounted in an outer end of said piston sleeve and sealingly engageable with an axially outer end of said piston;

and

seal retainer means independent of said actuator body for securing said secondary seal to said piston sleeve, whereby fluid leakage past said primary seal produces a force solely on said piston sleeve and said seal retainer means.

5,511,464

CUP-SEAL NON-RETURN VALVE

Rudolf Cezanne, Hofheim; Peter Gebhardt, Frankfurt am Main; Ralf Jahn, Eschborn, and Horst Laczny, Gifhorn, all of, Germany, assignors to ITT Automotive Europe GmbH, Frankfurt, Germany

PCT No. PCT/EP92/02167, § 371 Date Sep. 20, 1994, § 102(e) Date Sep. 20, 1994, PCT Pub. No. WO93/09368, PCT Pub. Date May 13, 1993

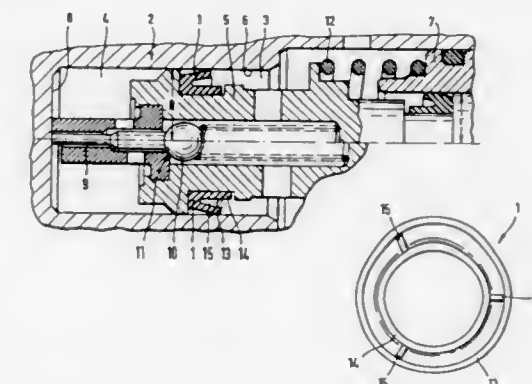
PCT Filed Sep. 19, 1992, Ser. No. 232,200

Claims priority, application Germany, Oct. 31, 1991, 41 35 867.8

Int. Cl.⁶ F16J 9/00

U.S. Cl. 92—240

21 Claims



19. A pressure reducing valve comprising:

- a housing having a cylindrical bore;
- a control piston movably along said cylindrical bore of said housing and having:
- (a) a head with clearance from said cylindrical bore defining first and second chambers in said cylindrical bore, and
- (b) a body;
- a valve, responsive to movement of said control piston, for controlling fluid flow between said first and said second chambers; and
- a cup-seal non-return valve disposed between said piston body and said cylindrical bore and having:
- (a) a cylindrical inner wall positioned against said piston body and having first and second ends,
- (b) a sealing lip angularly connected to said cylindrical inner wall at said first end of said cylindrical inner wall to form a V-shape with said cylindrical inner wall and bearing against said cylindrical bore, and
- (c) a plurality of supporting walls arranged between said cylindrical inner wall and said sealing lip and distanced from each other to permit said sealing lip to move towards said cylindrical inner wall when a sufficient pressure of pressure fluid is applied to the outside surface of said sealing lip.

5,511,465

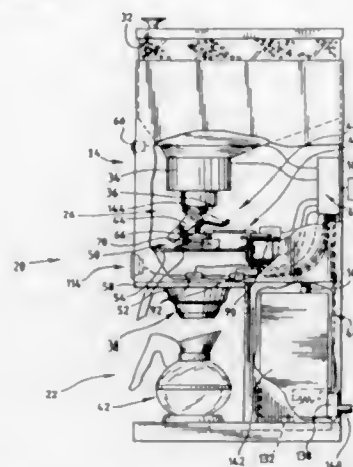
COMBO GRINDER AND BREWER

Brent R. Friedrich, Springfield, and John T. Knepler, Chatham, both of Ill., assignors to Bunn-O-Matic Corporation, Springfield, Ill.

Continuation-in-part of Ser. No. 371,293, Jan. 11, 1995, Pat. No. 5,465,650. This application Aug. 4, 1995, Ser. No. 511,133 Int. Cl.⁶ A47J 31/42

U.S. Cl. 99—286

21 Claims



1. A beverage brewing apparatus including a beverage brewer and brewing substance dispenser, said beverage brewer comprising:

- a receptacle for retaining a beverage brewing substance;
- said brewing substance dispenser being operatively associated with said receptacle for controllably dispensing brewing substance into said receptacle;
- a chute positioned between said substance dispenser and said receptacle for selectively directing brewing substance from said substance dispenser to said receptacle;
- a water dispenser operatively associated with said beverage brewer and selectively communicating with said receptacle for delivering water to a brewing substance retained in said receptacle; and
- a drive assembly for selectively alternately moving one of said water dispenser and said chute for controllably displacing the other of said water dispenser and said chute, whereby said water dispenser and said chute controllably, individually communicate with said receptacle.

5,511,466

COOKING UTENSIL

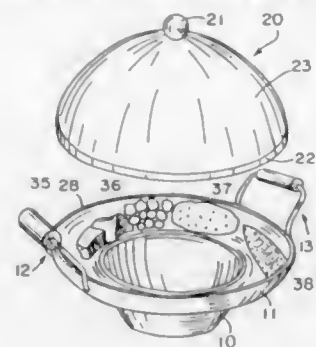
DuWayne M. Dzibinski, 11407 Rawson Ave., Franklin, Wis. 53132

Filed Jul. 20, 1995, Ser. No. 504,895
Int. Cl.⁶ A47J 27/00; 37/10

U.S. Cl. 99—339

6 Claims

1. The combination of a cooking vessel and a cooperating cover,



said vessel comprising:

a bowl-like body composed of sheet metal having a flat circular bottom and an annular wall extending nominally upwardly and unitarily from said bottom to terminate at an annular inner rim at which, without discontinuity, said sheet metal bends reentrantly downwardly and then is curved upwardly to define an annular trough circumjacent said body, said trough terminating in an upper circular rim having an inside diameter at the extremity thereof,

said cover comprising:

a hollow dome-like member composed of sheet metal having inner and outer surfaces terminating in a circular rim having an outside diameter at the extremity thereof sufficiently less than said inside diameter of said circular rim of the trough for said outside diameter of said rim at said extremity of the cover to enter said inside diameter of said extremity of said rim of said trough such that said cover covers said bowl-like body and the entirety of the trough when the cover is applied to said vessel.

5,511,467

STEAM TABLE PAN HANDLING APPARATUS

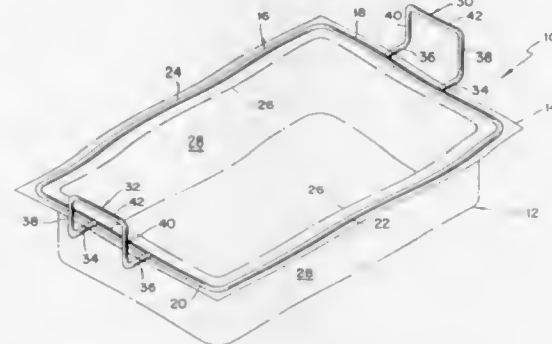
Daniel L. Motley, 102 Andover, Victoria, Tex. 77904; Joseph P. Petrisky, Jr., Rte. 1, Box 329 C, Port Lavaca, Tex. 77979, and Gordon L. Gentry, 121 Scarborough, Victoria, Tex. 77901

Continuation-in-part of Ser. No. 885,192, May 19, 1992, abandoned. This application Jan. 26, 1994, Ser. No. 187,657

Int. Cl.⁶ A47J 43/00

U.S. Cl. 99—426

19 Claims



1. A device for handling a steam table pan having an inside recess for containing food, an outside surface profile, and an outward projecting flange that rests against a steam table top cover along the edge portion of a table pan-receiving hole when the outside surface profile of the steam table is registered with and disposed in the steam table pan-receiving hole, said device comprising:

- a) table pan supporting means located along the outside surface profile of said steam table pan and below the outwardly projecting flange for carrying the steam table pan,
- b) said table pan supporting means being located between the outwardly projecting flange of the steam table pan and the steam table top cover along the edge portion of the steam table pan-receiving hole when the steam table pan is disposed in said steam table pan-receiving hole, and
- c) first and second handle means being connected to respective opposing sides of the table pan supporting means for lowering the steam table pan into and lifting said table pan out of a steam table pan-receiving hole.

5,511,468

FRUIT JUICE EXTRACTING MACHINE

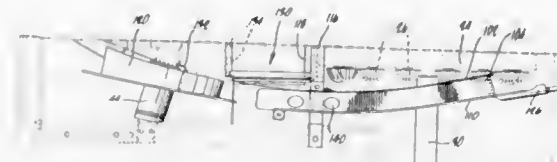
Ronald C. Bushman, Brea; William E. Harris, Jr., Fontana, both of Calif., and Roger N. Foch, Lake Alfred, Fla., assignors to Automatic Machinery and Electronics, Inc., Covina, Calif.

Division of Ser. No. 419,190, Apr. 10, 1995. This application Jun. 5, 1995, Ser. No. 464,540

Int. Cl.⁶ A23N 1/00

U.S. Cl. 99—504

7 Claims



1. In a fruit juice extracting machine of the type having a pair of opposing endless cup chains extending around a reamer wheel rotatable about a horizontal axis and having a plurality of spaced apart reamers for reaming fruit halves contained in cups on the cup chains, with a peel chute positioned in between the cup chains and behind the reamer wheel, for collecting and channeling fruit peels ejected from the cups, the improvement comprising:

the peel chute having a rear surface including a plurality of openings, to allow at least some juice ejected from the peel after it enters the peel chute, to pass out of the peel chute for collection.

5,511,469

ABRASIVE TYPE VERTICAL GRAIN MILLING MACHINE

Satoru Satake, Tokyo; Shigeharu Kanamoto, Mihara; Yutaka Okada, Higashihiroshima, and Nobuhiro Matsumoto, Kure, all of Japan, assignors to Satake Corporation, Tokyo, Japan

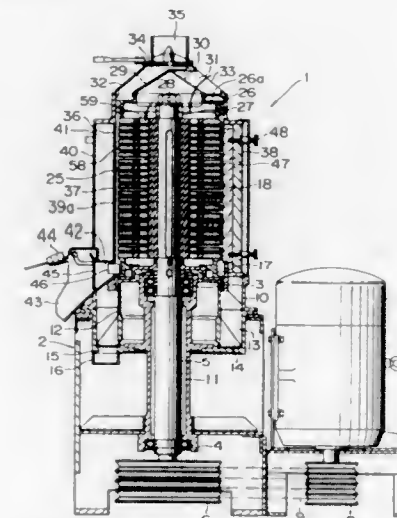
Filed Feb. 3, 1995, Ser. No. 382,920

Claims priority, application Japan, Feb. 17, 1994, 6-044916

Int. Cl.⁶ B02B 3/00; 3/04; 3/06; 7/02

U.S. Cl. 99—519

7 Claims



1. An abrasive type vertical grain milling machine comprising: an upstanding bran-removing cylinder; a main shaft rotatably mounted substantially vertically within said bran-removing cylinder; a spiral roll mounted on said main shaft for feeding grain to be milled; and a plurality of abrasive rolls mounted on said main shaft for milling the grain, said plurality of abrasive rolls being spaced

from one another along said main shaft to define a space between any two adjacent ones of said abrasive rolls serving as a jet air groove;

the interior of said bran-removing cylinder and said plurality of abrasive rolls cooperating to define a main portion of grain milling chamber therebetween, a grain supply portion at an upper part of said grain milling chamber, and a grain discharge portion at a lower part of said grain milling chamber; wherein a said space serving as said jet air groove is of a size in a direction along the axis of the main shaft larger than the length of the grain being supplied to said grain milling chamber from said grain supply portion so that the grain can come into and out of a said space to be abraded therein.

5,511,470

APPARATUS FOR SPLITTING PISTACHIOS

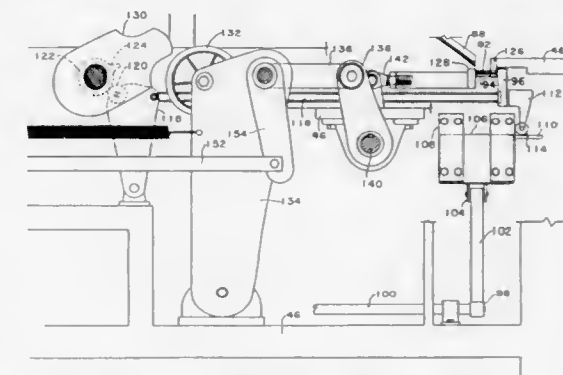
Robert F. Lemos, 21857 Brennan Rd., Escalon, Calif. 95320

Filed Jun. 9, 1994, Ser. No. 257,275

Int. Cl.⁶ A23N 5/00

U.S. Cl. 99—571

12 Claims



1. A pistachio splitter comprising a support means; a movable splitting head including a first splitting surface that moves relative to the support means; a splitting jaw secured to said support means, said jaw including a second splitting surface, said first and second splitting surfaces being opposed; cradles extending between the first and second splitting surfaces being opposed; cradles extending between the first and second splitting surfaces and being elongated in a direction perpendicular to the first and second splitting surfaces; and a vibration generator having a bottom end and a top end, said bottom end connected to said support means and said top end connected to the cradles to vibrate the cradles laterally.

5,511,471

CAR MAT PRESSER DEVICE

Jonathan P. Foote, 3111 Harview Ave., Baltimore, Md. 21234

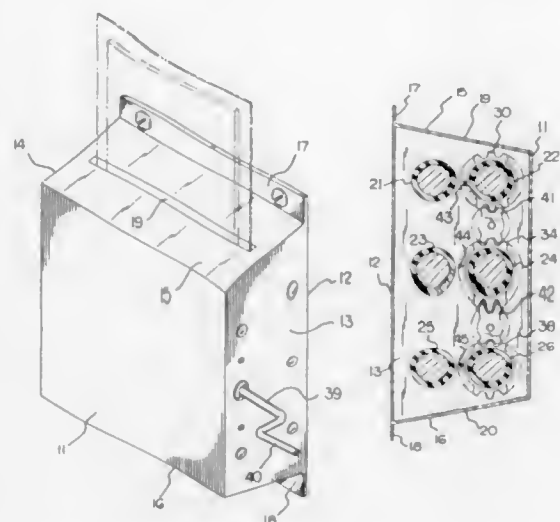
Filed Apr. 10, 1995, Ser. No. 419,432

Int. Cl.⁶ B30B 3/04

U.S. Cl. 100—161

4 Claims

1. A car mat presser device, comprising, a housing, the housing having a front wall spaced from a rear wall, a first side wall spaced from a second side wall, a top wall spaced from a bottom wall, and the top wall having an entrance slot and the bottom wall having an exit slot, with the entrance slot and the exit slot arranged in an aligned coextensive relationship relative to one another, and a plurality of roller pairs to include at least a first roller pair and a second roller pair contained within the housing and extending between the first side wall and the second side wall, the first roller pair having a first nip and the second roller pair



having a second nip, the first nip, the second nip, and the entrance slot, and the exit slot are arranged in an aligned relationship relative to one another, the bottom wall intersecting the rear wall, and the bottom wall being canted from the rear wall upwardly to the front wall, the bottom wall having at least one drainage opening adjacent the intersection of the bottom wall and the rear wall.

5,511,472

EMBOSSING PAPER APPARATUS

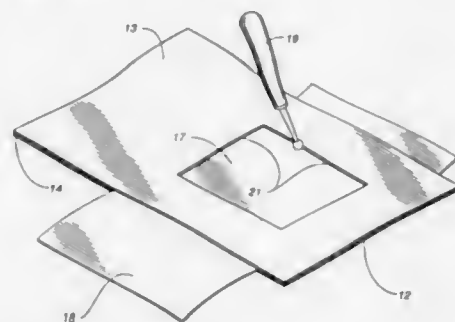
Nancy R. Taylor, 33495 Splinnaker Dr., Dana Point, Calif. 92629

Filed Dec. 7, 1994, Ser. No. 354,232

Int. Cl.⁶ B41F 19/02

U.S. Cl. 101—3.1

3 Claims



1. Embossing apparatus for hand embossing a shape into a sheet of paper the apparatus consisting of:

- a planar stencil member having a plurality of peripheral edges forming a polygon and a plurality of different shaped stencil cut-outs having particular shape-defining perimeters;
- a planar guide member having a plurality of peripheral edges forming a polygon and a plurality of different shaped guide cut-outs having particular shape-defining perimeters defining the identical shapes as said stencil cut-outs wherein said guide member cut-out perimeters provide a positive structure for guiding the point of the embossing tool;
- connection means hingedly connecting said stencil member and said guide member along one only of their respective peripheral edges and aligning said stencil cut-outs and said guide cut-outs when said guide member and said stencil member are overlaid one onto the other about said connection member causing the perimeters of said guide member cut-outs and the perimeters of said stencil member cut-outs to be aligned, said peripheral edges of said stencil member and said guide member, other than those connected, being unconnected and thereby free to have the paper to be embossed slidably dis-

posed therebetween allowing the paper to be embossed to be larger than said stencil and said guide and positionable relative to said guide member and said stencil member to have a selected cutout placed on the paper at a desired location on the paper, an embossing tool for hand scribing the perimeter of a guide member cut-out when it is aligned with the perimeter of its corresponding stencil member cut-out whereby a sheet of paper disposed between said stencil member and said guide member covering the area of said guide member cut-out scribed will be impressed with a geometric shape corresponding to the shape of the guide member cut-out and its corresponding stencil member cut-out.

5,511,473

WIDTH ADJUSTING DEVICE FOR A PAPER WEB

Takashi Ohmi, Yokohama, and Yasuo Shibuya, Kodaira, both of Japan, assignors to Kabushikigisha Tokyo Kikai Seisakusho, Tokyo, Japan

Continuation of Ser. No. 200,390, Feb. 23, 1994, abandoned.

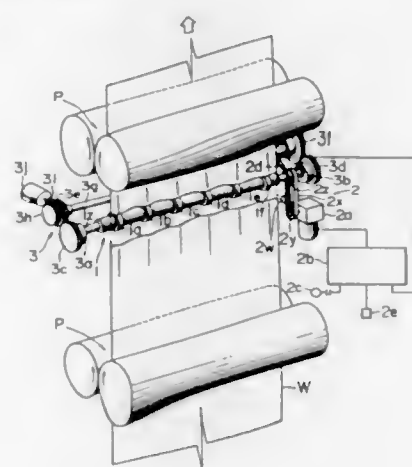
This application Apr. 6, 1995, Ser. No. 417,729

Claims priority, application Japan, Mar. 19, 1993, 5-085285

Int. Cl.⁶ B41F 13/54

U.S. Cl. 101—228

9 Claims



1. A printing apparatus comprising:

- a plurality of vertically arranged printing sections for printing a paper web; and
 - a web width adjusting device comprising
 - at least one means for applying a pressure force with respect to at least one side surface of said paper web in order to decrease the width of the web; and
 - at least one drive control means for making said pressure force applying means move in a different direction and at a different speed from a corresponding direction and speed at which the paper web is travelling for making said paper web clean parts of said pressure force applying means by preventing an accumulation of paper dust;
- wherein said control means includes means for varying the moving speed of said pressure force applying means.

5,511,474

DRIVE FOR AN OSCILLATING ROLLER IN AN INKING UNIT OF A ROTARY PRINTING PRESS

Rudi Junghans, Wilhelmsfeld, Germany, assignor to Heidelberger Druckmaschinen AG, Heidelberg, Germany

Continuation of Ser. No. 124,165, Sep. 20, 1993, abandoned.

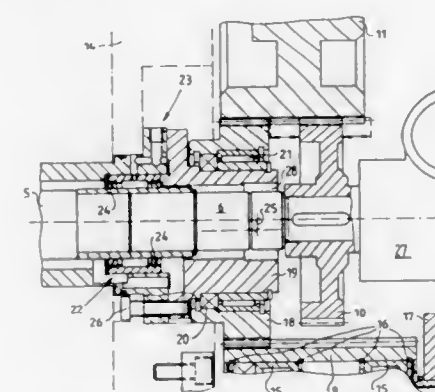
This application Mar. 22, 1995, Ser. No. 409,885

Claims priority, application Germany, Sep. 18, 1992, 42 31 260.4

Int. Cl.⁶ B41F 31/15

U.S. Cl. 101—348

8 Claims



1. A drive assembly, comprising:

- a central drive gear and an oscillating roller driven by said central drive gear; said oscillating roller having a roller axis and an oscillating roller gear meshing with said central drive gear;
- an axial drive connected to said oscillating roller and disposed coaxially with said oscillating roller for introducing an axially oscillating motion to said oscillating roller;
- an intermediate gear wheel meshing with said central gear wheel, and a bushing rotatably supporting said intermediate gear wheel;
- an active drive gear meshing with said intermediate gear wheel and rotatably driving said oscillating roller; and
- said bushing being mounted eccentrically relative to said oscillating roller such that said oscillating roller is rotatably driven by said active drive gear via said intermediate gear wheel, said central drive gear and said oscillating roller gear independently of the axially oscillating motion of said oscillating roller.

5,511,475

PRINTING UNIT FOR A ROTARY OFFSET PRINTING PRESS

Wolfgang Pfizenmaier, Neckargemünd, Germany, assignor to Heidelberger Druckmaschinen AG, Heidelberg, Germany

Filed Jul. 3, 1995, Ser. No. 497,856

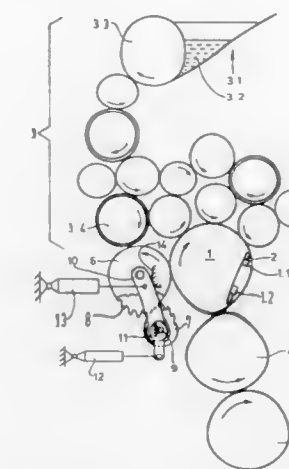
Claims priority, application Germany, Jul. 2, 1994, 44 23 286.1

Int. Cl.⁶ B41F 31/00

U.S. Cl. 101—349

6 Claims

- 1. Printing unit for a rotary offset printing press having a plate cylinder bearing a printing plate suitable for offset-printing operation free of dampening solution, and an inking unit with a multiplicity of inking rollers for inking the printing plate during operation with a printing ink suitable for offset-printing operation free of dampening solution, comprising an auxiliary roller bringable, independently of the inking rollers, into engagement with and out of engagement from the printing plate, said auxiliary roller, at least in a first operating position thereof wherein it is in engagement with the printing plate, being rotatable opposite to the direction of rotation of the plate cylinder at a circumferential speed different from the circumferential speed of the plate cylinder and, in a



second operating position thereof wherein it is out of engagement with the printing plate, forming a component or constituent part of the inking unit.

5,511,476

MAGNETIC CYLINDER WITH SURFACE GRIPPING

Ronald A. Banike, Belleville, Ill.; Michael Choi, Belleville, Mich.; David G. DeVries, Lisle, Ill.; Andres Peekna, Clarendon Hills, Ill., and Christopher J. Sensmeier, La Grange, Ill., assignors to R. R. Donnelley & Sons Co., Chicago, Ill.

Filed Oct. 26, 1993, Ser. No. 143,089

Int. Cl.⁶ B41F 27/02

U.S. Cl. 101—389.1

26 Claims



1. In a magnetic cylinder and plate of magnetic material for printing, in which the cylinder has a peripheral surface and the plate is wrapped around the cylinder with an inner surface of the plate being in direct contact with the cylinder peripheral surface, the plate being subject to circumferential movement around the cylinder as the plate is subject to localized pressure, with or without additional forces due to ink tack, from another cylinder in a nip, the improvement comprising,

at least one of the cylinder peripheral surface and the plate inner surface being defined by means for suppressing local sliding by surface gripping with the other of said surfaces, the one said surface including a plurality of circumferentially spaced, generally axially extending ridges forming indentations in the other said surface.

5,511,477

METHOD AND APPARATUS FOR THE PRODUCTION OF PHOTOPOLYMERIC RELIEF PRINTING PLATES

Uri Adler, Holon, and Ori Miller, Rehovot, both of Israel, assignors to Idanit Technologies, Ltd., Tel Aviv, Israel

Filed Aug. 30, 1994, Ser. No. 298,246

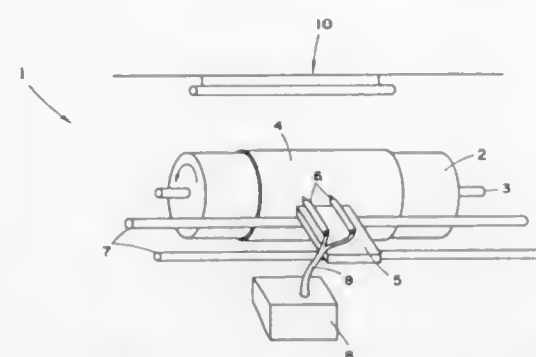
Claims priority, application Israel, Sep. 3, 1993, 106899

Int. Cl.⁶ B41C 1/00

U.S. Cl. 101—401.1

3 Claims

1. A method for the production of photopolymeric relief-type printing plates comprising:



forming a positive or a negative image on a substrate by ink-jet printing with a photopolymeric ink composition, optionally preheated to a temperature of about 30°–260° C.; and subjecting the resulting printed substrate to UV radiation, thereby curing said ink composition forming said image.

5,511,478

APPARATUS FOR THE AUTOMATED CHANGING OF PRINTING PLATES OF A PRINTING MACHINE

Bernd Lindner; Nikola Pupic, both of Heusenstamm; Helmut Schild, Steinbach/Ts., and Berthold Seib, Rodgau, all of Germany, assignors to MAN Roland Druckmaschinen AG, Germany

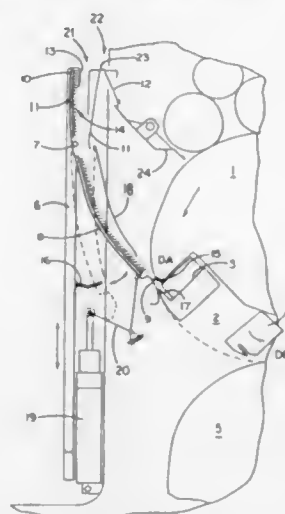
Filed Nov. 18, 1994, Ser. No. 342,255

Claims priority, application Germany, Nov. 18, 1993, 43 39 344

Int. Cl.⁶ B41F 27/06

U.S. Cl. 101—477

8 Claims



1. An apparatus for the automated changing of printing plates in a printing machine having a plate cylinder, the apparatus being used for feeding a new printing plate to and in picking up an old printing plate from the plate cylinder, the apparatus comprising, in combination: a guard that is vertically displaceable and disposable in front of the printing machine, the guard including first and second slots located adjacent an upper end of the guard for feeding in and feeding out the new and used printing plates, respectively, means for storing a new printing plate in a standby position, a plate guiding apparatus and a means for moving the plate guiding apparatus between an inactive position spaced from the cylinder and an active position adjacent the cylinder, the plate guiding apparatus having means for guiding the new printing plate in the standby position substantially tangentially to the circumference of the cylinder when the plate guiding apparatus is in said active position, said storing means comprising stop means disposed on said guard, a new printing plate being fed in through said first slot

resting on said stop means when said plate guiding apparatus is in said inactive position and being moved off of said stop means and toward said plate cylinder by said plate guiding apparatus as said plate guiding apparatus is moved toward said active position.

5,511,479

SYSTEM AND METHOD FOR PROVIDING PIN REGISTER HOLES IN FLEXIBLE PRINTING PLATES AND APPARATUS AND METHOD FOR ALIGNING PLATES ON A FLEXOGRAPHIC PRINTING PRESS

PLATE CYLINDER

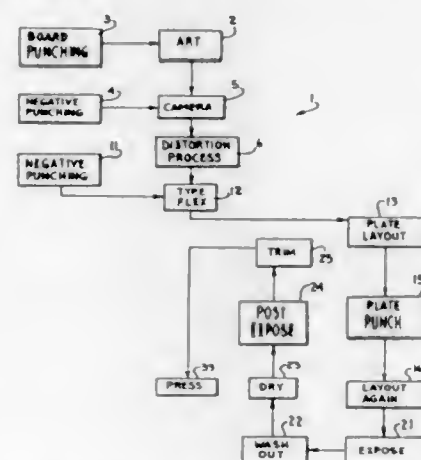
Michael E. Rogovin, Overland Park, Kans.; Philip A. Tyrrell, Kansas City, Mo., and Richard Kranz, Leawood, Kans., assignors to Tension Envelope Corporation, Kansas City, Mo.

Filed Jun. 27, 1994, Ser. No. 266,128

Int. Cl.⁶ B41L 3/04

U.S. Cl. 101—486

14 Claims



1. A method for making a flexible printing plate for installation on a flexographic printing press, comprising the steps of:
a. placing pin register hole location marks directly on artwork to be incorporated into said printing plate;
b. creating a type flex negative of the artwork with pin register hole location marks as a portion of an image of said artwork on said negative;
c. making a finished flexible printing plate from said type flex negative, said finished plate including a raised pattern of said type flex negative, said plate incorporating pin register hole location marks as a portion of said raised pattern; and
d. drilling pin register holes in said pin register hole location marks in said finished printing plate.

5,511,480

METHOD AND APPARATUS FOR HANDLING PRINTED SHEET MATERIAL

Howard W. DeMoore, 10954 Shady Trall, Dallas, Tex. 75220, and John A. Branson, Coppell, Tex., assignors to Howard W. DeMoore

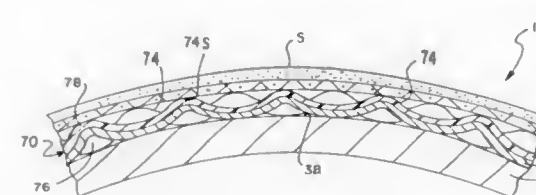
Division of Ser. No. 259,634, Jun. 14, 1994. This application Apr. 27, 1995, Ser. No. 429,866

Int. Cl.⁶ B41L 15/10; B41F 5/00

U.S. Cl. 101—492

11 Claims

1. A method for rotary offset printing in an offset press having multiple printing units, each printing unit employing a blanket cylinder and an impression cylinder for printing an printed image on one side of a sheet transferring between, comprising the following steps performed at each printing unit in succession:
transferring printing ink from the image area of the blanket cylinder to a sheet as the sheet is transferred through the nip between the impression cylinder and the blanket cylinder;



gripping and transferring the freshly printed sheet from the impression cylinder;
securing a base covering of low frictional coefficient material on the sheet support surface of a transfer cylinder, the low frictional coefficient base covering material having a frictional coefficient which is less than the frictional coefficient of the sheet support surface, and having radially projecting surface portions which reduce the surface area available for frictional engagement;
securing a flexible jacket covering over at least a part of the radially projecting surface portions of the base covering;
guiding the freshly printed sheet around the transfer cylinder as the freshly printed sheet is transferred from the impression cylinder; and,
turning the transfer cylinder to engage the flexible jacket covering against the freshly printed side of each freshly printed sheet.

5,511,481

LIGHTWEIGHT PYROTECHNIC COMPRESSOR

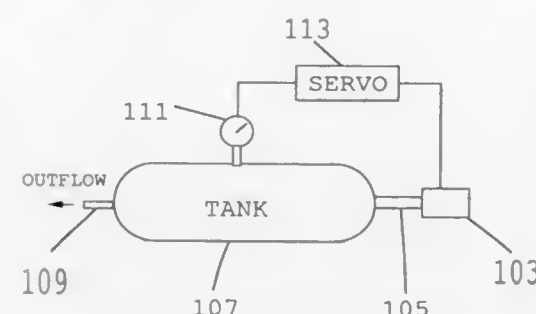
William D. Stephens, Huntsville, Ala., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jan. 23, 1995, Ser. No. 380,171

Int. Cl.⁶ F42B 3/00; 5/02; C06D 5/00

U.S. Cl. 102—326

1 Claim



LIGHTWEIGHT PYROTECHNIC COMPRESSOR

1. A lightweight pyrotechnic compressor comprising a shotgun breech, said breech being suitable for receiving therein at least one cartridge containing pyrotechnic composition and generating gas therefrom, a tank for storing gas, said tank being equipped with a gauge for monitoring the gas pressure inside said tank and producing pressure signals in response thereto, a check valve coupled between said shotgun breech and said tank to allow the flow of gas from said shotgun breech to said tank, a servo, said servo being coupled between said gauge and said shotgun breech such that said servo receives the pressure signals from said gauge and at a predetermined pressure activates said shotgun breech to combust at least one cartridge; and a means for releasing gas, said releasing means being connected to said tank to permit issuance of gas therefrom at a predetermined pressure level as useful power.

5,511,482

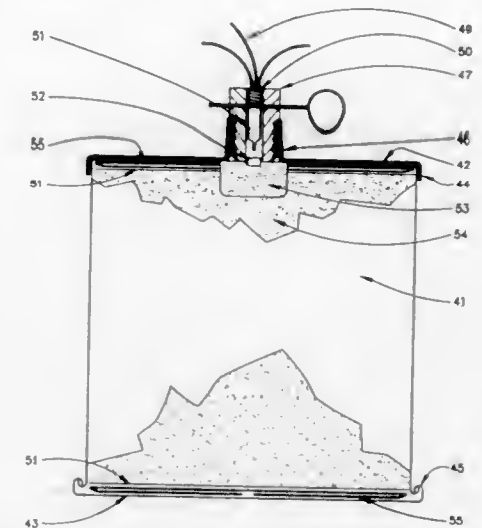
ENVIRONMENTALLY DEGRADABLE MUNITIONS

Al DiPietropolo, 701 Park Dr., Cherry Hill, N.J. 08002
Filed Jul. 11, 1994, Ser. No. 272,597

Int. Cl.⁶ F42B 12/00

U.S. Cl. 102—426

7 Claims



1. A munition device for release of an agent selected from the group consisting of an explosive compound, a chemical agent, and a biological agent, wherein the agent is released upon detonation, the device comprising:

- (a) a container for housing the agent;
- (b) a detonator; and
- (c) a biodegradable material comprising a biodegradable plastic, the material being integrated into at least one component of the device, wherein when the device is armed and located in an environment and the material is exposed to the environment, the material degrades over a predetermined period of time such that the component is substantially destroyed and the device is inoperative.

5,511,483

IDENTIFIABLE PROJECTILE

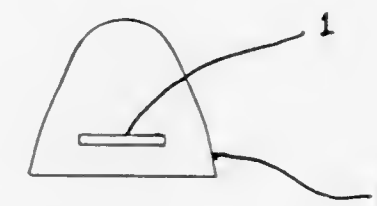
Bennie Griffin, Jr., 11062 Traci Lynn Dr., Jacksonville, Fla. 32218, assignor to Bennie Griffin, Jr., Jacksonville, Fla.

Filed Apr. 7, 1995, Ser. No. 418,442

Int. Cl.⁶ F42B 12/00

U.S. Cl. 102—501

2 Claims



1. An identifiable projectile, substantially conical in shape having a solid lead body with a base which contains an identification element in the form of an open centered washer which bears a specific identification insignia thereon; said washer being made of material selected from the group consisting of metal or alloys of metal which has a higher melting point than that of said lead body; said washer is completely embedded within said lead body and is secured, parallel and adjacent to said base of said projectile thus allowing continuous engagement during ejection, flight, and impact; said washer remains totally invisible from any outer aspect

and remains tamper proof unless the projectile is melted or destroyed leaving projectile useless.

5,511,484

TRACK WORKING MACHINE

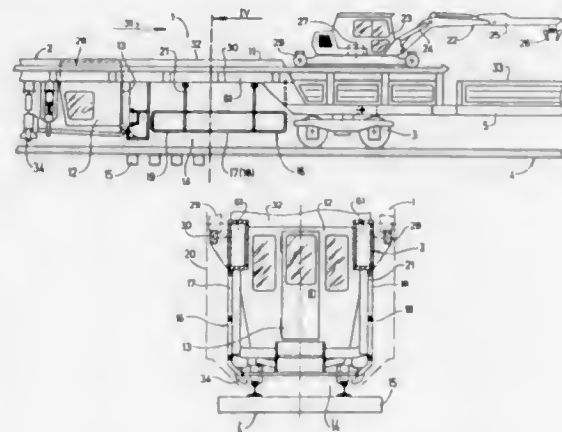
Josef Theurer, Vienna, and Herbert Wörgötter, Gallneukirchen, both of Austria, assignors to Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H., Vienna, Austria

Filed Aug. 15, 1994, Ser. No. 290,395

Claims priority, application Austria, Sep. 17, 1993, 1890/93
Int. Cl.⁶ E01B 29/00

U.S. Cl. 104—2

12 Claims



1. A track working machine comprising
 - (a) a machine frame extending in a longitudinal direction and having opposite ends,
 - (1) the machine frame having an upwardly recessed portion between the ends,
 - (b) undercarriages supporting the machine frame ends on the track for mobility thereon in an operating direction,
 - (c) two structural barrier parts attached to the machine frame and extending in the longitudinal direction below the upwardly recessed machine frame portion, the structural parts being spaced from each other transversely to the longitudinal direction and defining therebetween a delimited working area,
 - (d) an operator's cab having an access directly to and from the working area below the upwardly recessed machine frame portion for permitting an operator to enter and leave the cab, and
 - (e) a hoisting apparatus mounted on the machine frame, the hoisting apparatus comprising
 - (1) a load carrying device and
 - (2) drive means for adjusting the load carrying device in vertical, longitudinal and transverse directions.

5,511,485

METHOD AND APPARATUS FOR STABILIZING A SUBGRADE WITH ADDITIVES ADDED THROUGH THE SCARIFIER

Ernesto Romani; Livio Abbruzzese, both of Rome, Italy; Josef Theurer, Vienna, Austria; Herbert Wörgötter, Gallneukirchen, Austria, and Friedrich Oellerer, Linz, Austria, assignors to Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H.

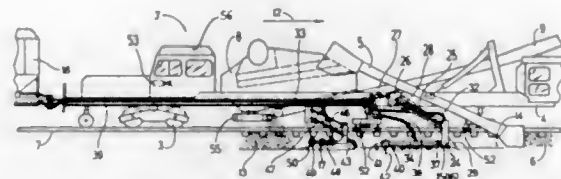
Filed Aug. 29, 1994, Ser. No. 297,140

Claims priority, application Austria, Aug. 31, 1993, 1748/93
Int. Cl.⁶ E01B 27/06

U.S. Cl. 104—2

21 Claims

1. A method of stabilizing the subgrade of a track, comprising the steps of:



continuously removing ballast from underneath the track thereby exposing an upper layer of the subgrade;
scarifying the upper layer of the exposed subgrade for formation of cracks while

disposing additives directly over the exposed subgrade and blending the additives with the subgrade underneath the track; leveling and compacting the mixture of additives and subgrade for formation of a protective layer; and laying removed ballast over the protective layer.

5,511,486

SHOCK ABSORBING TOW BAR

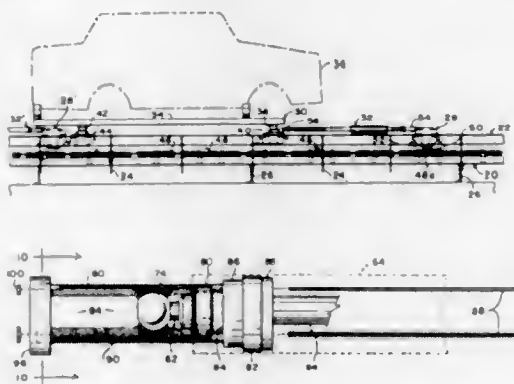
Mark A. Pollard, Plattsburg, and Wendy L. Calvert, Blue Springs, both of Mo., assignors to LICO, Inc., Kansas City, Mo.

Filed Sep. 16, 1994, Ser. No. 307,525

Int. Cl.⁶ B65G 17/00

U.S. Cl. 104—172.3

16 Claims



1. In combination with a leading component and a trailing, load-supporting component of a product conveyor, a shock-absorbing tow bar responsive to acceleration or deceleration of the conveyor, said tow bar comprising:

an elongated, tubular member having a resilient material therein of predetermined radial thickness presenting a longitudinal passage having a substantially uniform, normal transverse dimension,

a plunger in said passage shiftable longitudinally of the passage, a rod member connected to said plunger, shiftable therewith and extending longitudinally from said tubular member at one end of the tubular member,

means for connecting said members to said leading and trailing components respectively to connect the tow bar to the conveyor and cause relative longitudinal movement of the members and lengthening or shortening of the tow bar in response to acceleration or deceleration, respectively, of the conveyor, and

said plunger having a head in said passage of greater size than said transverse dimension to compress and displace said material at a zone of contact of the head with the material and cause the displaced material to form a pair of spaced, radially inwardly projecting, leading and following ridges of the material in contact with the head at said zone,

said head shifting said zone of contact and compressing and displacing said material to shift said ridges in response to said relative longitudinal movement, whereby impact communicated to said tow bar shifts the plunger against the resistance

of the resilient material to lengthen or shorten the tow bar and thereby absorb the shock.

5,511,487

TRANSPORT SYSTEM WITH ELECTRIC MOVERS

Tatsuya Sakagami, Kobe, and Yoshito Kaida, Itami, both of Japan, assignors to Daifuku Co., Ltd., Osaka, Japan

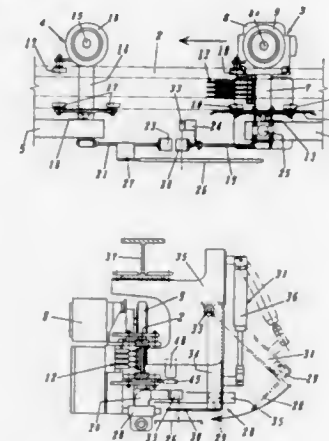
Filed Dec. 27, 1994, Ser. No. 364,604

Claims priority, application Japan, Apr. 14, 1994, 6-075640

Int. Cl.⁶ B61K 7/00

U.S. Cl. 104—252

7 Claims



1. A transport system, comprising

- (i) an electrical mover for moving in a travel direction along a guide rail, and having
 - (a) a drive wheel,
 - (b) a brakeless electric motor for rotating said drive wheel,
 - (c) a photoelectric switch adapted to sense the proximity of an object,

- (d) a contact member for stopping movement of said electric mover at a predetermined location, said photoelectric switch being disposed in the travel direction ahead of said contact member for switching the supply of electrical power to said brakeless motor upon sensing or ceasing to sense a previously sensed proximity of an object, and

- (ii) a stopping mechanism located along the guide rail for stopping the movement of said electric mover, including
 - (a) a stopper adapted in an operative position thereof to stop a moving electrical mover by contact with said contact member, and to allow movement of said electrical mover when said stopper is not in its operative position,
 - (b) a shifter for shifting said stopper in and out of its operating position, and

a detectable member connected to and shiftable by said shifter to a position perpendicularly to the travel direction, when said member is shifted to said perpendicular position, said member can be sensed by said photoelectric switch before contact between said stopper and said contact member.

5,511,488

ELECTROMAGNETIC INDUCTION GROUND VEHICLE LEVITATION GUIDEWAY

James R. Powell, Box 547, 9 Sorenview Dr., Sheridan, N.Y. 11786; Gordon T. Danby, P.O. Box 12, Wading River, N.Y. 11792, and John Morena, 4540 Sandpebble Trace #104, Stuart, Fla. 34996

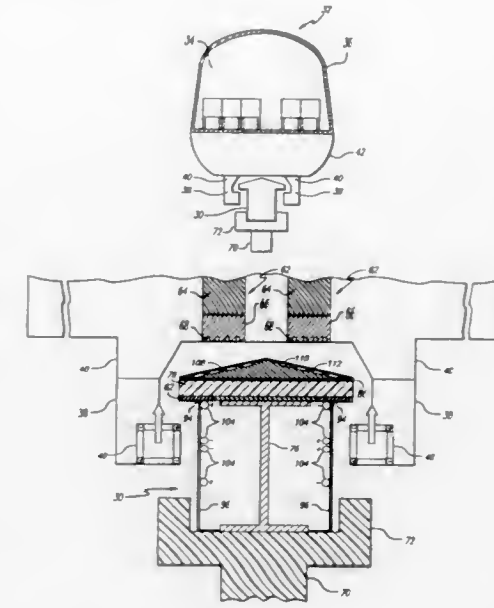
Filed Apr. 25, 1994, Ser. No. 232,940

Int. Cl.⁶ B60L 13/04; E01B 25/00; B61L 23/00

U.S. Cl. 104—232

59 Claims

1. An electromagnetic induction levitation guideway for a vehicle having magnets for providing magnetic levitation of said



vehicle, said vehicle being adapted to travel in a longitudinal direction along said guideway, comprising:

- a beam support member for supporting the weight of said vehicle, said beam support member having side edges and a length extending longitudinally along said guideway;
- a transverse structural slab member formed of non-metallic material mounted on top of said beam support member, said structural slab member having a flat, generally horizontal top surface and a bottom surface, and said structural slab member extending beyond the side edges of said beam support member;

energy absorption means mounted above said transverse structural slab member for absorbing kinetic energy from said magnetic levitation vehicle in the event of loss of magnetic levitation;

first mounting means for mounting said structural slab member to said support beam member;

vertical lift means for providing vertical lift and stability;

magnetic induction drive means for propelling said vehicle along said guideway;

lateral stability means for laterally stabilizing and centering said vehicle with respect to said guideway; and

second mounting means for mounting said vertical lift means, said magnetic induction drive means and said lateral stability means to said beam support member and said structural slab member disposed on opposing sides of said support beam member.

5,511,489

DUAL FACE FRICTION WEDGE

Robert L. Bullock, Antioch, Ill., assignor to Standard Car Truck Company, Park Ridge, Ill.

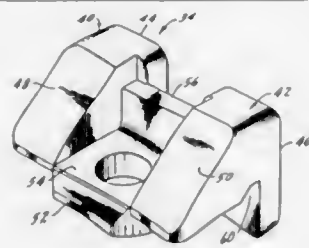
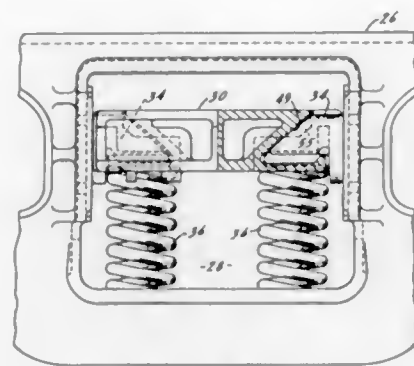
Filed May 17, 1994, Ser. No. 243,827

Int. Cl.⁶ B61F 5/06

U.S. Cl. 105—198.2

10 Claims

1. A railroad car truck including a pair of side frames and a bolster extending therebetween, a friction wedge for use in damping relative movement between the bolster and one of said side frames, a pocket in facing portions of one of the bolster and side frame, said wedge including a body formed and adapted to be positioned in the pocket, said body having an area of contact formed thereon by a pair of spaced, planar, generally parallel friction surfaces formed and adapted, during normal use, to be in frictional contact with a wear resistant surface on the other of the side frame and bolster, said spaced friction surfaces being discontinuous over the entire area of contact.



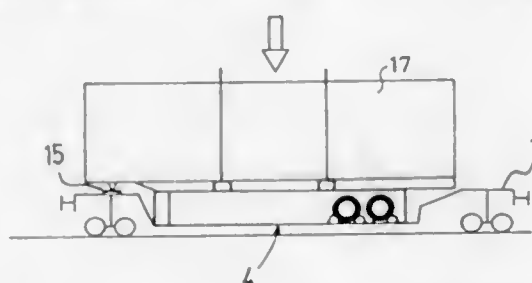
5,511,490 RAILWAY BASKET CAR FOR TRANSPORTING SEMITRAILERS

Burian Fendall, Budapest, Hungary; Albulescu Sandu, Arad, Romania; Nagy Iosif; Neceae Vasile, Arad, Romania, and Vajay György, Solymár, Hungary, assignors to Párkányi Kft., Budapest, Hungary

Filed Aug. 23, 1994, Ser. No. 294,009
Int. Cl.⁶ B61D 3/18

U.S. Cl. 105—375

6 Claims



1. A railway basket car having a normal direction of travel, comprising:

- (a) a car frame including
 - (1) two side-by-side arranged longitudinal side beams extending parallel to said direction and being spaced from one another perpendicularly to said direction; and
 - (2) a transverse stop beam extending between and perpendicularly to said longitudinal side beams adjacent at least one longitudinal end thereof;
- (b) a well defined by said car frame; said well being bounded by said longitudinal side beams;
- (c) a basket received in said well; said basket having
 - (1) a bottom part for supporting a load thereon;
 - (2) two side walls; and
 - (3) an edge extending transversely to said side walls at an end of said basket;
- (d) support means for supporting said basket in said well; said support means having
 - (1) first supporting parts carried by said side walls and
 - (2) second supporting parts carried by said longitudinal side beams; respective said second supporting parts cooperating with respective said first supporting parts;
- (e) a separate lifting lug carried by each said side wall of said basket to be engaged by a hoist for lifting and lowering the basket; and

(f) stop and locating means for determining a longitudinal position of said basket in said well.

5,511,491

RAILWAY CAR

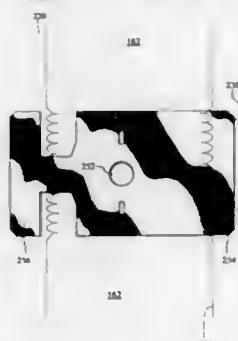
Harold E. Hesch, St. John, Ind.; Albert A. Beers, Duncanville, and Stephen W. Smith, Dallas, both of Tex., assignors to Trinity Industries, Inc., Dallas, Tex.

Continuation of Ser. No. 152,915, Nov. 12, 1993, Pat. No. 5,392,717, which is a continuation of Ser. No. 944,169, Sep. 11, 1992, abandoned. This application Feb. 10, 1995, Ser. No. 386,876

Int. Cl.⁶ B61D 17/00

U.S. Cl. 105—404

19 Claims



1. An improved articulated railway car having at least a first end unit and a second end unit interconnected by pivotal couplers, each unit having a front, rear and two sides forming a hollow interior for transporting vehicles comprising:

- a pair of spaced trucks for movably supporting each unit on railway tracks;
- a center sill having a first end supported by one of said trucks and a second end supported by the other of said trucks;
- at least one of said pair of trucks shared by another unit;
- a plurality of cross-bearers spaced along and disposed generally perpendicular to and connected to said center sill, said cross-bearers having free ends remote from said center sill;
- a plurality of side wall support posts extending generally vertically from and mounted respectively on said cross-bearers; said side walls connected to said posts, each of said side walls having a lower edge adjacent to said cross-bearers, an upper edge, and front and rear edges adjacent the front and rear of each unit, respectively;
- a roof extending from the front to the rear of each unit and connected to said upper edges of said side walls;
- a first end closure located at one end of said first end unit and a second end closure located at one end of said second end unit and each end closure connected to said front edges of said side walls of said respective end units;
- a floor mounted on said center sill and cross-bearers of each unit with said floor extending between said end closures and between said side walls;
- an expandable and collapsible bellows substantially spanning and enclosing adjacent ends of said units which do not have an end closure;
- said bellows connected respectively to said adjacent ends of each unit and extending around the perimeter of each unit with said bellows terminating on each side of said respective unit adjacent to said trucks;
- said bellows further comprising a plurality of flexible members having a configuration to match said adjacent ends of each unit;
- each of said flexible members including flexible reinforcing metal wire; and

5,511,492

TILT TABLE

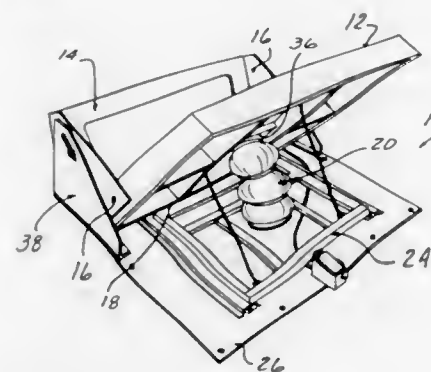
James Zaguroli, Jr., Drayton Plains, Mich., assignor to Knight Industries, Inc., Auburn Hills, Mich.

Filed Oct. 26, 1994, Ser. No. 329,205

Int. Cl.⁶ A47F 5/12

U.S. Cl. 108—5

5 Claims



1. A tilt table comprising:

- fixed support structure including a base plate having one side and a side opposite said one side;
- a platform mounted on said base plate for linear movement towards and away from said one side of said base plate, said platform having one side adjacent to said one side of said base plate;
- a table structure including a table member having one side hinged to said one side of said platform adjacent said one side of said base plate;
- said table member also having an endwall affixed and extending upwardly from said one side of said table member;
- spring means urging said table member to swing upwardly from said platform about said hinged one side thereof to move towards said one side of each of said platform and said base plate; and,
- cam means acting directly between said table structure and said fixed support structure constraining said platform and said hinged one side of said table member to be shifted away from said opposite side of said base plate as said table member swings up from said platform.

5,511,493

VEHICLE MOUNTABLE TABLE

Donald A. Kanehl, Jr., 240 Hewlett Ave., East Patchogue, N.Y. 11772

Division of Ser. No. 23,168, May 19, 1994, abandoned, which is a continuation of Ser. No. 911,316, Jul. 10, 1992, abandoned. This application Sep. 15, 1994, Ser. No. 306,620

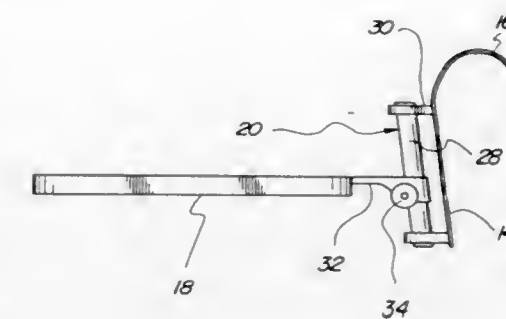
Int. Cl.⁶ A47B 23/00

U.S. Cl. 108—44

7 Claims

1. A vehicle mountable table comprising:

- a pair of spaced mounting brackets for releasably coupling to a portion of a vehicle;
 - a table; and,
 - an adjustment means for adjustably coupling said table to said mounting brackets,
- wherein each of said mounting brackets comprises a substantially straight member having a top end fixedly secured to an arcuate member,
- wherein said adjustment means comprises a pair of vertical stanchions each extending along an individual one of said mounting brackets and being spaced therefrom; a pair of



5,511,494 TRANSACTION DEAL DRAWER

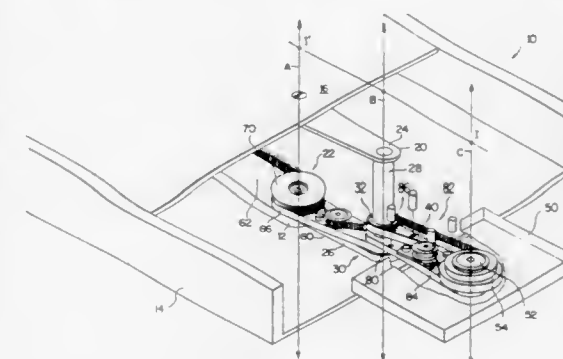
Lowell Scott, Fairfield, Ohio, assignor to Hamilton Safe Company, Fairfield, Ohio

Filed Mar. 28, 1994, Ser. No. 219,225

Int. Cl.⁶ E06B 7/32

U.S. Cl. 109—19

27 Claims



1. A drawer mechanism for supporting a movable carrier on a base comprising:

- a first arm supported on said base for swinging movement about a first axis which is stationary with respect to said base;
 - a second arm supported on said first arm for swinging movement about a second axis, said second axis being stationary with respect to said first arm, spaced from said first axis, and substantially parallel to said first axis;
 - a carrier supported on said second arm for pivotal movement about a third axis, said third axis being stationary with respect to said second arm, spaced from said second axis, and substantially parallel to said second axis;
 - first drive means for controlling an angular position of said second arm relative to said first arm in respect to swinging movement of said first arm relative to said base; and
 - second drive means for controlling an angular position of said carrier relative to said second arm in response to swinging movement of said second arm relative to said first arm,
- said angular positions having magnitudes and directions which maintain said carrier at a fixed angular orientation relative to said base throughout said swinging movement of said arms.

5,511,495

METHOD OF PROCESSING A MIXTURE OF BOTTOM ASH AND FLY ASH

Kouchiro Kinto, Mie, and Tadashi Ichihara, Gifu, both of, Japan, assignors to Daido Tokushuko Kabushiki Kaisha, Japan

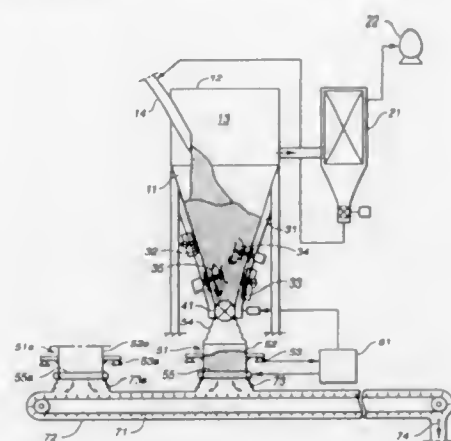
Filed May 5, 1995, Ser. No. 436,731

Claims priority, application Japan, May 17, 1994, 6-128335; Mar. 23, 1995, 7-091680

Int. Cl.⁶ F23C 5/00

U.S. Cl. 110—165 A

16 Claims



1. A method of processing a mixture of bottom ash and fly ash by melting, said method comprising the steps of:

- taking out bottom ash which has undergone a moistening process from an incinerator;
- subjecting said bottom ash to a drying process until the water content of said bottom ash becomes less than 10 weight %;
- taking out fly ash from a discharge gas processing system of said incinerator separately from said bottom ash without a moistening process;
- weighing portions of said bottom ash and said fly ash separately;
- discharging said weighed portions onto a same transporting device; and
- transporting said discharged portions of said bottom ash and fly ash by said transporting device into a melting furnace while mixing said discharged portions together.

5,511,496

METHOD OF RECOVERING GLASS AND METAL FROM SOLID RESIDUES PRODUCED IN REFUSE INCINERATION PLANTS

Peter Schoener, Taunusstein; Karl-Heinz Pfluegl, Weinbochla, and Norbert Kiethe, Friedewald, all of, Germany, assignors to Von Roll Umwelttechnik AG, Zurich, Switzerland

Filed Feb. 10, 1994, Ser. No. 194,228

Claims priority, application Switzerland, Feb. 10, 1993, 404/93

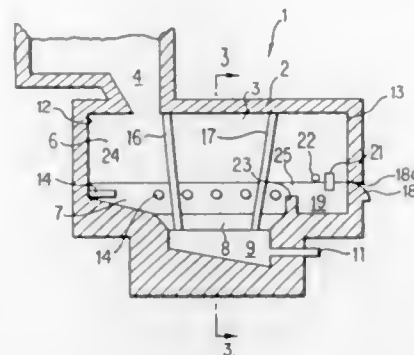
Int. Cl.⁶ F23J 1/08

U.S. Cl. 110—346

16 Claims

1. A method of recovering glass and metal from solid residues produced in a refuse incineration plant having a furnace space by subjecting the solid residues containing metallic constituents to a melting process, comprising:

- feeding the solid residues to a first top melting zone,
- converting oxidic constituents of the solid residues in the first top melting zone into a glass melt,
- feeding the metallic constituents of the solid residues from the first top melting zone to a second, bottom melting zone at a higher temperature than that of the first melting zone,
- converting the metallic constituents into a metal melt by using carbon heating electrodes, and
- separately recovering the glass and metal melts.



5,511,497

DIGGER FOR FACILITATING THE APPLICATION OF A SUPPLEMENT TO A MUSHROOM BED

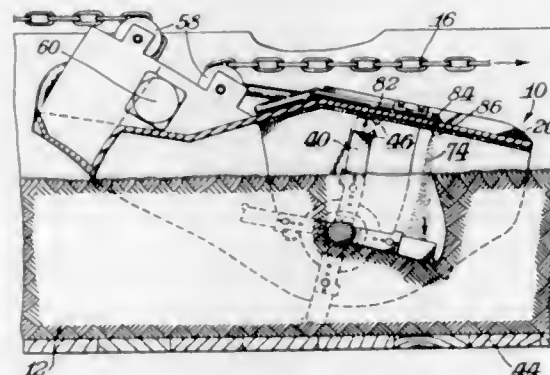
Remo Toto, Avondale, Pa., assignor to Remo's Mushroom Services, Inc., Avondale, Pa.

Filed Jan. 24, 1994, Ser. No. 185,368

Int. Cl.⁶ A01G 1/04; B65B 1/30

U.S. Cl. 111—118

19 Claims



1. A digger for facilitating the application of supplement to a mushroom bed comprising a shroud having a top wall and side walls, a shaft mounted to said side walls, a plurality of digging tines extending generally radially outwardly from said shaft, a drive motor connected for rotating said shaft to cause said tines to dig into a mushroom bed when said digger is placed on the mushroom bed, a direction guide mechanism on said shroud for moving said digger along the mushroom bed as said tines are rotated and dig into the mushroom bed, a compartment mounted to said shroud for containing a supply of supplement, and supplement conveying means mounted to said shroud for joint longitudinal movement with said digging tines and said compartment for conveying the supplement from said compartment and directing the supplement toward the mushroom bed generally at the location of said tines digging into the mushroom bed simultaneously with the digging action of said tines.

5,511,498

ECCENTRIC CAM LOCKING ASSEMBLY

Randy M. Lohrentz, Rt. 1, 13412 E. 56th, and Loren Dick, Rt. 1, 14316 E. 56th, both of, Buhler, Kans. 67522

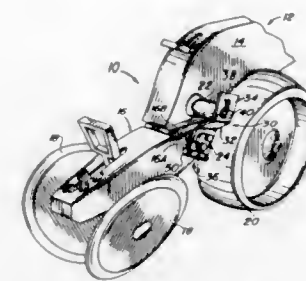
Filed Dec. 19, 1994, Ser. No. 358,853

Int. Cl.⁶ A01C 5/06

U.S. Cl. 111—191

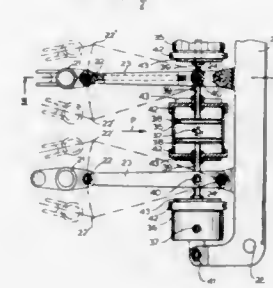
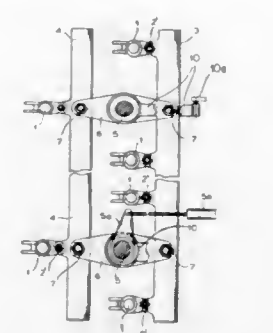
20 Claims

1. An eccentric cam locking assembly for use with a planting apparatus including a stationary member, an eccentric cam rotatably mounted to the stationary member, and a movable member movably mounted to the stationary member and coupled to the eccentric cam and being disposed in a position adjustable relative



to the stationary member in response to rotation of the eccentric cam, said eccentric cam locking assembly comprising:

- (a) an elongated locking bar having a first end portion and an second end portion opposite said first end portion;
- (b) first means defined on said first end portion of said locking bar for mounting said locking bar on the stationary member of the apparatus, said first means being a first fastening arrangement preset relative to the stationary member so as to allow longitudinal and pivotal movements of said locking bar relative to the stationary member in order to correspondingly permit adjusting of the position of the movable member relative to the stationary member; and
- (c) second means defined on said second end portion of said locking bar for clamping said locking bar on the eccentric cam so as to inhibit rotation of the eccentric cam relative to said locking bar.



5,511,500

SIDE-BY-SIDE PROGRAMMABLE FEED SYSTEM FOR A SEWING APPARATUS

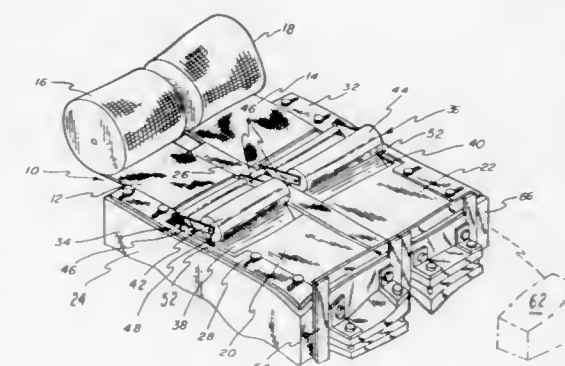
Ralph F. Conley, Jr., Miamisburg, Ohio, assignor to MIM Industries, Inc., Miamisburg, Ohio

Filed Jul. 28, 1992, Ser. No. 920,977

Int. Cl.⁶ D05B 19/00; 35A00:37/06

U.S. Cl. 112—470.05

20 Claims



5,511,499

SEEDING MACHINE AND METHOD

Otmar Edinger, Siebensterngasse 38/3, A-1070 Wien, Austria

Filed Nov. 22, 1994, Ser. No. 343,671

Claims priority, application Austria, Nov. 23, 1993, 2379/93

Int. Cl.⁶ A01C 19/00

U.S. Cl. 111—200

9 Claims

- 1. A seeder comprising:
 - a support displaceable over ground to be seeded in a direction of advance of the seeder;
 - a seed box on said support;
 - a plurality of seed tubes on said support distributing seed from said seed box;
 - a plurality of sowing blades engageable in said ground and each connected to one of said seed tubes for sowing seed distributed to the respective blade by the respective seed tube;
 - means for pivotally mounting each of said sowing blades tail-wheel fashion on said support for swiveling about a respective substantially vertical swivel axis; and
 - means for imparting side to side movement to said axes transverse to said direction, whereby each of said sowing blades moves in an undulating pattern as said support is displaced over said ground in said direction.

- 4. An apparatus for feeding two strips of material comprising:
 - first and second feed means located along a first feed path and a second feed path, respectively, said first and second feed paths extending in parallel side-by-side relation to each other;
 - programmable control means for controlling actuation of said first and second feed means;
 - said first and second feed means being operable to feed first and second strips of material along said first and second feed paths independently of each other to a workstation; and
 - first and second cutting means energized by said programmable control means and located along said first and second feed paths, respectively, for severing said strips of material whereby individual material pieces of predetermined length are formed from said strips of material.

5,511,501

METHOD AND APPARATUS FOR HANDLING FLEXIBLE OBJECTS

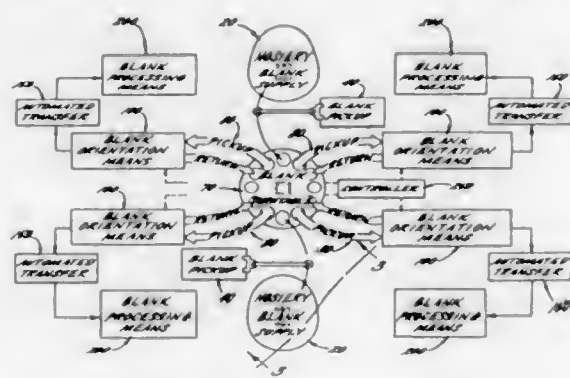
Cecil R. Bell, Pinnacle; Charles R. Moyer; Gregory S. Poole, both of Charlotte, and Kenneth B. Silvers, Mt. Holly, all of N.C., assignors to Monarch Knitting Machinery Corporation, Glendale, N.Y.

Filed Apr. 5, 1994, Ser. No. 222,801

Int. Cl.⁶ D05B 1/00

U.S. Cl. 112—470.15

46 Claims



1. Apparatus for handling and placing in a predetermined orientation elongate flexible objects having varying characteristics along the length thereof, said apparatus comprising

support means for supporting flexible objects in spaced apart relation,

first removing means for removing a small number of elongate objects from a mass of randomly arranged flexible objects and depositing the removed objects on said support means in spaced apart relation,

second removing means for removing the flexible objects substantially one at a time from said support means and transporting the removed objects along a first predetermined path of travel with one end thereof leading and another end thereof trailing,

first sensing means disposed adjacent the first predetermined path of travel for sensing the trailing end of the flexible object passing thereby,

first conveying means responsive to said first sensing means for receiving and transporting the flexible object along a second predetermined path of travel with the trailing end thereof being the leading end thereof from a beginning end of said second path of travel to a terminal end thereof,

second sensing means at the terminal end of said second predetermined path of travel for sensing the arrival of the flexible object at the terminal end of said second path of travel, clamping means responsive to said second sensing means for clamping the leading end of the flexible object,

elongating means responsive to said second sensing means for elongating the clamped flexible object to remove any folds or bunches therefrom,

third sensing means responsive to said second sensing means for sensing a characteristic of the flexible object adjacent the clamped end thereof that is indicative of the particular orientation of the flexible object at that time, and

second conveying means responsive to said third sensing means for conveying the flexible object along a selected one of two alternate paths of travel to a processing location, the selected path of travel being determined by the particular orientation of the flexible object indicated by the characteristic sensed by said fourth sensing means and the desired orientation thereof at the processing location.

5,511,502

AUTOMATIC LOADER FOR A STATOR COIL LACING MACHINE

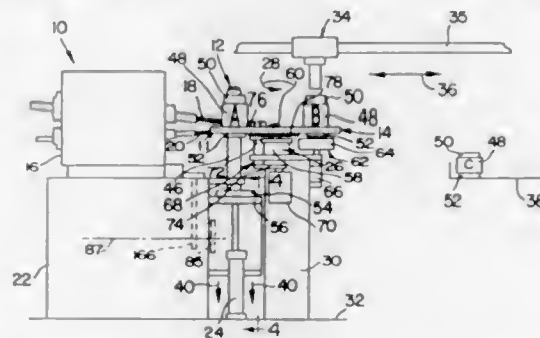
Keith W. Moser, Fort Wayne, and David G. Bouman, Ossian, both of Ind., assignors to Alliance Winding Equipment, Inc., Fort Wayne, Ind.

Filed Feb. 25, 1994, Ser. No. 201,639

Int. Cl.⁶ D05B 3/00; B65G 37/00

U.S. Cl. 112—470.21

38 Claims



1. A stator coil lacing machine, comprising:

means for orienting a first stator on the machine so that stator coils of the first stator can be laced, the orienting means including an arbor on which the first stator is positioned to lie;

means for stitching lacing cord around the first stator coils; lacing cord handling means for receiving a continuous length of lacing cord and delivering the lacing cord to the stitching means;

means for reciprocating the lacing cord handling means so that the lacing cord handling means moves generally parallel to the arbor;

means for oscillating the lacing cord handling means so that the lacing cord handling means rotates through an arc;

a table on which the first stator is positioned to lie;

means for rotating the table so that the first stator advances from a first position adjacent the arbor to a second position away from the arbor; and

means for moving the arbor between a lowered position away from the first stator to allow the rotating means to move the first stator from the first position to the second position, and a raised position to allow a second stator on the table to be positioned to lie adjacent the arbor.

5,511,503

DOWNHAULING APPARATUS AND METHOD FOR USING SAME

Barry E. Spanier, Haiku, HI.; L. Scott Leishman, Huntington Beach, Calif., and Kevin J. McDonald, Haiku, HI., assignors to All West Plastics, Inc., Huntington Beach, Calif.

Filed Oct. 6, 1994, Ser. No. 320,305

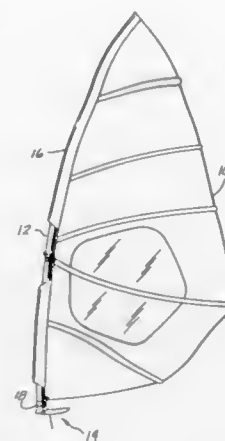
Int. Cl.⁶ B63B 35/79

U.S. Cl. 114—39.2

20 Claims

1. An apparatus for downhauling a sail movably attached to a mast assembly including a mast base having a gripping assembly, the sail being coupled to the gripping assembly by a downhaul line adapted to be held at varying points along its length by the gripping assembly to maintain a degree of tension on the sail, said apparatus comprising:

a system base adapted to be removably secured to the mast base; a lever arm including a first portion coupled to said system base and adapted to be pivotally moveable relative to said system base, and a second portion which extends longitudinally away from said first portion, and is directly coupled to said first portion at a location, said lever arm has a relaxed configuration in which the downhaul line passes between said first and second portions and an activated configuration in which the downhaul line located between said first and second portions is prevented from movement relative to said lever arm and;



a blocking assembly coupled to said lever arm and positioned so that when said lever arm is in said activated configuration said blocking assembly cooperates with said first and second portions to prevent movement of the downhaul line located between said first and second portions relative to said lever arm.

5,511,504

COMPUTER CONTROLLED FINS FOR IMPROVING SEAKEEPING IN MARINE VESSELS

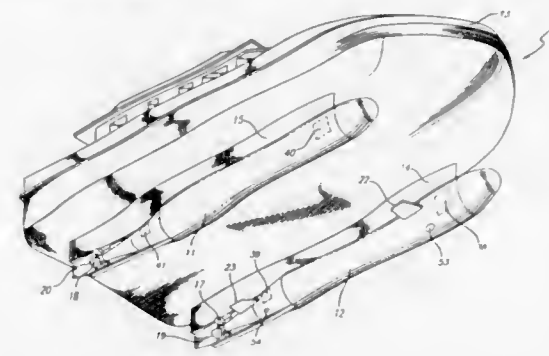
John R. Martin, 5635 Nebeshonee La., Rockford, Ill. 61103

Filed Aug. 9, 1995, Ser. No. 512,990

Int. Cl.⁶ B63B 1/10

U.S. Cl. 114—61

12 Claims



1. A pontoon vessel comprising:

a superstructure;

at least first and second pontoons disposed parallel to one another beneath the superstructure;

at least one strut disposed between each pontoon and the superstructure for supporting the superstructure, so that the combined buoyancy of the pontoons and submerged portions of the struts is sufficient to support the superstructure spaced above the waterline by a prescribed distance;

engine means for propelling the vessel;

control fins mounted to the pontoons and having a controller mechanism for individually varying the lift generated thereby as the vessel is moving through water;

roll sensing means for sensing roll angle;

pitch sensing means for sensing pitch angle;

computer means responsive to roll angle for developing a roll control signal which is applied to said controller mechanism for controlling the lift generated by said control fins to counteract roll;

said computer means also responsive to pitch angle for developing a pitch control signal which is applied to said controller mechanism for controlling the lift generated by said control fins to counteract pitch;

accelerometers mounted to the vessel for sensing vertical acceleration of the vessel and providing indications thereof to said computer means, with said computer means incorporating vertical acceleration indications with the roll and pitch control signals, whereby the vertical acceleration indications provide earlier indications of undesirable vessel movement than conventional roll and pitch indications and provide tighter control of roll and pitch motions in a platforming mode and control the control fins to oppose vertical motions of the vessel to provide heave control.

5,511,505

PERSONAL WATERCRAFT WITH V-TYPE ENGINE

Noboru Kobayashi, and Yoshiyuki Kaneko, both of Iwata, Japan, assignors to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

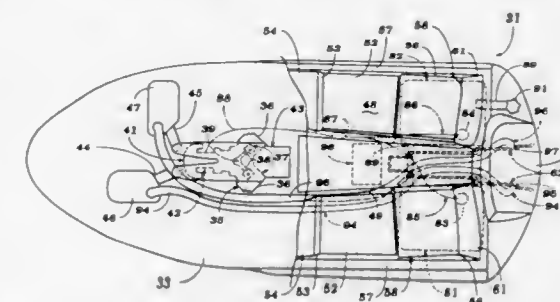
Filed Feb. 10, 1994, Ser. No. 195,354

Claims priority, application Japan, Feb. 15, 1993, 5-025811

Int. Cl.⁶ B63B 35/00

U.S. Cl. 114—270

129 Claims



1. A personal type of watercraft having a hull, said hull providing a passenger area bounded on the sides by raised gunnels and having a centrally positioned straddle-type seat adapted to carry at least two riders seated thereon in straddle fashion with their feet positioned on foot areas to the sides thereof and within said passenger's area, a propulsion device for propelling said watercraft disposed in substantial part beneath said seat, and an internal combustion engine carried by said hull beneath said seat and having at least a pair of cylinder banks disposed at an angle to each other, said cylinder banks containing pistons driving a crankshaft, said engine being mounted in said hull so that said crankshaft rotates about a vertically disposed axis, and a transmission for driving said propulsion device from said crankshaft, said seat having a removable portion for accessing said engine.

5,511,506

MARINE ANCHOR

Peter Bruce, Onchan, Isle of Man, assignor to Brupat Limited, Onchan, Isle of Man

PCT No. PCT/GB92/00921, § 371 Date Feb. 17, 1994, § 102(e) Date Feb. 17, 1994, PCT Pub. No. WO92/20569, PCT Pub. Date Nov. 26, 1992

PCT Filed May 21, 1992, Ser. No. 150,070

Claims priority, application United Kingdom, May 21, 1991, 9110950

Int. Cl.⁶ B63B 21/32

U.S. Cl. 114—301

51 Claims

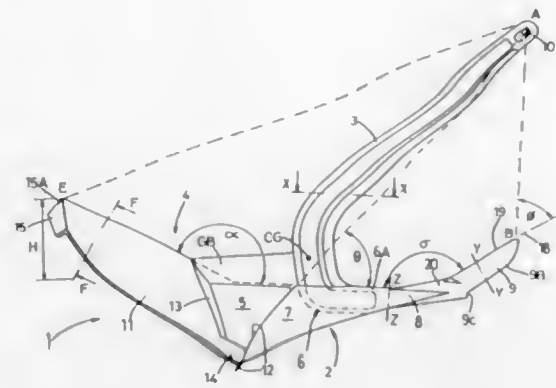
1. A marine anchor, symmetrical about a fore-and aft plane, including a basic anchor structure comprising:

a fluke;

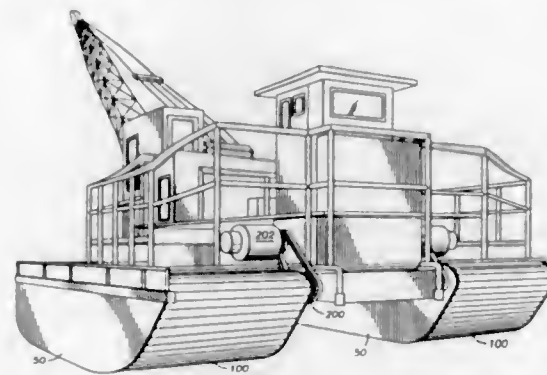
a shank having a first end and second end, said shank being attached at a fluke angle θ to said fluke at said first end and including an anchor line attachment point at said second end;

a rear assembly including a plate-like surface;

means for supporting said rear assembly so that said plate-like surface extends aft of said basic anchor structure for reaction



5,511,508
PONTON RUNNER SYSTEM
John M. Wilson, Sr., and Dean R. Wilson, both of Marrero, La., assignors to Wilco Marsh Buggies & Draglines, Inc., La.
Filed Apr. 21, 1994, Ser. No. 230,618
Int. Cl.⁶ B63B 3/00
U.S. Cl. 114—356 10 Claims



with incident mooring-bed soil, said plate-like surface being upwardly inclined relative to said fluke thereby forming a forwardly and upwardly opening obtuse angle of inclination with said fluke; and
soil escape passage means located between said fluke and said rear assembly, said rear assembly being arranged so that said plate-like surface in the anchor burying position presents a substantial forward component of area for substantial arrestment of soil impinging incident on the surface to provide in the plane of symmetry (M—M) a counter turning moment on said anchor about said anchor line attachment point which substantially counters opposing turning moments exerted on said anchor about said point due to pressure and friction of incident non-cohesive mooring bed soil on said shank and fluke during anchor burial in such soil, said soil escape passage means being dimensioned to permit free escape of both granular non-cohesive soils and soft mud cohesive soils passing over the fluke without causing said soft mud cohesive soils to be so retarded as to tend to accumulate over said fluke in advance of said rear assembly.

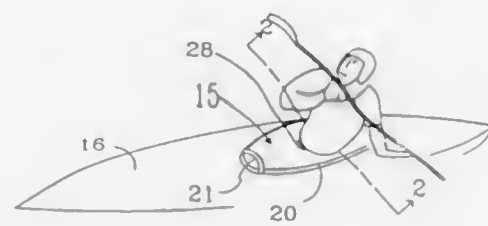
1. A lightweight amphibious vehicle substantially capable of operating in soft areas without bogging down or becoming stuck the vehicle having at least one pontoon, each pontoon comprising:
a. a shell substantially comprised of aluminum enclosing a water-tight chamber and having an exterior surface;
b. at least one longitudinal strip substantially comprised of aluminum disposed along and fixedly attached to portions of the exterior surface of said shell by welding;
c. a longitudinal channel member disposed along portions of the exterior face proximate said strip and fixedly attached to said strip by bolting, said channel member being operable to receive and partially enclose portions of a drive chain.

5,511,507
KAYAK COCKPIT COVER - WITH INTERCHANGEABLE SPRAY SKIRT WAISTBAND, DRY TOP, AND DRY TOP WITH INTERNAL P.F.D.

Jeff T. Allen, P.O. Box 1431, Kapaau, HI. 96755
Filed Nov. 14, 1994, Ser. No. 338,398
Int. Cl.⁶ B63B 35/00

U.S. Cl. 114—347

3 Claims



1. A drytop for kayaking, said drytop is a substantially water proof garment for fitting about a boater's torso, a kayak cockpit cover, and a releasable profile fastener for attaching said drytop to said kayak cockpit cover so that the said drytop can be quickly and easily detached from said cockpit cover by the boater, said releasable profile fastener further comprising:

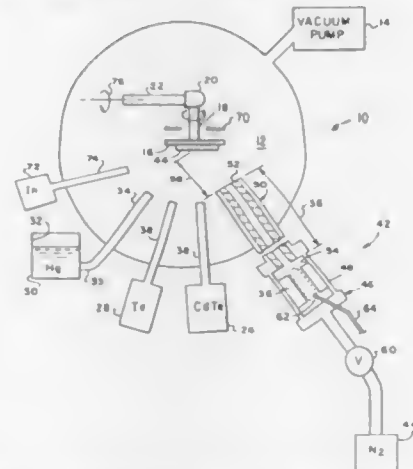
A first profile strip attached about the bottom of said drytop for attaching to a second profile strip attached about the opening of said kayak cockpit cover; and
a release handle attached to said first profile strip to facilitate quick removal of said drytop from said cockpit cover by the boater.

5,511,509
APPARATUS FOR P-TYPE DOPING OF SEMICONDUCTOR STRUCTURES FORMED OF GROUP II AND GROUP VI ELEMENTS
Hung-Dah Shih, Plano, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 98,492, Jul. 27, 1993, Pat. No. 5,398,641.
This application Jan. 27, 1995, Ser. No. 379,835
Int. Cl.⁶ C30B 35/00

U.S. Cl. 117—200

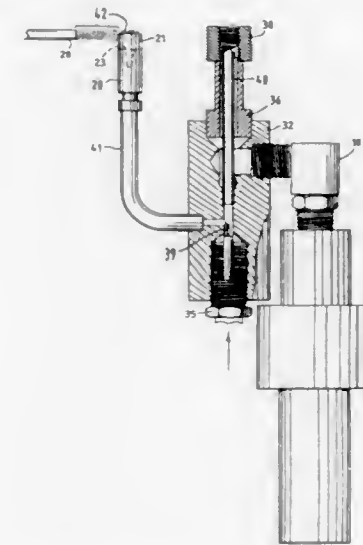
6 Claims



1. Apparatus for epitaxially growing a p-type semiconductor layer consisting essentially of II—VI material, the apparatus comprising:
an epitaxial growth chamber and means for drawing an ultra-high vacuum within the chamber;

a plurality of effusion cells associated with the chamber, the effusion cells containing at least one Group II element selected from the group consisting of cadmium, zinc, and lead, the Group II element of mercury, and at least one Group VI element selected from the group consisting of tellurium and selenium;
a substrate support positionable within the chamber and means for heating the substrate support, and any substrate mounted thereon, to epitaxial growth temperatures; and
means for injecting activated nitrogen into the chamber during epitaxial growth of a semiconductor layer.

5,511,510
RESIN COATED FASTENER AND APPARATUS AND METHOD FOR MANUFACTURE OF SAME
Richard J. Duffy, 4001 Sandy Creek, Shelby Township, Mich. 48316, and Eugene D. Sessa, 20160 Waybridge - Apt. 3021, Mt. Clemens, Mich. 48043
Filed Jan. 26, 1994, Ser. No. 188,065
Int. Cl.⁶ B05B 7/00; B05C 5/00; F16B 39/22
U.S. Cl. 118—312 11 Claims



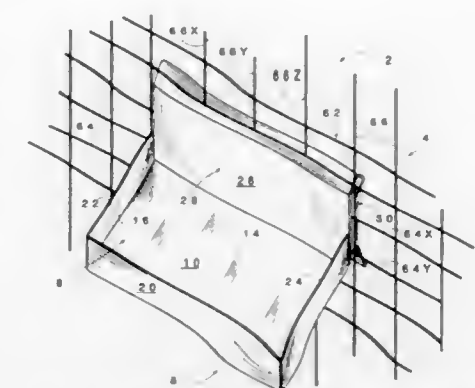
1. An apparatus for applying a resin coating to both internal and external threads of a threaded fastener, comprising:
a powdered resin reservoir;
a first powdered resin spray assembly communicating with said reservoir and operable to generate a first air-borne powdered resin stream;
a heater;
a conveyor adapted to support said fastener and to move said fastener along a path which first passes adjacent to said heater and thereafter traverses said first resin stream to apply said resin coating onto one of said internal or external threads;
a second powdered resin spray assembly operable to generate a second powdered resin stream to apply said resin coating to the other of said internal or external threads, said second assembly having a resin receiver carried by said conveyor and positionable to traverse said first resin stream to generate a powdered resin supply for said second powdered resin stream.

5,511,511
AVIAN FEEDING DEVICES
Howard J. Voren, 1538 E Rd., Loxahatchee, Fla. 33470
Filed Jun. 8, 1995, Ser. No. 482,908
Int. Cl.⁶ A01K 39/014

U.S. Cl. 119—464

5 Claims

1. An avian feeding device comprising in combination a bird cage and a feeding tray,



said feeding tray comprising a rectangular vessel having a rectangular flat bottom defined by a front edge, a back edge equal in length to said front edge, a first side edge and a second side edge equal in length to said first side edge, a rectangular front wall of a given height of a given value and a length substantially equal to said front edge, said front wall upstanding from said front edge,
a rectangular first side wall of said given height and a length substantially equal to said first side edge, said first side wall upstanding from said first side edge,
a rectangular second side wall of said given height and a length substantially equal to said second side edge, said second side wall upstanding from said second side edge, and
a complex back member upstanding from said back edge, said complex back member being both the back wall for said vessel and the means for mounting said feeding tray to said bird cage, said back member comprising a flat front sheet, a rear web and a U-shaped section,
said flat front sheet being rectangular and defined by a bottom edge substantially equal in length to said back edge, a top edge equal in length to said bottom edge, a third side edge of length at least twice said given value and a fourth side edge equal in length to said third side edge,
said rear web consisting of a rectangular flat top sheet and a rectangular flat bottom sheet,
said top sheet being defined by a first upper edge equal in length to said front sheet top edge, a first lower edge equal in length to said first upper edge, a fifth side edge greater in length than said third side edge and a sixth side edge equal in length to said fifth side edge,
said bottom sheet being defined by a second upper edge being equal in length to and integral with said first lower edge, a second lower edge equal in length to said second upper edge, a seventh side edge shorter in length than said given value and an eighth side edge equal in length to said seventh side edge,
said U-shaped section integrally joining said top edge of said front sheet to said first upper edge of said top sheet to fix said front sheet spaced apart from said top sheet providing a mounting space therebetween,
said cage being defined by walls at least one of which is a mesh wall formed of a plurality of horizontal wires spaced apart a distance slightly greater than said given value and a plurality of vertical spaced apart wires,
a rectangular tray opening in said mesh wall of an area slightly larger than the area of said rectangular front wall formed by cutting away a portion of each of several adjacent of said vertical wires,
said feeding tray being mounted upon said cage by all portions thereof except said rear web extending inwardly of said mesh wall, with all of said rear web positioned outwardly of said mesh wall and with at least one of said horizontal wires of said mesh wall captured in said mounting space,
said feeding tray being removable from said cage by applying upward pressure upon said second lower edge of said bottom sheet of said rear web to move said one of said captured horizontal wires out of said mounting space thereby permitting said vessel to be withdrawn through said tray opening.

5,511,512

MODULAR BIRD PERCH AND BIRD CAGE

Nanci A. Pintavalli, and Willis J. Whitaker, both of 5731

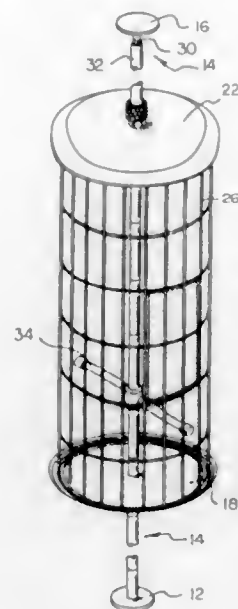
Henderson Dr., Delaware, Ohio 43015

Filed Sep. 22, 1994, Ser. No. 310,380

Int. Cl.⁶ A01K 31/08; 31/12

U.S. Cl. 119-468

7 Claims



1. A bird perch apparatus, comprising:

- a floor base assembly,
- a pole assembly connected to said floor base assembly, wherein said pole assembly includes a first adjustable portion and a second adjustable portion which are adjustable longitudinally with respect to each other, wherein said pole assembly includes a plurality of modules having a head end and a tail end and arranged in head-to-tail fashion,
- a ceiling-contacting assembly connected to said pole assembly,
- a lower pan assembly supported by said pole assembly,
- an upper pan assembly supported by said pole assembly at a predetermined distance above said lower pan assembly,
- a perch assembly connected to said pole assembly at a position along said pole assembly between said lower pan assembly and said upper pan assembly, and
- a cage assembly supported by said lower pan assembly and capped by said upper pan assembly, wherein said cage assembly includes a plurality of cage segments placed in head-to-tail fashion with intervening segment connector assemblies.

5,511,513

PET LITTER BOX FOR COLLECTING PET WASTE AND ELIMINATION OF ODOR

Robert A. Baron, 27 Sunnyside Rd., Scotia, N.Y. 12302-2408; Stanley M. Dzek, 41 Broad St., Kinderhook, N.Y. 12106, and Frederick Haber, R.D. Box 138, Howes Rd., Old Chatham, N.Y. 12136

Filed Jan. 23, 1995, Ser. No. 377,276

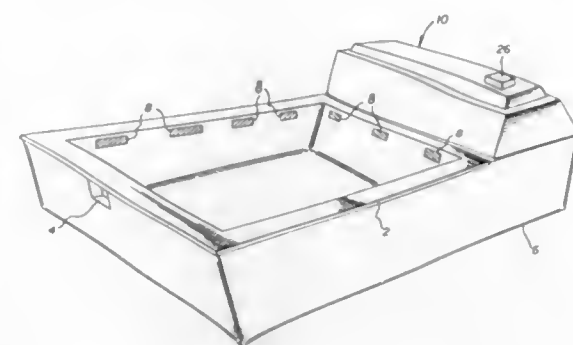
Int. Cl.⁶ A01K 1/035

U.S. Cl. 119-163

5 Claims

- 1. A pet waste material collector and odor eliminator system comprising in combination:

- (a) a rectangular container;
- (b) a substantially rectangular removable tray having essentially vertical sides and a bottom insertable in said rectangular container which removable tray has air vents along the upper part of the vertical sides of the removable tray, said removable substantially rectangular tray when in place in the container,



forms an air chamber between the inside of the bottom of the rectangular container and the bottom and sides of said removable tray;

- (c) a fan;
- (d) a filter pack interposed between said fan and said removable tray and forming one side of said air chamber; and
- (e) a motion sensor for controlling the operation of the fan.

5,511,514

METHOD OF CULTIVATING SHELLFISH

Michael W. Hitchins, 12 Brook Street, Blenheim; Hamish T. Jamieson, Clova Bay, RD 2, Picton, and Bruce J. Hearn, 59

Holdsworth Street, Blenheim, all of, New Zealand

PCT No. PCT/NZ93/00006, § 371 Date Oct. 31, 1994, § 102(e)

Date Oct. 31, 1994, PCT Pub. No. WO93/16587, PCT Pub.

Date Sep. 2, 1993

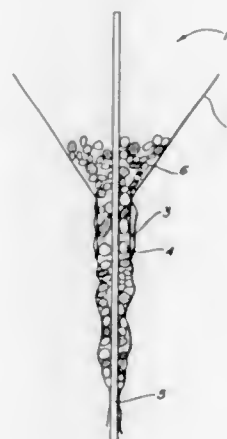
PCT Filed Feb. 18, 1993, Ser. No. 290,799

Claims priority, application New Zealand, Feb. 18, 1992, 241646

Int. Cl.⁶ A01K 61/00

U.S. Cl. 119-237

12 Claims



- 1. A method of cultivating shellfish, wherein the improvement comprises retaining a plurality of live juvenile shellfish on a cultivation support means by way of a retaining means, said plurality of shellfish comprising a first type of shellfish having the potential for producing securement means at a future date such that said first type of shellfish can become secured to said support means by said securement means, said plurality of shellfish also comprising a second type of shellfish not having the potential for

producing securement means, wherein said second type of shellfish can become secured to said support means by way of said securement means when said securement means has been produced by said first type of shellfish.

5,511,515

ANIMAL TRAINING AND RESTRAINING HARNESS

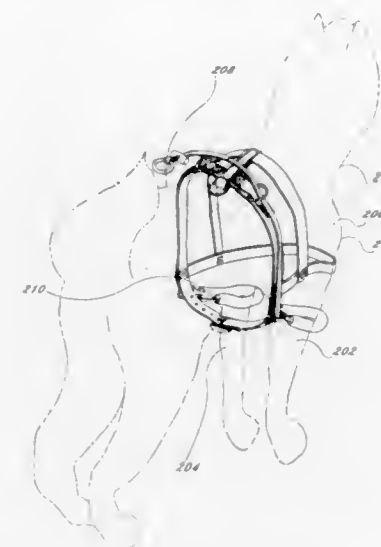
Donald D. Brown, and Barbara J. Brown, both of 1600 E. 7th St., Stuart, Fla. 34996

Filed May 24, 1994, Ser. No. 248,380

Int. Cl.⁶ A01K 27/00

U.S. Cl. 119-771

13 Claims



- 1. A harness for controlling and immobilizing an animal, said animal having a plurality of legs, including a left foreleg and a right foreleg, comprising:

- a body member for disposal around said animal;
- a first loop means for disposal around said left foreleg;
- a second loop means for disposal around said right foreleg; and
- means for pulling said first and second loop means perpendicular to the left foreleg and right foreleg of said animal to restrict movement of the animal's left foreleg and right foreleg thus effectively restraining and immobilizing the animal, said means for pulling including a cord member operatively associated with said first loop means and said second loop means, said cord member having a first end and a second end;

wherein said first end of said cord member having a first snap hook member attached thereto and said second end of said cord member having a second snap hook member attached thereto;

wherein a top portion of said body member having a first D-ring and a second D-ring attached thereto and wherein a bottom portion of said body member having a third D-ring and a fourth D-ring attached thereto, said first D-ring and said third D-ring attached to a left side of said body member and said second D-ring and said fourth D-ring attached to a right side of said body member;

wherein said first loop means is formed by inserting said first snap hook member and said first end of said cord member through said first D-ring and said third D-ring and attaching said first snap hook member to said third D-ring, wherein said second loop means is formed by inserting said second snap hook member and said second end of said cord member through said second D-ring and said fourth D-ring and attaching said second snap hook member to said fourth D-ring.

5,511,516

WATER HEATER WITH LOW NO_x CERAMIC BURNER

H. Jack Moore, Jr., Playa Del Ray, and Martin Abalos,

Pomona, both of Calif., assignors to SABH (U.S.) Water

Heater Group, Inc., Atlanta, Ga.

Continuation of Ser. No. 113,618, Aug. 27, 1993, abandoned.

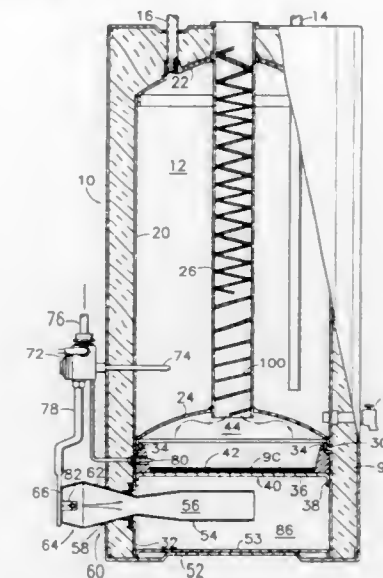
This application Nov. 3, 1994, Ser. No. 333,871

The portion of the term of this patent subsequent to Oct. 18, 2011, has been disclaimed.

Int. Cl.⁶ F22B 5/00

U.S. Cl. 122-17

24 Claims



- 1. A water heater comprising:
- a tank adapted to contain a body of water, said tank having a water inlet, a water outlet and a bottom;
- a chamber defined by said tank bottom, a side wall substantially gas tightly sealed to said tank bottom and a bottom pan substantially gas tightly sealed to said side wall;
- a flue passing through said tank having an inlet in said tank bottom;
- a ceramic burner substantially gas tightly sealed substantially directly to said side wall and adapted to contain combustion above said burner;
- a fuel and air proportioner extending into said chamber and adapted to admit ambient air and fuel to said chamber, said chamber being substantially gas tight except for said proportioner and said flue.

5,511,517

REDUCING EXHAUST EMISSIONS FROM OTTO-CYCLE ENGINES

Newton A. Perry, Richmond, Va., and Joseph W. Roos, Baton Rouge, La., assignors to Ethyl Corporation, Richmond, Va.

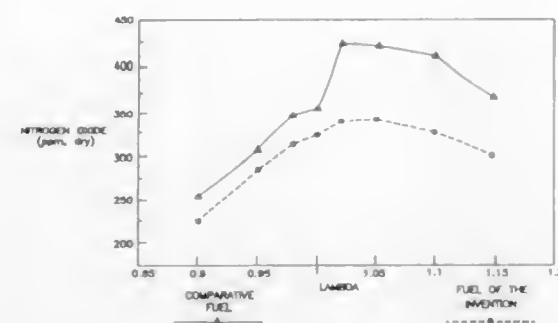
Filed Feb. 10, 1994, Ser. No. 195,857

Int. Cl.⁶ F02B 75/12

U.S. Cl. 123-1 A

14 Claims

- 1. A method of reducing the amount of nitrogen oxide (NO_x) emissions and hydrocarbon emissions emanating via the exhaust of a gasoline engine during operation thereof, which method comprises dispensing to a gasoline engine adjusted to operate primarily at an air-to-fuel ratio between lambda of about 0.9 to about 1.15, a gasoline fuel that contains a minor amount of (i) a cyclopentadienyl manganese tricarbonyl compound and (ii) an alkyllead anti-knock agent, wherein said compound and said agent are proportioned such that there is dissolved in said fuel a substantially equal weight of manganese as said compound and lead as said agent, and wherein said minor amount of said compound and said agent is sufficient to reduce the amount of NO_x and hydrocarbons in the engine exhaust on combustion on said fuel with an air-to-fuel ratio



between lambda of about 0.9 to about 1.15, where lambda is the actual air-to-fuel ratio divided by the stoichiometric air-to-fuel ratio, said stoichiometric air-to-fuel ratio being a lambda value of one.

5,511,518

SEALING ASSEMBLY WITH UNDERCUT GROOVE

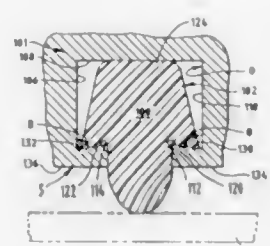
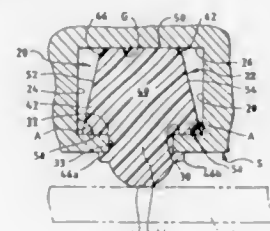
Balbir Jain, Northbrook, and Josefino T. Inlong, Skokie, both of Ill., assignors to Fel-Pro Incorporated, Skokie, Ill.

Filed Nov. 2, 1994, Ser. No. 337,648

Int. Cl.⁶ F01M 9/10; F16J 10/00

U.S. Cl. 123—90.37

12 Claims



5. A sealing assembly for use with an internal combustion engine, comprising:

a gasket comprised of elastomeric material, said gasket having a sealing portion, neck portion, and an anchoring portion of selected volume, said anchoring portion having a pair of shoulders and a bottom portion opposite the shoulders; and an engine part defining a groove for receiving said anchoring portion, said groove formed by a plurality of walls, two of said walls spaced from each other by said neck portion of said gasket and opposing said shoulders, a bottom wall opposing said bottom portion of the anchoring portion, said groove being sufficiently larger in volume than said anchoring portion before exposure of said gasket to an engine fluid so that upon an exposure to engine fluid, said anchoring portion expands.

5,511,519 TEMPERATURE ADJUSTING AUTOMATIC CHOKE SYSTEM

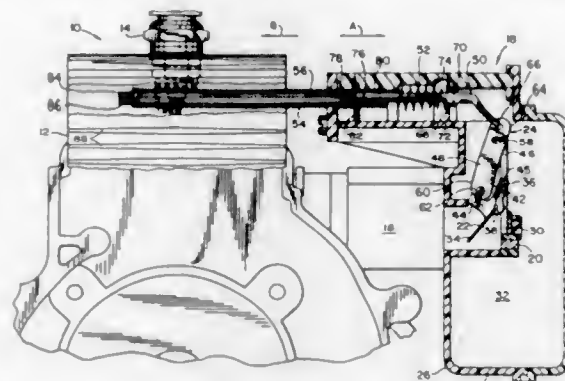
Christopher L. Watson, Rock Hill, and John A. Morrow, Fort Mill, both of S.C., assignors to Homelite, Inc., Charlotte, N.C.

Filed Jul. 5, 1994, Ser. No. 271,007

Int. Cl.⁶ F02M 1/10

U.S. Cl. 123—179.18

23 Claims



1. An air inlet control system for an internal combustion engine, the system comprising:
an air inlet valve; and
a temperature controlled limiter, the limiter being adapted to limit a range of movement of the inlet valve based upon temperature of a cylinder of the engine, the limiter comprising a temperature responsive element for positioning at the cylinder and a mechanical linkage from the temperature responsive element to the air inlet valve, wherein a portion of the limiter is suitably sized and shaped to be positioned between cooling fins on the cylinder.

5,511,520

CYLINDER HEAD CONSTRUCTION

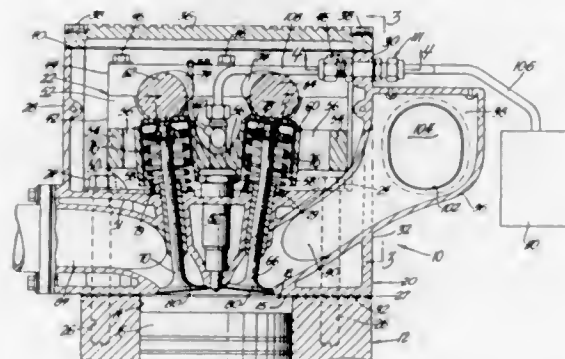
Jose F. Reguelro, Rochester Hills, Mich., assignor to Chrysler Corporation, Auburn, Mich.

Filed Jul. 3, 1995, Ser. No. 498,283

Int. Cl.⁶ F01L 1/44; F02F 1/24

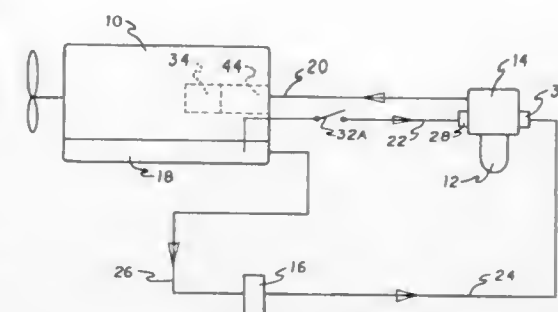
U.S. Cl. 123—193.5

10 Claims



1. A cylinder head for an internal combustion engine having an engine block provided with a plurality of cylinders and having a flat surface formed on the top portion thereof, said cylinder head including a lower head portion and an upper head portion secured to said flat surface of said engine block, a valve train incorporated in said cylinder head and associated with each of said cylinders and including a pair of intake valves, a pair of exhaust valves, and a pair of rotatable camshafts for actuating said intake valves and said exhaust valves,

a pair of laterally spaced side walls integrally formed with said lower head portion of said cylinder head and extending upwardly therefrom,
said lower head portion having an intake passage extending upwardly from said intake valves at a high angle relative to said flat surface of said engine block, and
an intake manifold communicating with said intake passage and being integrally formed with said lower head portion so as to define an intake plenum located outboard of said cylinder head with a large portion of one of said side walls serving as a common wall between said intake plenum and said upper head portion.



5,511,521

LIGHT-ALLOY PISTON WITH A COMBUSTION BOWL Ulrich Bischofberger, Esslingen, and Dieter Müller-Schwelling, Fellbach, both of, Germany, assignors to Mahle GmbH, Stuttgart, Germany

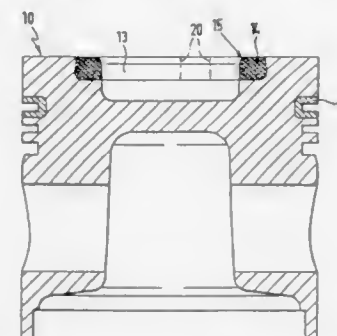
Filed Nov. 17, 1994, Ser. No. 341,660

Claims priority, application Germany, Nov. 26, 1993, 43 40 267.4

Int. Cl.⁶ F16J 1/01; B23P 15/10

U.S. Cl. 123—193.6

10 Claims



7. A process for manufacturing a light-alloy piston with a combustion bowl and bowl edge armor for a diesel engine, comprising the steps of:

producing a ring consisting of fine graphite;
galvanizing the ring to form a metal coating thereon;
dipping the ring into a first metal melt to slightly dissolve the metal coating;
removing the ring from the first metal melt and placing the ring into a form with the metal coating still partially unsolidified; and
forming the piston by pouring a second light-alloy metal melt around the galvanized ring to produce a metallic bond between the ring and the second light-alloy metal, wherein a combustion bowl is formed in the piston with the ring defining bowl edge armor.

5,511,522

INTERNAL COMBUSTION ENGINE PRE-IGNITION OIL PUMP

Thuan V. Tran, 120 Ozone Dr., Hammond, La. 70403

Filed Nov. 14, 1994, Ser. No. 339,675

Int. Cl.⁶ F01M 5/00

U.S. Cl. 123—196 S

3 Claims

1. A secondary pre-ignition oil pump system for an internal combustion engine comprising:

a lubrication circuit for an internal combustion engine;
a primary oil pump of said internal combustion engine;
an oil sump that collects oil passing through said lubrication circuit;
a primary oil-drawing conduit means that draws oil from said oil sump under a force provided by said primary oil pump;

a secondary oil pump;
a secondary oil-drawing conduit means that draws oil from said oil sump under a force provided by said secondary oil pump, said secondary oil-drawing conduit means being separate from said primary oil-drawing conduit means, whereby blockage of one of said oil-drawing conduit means does not affect drawing of oil through the other of said oil-drawing conduit means;
a secondary check valve that ensures that oil flows in said secondary oil-drawing conduit means away from said oil pump;
an oil filter adapter that receives oil from said primary oil pump and from said secondary oil-drawing conduit means;
an oil filter that filters oil received by said filter adapter;
a return conduit means that receives oil from said filter and returns received oil to said lubrication circuit; and
a pressure sensitive switch that senses oil pressure in said primary oil-drawing conduit means and activates said secondary pump when the oil pressure in said primary oil-drawing conduit means decreases below a predetermined level, whereby the pressure sensitive switch is activated prior to the running of the internal combustion engine.

5,511,523

LUBRICATING SYSTEM FOR ENGINE

Tatsuyuki Masuda, Iwata, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

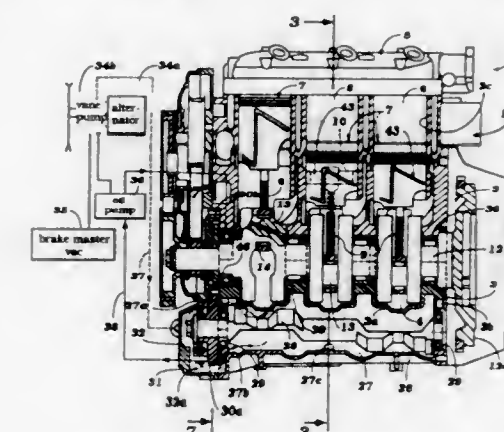
Filed Jul. 19, 1994, Ser. No. 276,953

Claims priority, application Japan, Jul. 26, 1993, 5-184051

Int. Cl.⁶ F01M 1/12

U.S. Cl. 123—196 R

10 Claims



1. A lubricating and accessory drive system for an internal combustion engine comprised of an air pump for drawing air from a first location and delivering the pumped air to a second location, a lubricating pump for drawing lubricant from a lubricant sump and delivering the pumped lubricant to said air pump for its lubrication, the improvement comprising delivering the air pumped by said air pump to said second location through said lubricant

sump for returning the lubricant used to lubricate said air pump back to said lubricant sump.

5,511,524

LUBRICATING OIL SUPPLYING SYSTEM FOR ENGINE
Hiroyuki Kidera, and Toru Izumi, both of Iwata, Japan, assignors to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Division of Ser. No. 947,497, Sep. 18, 1992, Pat. No. 5,390,635.

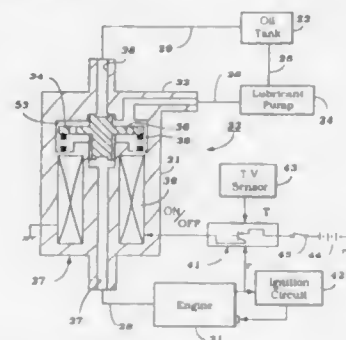
This application Oct. 11, 1994, Ser. No. 321,963

Claims priority, application Japan, Mar. 16, 1992, 4-089297

Int. Cl.⁶ F01M 1/02

U.S. Cl. 123—196 R

48 Claims



1. A lubricating system for an internal combustion engine comprising a lubricant pump, lubricant control means for controlling the amount of lubricant delivered by said lubricant pump to said engine by selectively supplying lubricant from said lubricant pump to said engine and bypassing lubricant from said lubricant pump back to a return, means for sensing running conditions of the engine, and means for controlling the amount of lubricant supplied to the engine by said lubricant control means in response to the sensed engine conditions by varying the duty ratio of the lubricant control means and varying the length of time when said lubricant control means is in its supply condition.

5,511,525

SLIDING-BLADE HEAT ENGINE WITH VORTEX COMBUSTION CHAMBER

Alexei Jirnov, and Olga Jirnov, both of 5490 Braesvalley, Apt. 420, Houston, Tex. 77096

Filed Mar. 8, 1995, Ser. No. 400,764

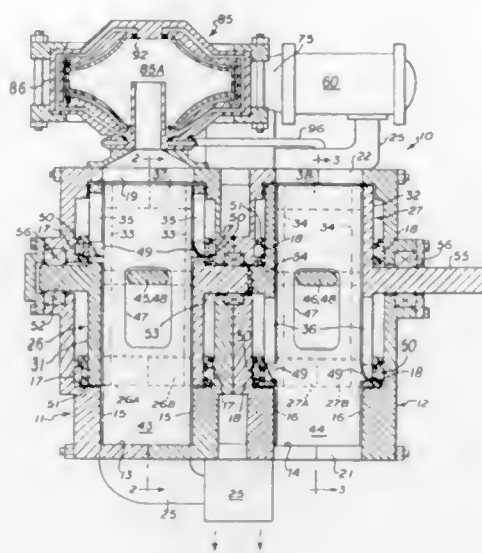
Int. Cl.⁶ F02G 3/00

U.S. Cl. 123—204

19 Claims

1. A sliding-blade heat engine comprising:

- a vortex combustion chamber for mixing a fuel with air, igniting the mixture, and discharging the heated product as a working fluid;
- an oval-shaped turbine chamber having a peripheral side wall which is oval-shaped in cross section, parallel opposed facing flat end walls, and a continuous guide groove formed in each said end wall;
- a cylindrical turbine rotor having a circular side wall, parallel opposed flat end walls, a concentric shaft extending outwardly from each said end wall, and at least two mutually perpendicular slots extending radially through said turbine rotor with a radial extending portion of each said slot extending through said end walls, said turbine rotor rotatably mounted by said shafts eccentrically in said turbine chamber relative to the major axis of said turbine chamber;
- at least two elongate rectangular turbine blades, one slidably mounted in each of said slots extending through said turbine rotor in mutually perpendicular relation and each independently movable relative to the other in a radial direction, each said turbine blade having a guide element extending from



opposed sides and through said radial extending portion of each said slot outwardly from said turbine rotor end walls and slidably received in said guide groove in said turbine chamber end walls;

an oval-shaped compressor chamber adjacent said turbine chamber having a peripheral side wall which is oval-shaped in cross section, parallel opposed facing flat end walls, and a continuous guide groove formed in each said end wall;

a cylindrical compressor rotor having a circular side wall, parallel opposed flat end walls, a concentric shaft extending outwardly from each said end wall, and at least two mutually perpendicular slots extending radially through said compressor rotor with a radial extending portion of each said slot extending through said end walls, said compressor rotor rotatably mounted by said shafts eccentrically in said compressor chamber relative to the major axis of said compressor chamber;

at least two elongate rectangular compressor blades, one slidably mounted in each of said slots extending through said compressor rotor in mutually perpendicular relation and each independently movable relative to the other in a radial direction, each said compressor blade having a guide element extending from opposed sides and through said radial extending portion of each said slot outwardly from said compressor rotor end walls and slidably received in said guide groove in said compressor chamber end walls;

said turbine rotor and said compressor rotor connected together by said shafts in concentric relation whereby rotation of said turbine rotor causes simultaneous rotation of said compressor rotor, and upon rotation of said turbine and compressor rotors said guide elements traveling in said guide grooves causing said turbine blades and said compressor blades to extend and retract radially with their outer ends following the inner periphery of the respective oval-shaped side walls of said turbine chamber and said compressor chamber with a constant clearance between the outer tip ends of said blades and said inner peripheries;

working fluid inlet and outlet means formed in said turbine chamber side wall configured to receive a working fluid from said combustion chamber tangentially to the axis of rotation of said turbine rotor and impart a force on said turbine blades to cause rotation of said turbine rotor and to discharge the working fluid tangentially to the axis of rotation of said turbine rotor;

air inlet and outlet means formed in said compressor chamber side wall configured to draw air into said compressor chamber tangentially to the axis of rotation of said compressor rotor upon rotation thereof, and as rotation continues said compressor blades compressing the air drawn into in said compressor chamber and discharging the compressed air through said air outlet means; and

thermal exchange recuperator means connected with said air outlet means, said working fluid outlet means, and said combustion chamber to mix compressed air discharged from said compressor chamber with a portion of heated working fluid discharged from said turbine chamber and conduct the heated compressed air to said vortex combustion chamber.

5,511,526

ENGINE AIR/FUEL CONTROL WITH ADAPTIVE LEARNING

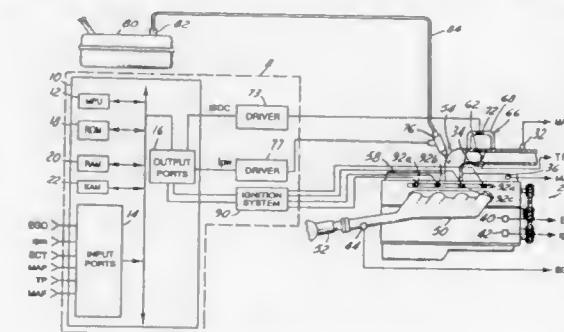
Douglas R. Hamburg, Bloomfield; Dennis C. Reed, Plymouth, and Nicholas G. Zorka, Clarkston, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Jun. 30, 1995, Ser. No. 497,274

Int. Cl.⁶ F02D 41/14; F02P 5/15

U.S. Cl. 123—424

17 Claims



1. A control method for an engine having an exhaust gas oxygen sensor with a two state output having first and second states respectively corresponding to exhaust gases being rich or lean of stoichiometry, comprising the steps of:

- modulating flow of fuel delivered to the engine with a modulation signal having a preselected peak amplitude;
- providing an air/fuel ratio indicating signal from an average of the sensor output;
- changing said fuel flow a predetermined amount to achieve a preselected offset in engine air/fuel ratio; and
- adjusting said modulation signal amplitude in response to a detection of when said air/fuel indicating signal exceeds a preselected value during said fuel flow changing step.

5,511,527

FUEL RAIL ASSEMBLY WITH CROSSOVER HOSE

Jack R. Lorraine, Newport News; Anthony L. Franchitto, Hampton, and Gary D. Vattelana, Prince George, all of Va., assignors to Siemens Automotive Corporation, Auburn Hills, Mich.

Filed Jun. 28, 1995, Ser. No. 496,231

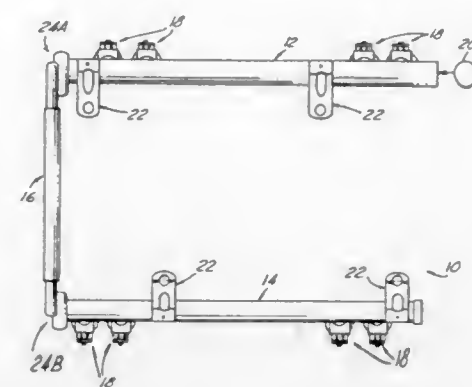
Int. Cl.⁶ F02M 55/02

U.S. Cl. 123—456

17 Claims

1. A fuel rail assembly for an internal combustion V engine, said fuel rail assembly having a pair of side-by-side spaced apart fuel rail segments, each fuel rail segment including a section of tubing and a plurality of fuel injectors installed therein; a crossover hose connection between said fuel rail segments comprising a pair of end caps each inserted into one end of a respective fuel rail segment, each end cap comprising a hose barb fitting having one end slidably fit into a respective fuel rail end and another arm projecting out of said fuel rail end; a seal on said one end of each hose barb fitting sealing said one end to an interior wall of a respective fuel rail one end; retention means retaining each of said hose barb fittings in position with said one end thereof inserted in said respective fuel rail end; and,

a crossover hose having each end fit to a respective fitting projecting end to establish a fluid tight connection between said fuel rail segments.



5,511,528

ACCUMULATOR TYPE OF FUEL INJECTION DEVICE
Takashi Iwanaga, Toyohashi; Yasuhiro Kariya, Hino, both of Japan; Kenji Magario, Amsterdam, Netherlands; Takayoshi Kawaguchi, Oobu, Japan; Nobuhiko Shima, Nagoya, Japan, and Mitsuru Ban, Okazaki, Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

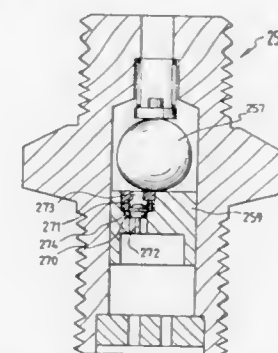
Continuation of Ser. No. 934,477, Nov. 16, 1992. This application Apr. 11, 1994, Ser. No. 226,039

Claims priority, application Japan, Jan. 14, 1991, 3-2757; Jan. 24, 1991, 3-6908; Mar. 15, 1991, 3-51450; Jun. 26, 1991, 3-154901

Int. Cl.⁶ F02M 37/04

U.S. Cl. 123—467

2 Claims



1. An accumulator type of fuel injection device comprising: a common rail which accumulates high pressure fuel; an injector provided to each cylinder; a fuel pipe connecting each said injector to said common rail so that each said injector injects the fuel into an engine being electrically controlled; and a single safety/check device provided in said fuel pipe, wherein said safety/check device both cuts off a fuel flow when an amount of fuel flowing in said safety/check device exceeds an allowed range, and allows only fuel supply from said common rail to said injector and restricts pressure transmission from said injector to said common rail, wherein said safety/check device comprises: a housing with an inlet on a first end and an outlet on a second end, said inlet being connected to a hollow cylindrical bore inside said housing, said hollow cylindrical bore being connected to a smaller diameter bore inside said housing, said smaller diameter bore being connected to said outlet, a piston and ball valve located inside said hollow cylindrical bore and movably disposed in an axial direction, a spring urging said piston and ball valve toward said inlet, and a circular seat portion formed on a side of said piston towards said inlet, said circular seat portion blocking said inlet when a fuel pressure at said inlet side is less than a fuel pressure at said outlet side, thereby preventing a flow of fuel from said outlet to said inlet.

said piston having a passage therethrough in an axial direction, wherein fuel flows into said inlet and up against said piston, flowing through said passage, hollow cylindrical bore and said smaller diameter bore to said outlet, wherein if said fuel flow exceeds said allowed range, said piston and ball valve are displaced toward said outlet against said smaller diameter bore to a closed state, thereby preventing a flow of fuel.

5,511,529

TANK-VENTING APPARATUS FOR A MOTOR VEHICLE AND METHOD FOR OPERATING THE APPARATUS

Andreas Blumenstock, Ludwigshurg, and Helmut Denz, Stuttgart, both of, Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

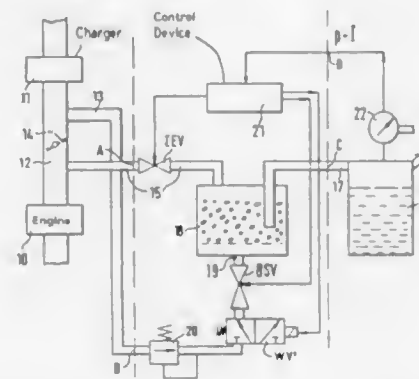
Filed Apr. 20, 1994, Ser. No. 230,485

Claims priority, application Germany, Apr. 20, 1993, 43 12 720.7

Int. Cl.⁶ F02M 33/02

U.S. Cl. 123—520

9 Claims



1. A tank-venting apparatus for a motor vehicle having an internal combustion engine equipped with a charger having a charger output line, the tank-venting apparatus comprising:

- a tank;
- an absorption filter having a venting line extending therefrom;
- a tank supply line connecting said tank to said adsorption filter;
- a tank-venting valve connected to the engine;
- a valve line connecting said tank-venting valve to said adsorption filter;
- control valve means for connecting said charger output line to said venting line; and
- said control valve means including a directional valve switchable between a first position wherein said venting line is connected to said charger output line and a second position wherein said venting line is connected to the ambient.

5,511,530

MODULAR FUEL LINE HEATER

Elmore S. Buringrud, Monroe, and Jan B. Stephens, Vashon, both of Wash., assignors to Paccar Inc., Bellevue, Wash.

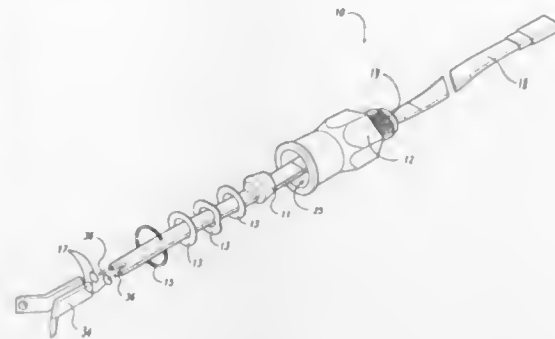
Filed Oct. 24, 1994, Ser. No. 328,350

Int. Cl.⁶ F02M 31/00

U.S. Cl. 123—549

12 Claims

1. A fuel line heating apparatus comprising:
- a feed-through device being adapted to detachably attach to a fitting, the fitting being coupled to a fuel line; and
 - a length of heat tape, the heat tape being integrally fixed to the feed-through device, such that when the feed-through device is attached to the fitting, the length of heat tape is positioned within the fuel line, and when the feed-through device is detached from the fitting, the length of heat tape is removed from the fuel line and remains coupled to the feed-through device.



5,511,531

EGR VALVE WITH FORCE BALANCED PINTLE

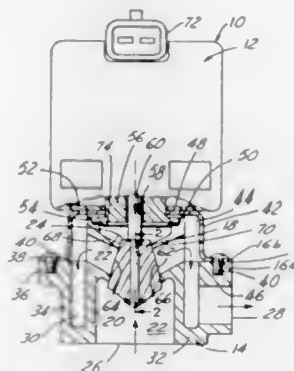
John E. Cook, and William C. Gillier, both of Chatham, Canada, assignors to Siemens Electric Ltd., Chatham, Canada

Filed May 19, 1994, Ser. No. 245,944

Int. Cl.⁶ F02M 25/07; F16K 31/126

U.S. Cl. 123—568

11 Claims



1. An internal combustion engine comprising exhaust gas recirculation (EGR) apparatus wherein a portion of the engine exhaust gas is recirculated in a controlled manner by an electrically controlled EGR valve to dope a fresh air-fuel charge for the engine with some of the engine's exhaust gas, said EGR valve comprises a housing having an exhaust inlet to which engine exhaust is communicated, an exhaust outlet from which engine exhaust exits the valve to dope a fresh air-fuel charge, a passage extending through said housing between said exhaust inlet and said exhaust outlet, a pintle that is disposed on said housing within said passage and that is selectively linearly positionable within said housing by a linear electric actuator that positions said pintle linearly from closed position to open positions in accordance with a control signal applied to the actuator, said pintle comprising opposite axial ends, a shaft extending from one of said axial ends to said actuator, another of said axial ends of said pintle being in communication with said exhaust inlet via said passage, characterized in that said housing comprises means to communicate said exhaust inlet to said one of said axial end, of said pintle to provide at least some pressure-balancing of said pintle, said housing comprises internal seat means disposed within said passage axially intermediate said opposite axial ends of said pintle for coaction with a portion of said pintle that is axially intermediate said opposite axial ends of said pintle, and said axially intermediate portion of said pintle comprises a frustoconically tapered surface and said internal seat means comprises at least one seating surface that is at a radially inner open distal end of a pipe extending from and through a side wall of said housing that circumferentially bounds a space containing said pintle such that the selective relative positioning of said pintle to said internal seat means selectively restricts the flow of exhaust gas from said exhaust inlet to said exhaust outlet.

5,511,532

DISTRIBUTOR-LESS IGNITION SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

Martin Koelter, Munich, Germany, assignor to Bayerische Motoren Werke AG, Munich, Germany

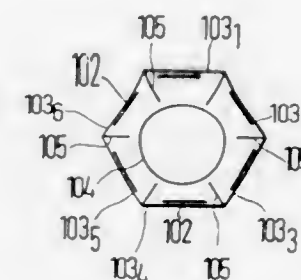
Filed May 27, 1994, Ser. No. 250,741

Claims priority, application Germany, May 28, 1993, 43 17 962.2; Feb. 24, 1994, 44 05 994.9

Int. Cl.⁶ F02P 3/12

U.S. Cl. 123—643

8 Claims



1. An optional ignition device for use in a distributor-less ignition system for an internal combustion engine, the device comprising:

- a semiconductor switch including a plurality of optoelectronic semiconductor components wired in series and having a lead connectable to a high voltage; and
- a single common light-emitting element by which the semiconductor components are simultaneously activated, said plurality of optoelectronic semiconductor components being arranged around the single common light-emitting element at least approximately the same distance therefrom.

5,511,533

ADJUSTABLE HYDRAULIC STABILIZER FOR A BOW

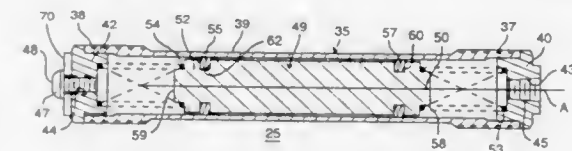
Charles O. Waller, 6325 W. Larkspur, Glendale, Ariz. 85304

Filed Feb. 3, 1994, Ser. No. 191,090

Int. Cl.⁶ F41B 5/20

U.S. Cl. 124—89

21 Claims



1. An adjustable stabilizer device for use in combination with a bow, said device comprising:

- a tubular housing having an attachment end, a free end, and a threaded interior;
 - attachment means for attaching said tubular housing to said bow; and
 - a hydraulic component having a threaded exterior configured to threadably engage said threaded interior; wherein said hydraulic component is carried within said tubular housing such that the axial position of said hydraulic component is adjustable between said attachment end and said free end.
10. A stabilized bow comprising:
- a handle riser having a front, a top end, and a bottom end;
 - a top limb extending from said top end;
 - a bottom limb extending from said bottom end;
 - a tubular housing having a free end, an attachment end removably coupled to said front of said handle riser, and a threaded interior; and
 - a hydraulic component having a threaded exterior configured to threadably engage said threaded interior; wherein

said hydraulic component is carried within said tubular housing such that the axial position of said hydraulic component is adjustable between said attachment end and said free end.

5,511,534

GAS FIRED CONVECTION OVEN

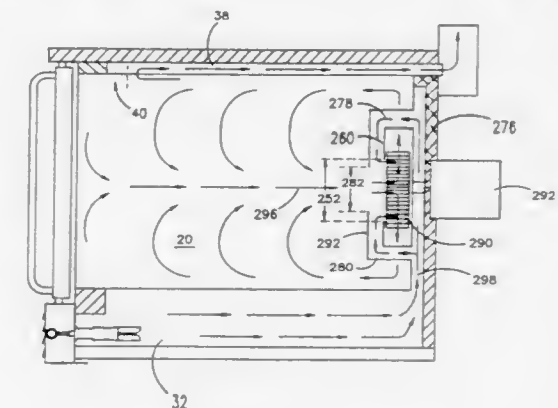
Gajanan M. Prabhu, Cary, and Mark J. Smith, Fuquay-Varina, both of N.C., assignors to Southbend—A Middleby Company, Fuquay Varina, N.C.

Continuation-in-part of Ser. No. 979,203, Nov. 20, 1992, Pat. No. 5,361,749, which is a continuation-in-part of Ser. No. 833,889, Feb. 10, 1992, and a continuation of Ser. No. 145,293, Oct. 29, 1993. This application Jun. 27, 1994, Ser. No. 266,214

Int. Cl.⁶ F24C 15/32

U.S. Cl. 126—21 A

30 Claims



1. A convection oven comprising a heating element, a closed and insulated housing having a baking cavity, an air passageway extending from said heating element through a duct under a floor of the baking cavity and up a communicating duct in the back of the oven, a baffle ductway plate located a predetermined distance in front of said duct in the back of said oven, at least one baffle connecting duct extending from said duct in the back of said oven through said baffle ductway plate, an oven baffle plate in front of and spaced apart from said baffle ductway plate to define a baffle chamber therebetween, a blower between said baffle ductway plate and said communicating duct in the back of said oven, said baffle ductway plate and said oven baffle plate respectively having a pair of holes formed in front of said blower, said blower for drawing air across said heating element and through said air passageway under said floor and said baffle connecting duct into said baffle chamber and out into said baking cavity.

5,511,535

BARBECUE GRILL WITH FIRE RETARDING MEANS

Peter H. Landstrom, 116 E. Liberty, Barrington, Ill. 60016, and Thomas Carpenter, 1185 Jansen Farm Ct., Elgin, Ill. 60120

Filed Feb. 14, 1994, Ser. No. 196,275

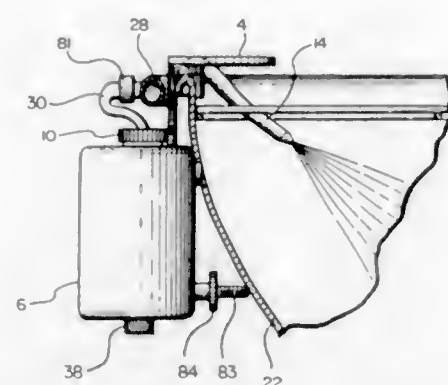
Int. Cl.⁶ A47B 96/00; F24C 15/36

U.S. Cl. 126—25 C

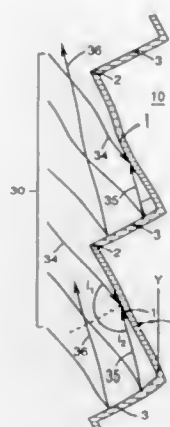
26 Claims

1. An excessive flame retarding system, for use with a barbecue grill that has a kettle with an upper rim that is arranged and adapted to hold cooking fuel which may be ignited in the bottom hollow thereof to produce a flame and a grill for supporting food in a generally horizontal plane located in proximity to said upper rim and above the cooking fuel, comprising:

- a means for distributing a fluid fire suppressant having at least one discharge nozzle, accessible to and directed generally toward the flame in said kettle,
- said means for distributing a fluid fire suppressant further comprises a generally horizontal distribution member disposed outside of the kettle;



5,511,537
SMART, PASSIVE SUN FACING SURFACES
 Lee M. Hively, Knoxville, Tenn., assignor to Martin Marietta Energy Systems, Inc., Oak Ridge, Tenn.
 Filed May 12, 1994, Ser. No. 241,983
 Int. Cl.⁶ F24J 2/00
 U.S. Cl. 126—702 8 Claims



b. a means for sensing light being optically accessible to and operably responsive to the light from an excessive flame produced during the cooking process and operably connected to a means for activating;

c. the means for activating having a means for electrical power, said means for electrical power being operably connected to power the means for distributing a fluid fire suppressant and the means for sensing light; and

d. a means for maintaining a quantity of water in said generally horizontal distribution member,

whereby, an excessive flame produced during the cooking process that is sensed by the means for sensing light activates the means for distributing a fluid fire suppressant to discharge said fluid fire suppressant toward the excessive flame and thereby retard said excessive.

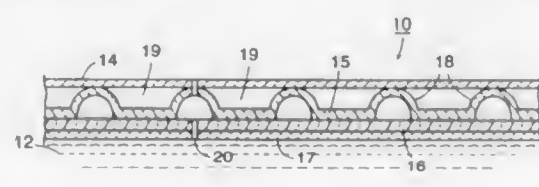
5,511,536
SOLAR-TYPE POOL COVER

Harry Bussey, Jr., Marco Island, Fla., and Edward J. Ellison, Oakland, N.J., assignors to CPI Packaging, Inc., Marlboro, N.J.

Filed Mar. 23, 1995, Ser. No. 408,999
 Int. Cl.⁶ F24J 2/42

U.S. Cl. 126—565

20 Claims



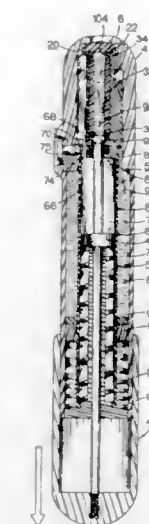
1. A solar-type pool cover comprising
 a first transparent layer for passing sunlight therethrough;
 a second opaque layer for absorbing sunlight passing through said first layer;
 a third transparent layer between said first and second layers and having a plurality of pockets therein facing one of said first and second layers and sealed relative thereto to encapsulate air therein whereby sunlight passing through said first layer heats said opaque layer and the air in said pockets; and
 a fourth reflective layer secured to said opaque layer to face a pool of water and to transfer heat from said opaque layer to the pool of water and to reflect heat from the pool of water back into the pool of water.

5,511,538
SUPER ATOMIZING NONCHLORINATED FLUOROCARBON MEDICATION INHALER
 Terry M. Haber, Lake Forest; Clark B. Foster, Laguna Niguel, and William H. Smedley, Lake Elsinore, all of Calif., assignors to Habley Medical Technology Corporation, Laguna Hills, Calif.
 Continuation of Ser. No. 924,358, Jul. 31, 1992, abandoned, which is a continuation of Ser. No. 551,990, Jul. 12, 1990, abandoned. This application Sep. 13, 1993, Ser. No. 120,691
 Int. Cl.⁶ A61M 11/00

U.S. Cl. 128—200.14

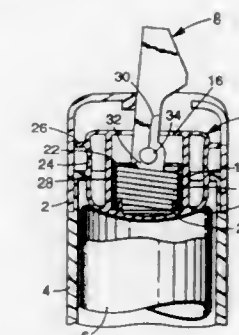
15 Claims

1. An atomizer for atomizing a liquid comprising:
 a body;
 an elastomeric barrier mounted to the body, the barrier having outer and inner surfaces and a slit formed therethrough to provide restricted fluid communication between the inner and outer surfaces, the outer surface facing the ambient environment;
 a supply of the liquid to be atomized housed within the body;
 a cylinder, housed within the body, fluidly coupled to the supply of liquid and opening onto the inner surface of the barrier, the cylinder housing a dose of the liquid to be atomized; and
 a piston mounted within the body, in direct contact with the dose of the liquid in the cylinder, for reciprocal movement within the cylinder between a retracted position, at least partially withdrawn from the cylinder, and a discharged position, substantially within the cylinder, wherein the piston applies direct pressure on the dose of the liquid in the cylinder to force the liquid through the slit so that the liquid is atomized.

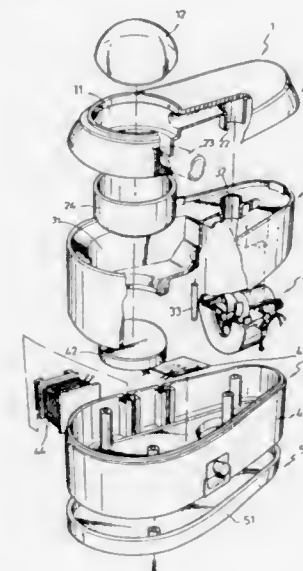


port and said second air channel, said transient surface being inclined towards the retaining port for preventing the medicinal liquid from flowing into the water chamber through said air channels; and
 said cover lid being provided with an opening in alignment with said retaining port of said channel lid, said opening being provided with a transparent lid.

5,511,540
INHALATION DEVICE
 Andrew M. Bryant, Loughborough; Anthony C. L. Wass, Stamford, both of, Great Britain, and Guenter M. Zilligan, Grevenbroich, Germany, assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
 PCT No. PCT/GB93/01754, § 371 Date Feb. 15, 1995, § 102(e) Date Feb. 15, 1995, PCT Pub. No. WO94/04209, PCT Pub. Date Mar. 3, 1994
 PCT Filed Aug. 18, 1993, Ser. No. 381,867
 Int. Cl.⁶ A61M 11/00
 U.S. Cl. 128—200.23 14 Claims



5,511,539
DOSE INHALER
 Su-chu Lien, 5F, 200 Min-chu Rd., Lu-chou Hsiang, Taipei Hsien, Taiwan
 Filed Jun. 19, 1995, Ser. No. 492,161
 Int. Cl.⁶ A61M 11/00
 U.S. Cl. 128—200.21 1 Claim



1. An inhaler comprising a cover lid, a channel lid, a water chamber, a power set and a bottom:
 said power set including a housing, an oscillator and a circuit, said housing which is disposed with the circuit being installed at the bottom, said oscillator being electrically interconnected with the circuit;
 said water chamber being disposed above the oscillator and being used to contain water for mixing with a medicinal liquid, one side of said water chamber being provided with an air channel, a water level sensor being provided at the bottom of said water chamber;
 said channel lid including a retaining port and a second air channel, and also an inhaling port at one side thereof, said retaining port being disposed right above the water chamber, a cup containing the medicinal liquid being disposed above the water chamber with a top portion of said cup being disposed above said retaining port, a passage being defined by said air channels and being intercommunicated with said inhaling port, a transient surface being provided between said retaining

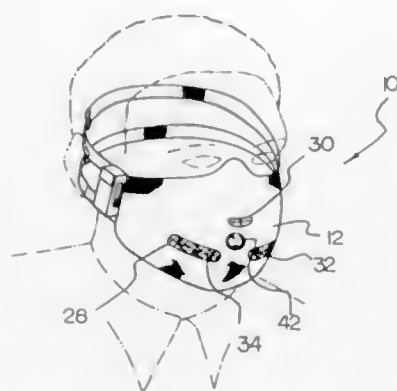
1. A breath-actuated aerosol dispenser comprising a housing defining a patient port and containing an aerosol container equipped with a metered dose dispensing valve, a primer movable between a rest position and a priming position in which it applies a force sufficient to actuate the dispensing valve, and a breath-actuated trigger mechanism which prevents actuation of the dispensing valve until a triggering air flow passes through the patient port, wherein the primer comprises a spring and a cage, the spring being positioned within the cage such that the spring is maintained in a partially compressed state when the primer is in its rest position and such that no substantial force is applied by the spring to the aerosol container, dispensing valve, or breath-actuated trigger mechanism in the rest position, the cage comprising a top element which engages a top end of the spring and a bottom element which engages a bottom end of the spring so as to hold the spring in said partially compressed state when the primer is in its rest position, said top element and said bottom element of the cage being movable within the housing.

5,511,541
WARM AIR MASK
 Walter R. Dearstine, 5206 W. Sharps Ridge Rd., McConnelsville, Ohio 43756
 Filed Aug. 4, 1995, Ser. No. 511,371
 Int. Cl.⁶ A62B 18/08

U.S. Cl. 128—201.13

5 Claims

1. A new and improved warm air mask comprising, in combination:
 a facial covering positionable over the mouth, nose, chin and cheeks of a wearer, the covering including an interior layer of a stay dry material, an exterior layer of a stay dry material and an intermediate layer of felt therebetween, the covering configured to form an upper edge positionable above the nose of



a wearer, a lower edge positionable beneath the chin of a wearer, and side edges positionable beyond the ears of a wearer;

three oval inhale ports formed in the covering and extending therethrough, each inhale port including a fabric mesh and an imperforate flexible flap to open with the inhaling of a wearer and to close with the exhaling of a wearer;

a single circular exhale port formed centrally in the covering and extending therethrough, the exhale port including an imperforate flexible flap to open with the exhaling of a wearer and to close with the inhaling of a wearer;

an array of electrical resistance wires for generating heat when electrically activated, the wires of the array being positioned in each inhale port with an associated electrical power source and a switch secured adjacent to the covering for selectively activating and inactivating the resistance wires;

a pair of parallel securement straps having first ends fixedly secured to one edge of the covering and second ends separately secured to the other edge of the covering;

pile type fasteners releasably securing the other edge of the covering to the second ends of the straps; and

adjustment members located on the straps intermediate the ends.

5,511,542

LOX BREATHING SYSTEM WITH GAS PERMEABLE-LIQUID IMPERMEABLE HEAT EXCHANGE AND DELIVERY HOSE

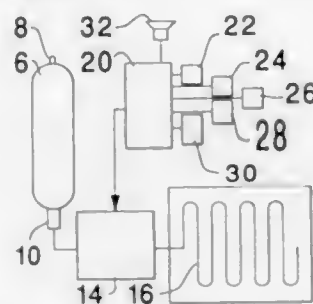
Mark N. Hall, Richland, Wash., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Mar. 31, 1994, Ser. No. 220,865

Int. Cl.⁶ A62B 7/00; A61M 16/00

U.S. Cl. 128—201.21

13 Claims



1. Life support apparatus comprising:

a garment for completely enclosing a wearer and constructed for preventing passage of gas from the environment surrounding said garment;

a portable receptacle holding a quantity of an oxygen-containing fluid in liquid state, the fluid being in a breathable gaseous state when at standard temperature and pressure;

fluid flow means secured within said garment and coupled to said receptacle for conducting the fluid in liquid state from said receptacle to the interior of said garment; and

flow control means connected for causing fluid to flow from said

receptacle to said fluid flow means at a rate determined by the breathable air requirement of the wearer,

wherein fluid in liquid state is conducted into the interior of the garment at a rate to be vaporized and heated to a breathable temperature by body heat produced by the wearer, and

wherein said fluid flow means comprise a heat exchanger including a conduit connected to receive the fluid from said receptacle, said conduit being made of a material which is permeable to gasses and impermeable to liquids.

5,511,543

DISPOSABLE RESUSCITATION DEVICE HAVING UNIDIRECTIONAL VALVE

Terry L. Shirley, 31471 Paseo Duran, San Juan Capistrano, Calif. 92675

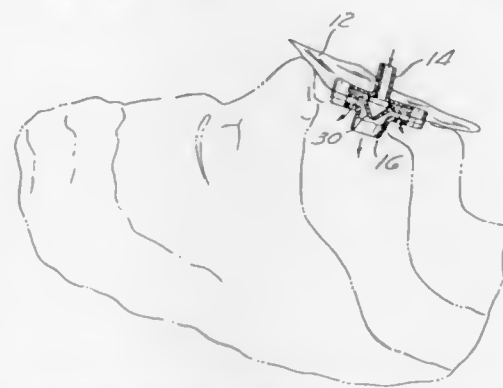
Continuation of Ser. No. 931,712, Aug. 18, 1992, abandoned.

This application May 24, 1994, Ser. No. 248,198

Int. Cl.⁶ A61M 16/00

U.S. Cl. 128—203.11

3 Claims



1. A device for preventing disease transmission during manual rescue breathing, said device comprising:

(a) a flexible sheet configured to cover a victim's mouth and nose;

(b) a body disposed substantially centrally within said flexible sheet, said body comprising:

(i) a first tube insertable into a rescuer's mouth;

(ii) a second tube in fluid communication with said first tube and insertable into a victim's mouth, said first and second tubes defining a first air path through said body;

(c) at least one aperture formed in said body, said aperture(s) between said flexible sheet and said second tube, said aperture(s) defining a second air path through which air exhausted by a victim exits said body between said flexible sheet and said second tube for preventing the exhausted air from being directed toward a rescuer, wherein said aperture(s) formed in said body allows a victim to exhale through a victim's mouth and means for closing said aperture(s) formed in said body when air is blown into said first tube.

5,511,544

NON-RESISTANT RESPIRATORY EXERCISER

Charles L. McKenna, 9744 1st St., Gerber, Calif. 96035, and G. David Swanson, 2018 Burns Dr., Eureka, Calif. 95503

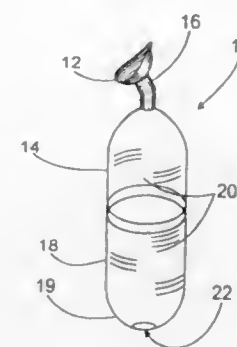
Filed Jan. 23, 1995, Ser. No. 376,903

Int. Cl.⁶ A62B 7/00

U.S. Cl. 128—205.13

1 Claim

1. A respiratory exercising device consisting of a face mask, an enlarged cavity composed of first and second sections, each of said sections having a rounded end joined by a substantially cylindrical portion, a passageway extending from a first open end at said mask to a second open end substantially centrally located in the rounded end of said first section of said enlarged cavity, said first and second open ends being the only openings in said passageway, said



passageway being unobstructed between said first and second open ends at all times, said substantially cylindrical portions of said first and second sections of said enlarged cavity being telescopically joined so that said enlarged cavity may be expanded or contracted by relative telescoping movement of said first and second sections, said second section having an aperture located substantially centrally therein in its rounded end to allow airflow into and out of said enlarged cavity.

5,511,545

VALVE FOR PULMONARY MEDICAL USE

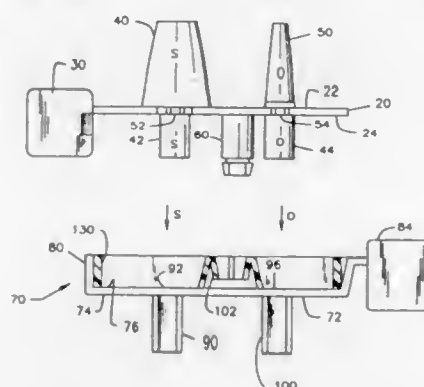
Walter J. Jinotti, 10 Scott St., New Brunswick, N.J. 08903

Filed Jan. 4, 1995, Ser. No. 368,361

Int. Cl.⁶ A61M 16/00

U.S. Cl. 128—205.24

19 Claims



1. A valve for pulmonary treatment apparatus comprising

a first valve portion,

a second valve portion,

first locking means forming a unitary piece with with said first valve portion, and

second locking means forming a unitary piece with with said second valve portion,

said first locking means tightly engaging said second locking means and exerting a pulling force which causes said first and second valve portions to be pulled toward each other and tightly locked together, thus locked together, said first and second valve portions are rotatable with respect to each other between a first orientation and a second orientation.

5,511,546

FINGER APPARATUS FOR MEASURING CONTINUOUS CUTANEOUS BLOOD PRESSURE AND ELECTROCARDIOGRAM ELECTRODE

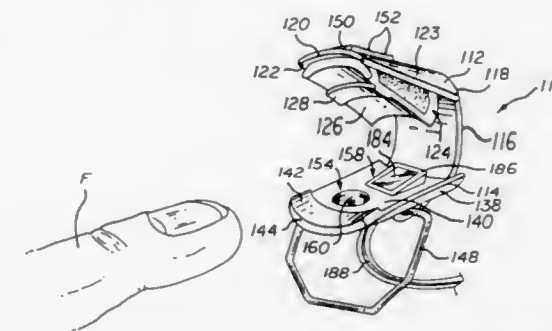
Edward H. Hon, 11 Bradbury Hills Rd., Bradbury, Calif. 91010

Filed Sep. 20, 1993, Ser. No. 124,101

Int. Cl.⁶ A61B 5/02

U.S. Cl. 128—633

5 Claims



1. A finger attachment assembly for measuring blood pressure comprising:

a first means for engaging the cylindrical dorsal surface of the finger;

a second means for engaging the palmside surface of the finger;

at least one blood pressure sensing and monitoring means for sensing and monitoring blood pressure;

means for holding and mechanically coupling to a finger said at least one blood pressure sensing and monitoring means; and

at least one means for engaging the middle portion of the middle phalanx of the finger.

5,511,547

SOLID STATE SENSORS

David R. Markle, Paoli, and Misa V. Jovanovic, Wayne, both of Pa., assignors to Biomedical Sensors, Ltd., High Wycombe, England

Filed Feb. 16, 1994, Ser. No. 197,423

Int. Cl.⁶ A61B 5/00

U.S. Cl. 128—633

8 Claims

1. A stabilized, bio-inert sensor for the determination of an analyte in a medium which comprises a chemical indicator sensitive to the analyte in association with a stabilizing substrate formed from a polymer which is inert to the medium and analyte and does not affect the sensitivity of the indicator, which polymer is a crosslinked, solid silicone rubber formed from a silicone carbinol having a molecular structure compatible with said indicator.

5,511,548

BIOMEDICAL ELECTRODE HAVING A SECURED ONE-PIECE CONDUCTIVE TERMINAL

Timothy J. Riazzi, Kettering; Michael L. Wolf, West Milton, and Michael J. Allaire, Cincinnati, all of Ohio, assignors to New Dimensions in Medicine, Inc., Dayton, Ohio

Division of Ser. No. 66,716, May 24, 1993, Pat. No. 5,406,945.

This application Nov. 7, 1994, Ser. No. 335,171

Int. Cl.⁶ A61B 5/0402; 5/0488; A61N 1/04

U.S. Cl. 128—641

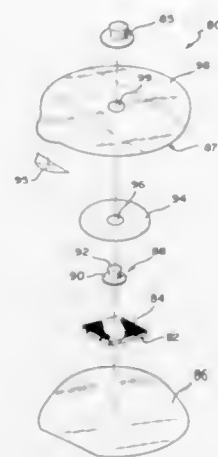
7 Claims

1. A biomedical electrode comprising:

an electrolytic gel layer having first and second sides wherein said first side is adapted to contact a patient;

a conductive terminal having a base portion integrally joined to a stud member, said base portion being mounted to said second side of said gel layer;

an anchoring patch having a first opening correspondingly sized with said stud member of said terminal, said anchoring patch



being mounted over said terminal such that said stud member protrudes through said first opening and said base portion is held against said second side of said gel layer, said anchoring patch being formed of a porous foam material having sufficient porosity such that said anchoring patch is securable to said second side of said gel layer;

a top layer having first and second sides and a second opening correspondingly sized with said stud member of said terminal, wherein said second side of said top layer has a patient-contact adhesive coating, said top layer being adhesively mounted onto said anchoring patch such that said stud member protrudes through said second opening and the periphery of said second side is capable of being secured to said patient; and

a conductive cap portion attached over said stud member and positioned over said second opening on said first side of said top layer.

5,511,549

NORMALIZING AND CALIBRATING THERAPEUTIC RADIATION DELIVERY SYSTEMS

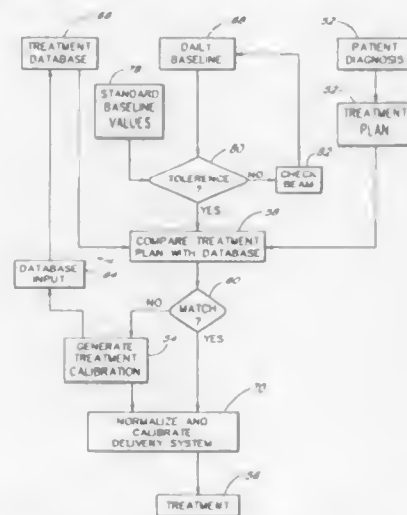
David B. Legg, Corona; George Contrakon; Jon W. Slater, both of Redlands; Daniel W. Miller, Yucaipa; Michael E. Moyers, Redlands, and Jeffrey V. Siebers, Grand Terrace, all of Calif., assignors to Loma Linda Medical Center, Loma Linda, Calif.

Filed Feb. 13, 1995, Ser. No. 404,207

Int. Cl.⁶ A61B 6/00

U.S. Cl. 128—653.1

7 Claims



1. A method of treating a patient with proton radiation, comprising:

- utilizing a first beam delivery system to emit a proton radiation beam having a standard beam configuration;
- detecting the radiation dose supplied by the beam of standard configuration;
- utilizing said first beam delivery system to emit a proton radiation beam having a beam configuration tailored for a specific treatment plan;
- detecting the radiation supplied by the beam configured for the specific treatment plan and producing a signal corresponding to the detected radiation;
- comparing the signal detected in step (d) with calibrated dose detection data to develop at least one treatment plan calibration factor;
- treating said patient with a proton radiation beam that has been calibrated with said treatment plan calibration factor and that is configured for the specific treatment plan;
- subsequent to steps (a)–(f), utilizing a second beam delivery system to emit another proton radiation beam having said standard beam configuration;
- detecting the radiation dose supplied by the subsequent proton radiation beam having the standard beam configuration;
- comparing the dose detected in step (h) with the dose detected in step (b) to develop at least one normalizing factor;
- utilizing said second beam delivery system to emit a normalized proton radiation beam tailored for said specific treatment plan by utilizing said normalizing factor; and
- treating said patient with the normalized proton radiation beam configured for said specific treatment plan.

5,511,550

ULTRASONIC TRANSDUCER ARRAY WITH APODIZED ELEVATION FOCUS

P. Michael Finsterwald, Scottsdale, Ariz., assignor to Parallel Design, Inc., Tempe, Ariz.

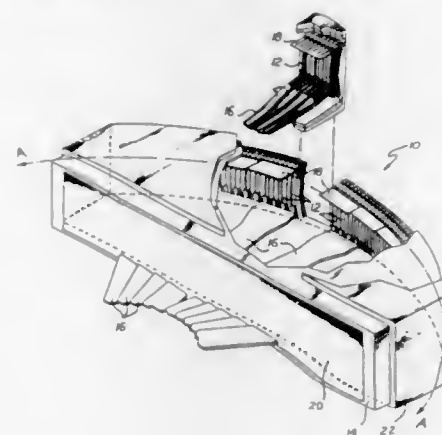
Continuation of Ser. No. 324,104, Oct. 14, 1994, abandoned.

This application May 22, 1995, Ser. No. 447,097

Int. Cl.⁶ A61B 8/00

U.S. Cl. 128—662.03

19 Claims



1. An ultrasonic transducer array for imaging a target, comprising a plurality of piezoelectric transducer elements aligned along an array axis in an imaging plane, each piezoelectric transducer element including:

- a piezoelectric substrate having a front surface and a rear surface;
- a patterned front electrode overlaying selected portions of the front surface of the piezoelectric substrate, such selected portions being less than the entire front surface;
- a rear electrode overlaying the rear surface of the piezoelectric substrate; and
- a first acoustic matching layer overlaying the patterned front electrode and conducting electrical signals to the front electrode;

wherein the patterned front electrode is configured to provide a predetermined tapered weighting function distributed along an elevation axis, perpendicular to the imaging plane, thereby providing a beam of ultrasonic energy that is apodized in the elevation plane.

5,511,551

CUFF FOR BLOOD PRESSURE METER

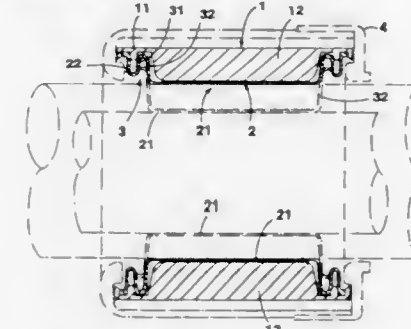
Yoshihiko Sano; Toshiyuki Kobayashi, both of Kyoto; Tsutomu Teramoto, Nara, and Kouta Fukumura, Kyoto, all of Japan, assignors to Omron Corporation, Najaokakyo, Japan

Filed Mar. 15, 1994, Ser. No. 213,425

Int. Cl.⁶ A61B 5/00

U.S. Cl. 128—686

15 Claims



1. A cylindrical cuff for a blood pressure meter, said cylindrical cuff comprising:

- a belt having a plurality of protruding bodies disposed on one side of said belt, each of said protruding bodies having a flat surface facing a center of said cylindrical cuffs, each of said flat surfaces representing an innermost surface of said protruding body with respect to the center of said cylindrical cuff; and

at least one chamber disposed on said one side of said belt for receiving compressed air and accommodating said protruding bodies therein.

5,511,552

DISPOSABLE BLOOD PRESSURE CUFF

David E. Johnson, Madison, Conn., assignor to CAS Medical Systems, Inc., Branford, Conn.

Filed Sep. 2, 1994, Ser. No. 300,396

Int. Cl.⁶ A61B 5/022

U.S. Cl. 128—686

4 Claims



1. An inflatable blood pressure cuff which may be used by a single patient and safely disposed of thereafter, said cuff comprising:

- an inner elastic resin component, said inner component being operable to compress a patient's appendage when said cuff is inflated;
- an outer component which combines with said inner component to form an internal expandable cuff inflation chamber, said outer component comprising:
 - a first layer of bondable material facing said inflation chamber;

- an essentially non-stretchable paper layer overlying said first layer, said paper layer being operable to resist outward expansion when the cuff is inflated; and
- a resinous layer disposed on said paper layer on a side thereof which is opposite said first layer, said resinous layer forming an outermost layer of said outer component.

5,511,553

DEVICE-SYSTEM AND METHOD FOR MONITORING MULTIPLE PHYSIOLOGICAL PARAMETERS (MMPP) CONTINUOUSLY AND SIMULTANEOUSLY

Jacob Segalowitz, 505 S. Beverly Dr., Ste. 1240, Beverly Hills, Calif. 90212

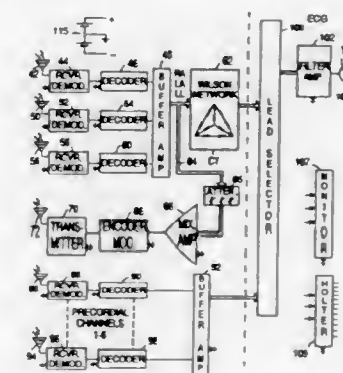
Continuation-in-part of Ser. No. 273,535, May 3, 1994, which is a continuation of Ser. No. 911,561, Jul. 7, 1992, Pat. No. 5,307,878, which is a continuation-in-part of Ser. No. 818,398, Jan. 2, 1992, abandoned, which is a continuation of Ser. No. 473,887, Feb. 7, 1990, abandoned, which is a continuation-in-part of Ser. No. 310,660, Feb. 15, 1989, Pat. No. 4,981,141.

This application Oct. 28, 1994, Ser. No. 330,526

Int. Cl.⁶ A61B 5/00

U.S. Cl. 128—696

39 Claims



1. An electrode structure for use in a wireless patient monitoring system, including:

- non-conductive strip means of selected length and width for supporting a signal transmitter on one side thereof and a plurality of conductive element pairs on the other side thereof, each of said conductive element pairs being in spaced relationship to each other and exposed on said other side of said strip means;
- battery means having at least one voltage terminal and a ground terminal carried on said strip means;
- microchip amplifier means carried on said strip means for amplifying signals and having signal input terminal means coupled to a first conductive element of each pair of conductive elements for receiving physiological signals therefrom and having output terminal means;
- microchip multiplexer means carried on said strip means having input terminal means coupled to the output terminal means of the amplifier means for receiving the physiological signals therefrom and multiplexing same and having output terminal means;
- a microchip encoder-modulator carried on said strip means for encoding and modulating multiplexed signals and having input terminal means coupled to said output terminal means of said multiplexer means and having output terminal means;
- microchip transmitter carried by said strip means for transmitting coded-modulated signals and having input terminal means and output terminal means, said input terminal means of said transmitter being coupled to said output terminal means of said encoder-modulator means;
- a wireless-signal radiator having input terminal means coupled to said output terminal means of said microchip transmitter means for radiating the coded-modulated signals;

5,511,560

METHOD AND APPARATUS FOR SIGNALING
PARTURITION IN LARGE FARM ANIMALS

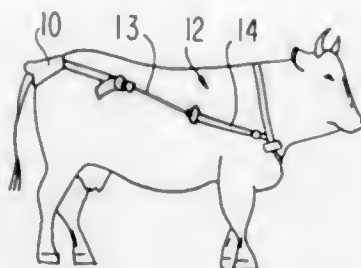
Jean-Paul Begouen, Lombost, 03280 Archignat, France
PCT No. PCT/FR93/00359, § 371 Date Oct. 18, 1994, § 102(e)
Date Oct. 18, 1994, PCT Pub. No. WO93/20778, PCT Pub.
Date Oct. 28, 1993

PCT Filed Apr. 9, 1993, Ser. No. 307,716

Int. Cl.⁶ A61B 5/103

U.S. Cl. 128—775

9 Claims



1. An apparatus for signaling of the parturition of large animals comprising:

a bearing plate in the shape of a gutter formed by two inclined planes and a substantially parallelepipedal roof ridge, supporting straps to maintain the bearing plate affixed to the posterior part of the back of the animal,

a subcaudal strap affixed on the bearing plate, situated substantially in the plane formed by the bottom edges of the bearing plate,

an arm equipped at its extremity with a ring for holding the tail of the animal and articulated on the bearing plate with a magnet placed close to the joint, the arm normally assuming, when the apparatus is in place on the animal, a position substantially perpendicular to said plane, while the raised position of the tail places the arm in a position substantially parallel to the plane thereby placing the magnet in a position closer to the parallelepipedal roof ridge;

an electronic assembly forming a transmitter apparatus and comprising:

a power supply dry cell,
a magnetically operated power supply circuit breaker (ILS microbreaker),

an oscillating and wave-shaping circuit for producing and modulating a radio signal in a discontinuous manner, timing means for delaying the application of power and activating the oscillator only after the passage of the preset time period resulting in low consumption of electric energy, wherein energy is consumed necessary for discontinuous radio transmission when the detector senses parturition in that the tail of the animal has assumed a raised position for an uninterrupted period of time longer than the preset period, so that the imminence of parturition is thereby indicated, and radio frequencies are emitted, and

a receiving apparatus located either near a human monitor or a relay station.

5,511,561

GAIT CYCLE FORCE MONITOR

Steven M. Wanderman, 107 Southern Trace Ct., Peachtree City, Ga. 30269, and Glenn E. Bader, 78 Oronoque Trail, Shelton, Conn. 06484

Filed Nov. 16, 1992, Ser. No. 976,549

Int. Cl.⁶ A61B 5/103

U.S. Cl. 128—779

9 Claims

1. A force monitoring system comprising a foot-pad unit and a remote unit wherein the foot-pad unit comprises a power source,



a tactile force sensor selected from the group consisting of a resistance sensor and a capacitance sensor,

means to translate a force applied to the tactile force sensor to a voltage,

a comparator circuit having a set point and an amplifier that is activated when the voltage from the force sensor is greater than the set point,

a piezo electric annunciator that oscillates at a frequency greater than 22 khz and is driven by the comparator amplifier, and

a housing made of a protecting material encasing the tactile force sensor, the means to translate the force, the comparator circuit, and the piezo electric annunciator; and

the remote unit comprises a receiver matched to the frequency of the piezo-electric annunciator, a convertor, a microprocessor, and a visual display wherein the micro processor is programmed to activate the visual display upon receipt of a signal from the piezo-electric annunciator.

5,511,562

TEMPOROMANDIBULAR JOINT APPLIANCE

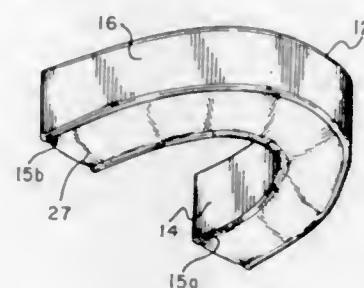
Raymond R. Hancock, 475 Old Marlton Pike, Marlton, N.J. 08053

Filed Nov. 14, 1994, Ser. No. 338,257

Int. Cl.⁶ A61C 5/14

U.S. Cl. 128—859

5 Claims



1. A dental appliance for treating temporomandibular joint disorders comprising a U-shaped channel member having an inner side wall and an outer side wall, said inner side wall and said outer side wall each having a top edge and a bottom edge, a plurality of connectors positioned between said inner side wall and said outer side wall, said connectors joining said walls together and dividing said dental appliance into an upper compartment and a lower compartment for receiving a patient's upper and lower teeth, respectively, a pliable material filling said upper and lower compartments so that the grinding or clenching of the patient's teeth is prevented and the patient's mandible can be set in a desired position, said pliable material having an unstressed configuration and being compressible upon application of force supplied by the patient's teeth in order to form an accurate impression of the same, said pliable material being capable of substantially returning to said unstressed configuration upon removal of the force supplied by the patient's teeth, and a thin flexible plastic shield extending between said bottom edge of said inner side wall and said bottom edge of said outer side wall for preventing the patient's teeth from being retained in said pliable material.

5,511,563

APPARATUS AND METHOD FOR TREATING
RHEUMATOID AND PSORIATIC ARTHRITIS

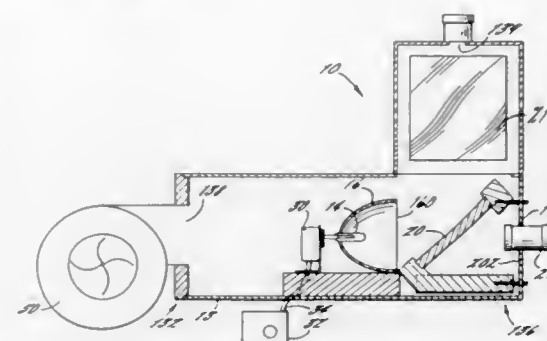
Donald A. Diamond, 5416 Harbor Rd., Bradenton, Fla. 34209-1832

Continuation-in-part of Ser. No. 718,615, Jun. 21, 1991, Pat. No. 5,337,741. This application Feb. 18, 1994, Ser. No. 198,297

Int. Cl.⁶ A61N 5/06

U.S. Cl. 128—848

5 Claims



1. A method of treating an inflamed joint of a patient having rheumatoid or psoriatic arthritis, comprising the steps of: providing a source of noncoherent radiation having an output wavelength between 640 and 800 nm and an incident power of 40 to 200 mW/cm²; and irradiating an epidermal surface transversely to transilluminate the inflamed joint with the radiation for a time sufficient to reduce the inflammation of the joint, the time generally in the range of 10 to 20 minutes.

5,511,564

LAPAROSCOPIC STRETCHING INSTRUMENT AND
ASSOCIATED METHOD

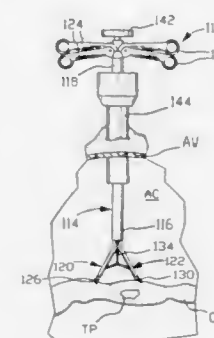
Peter J. Wilk, New York, N.Y., assignor to Valleylab Inc., Boulder, Colo.

Continuation of Ser. No. 154,809, Nov. 18, 1993, Pat. No. 5,395,367, which is a continuation-in-part of Ser. No. 922,165, Jul. 29, 1992, Pat. No. 5,312,391, and Ser. No. 972,508, Nov. 6, 1992, Pat. No. 5,318,013. This application Feb. 1, 1995, Ser. No. 382,280

Int. Cl.⁶ A61B 19/00

U.S. Cl. 128—898

7 Claims



1. A surgical device comprising: a frame member having a distal end and a proximal end; first holding means secured to said frame member and disposed at said distal end thereof for securing a hold on first organic tissues of a patient; second holding means secured to said frame member and disposed at said distal end thereof for securing a hold on second organic tissues of the patient spaced from the first organic

tissues, at least one of said first holding means and said second holding means being movable relative to the other; first actuator means, mounted to said frame member at said proximal end thereof and operatively connected to said first holding means, for controlling operation of said first holding means; second actuator means, mounted to said frame member at said proximal end thereof and operatively connected to said second holding means, for controlling operation of said second holding means; and additional actuator means, operatively independent of said first actuator means and said second actuator means and mounted to said frame member and operatively connected to said first holding means and said second holding means, for moving at least one of said first holding means and said second holding means relative to the other, thereby enabling a stretching of third organic tissues between said first organic tissues and said second organic tissues and facilitating access to said third organic tissues.

5,511,565

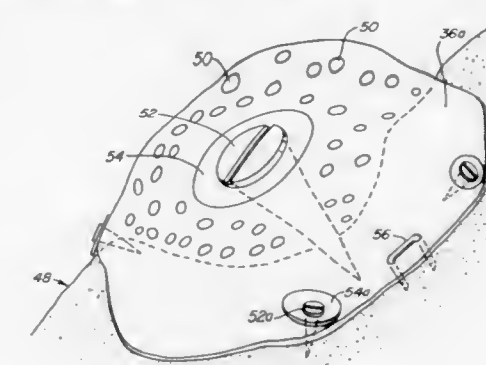
GUIDED BONE AND TISSUE GENERATION DEVICE
AND METHOD TO BE USED DURING OR AFTER
DENTAL SURGERY OR JAW SURGERY

Charles S. Syers, 325 Ascot Rd., Hillsborough, Calif. 94010
Continuation-in-part of Ser. No. 862,894, Apr. 3, 1992, Pat. No. 5,297,563. This application Mar. 15, 1994, Ser. No. 213,491

Int. Cl.⁶ A61B 19/00

U.S. Cl. 128—898

15 Claims



1. A method to facilitate tissue guided regeneration of a bony deficit of a bone using a mechanical barrier sized to cover said deficit comprising:
a. placing the barrier over the deficit and beneath the periosteum of the bone;
b. shaping the barrier to the deficit; and
c. securing the barrier in place by applying a member of the group consisting of a screw and a staple.

5,511,566

DISTRIBUTOR FOR PARTICLES OF TOBACCO AND
THE LIKE

Peter Brand, Hamburg, Germany, assignor to Hauni Maschinenbau AG, Hamburg, Germany

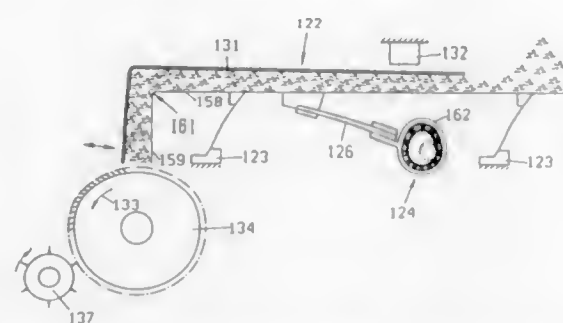
Filed Jun. 2, 1994, Ser. No. 252,958

Int. Cl.⁶ A24C 5/39

U.S. Cl. 131—109.3

17 Claims

1. A distributor for particles of smokable material, comprising a carded conveyor rotatable about a predetermined axis; means for delivering to said conveyor an at least substantially continuous flow of particles including a duct having a discharge end at said conveyor, a particle receiving section, and an elongated intermediate section between said receiving section and said discharge end,



at least a major part of said intermediate section being at least substantially horizontal; means for agitating at least a portion of said duct to thereby advance the flow in a direction from said receiving section to said discharge end; and means for smoothing the flow of particles at said discharge end, comprising a flow contacting member which is driven to oscillate in at least substantial parallelism with said axis.

5,511,567

HAIR ANCHORING DEVICE

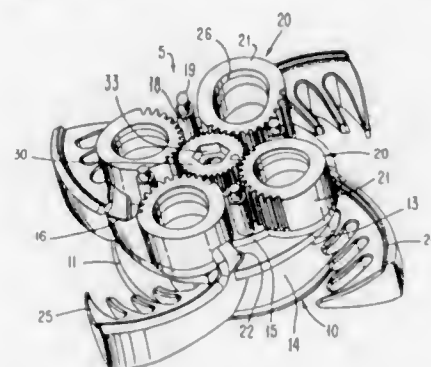
Adolfo Cefis, Milan, Italy, assignor to Arborea S.A.S. di Adolfo Cefis & C., Milan, Italy

Filed Apr. 21, 1994, Ser. No. 230,751

Int. Cl.⁶ A45D 8/30

U.S. Cl. 132—279

17 Claims



1. A device for removably anchoring a piece to hair, comprising: miniature clamp means having an open position for receiving a tuft of hair and a closed position for firmly clamping the tuft of hair, the miniature clamp means comprising a receiving section locatable in an area containing hair and a plurality of hair trapping assemblies, movably mounted to the receiving section between the open position for receiving a tuft of hair, and the closed position for holding the tuft against the receiving section;

mounting means for carrying a piece, the mounting means being connected to the miniature clamp means when the miniature clamp means is in the closed position firmly clamping a tuft of hair, the mounting means including a cover plate detachably engageable to the assemblies;

activating means operatively connected to the miniature clamp means for moving the hair trapping assemblies into and out of the receiving section between the open and closed positions for trapping hair at the receiving section; and

the hair trapping assemblies each comprising a comb assembly, each comb assembly comprising a comb having a plurality of teeth, the receiving section having a recess for receiving teeth in the closed position, and the means for moving the comb assemblies comprising a central wheel having an outer circumference engaged with each of the comb assemblies for rotation of the comb assemblies with rotation of the central wheel.

5,511,568 ENDOSCOPIC CANNULATED INSTRUMENT FLUSHING APPARATUS FOR FORCING A CLEANING SOLUTION THROUGH AN ENDOSCOPIC CANNULATED INSTRUMENT FOR REMOVAL OF GROSS DEBRIS

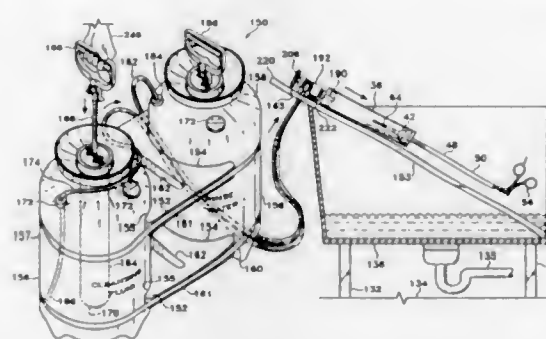
Michael D. Bowman, Olathe; Michael J. Armentrout, Leawood, both of Kans., and Drake L. Koch, Kansas City, Mo., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

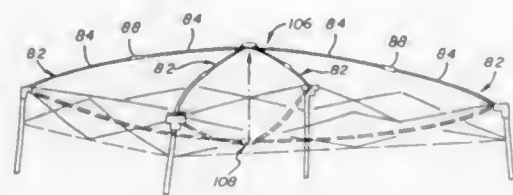
Continuation-in-part of Ser. No. 47,119, Apr. 14, 1993, Pat. No. 5,279,317, which is a continuation-in-part of Ser. No. 22,994, Feb. 26, 1993, abandoned. This application Oct. 1, 1993, Ser. No. 130,597

Int. Cl.⁶ B08B 3/04

U.S. Cl. 134—102.2

18 Claims





at least three legs, each of said legs having an upper end and a lower end;

at least two perimeter truss pairs of link members connected to each of said legs, each of said perimeter truss pairs of link members including first and second link members, said first link member having an outer end connected to the upper end of one said leg, and said second link member having an outer end slidably connected to said leg, and said first and second link members being pivotally connected together in a scissors configuration so as to be extendable from a first collapsed position to a second extended position;

a flexible, collapsible canopy mounted to said upper end of said legs, said flexible, collapsible canopy being movable between a normal raised position and a lowered position providing said collapsible shelter with a reduced profile, said flexible, collapsible canopy including at least two flexible pole members removably mountable to the upper ends of the legs of the shelter to extend across the shelter; and

a plurality of clip members disposed on said truss pairs of link members for removably receiving said pole members for temporary stowage of said pole members in a folded configuration.

5,511,573

CONTAMINATED VALVE CONTAINMENT DEVICE

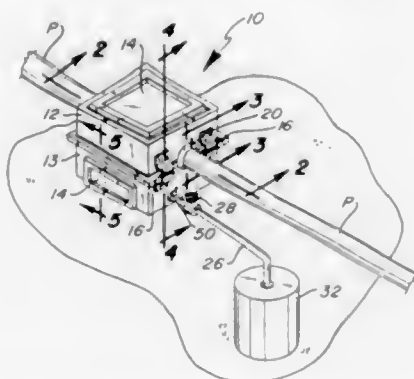
Lawrence J. Corte, Lakewood, Colo., assignor to K N Energy, Inc., Lakewood, Colo.

Filed Oct. 24, 1994, Ser. No. 327,594

Int. Cl.⁶ F16L 55/168; 55/18; F16K 43/00

U.S. Cl. 137—15

13 Claims



6. A method for containing spills from a leaking pipe member and repairing the leaking pipe, said method comprising the steps of:

attaching a leak-proof housing around a section of the leaking pipe member to form a leak-proof barrier between the section of the leaking pipe member and the surrounding environment; opening a leak-proof panel positioned the housing to obtain access to the section of the leaking pipe member wherein the leak-proof housing remains attached to the section of leaking pipe to continue to provide a leak-proof barrier;

providing means for draining the fluid leakage within the catch means conducting the necessary maintenance to repair the leaking pipe member section;

closing the leak-proof panel upon completion of the necessary maintenance of the leaking pipe member section; and

removing the housing from the repaired section of the leaking pipe member.

5,511,574

THRUST BLOCK AND COUPLING FOR AN IRRIGATION SYSTEM

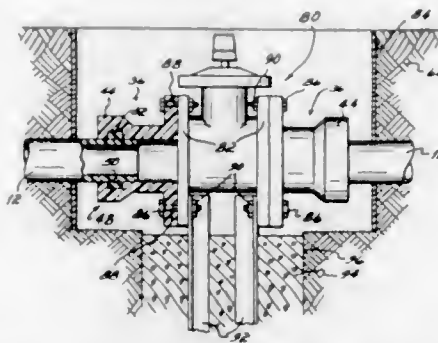
Robert Macke, 6208 Charity Dr., Cincinnati, Ohio 45248

Filed Nov. 15, 1994, Ser. No. 340,192

Int. Cl.⁶ F16L 55/18; H05B 15/06

U.S. Cl. 137—15

16 Claims



1. A method of blocking the thrust within an irrigation system, said method comprising:

providing a valve having a pair of flanges; releasably securing each said valve flange to a similarly configured flange on an adjacent component of the system; releasably securing a brace to one of said valve flanges; and anchoring said brace to the ground, wherein said valve can be disconnected from said adjacent component and replaced with

a similar valve without removing said brace and said adjacent component from the ground and disturbing the ground surrounding said valve.

5,511,575

APPARATUS FOR PERMITTING UNINTERRUPTED RELIEF OF CARGO TANK COMPARTMENT INTERNAL PRESSURE AND PREVENTING LEAKAGE OF LADING FROM THE CARGO TANK DURING DYNAMIC PRESSURE SURGES

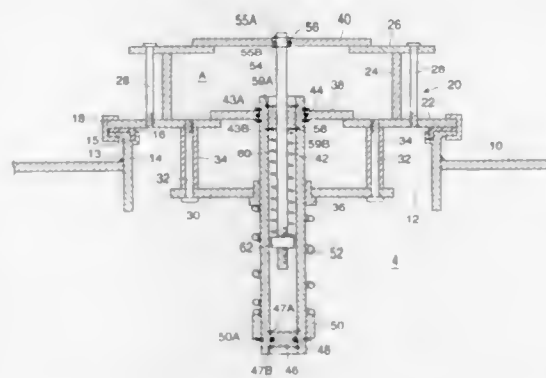
Roy W. Andenmatten, 10 Eva La., Farmingville, N.Y. 11738, and Ronald P. Andenmatten, 27 Otsego Ave., Dix Hills, N.Y. 11746

Filed Dec. 1, 1994, Ser. No. 348,380

Int. Cl.⁶ F16K 17/04

U.S. Cl. 137—43

16 Claims



1. A valve for relieving pressure from within a cargo tank through an opening in a cargo tank wall, which comprises:

(a) a chamber housing coupled to the cargo tank at a position centrally disposed over the tank wall opening having a flow chamber extending axially throughout and having a first opening at its lower end in flow communication with the interior of the cargo tank and a second opening at its upper end in flow communication with the exterior of the cargo tank, wherein the first opening and the second opening define a first annular valve seat and a second annular valve seat, respectively;

(b) a first vent head positioned for engagement with the first annular valve seat and movable between a normally closed position in sealing engagement with the first annular valve seat blocking flow of fluid past the first annular valve seat and an open position above the first annular valve seat enabling flow of fluid from the cargo tank past the first annular valve seat and into the flow chamber;

(c) a second vent head positioned for engagement with the second annular valve seat and movable between a normally closed position in sealing engagement with the second annular valve seat blocking flow of fluid past the second annular valve seat and an open position above the second annular valve seat enabling flow of fluid from the flow chamber to the exterior of the cargo tank;

(d) a means for yieldably biasing the first vent head toward the normally closed position to maintain a positive closure seal between the first vent head and the first annular valve seat, wherein the means provides a predetermined closing force which, when overcome by the pressure within the cargo tank, enables movement of the first vent head against the biasing force to the open position; and

(e) a means for yieldably biasing the second vent head toward the normally closed position to maintain a positive closure seal between the second vent head and the second annular valve seat, wherein the means provides a predetermined closing force which, when overcome by the pressure within the flow chamber, enables movement of the second vent head against the biasing force to the open position.

5,511,576

PISTON-TYPE THERMALLY ACTIVATED RELIEF DEVICE

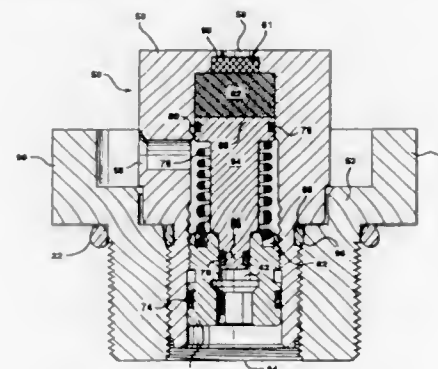
Robin N. Borland, McMurray, Pa., assignor to Amcast Industrial Corporation, Dayton, Ohio

Filed Jan. 17, 1995, Ser. No. 373,622

Int. Cl.⁶ F16K 17/38

U.S. Cl. 137—72

15 Claims



15. A thermally activated relief device comprising: a body having an inlet, an outlet, and a fluid flow passage communicating with said inlet and outlet;

said body further including a fluid escape passage having a member therein which is porous to gases and liquids but not to solids and includes numerous small flow passages providing tortuous flow paths for a fluid;

a plug of a fusible material which melts at a predetermined temperature adjacent to said member; and

a piston positioned in said fluid flow passage having first and second ends, said first end of said piston being normally

biased into a sealing relationship with said inlet and said second end abutting and applying a compressive force on said plug.

5,511,577

AIR RELEASE VALVE

Kevin Richards, Kempton Park, and Michael P. Muller, Beconi, both of, South Africa, assignors to Mulric Hydro Projects (Proprietary) Limited, Boksburg North, South Africa

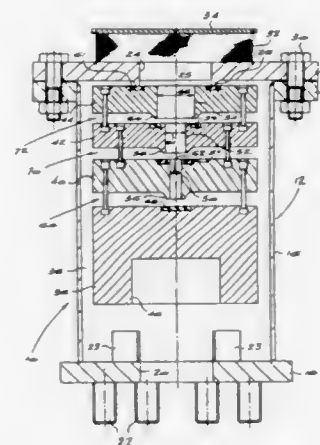
Filed Jul. 1, 1994, Ser. No. 269,968

Claims priority, application South Africa, Mar. 2, 1994, 94/1452

Int. Cl.⁶ F16K 31/18

U.S. Cl. 137—202

7 Claims



1. An air release valve comprising:

a valve chamber having an inlet and an outlet,

a control float positioned adjacent the inlet in the chamber, said control float being movable, in use, in response to changes in liquid level in the chamber, and

a stack of movable valve members positioned in the chamber above the control float, the movable valve members having vent passages therethrough which increase in size with increasing height in the stack but which are smaller than the outlet, and the top movable valve member in the stack being lifted up, by differential in air pressure acting on the top movable valve member, to seat the top movable valve member on the outlet and thereby reduce the effective size of the outlet when a pipeline served by the air release valve is filling with liquid and the liquid displaces air through the valve.

5,511,578

TOOL FOR INSTALLING A STOPPER IN A GAS CONDUIT WALL

Dennis J. Wagner, 63 Wilson La., Bethpage, N.Y. 11714

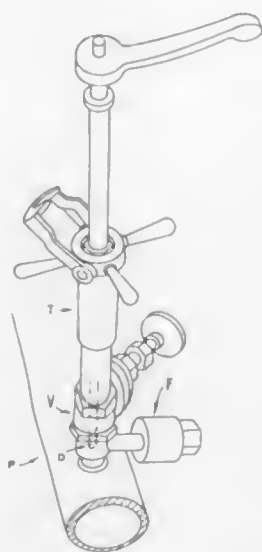
Filed Jun. 29, 1994, Ser. No. 267,668

Int. Cl.⁶ F16K 43/00; F16L 55/12

U.S. Cl. 137—315

7 Claims

1. A tool for installing a stopper plug having a radially expandable body in a hole in order to close the hole against fluid leakage, the tool comprising: a one-piece socket element having internal threads for releasably engaging an externally threaded element that extends above and through said radially expandable body of the stopper plug for holding and positioning the stopper plug during installation of the plug and releasing said externally threaded element after installation of the stopper plug; said socket element being mounted on one end of an elongated shaft securing means cooperatively associated with the end of said threaded element that is positioned below the stopper plug, said elongated shaft carrying



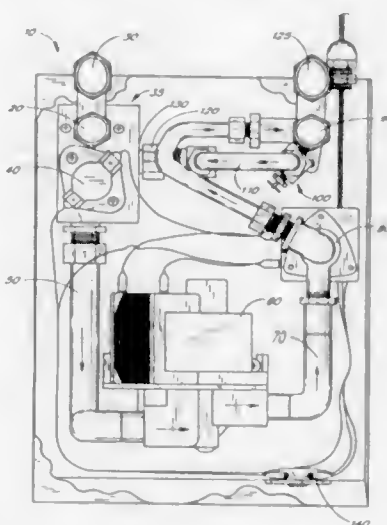
the socket element for moving the socket element linearly and rotationally by moving said shaft said threaded element and said securing means to position and secure the stopper plug with said hole and for withdrawing the socket element after installation of the stopper plug; a generally cylindrical housing through which the elongated shaft extends axially and slidably therein, said housing having a cap at one end through which said shaft extends and attachment means at an opposite housing end for securing the housing to a cylindrical member that defines said hole.

5,511,579

WATER CONSERVATION RECIRCULATION SYSTEM
William D. Price, 3445 Ashwood Ct., Oceanside, Calif. 92054
Continuation-in-part of Ser. No. 198,361, Feb. 18, 1994, abandoned. This application Dec. 19, 1994, Ser. No. 359,053
Int. Cl.⁶ F16K 49/00

U.S. Cl. 137—337

7 Claims



1. A water recirculation system comprising:
 - a hot water source and a cold water source;
 - a hot water delivery line connected between said hot water source and at least one plumbing fixture;
 - a cold water delivery line connected between said cold water source and said plumbing fixture;
 - said hot water delivery line and said cold water delivery line being in communication with each other through a recirculation line;

said recirculation line including a pump and a temperature control switch, wherein said pump is activated by said temperature control switch when the temperature of the water in said recirculation line falls below a preselected value;

a backflow line connecting said cold water delivery line to said recirculation line so a portion of the water from the cold water line flows past said temperature control switch, wherein a portion of the water moved by said pump towards the cold water delivery line is also directed into said backflow line; and

a directional valve positioned in said backflow line so that water can only flow from the cold water delivery line to the temperature control switch.

5,511,580

DEVICE FOR RENDERING A STORAGE CONTAINER INERT

Sylvio Resseguier, Rieux, France, assignor to Elf Atochem S.A., France

PCT No. PCT/FR94/00279, § 371 Date Apr. 7, 1995, § 102(e)

Date Apr. 7, 1995, PCT Pub. No. WO94/22744, PCT Pub.

Date Oct. 13, 1994

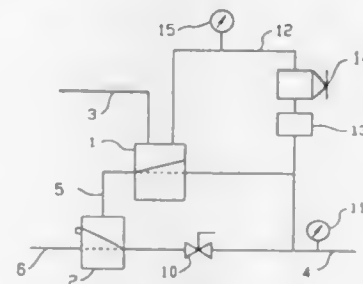
PCT Filed Mar. 15, 1994, Ser. No. 256,062

Claims priority, application France, Mar. 30, 1993, 93 03658

Int. Cl.⁶ B65D 90/44; B64D 37/32

U.S. Cl. 137—488

4 Claims



1. Device for the inert-rendering of a storage container (21), using a cylinder of pressurized inert gas, the said device having a pressurizing pipe (3) and an inert-rendering pipe (6) which are intended to be connected to the storage container, and an inert-gas intake pipe (4) intended to be connected to the cylinder of inert gas, characterized in that it comprises

- a pilot valve (1), having one control inlet, one outlet and two inlets which are capable of communicating alternately with the said outlet, depending on the pressure at the said control inlet,
 - a supply valve (2) having one control inlet, one inlet and one outlet which are capable of being connected or not connected, depending on the pressure at the said control inlet, and
 - a low-pressure support pipe (12) connecting the inert-gas intake pipe (4) to the pilot valve (1) via a filter (13) and via a pressure-reducing valve (14),
- the control inlet of the said pilot valve (1) being connected to the pressurizing pipe (3),
- the inlets of the said pilot valve (1) being respectively connected to the pipe (4) and to a reference pressure,
- the outlet of the said pilot valve (1) being connected via a pipe (5) to the control inlet of the said supply valve (2), the outlet of the said supply valve (2) being connected to the inert-rendering pipe (6),
- and the inlet of the said supply valve being connected to the inert-gas intake pipe (4).

5,511,581
VENT VALVE

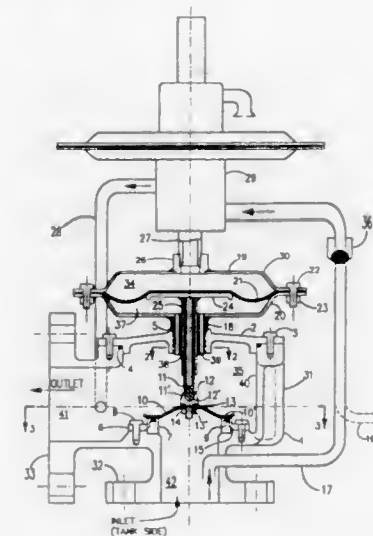
Jone Y. Ligh, P.O. Box 420509, Houston, Tex. 77242-0509

Filed Oct. 31, 1994, Ser. No. 331,853

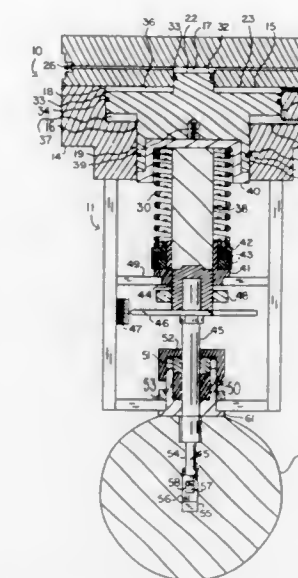
Int. Cl.⁶ F16K 31/385

U.S. Cl. 137—489

19 Claims



1. A tank vent valve for use with a pilot valve that comprises:
 - (a) a vent valve body containing:
 - (i) a nozzle,
 - (ii) a seat plate movable within said vent valve body which seats on said nozzle to seal the valve,
 - (iii) an articulated stem extending from the center of said seat plate and
 - (iv) an outlet and
 - (b) a diaphragm actuator mounted on said vent valve body comprising a resilient member, a support plate below said resilient member such that said resilient member bears upon but is not connected to said support plate and a hollow member attached to said support plate extending toward said seat plate and surrounding said stem, said stem being slidably movable within said hollow member, the upper surface of said diaphragm being in fluid communication with a pressure in said tank through a pilot valve, and the lower surface of said diaphragm being in fluid communication with a pressure at said outlet.



- (D) said piston extension having an O-ring annularly mounted thereon to separate said hydraulic bore from said atmospheric bore; said piston shoulder having an O-ring annularly mounted thereon to separate said upper air chamber from said lower air chamber;
 - (E) said frame supporting a biasing spring to supply force against said piston;
- whereby when hydraulic fluid is supplied at increased pressure through said hydraulic port into said hydraulic bore and against said piston extension, increasing the size of said upper air chamber, decreasing the size of said lower air chamber and extending said valve barrier relative to said fixed flow orifice; and whereby when said hydraulic fluid pressure is decreased within said hydraulic bore, said biasing spring reciprocates said piston in the opposite direction, increasing the size of said lower air chamber, decreasing the size of said upper air chamber and retracting said valve barrier relative to said fixed flow orifice.

5,511,583
COMPRESSOR VALVE

H. Eugene Bassett, Houston, Tex., assignor to Dover Resources, Inc., Tulsa, Okla.

Filed Jan. 24, 1995, Ser. No. 377,164

Int. Cl.⁶ F16K 15/08

U.S. Cl. 137—543.23

28 Claims

1. A valve for intake or exhaust of gas with respect to a compressor comprising:
 - a seating plate and a guard plate releasably attached in opposed relation;
 - the seating plate having a plurality of clusters of holes extending from an outer side of the seating plate thereto, the holes of each cluster being arranged along a respective ring-shaped locus and communicating with respective sealing surfaces opening through an inner side of the seating plate, the clusters being non-concentrically spaced from one another about the seating plate;
 - the guard plate defining a respective stop surface generally opposed to but spaced from the seating surfaces associated with each such cluster of holes, and having flow passages through the guard plate from an inner side thereof to an outer side thereof and communicating with the spaces between the stop surfaces and seating surfaces;

5,511,582

COMPENSATING VALVE FOR CONTROL OF FLUID FLOW

Dannie B. Hudson, Jacksonville, Fla., assignor to ENRJ Ltd., Freeport, Bahamas

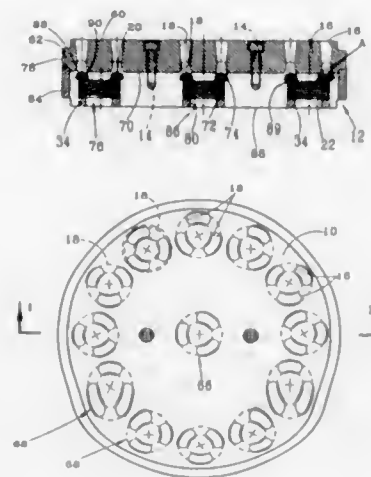
Filed May 23, 1995, Ser. No. 447,769

Int. Cl.⁶ F16K 31/363

U.S. Cl. 137—494

10 Claims

1. A hydraulically operated adjustable valve device for controlling fluid flow through an orifice, said device comprising a valve body, a casing enclosing a cylindrical piston, and a frame connecting said casing to said valve body:
 - (A) said valve body comprising a flow orifice abutted by a sliding valve barrier, said sliding valve barrier being operatively connected to said piston;
 - (B) said piston comprising a main body, a shoulder and an extension, said extension and said main body each having a smaller diameter than said shoulder;
 - (C) said casing comprising a hydraulic fluid bore adapted to reciprocatingly receive said piston extension, an atmospheric bore adapted to reciprocatingly receive said piston shoulder, and a sleeve bore adapted to reciprocatingly receive said piston main body; said atmospheric bore and said piston



a respective seal ring reciprocable between each stop surface and the respective opposed seating surfaces and having sealing surfaces sized and shaped to engage and seal against the respective seating surfaces;
and a plurality of springs carried by the guard plate and each engaging a respective one of the seal rings to bias the seal ring toward the seating surfaces.

5,511,584

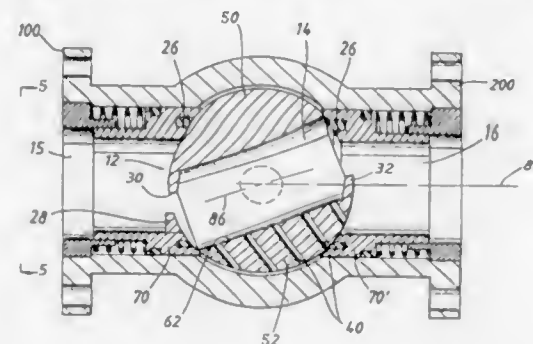
LOW NOISE ROTARY CONTROL VALVE

Chris M. Lelien, 2010 Big Canyon Dr., Austin, Tex. 78746
Continuation of Ser. No. 108,394, Aug. 18, 1993, abandoned, which is a division of Ser. No. 949,459, Sep. 22, 1992, Pat. No. 5,287,889. This application Dec. 7, 1994, Ser. No. 351,556
The portion of the term of this patent subsequent to Feb. 22, 2011, has been disclaimed.

Int. Cl.⁶ F16K 5/10

U.S. Cl. 137—625.3

14 Claims



1. A valve, comprising:

a valve body having a body bore therethrough extending between a valve inlet and a valve outlet and intersecting a valve element receiving portion therein;
a valve element received in said valve element receiving portion and positionable in a first position whereby said element blocks the passage of fluid flowing through said body bore to close the valve, a second position whereby said valve element provides minimal restriction to flow through the valve, and intermediate positions between said first position and said second position;
said valve element including a single, open valve bore therethrough;
said valve bore including a circumferential wall and an inlet flow diverter extending inwardly of said valve bore wall adjacent the inlet of said valve, a separate outlet flow diverter extending inwardly of said valve bore wall adjacent the outlet of the valve and spaced from the inlet flow diverter, said inlet

and said outlet flow diverters extending partially inwardly of said circumferential wall to provide a diverter surface exposed to flow through said valve bore and also terminating inwardly of said valve bore to provide an unrestricted fluid path through the portion of the valve bore between said diverters;
a body passage flow diverter disposed in said body bore adjacent said valve inlet;
said inlet flow diverter and said body passage diverter including apertures therethrough that form a plurality of passages between said valve inlet side of said body bore and said single, open valve bore; and
said outlet flow diverter including apertures therethrough that form a plurality of passages between said valve outlet side of said body bore and said single, open valve bore.

5,511,585

METHOD AND DEVICE FOR PROVIDING FLUID RESISTANCE WITHIN A FLOW PASSAGEWAY

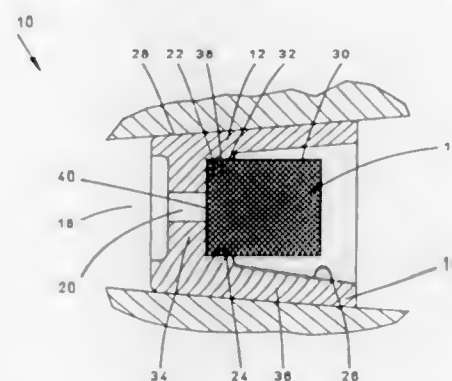
Leighton Lee, II, Guilford, Conn., assignor to The Lee Company, Westbrook, Conn.

Filed Mar. 31, 1994, Ser. No. 222,604

Int. Cl.⁶ F15D 1/02

U.S. Cl. 138—44

28 Claims



1. A method of achieving fluid resistance within a flow passageway comprising:

(a) sealing the passageway with a transverse member
(b) forming an orifice in the transverse member, and
(c) reducing the area open to flow to less than the area of the orifice by masking the orifice with at least one masking element formed of a porous material, retained in direct contact with the orifice and having an outside dimension that is less than the inside dimension of the flow passageway surrounding a part of each masking element, creating a radial clearance around a portion of each masking element.

5,511,586

DEVICE FOR AFFIXING A DRIVE ELEMENT TO A LOOM WARP BEAM SHAFT

Bart Lefever, Ieper, and Marc Gruwez, Zwalm, both of, Belgium, assignors to Picanol N.V., Belgium

Filed Jan. 31, 1995, Ser. No. 381,063

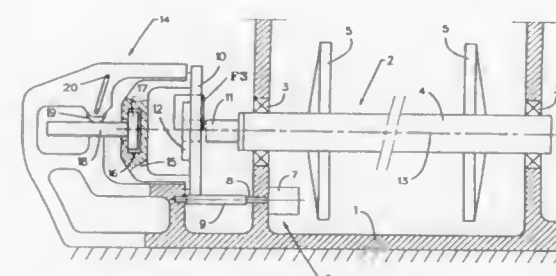
Claims priority, application Belgium, Feb. 2, 1994, 09400119

Int. Cl.⁶ D03D 49/06

U.S. Cl. 139—1 R

13 Claims

1. An arrangement for driving a warp beam, said arrangement including a warp beam shaft having teeth, a warp beam drive element having teeth, and warp beam drive means for driving the drive element, the teeth on the warp beam shaft and the teeth on the drive element each having tooth flanks, said arrangement further comprising:
a clamping element; and
means for causing the drive element and the warp beam shaft to rotate relative to each other such that the tooth flanks of the



drive element teeth and the tooth flanks of the warp beam shaft teeth are pressed and held against each other to prevent relative movement between the drive element and the warp beam after the drive element has been placed on the warp beam drive shaft.

5,511,587

WEAR-RESISTANT REED FOR A HIGH-SPEED LOOM

Yukio Miya, Kawagoe; Shigeru Kizaki, Hanno; Osamu Sugiyama, Fuchu; Akiteru Hatayama, Kawagoe; Yoshitsugu Shibuya, Toda; Mitsugu Enomoto, Higashikurume; Koichi Naoi, Sayama; Yuji Fukazawa, Tokyo; Takanori Nanya, Sayama; Shotaro Shimizu, Kunitachi, and Hiroshi Tagawa, Kashiwa, all of, Japan, assignors to Citizen Watch Co., Ltd., Japan

Continuation of Ser. No. 30,029, Aug. 30, 1993, abandoned.

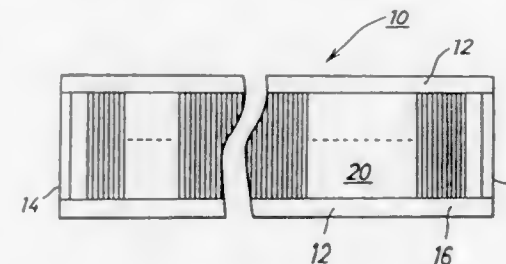
This application Apr. 19, 1995, Ser. No. 426,462

Claims priority, application Japan, Sep. 28, 1990, 2-101865 U; Nov. 16, 1990, 2-119338 U

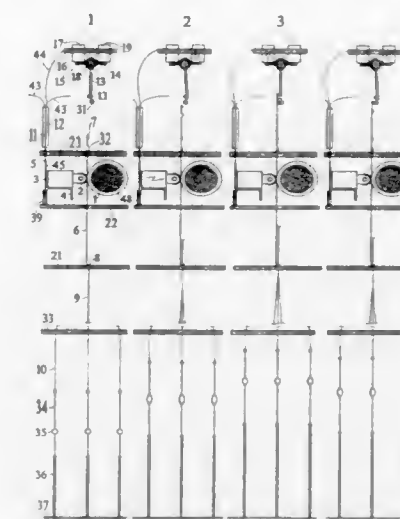
Int. Cl.⁶ D03D 49/62

U.S. Cl. 139—192

19 Claims



1. A reed for a high-speed loom, in which a large number of reed blades comprising thin metal plates are arranged parallel to each other at predetermined gaps and are fixed and held with a frame comprising right and left side master blades and upper and lower side metal portions, a plurality of reed blades adjacent to said master blades forming a first group and a plurality of reed blades adjacent to said first group forming a second group characterized in that said reed blades of said first group including a maximum wear portion are coated with DLC films, and said reed blades of said second group are coated with hard films of a different type than said DLC films.



5,511,589

POWER OPERATED SAFETY CABLE TOOL

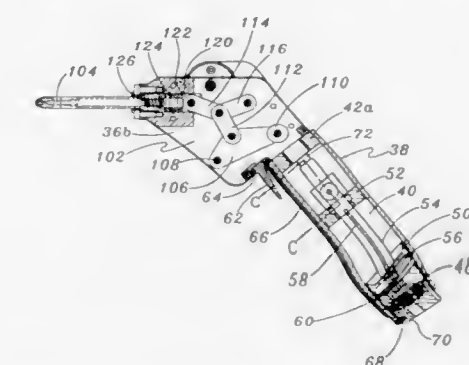
Michael G. Scruggs, Orlando, Fla., assignor to Daniels Manufacturing Corporation, Orlando, Fla.

Continuation-in-part of Ser. No. 945,095, Sep. 5, 1992, Pat. No. 5,361,475, which is a continuation-in-part of Ser. No. 831,186, Feb. 5, 1992, Pat. No. 5,230,129. This application Jun. 16, 1994, Ser. No. 261,104

Int. Cl.⁶ B21F 9/02

U.S. Cl. 140—93.2

11 Claims



1. A tool for tensioning safety cable to a predetermined tension limit comprising:

rotatable means mounted for rotation about a point on the tool for incrementally advancing the cable;
a gear assembly coupled to said rotatable means and having at least one driven gear connected to affect rotation of said rotatable means;
a power actuator coupled to said gear assembly and adapted for affecting rotation of said at least one driven gear;
tension control means operatively associated with said power actuator for inhibiting rotation of said rotatable means when tension on the cable reaches a preselected value;

5,511,588

ELECTROMAGNETICALLY ACTIVATED JACQUARD MACHINE WITH ROTATING LIFTING ROLL

Danilo Jakšić, Poljanski nasip 30, Ljubljana, Slovenia

Filed Jan. 24, 1995, Ser. No. 377,243

Claims priority, application Slovenia, Jan. 16, 1994, P-9400039; Nov. 11, 1994, P-9400407

Int. Cl.⁶ D03C 3/20; 13/00

U.S. Cl. 139—455

12 Claims

1. A jacquard machine comprising a plurality of lifters, a continuously rotatable lifting roll having a roll surface adjacent to said

means coupled to said power actuator for automatically terminating the cable comprising:

- a toggle assembly;
- a cable terminating member coupled to be driven by said toggle assembly; and

means for actuation of said toggle assembly for terminating the cable at the preselected tension limit; and

said power actuator comprising a linear actuator coupled in driving relationship with said gear assembly, said linear actuator including a first drive rod connected to be reciprocally driven by said power actuator and a second drive rod frictionally engaged with said first drive rod, said second drive rod being coupled to said gear assembly and said first drive rod being coupled to actuate said toggle assembly, said second drive rod being coupled to frictionally slide on said first drive rod when tension on the cable reaches the preselected tension limit.

5,511,590

ENGINE COOLANT REMOVAL AND REFILL METHOD AND DEVICE

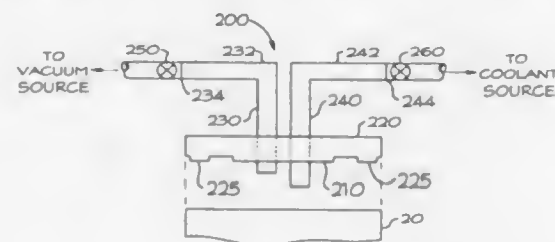
David E. Turcotte, Woodhaven; John J. Conville, Canton; Stephen M. Zeld, Wyandotte; Daniel E. Coker, Grosseville, and James T. Lyon, Novi, all of Mich., assignors to BASF Corporation, Parsippany, N.J.

Filed Jul. 27, 1993, Ser. No. 97,479

Int. Cl.⁶ B65B 13/00

U.S. Cl. 141—7

8 Claims



1. A method of draining and refilling an automotive cooling system with coolant comprising the steps of:

- a) removably affixing a refill element comprising an air pressure/vacuum conduit and a coolant conduit extending through a cap fixture in fluid communication and cooperative sealed engagement with the highest vertical point of said coolant system defining a neck of a radiator, said air pressure/vacuum conduit and said coolant conduit terminating at or above the main body of said radiator;
- b) draining used coolant from the lowest vertical point of said cooling system by applying air pressure through said air pressure vacuum conduit of said refill element;
- c) applying vacuum to said cooling system at said highest vertical point through said air pressure/vacuum conduit of said refill element; and
- d) applying a volume of coolant equal to or less than the capacity of said cooling system for refilling said cooling system through said coolant conduit of said refill element, wherein step (c) applying vacuum and step (d) applying coolant are done simultaneously.

5,511,591

METHOD AND DISPENSER FOR FILLING LIQUID CRYSTAL INTO LCD CELL

Taizo Abe, Himeji, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Division of Ser. No. 344,668, Nov. 22, 1994, which is a division of Ser. No. 134,715, Oct. 12, 1993, Pat. No. 5,406,989.

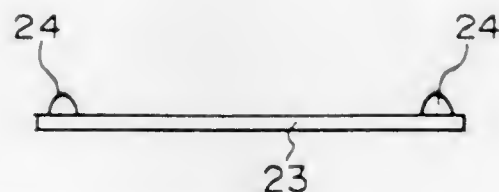
This application Apr. 10, 1995, Ser. No. 419,546

Claims priority, application Japan, Apr. 13, 1992, 4-118459; May 8, 1992, 4-142054

Int. Cl.⁶ B65B 31/00; B67C 3/00

U.S. Cl. 141—7

3 Claims



1. A method for filling liquid crystal into a LCD cell comprising: providing a capillary-type liquid crystal dispenser adapted to be operated at an evacuated atmosphere, placing a lower substrate horizontally at an evacuated atmosphere, releasing a predetermined amount of liquid crystal from the dispenser onto a lower substrate, laminating an upper substrate of the LCD cell onto the lower substrate thereafter, and sealing the margins defined by the edges of the upper and lower substrates.

5,511,592

SPARE BOTTLE FOR AN INK REFILLING OF PISTON-TYPE FOUNTAIN PENS OR OF WRITING IMPLEMENTS FITTED WITH AN INK RESERVOIR AND AN INK CONDUCTING SYSTEM

Volker Kiel, Am Wasserbett 7, 68526 Ladenburg, Germany

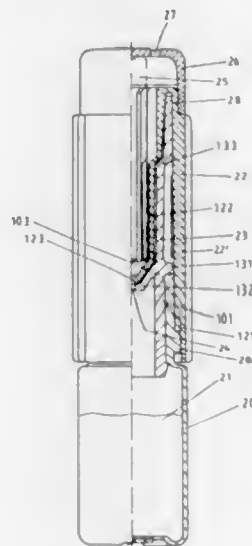
Filed Oct. 20, 1993, Ser. No. 139,376

Claims priority, application Germany, Oct. 21, 1992, 92 14 185.4 U

Int. Cl.⁶ B65B 1/04; 3/04

U.S. Cl. 141—23

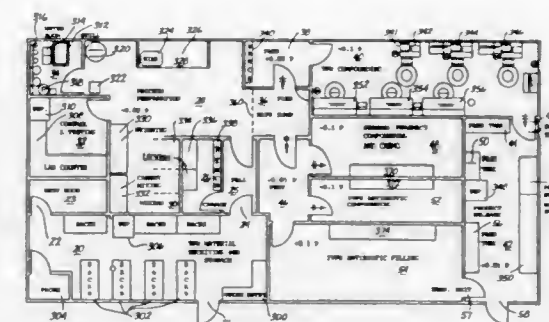
10 Claims



1. A spare bottle for ink refilling of piston-type fountain pens having an ink reservoir, a terminal section, and an ink conducting system communicating the terminal section with the ink reservoir, said spare bottle comprising:

- a refilling container formed of low-density polyethylene and having a neck;

an attachment having a docking section for receiving the terminal section of a fountain pen and a collar section for sealingly engaging said neck, at least one of said collar section and said neck having a bead for providing a seal therebetween; and cap means for closing said spare bottle and including a cap portion sealingly enclosing said attachment and means for securing said cap portion on said attachment; wherein said securing means comprises a center pin sealingly engaging an inner surface of said attachment in a closed position of said sealing bottle, and wherein said cap portion has, within a region of said center pin, an absorbent wick projecting out of said cap portion.



5,511,593

GLASS GOB DROP GUIDE FUNNEL ASSEMBLY

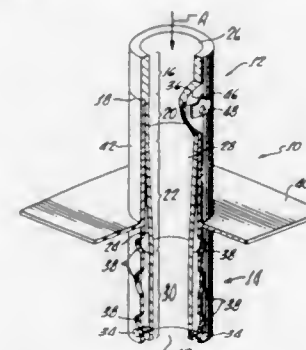
James E. Sweetland, Decatur, Tex., assignor to Union Oil Company of California, El Segundo, Calif.

Division of Ser. No. 953,726, Sep. 29, 1992, Pat. No. 5,394,910, which is a continuation-in-part of Ser. No. 937,343, Aug. 27, 1992, abandoned. This application Mar. 6, 1995, Ser. No. 399,280

Int. Cl.⁶ B65B 1/04; 3/04; B67C 3/02

U.S. Cl. 141—98

14 Claims



1. A graphite glass gob funnel assembly comprising: an outer cylindrical support sleeve having an outer diameter at an upper surface; and an inner substantially tube shaped monolithic piece of graphite having a tubular body resting on the upper surface of the support sleeve, wherein said tubular body is rotatively repositionable on said sleeve between a plurality of stationary positions and assembly includes means for fixedly receiving said tubular body in each of said positions with respect to said support sleeve.

5,511,594

MODULAR PHARMACY SYSTEM AND PHARMACY PROCESS

Eric L. Brennan, 1331 Willow St., San Diego, Calif. 92653; Arnold E. Rivero, 24922 Oxford Dr., Laguna Niguel, Calif. 92677; William S. Bohn, 25652 Nottingham Ct., Laguna Hills, Calif. 92653; Jean Pfeiffer, 9463 Grackle Ave., Fountain Valley, Calif. 92708, and Robert R. Snider, 23812 Inverness Pl., Laguna Niguel, Calif. 92677

Filed Jun. 23, 1992, Ser. No. 903,235

Int. Cl.⁶ B65B 1/04; 3/04

U.S. Cl. 141—98

31 Claims

1. A pharmaceutical system for the admixture of ultra-high purity intravenous solutions and drugs, said system comprising: a plurality of work stations for completion of successive process flow steps in the admixture of intravenous solutions and drugs and comprising: at least one work station for reception of patient prescriptions and generation of prescription labels comprising computer

means for accessing and receiving a hospital's prescription data files for prescription orders;

at least one work station for raw materials receiving and storage; at least one work station for compounding of solutions, for sterile microfiltration of said solutions, and for unit filling of IV bags or syringes; at least one work station for cleaning or sterilization of work station equipment; at least one work station for analysis, control and testing of solutions and equipment; at least one work station for double checking labeled product for release thereof; and,

environment control means comprising air filtration means to supply air in ultra-high purity form, at controlled pressure and temperature, to said plurality of work stations.

5,511,595

FUNNEL DEVICE

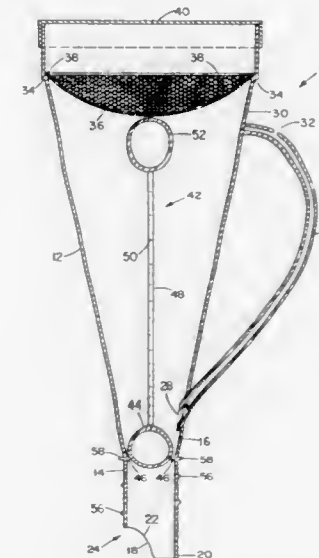
William C. Stidham, 917 W. Florida, Chickasha, Okla. 73018

Filed Dec. 5, 1994, Ser. No. 349,537

Int. Cl.⁶ B67C 11/00

U.S. Cl. 141—300

21 Claims



1. A device for funneling liquid, comprising: a hollow funnel portion having a conical side wall for receiving the liquid; an outlet spout for delivering the liquid from said funnel portion; means for reducing backup of the liquid in said funnel portion wherein said means for reducing backup is in communication with said funnel portion; wherein the liquid received in said funnel portion is allowed to move in and out of said means for reducing backup;

wherein said means for reducing backup includes a tube having an opening, said tube extends from outside said funnel portion through said side wall thereof and into said hollow funnel portion; and
wherein said tube is extended into said hollow funnel portion at a location which is generally adjacent said outlet spout.

5,511,596

QUICK CHANGE DEBARKING CHAIN

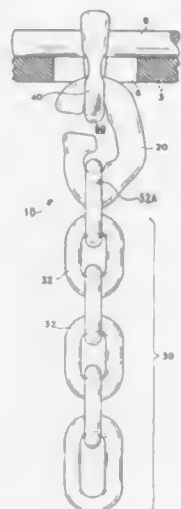
Myron H. Wardell, Jr., Littitz, Pa., and Phillip Schmidt, Tacoma, Wash., assignors to Cooper Industries, Inc., Houston, Tex.

Filed Feb. 16, 1995, Ser. No. 390,388

Int. Cl.⁶ B27L 1/00

U.S. Cl. 144—208.J

6 Claims



a pair of knives each having a cutting edge, support for the knives supporting the knives on the rotor head and supporting one knife with the cutting edge of said one knife on rotation of the cutter head moving in a plane normal to the axis of the rotor head and supporting the other knife with the cutting edge of said other knife on rotation of the cutter head moving in a path of substantially conical configuration, and
a clamp for said other knife clamping the knife against said support and the clamp having one end and an opposite end, said clamp having an elongate region extending along its length of increasing thickness progressing from said one end to said opposite end of the clamp and said region having an outer wear surface that contacts the work being cut by the chipper.

5,511,598

VENEER-SLICER WITH REMOTELY CONTROLLABLE BLADE ANGLE ADJUSTMENT

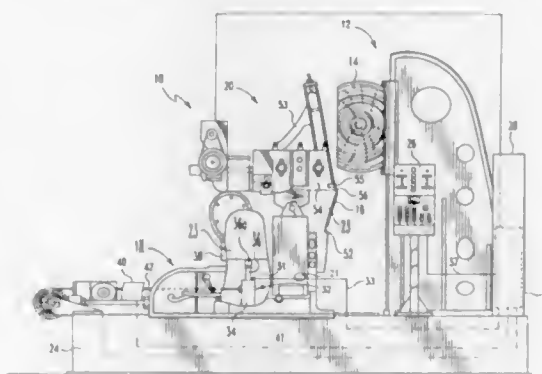
Robert Brand, Lawrence, Ind., assignor to Capital Machine Company, Indianapolis, Ind.

Filed Apr. 5, 1994, Ser. No. 223,423

Int. Cl.⁶ B27L 5/00; B27B 1/00

U.S. Cl. 144—356

28 Claims



1. Veneer-slicing apparatus, comprising:
a flitch table for supporting a flitch to be sliced;
a carriage;
a blade carrier pivotably coupled to the carriage;
first drive means for reciprocating the flitch table and the flitch supported thereon in a first plane, each reciprocation of the flitch table including a slicing stroke and a return stroke;
second drive means for moving the carriage and the cutting blade mounted thereon in a second plane substantially perpendicular to the first plane;

5,511,597

SLABBING CHIPPER WITH REPLACEABLE KNIVES AND WEAR PLATE

Michael A. Shantie, Molalla, and William C. Toogood, Beaverton, both of Oreg., assignors to Key Knife, Inc., Portland, Oreg.

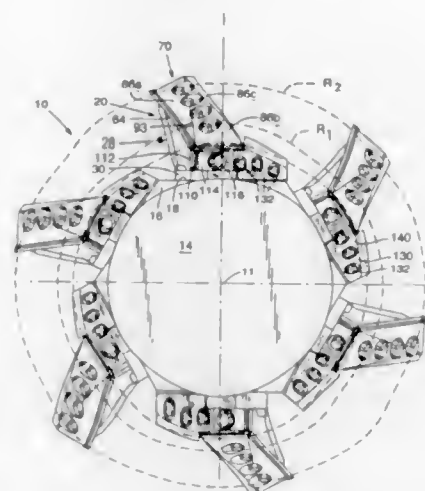
Filed Jan. 6, 1995, Ser. No. 369,666

Int. Cl.⁶ B27G 1/04

U.S. Cl. 144—220

11 Claims

1. In a slabbing chipper for cutting work advanced into the chipper and reducing such to chips:
a power-driven rotatable rotor head, rotatable about an axis,



a cutting blade mounted on the blade carrier and having a cutting surface extending along the blade for slicing veneer sheets from the flitch during the slicing stroke of the flitch table; and
means for rotating the cutting blade with respect to the flitch table to reposition the cutting surface relative to the flitch, the rotating means including hydraulic piston means for pivoting the blade carrier with respect to the carriage and means for controlling the position of the hydraulic piston means.

5,511,599

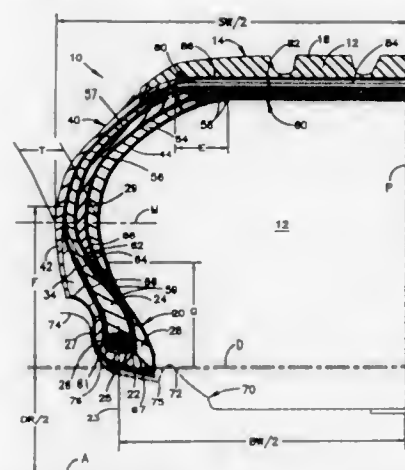
RUN-FLAT TIRE WITH THREE CRESCENT-SHAPED REINFORCING MEMBERS

Walter L. Willard, Jr., Greenville, S.C., assignor to Michelin Recherche et Technique S.A., Granges-Paccot, Switzerland
Continuation-in-part of Ser. No. 182,995, Jan. 13, 1994, Pat. No. 5,427,166. This application Apr. 7, 1995, Ser. No. 418,969

Int. Cl.⁶ B60C 3/00; 15/04; 15/06; 17/06

U.S. Cl. 152—454

23 Claims



1. A tire for mounting on a rim of a vehicle which tire is capable of sustaining vehicle loads at a contact patch in an effective manner with the loss of inflation pressure comprising:
a crown portion having a tread;
a belt package located radially inward of said tread;
an innerliner portion on the interior surface of the tire;
a pair of bead portions axially spaced apart and each having a bead core and a bead filler;
a pair of axially spaced apart load bearing sidewall portions wherein each sidewall portion is disposed radially between a respective lateral edge of said crown portion of the tire and a respective bead portion, each sidewall portion having first and second crescent-shaped reinforcing members disposed outside said innerliner portion and a third crescent-shaped reinforcing member extending radially outward from and contiguous with said bead filler, and a sidewall rubber portion;
an outer carcass layer disposed radially inward of the belt package and axially inward of each sidewall rubber portion, said outer carcass layer extending radially inward to at least a point axially outward and adjacent to each said bead core;
a middle carcass layer disposed to the inside of said outer carcass layer and extending under the crown portion and radially inward between the second member and the third member of the crescent-shaped reinforcing members in each sidewall to each bead portion and continues around said bead core with turned-up portions from inside to outside in such a manner to at least partially encompass said bead core and a respective bead filler; and
an inner carcass layer disposed to the inside of said middle carcass layer and extending under the crown portion and radially inward between the first member and the second member of the crescent-shaped reinforcing members in each sidewall to at least a point axially inward and adjacent to each

said bead core, said carcass layers each having a plurality of substantially parallel reinforcing members and a curvilinear configuration.

5,511,600

BEAD RING ASSEMBLY FOR VEHICLE TIRES INCLUDING FORM-MATCHED BEAD APEX

Klaus-Dieter Glotzbach, Maintal, Germany, assignor to SP Reifenwerke GmbH, Hanau, Germany

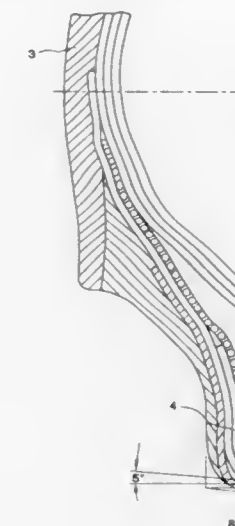
Filed Mar. 14, 1994, Ser. No. 209,625

Claims priority, application Germany, Mar. 16, 1993, 43 09 359.5

Int. Cl.⁶ B29D 30/48; B60C 15/04; 15/06

U.S. Cl. 152—540

9 Claims



1. A bead ring assembly for vehicle tires comprising a ring-shaped rubberized wire bundle consisting of several wire layers arranged on top of one another, and a bead apex comprising elastomeric material arranged adjacent the wire bundle and adapted to extend in the direction of a side wall of a tire, wherein the wire bundle is wound from a single wire; the number of wire turns lying alongside each other is different in at least two of the wire layers which lie on top of one another; the number of wire turns lying alongside each other in the wire layer at the bead apex side is smaller, by at least two turns, than the number of wire turns lying alongside each other in the wire layer lying directly underneath it; and the bead apex lies on wire turns lying alongside each other of both the wire layer at the bead apex side and the wire layer lying directly underneath it in a form matched manner.

5,511,601

DRIVE MECHANISM FOR VENETIAN BLINDS

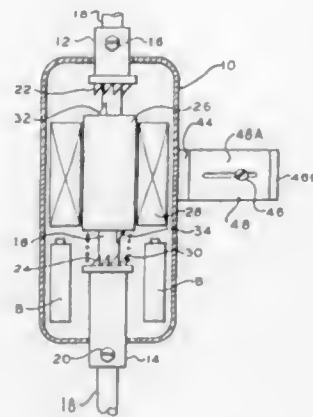
Herbert Worthington, 38 Noe Ave., Madison, N.J. 07940
Filed Sep. 16, 1994, Ser. No. 307,158

Int. Cl.⁶ E06B 9/26

U.S. Cl. 160—176.1

22 Claims

1. A drive mechanism for spinning a vertical adjustment rod of a venetian blind mounted at a window, comprising:
a case adapted to be mounted at said window;
a drive means mounted in said case and adapted to be coupled to said adjustment rod, said drive means having a spindle with a cavity sized to engage and turn said adjustment rod; and
control means coupled to said drive means for controlling the turning of said adjustment rod.



5,511,602

COLLAPSIBLE MINI-BLIND SUN VISOR FOR VARIOUS VEHICLES

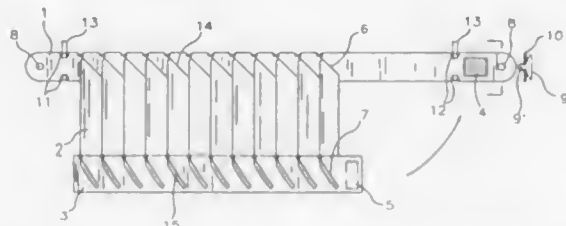
Sang D. Chol, and Lee D. Chol, both of 2211 E. 16th, Los Angeles, Calif. 90021

Filed May 30, 1995, Ser. No. 454,419

Int. Cl.⁶ B60J 3/02

U.S. Cl. 160—370.21

2 Claims



1. A collapsible mini-blind sun visor for various vehicles comprising:

- a. a plurality of vertical panels;
 - (1) all of said vertical panels having equal dimensions;
 - (2) each of said vertical panels having a general parallelogram shape;
 - (3) each of said vertical panels having an upper side, a lower side, and a middle;
 - (4) each of said vertical panels being made of a pliable material, including but not limited to plastic;
 - (5) each of said vertical panels having an angular upper incision and an angular lower incision;
 - (6) wherein said upper incision and said lower incision are at said upper and said lower side of said vertical panel, parallel to said upper side and said lower side of said panel;
 - (7) wherein said upper and lower incision extend to said middle of said vertical panel;
 - (8) wherein said upper incision and said lower incision extend to an end;
 - (9) wherein said upper incision and said lower incision are wide enough to accommodate an upper horizontal strip and a lower horizontal strip of similar material and width; and
 - (10) wherein a hole exists at said end of said upper incision and said lower incision to allow said sun visor to be more easily extended and collapsed;
- b. said vertical panels affixed to said upper horizontal strip;
 - (1) said upper horizontal strip having four corners and two ends;
 - (2) said upper horizontal strip having a rectangular shape, two sides being long, two sides being short, but said corners not necessarily being rectangular;
 - (3) said upper horizontal strip having a middle;
 - (4) said upper horizontal strip having a plurality of angular incisions along only one of said long sides;

- (5) wherein said incisions have an angle of 45 degrees with respect to said long side of said upper horizontal strip;
- (6) wherein said incisions extend to said middle of said upper horizontal strip;
- (7) wherein said incisions are wide enough to accommodate said vertical panels of similar material and width;
- (8) wherein said incisions have an end at said middle of said upper horizontal strip;
- (9) wherein there exists a very small hole at said end of said incisions;
- (10) said angular incisions having an upper left side and upper right side;
- (11) wherein said upper left side of said incision has a small puncture;
- (12) wherein said upper right side of said incision has a small puncture;
- (13) wherein said punctures can accommodate but are not limited to accommodating a staple intended to prevent said vertical panels from slipping out of said angular incisions;
- (14) said upper horizontal strip having two small apertures;
- (15) said two small apertures being located near said ends of said upper horizontal strip;
- (16) said two small apertures holding two suction cups;
- (17) said suction cups having a front and rear end;
- (18) said suction cups having a dimple on said rear end;
- (19) wherein said small apertures can accommodate said dimple of said suction cup for fastening purposes;
- (20) wherein said dimple is held in place by a washer;
- (21) said upper horizontal strip having a fastening material intended to correspond to a fastening material on a lower horizontal strip;
- (22) said upper horizontal strip having four notches, two on each of said long sides, near said ends of said upper horizontal strip;
- (23) wherein said notches are able to hold clips;
- (24) wherein said clips are intended to fasten said sun visor in place;

c. said vertical panels affixed to said lower horizontal strip;

- (1) said lower horizontal strips having four sides, four corners, two ends, and a middle;
 - (2) said lower horizontal strips having a rectangular shape, two of said sides being long, two of said sides being short, but said corners not necessarily being rectangular;
 - (3) said lower horizontal strip having a plurality of angular incisions along one of said long sides;
 - (4) wherein said incisions have an angle of 45 degrees with respect to said long side of said lower horizontal strip;
 - (5) wherein said incisions extend to said middle of said lower horizontal strip;
 - (6) wherein said incisions are wide enough to accommodate said vertical panel of similar material and width;
 - (7) wherein said incisions have an end at said middle of said upper horizontal strip;
 - (8) wherein there exists a very small hole at said end of said incisions;
 - (9) said angular incisions having an upper left side and upper right side;
 - (10) wherein said upper left side of said incision has a small puncture;
 - (11) wherein said upper right side of said incision has a small puncture;
 - (12) wherein said punctures can accommodate but are not limited to accommodating a staple intended to prevent said vertical panels from slipping out of said angular incisions;
 - (13) said lower horizontal strip having said fastening material attached to said end and intended to correspond to said fastening material on said upper horizontal strip;
- d. said vertical panels being connected to said upper horizontal strip and said lower horizontal strip;
- (1) each of said vertical panels being connected to said upper horizontal strip by means of interlocking said incisions;
 - (2) said upper incision of said vertical panel being slid into said incision of said upper horizontal strip;
 - (3) each said vertical panel being connected to said upper horizontal strip by means of interlocking said incisions;

- (4) said lower incision of said vertical panel being slid into said incision of said lower horizontal strip;
- (5) each said vertical panel being able to fold to a perpendicular angle with said upper horizontal strip and lower horizontal strip with aid of said holes at said ends of said incisions, thus making said sun visor collapsible; and
- (6) said incisions on said upper horizontal strip and said lower horizontal strip being closed to prevent said vertical panels from sliding out.

5,511,603

MACHINABLE METAL-MATRIX COMPOSITE AND LIQUID METAL INFILTRATION PROCESS FOR MAKING SAME

Alexander M. Brown, Wilmington, Del., and Eric M. Klier, Catonsville, Md., assignors to Chesapeake Composites Corporation, New Castle, Del.

Continuation of Ser. No. 38,129, Mar. 26, 1993, abandoned.

This application Jun. 16, 1994, Ser. No. 262,075

Int. Cl.⁶ B22D 19/14

U.S. Cl. 164—97

21 Claims



1. A method for manufacturing a machinable metal-matrix composite comprising the steps of:
 - providing a colloidal slurry of ceramic particles in a liquid wherein substantially all of the said particles have a particle size of no greater than about 1 micron;
 - separating the ceramic particles from the liquid to provide a ceramic preform having a substantially uniform distribution of ceramic particles and sintering the ceramic particles to one another;
 - disposing of said ceramic preform into a mold;
 - contacting said ceramic preform with a molten metal;
 - causing said molten metal to penetrate into said preform; and
 - permitting said molten metal to solidify to form a machinable metal matrix composite.

5,511,604

METHOD FOR MAKING A TITANIUM METAL MATRIX COMPOSITE

Richard Ravenhall, Cincinnati; Charles R. Wojciechowski; Stephen C. Mitchell, both of West Chester, all of Ohio; Gary D. Mercer, Ballston Lake, N.Y.; Thomas J. Kelly, Cincinnati, Ohio; Melvin A. Schobert, Cincinnati, Ohio, and Harvey M. MacLin, Cincinnati, Ohio, assignors to General Electric Company, Cincinnati, Ohio

Division of Ser. No. 76,670, Jun. 15, 1993, Pat. No. 5,439,750.

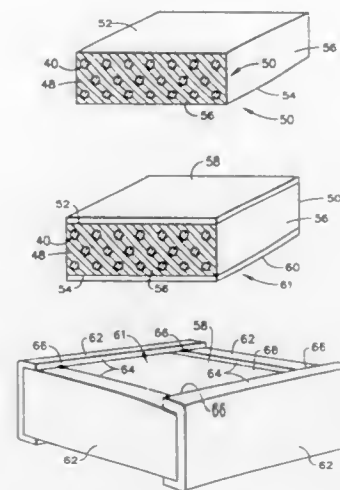
This application Dec. 13, 1994, Ser. No. 355,128

Int. Cl.⁶ B22D 19/14

U.S. Cl. 164—97

6 Claims

1. A method for forming a structural element comprising the steps of:
 - a) forming a metal matrix composite structural core having non-metallic filaments with a first degrading temperature;



- b) attaching a sheath to said core by encasing the core with the sheath, said sheath comprising a metal having a second melting temperature above said degrading temperature thereby forming an insert;
- c) inserting said insert into a mold cavity;
- d) pouring molten metal into the mold cavity to form a peripheral element, said molten metal being the same as said sheath material, said molten metal surrounding said insert; and
- e) cooling said molten metal thereby forming a structural element whereby said insert is embedded within the peripheral element.

5,511,605

METHOD AND APPARATUS FOR VACUUM DIE CASTING

Norihiro Iwamoto, Zama, Japan, assignor to Toshiba Kikai Kabushiki Kaisha, Tokyo, Japan

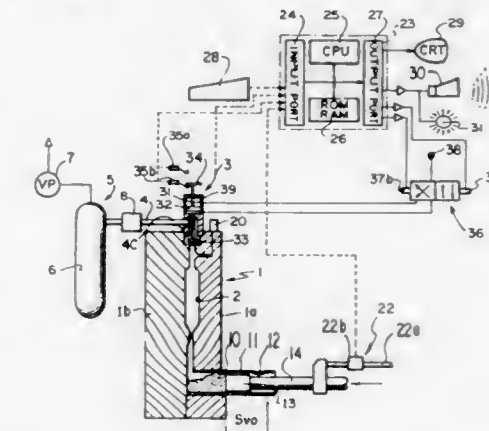
Filed Jul. 7, 1994, Ser. No. 271,603

Claims priority, application Japan, Jul. 7, 1993, 5-168135

Int. Cl.⁶ B22D 17/32

U.S. Cl. 164—457

11 Claims



1. In a vacuum die-casting method wherein, as the degree of vacuum within a cavity of a metal form is measured, opening and closing of a vacuum valve provided in a vacuum system communicating with the cavity is carried out, and, as suction is applied to evacuate the interior of the cavity, pressure forming therein of molten metal is carried out, said method comprising:
 - starting suction of gas within the cavity by opening the vacuum valve when an injection plunger has advanced to a first position;
 - stopping the suction of the gas within the cavity by closing the vacuum valve when the injection plunger has reached a second position;

1. A heat exchanger comprising:

a plurality of tube elements laminated alternately with fins over a plurality of levels;
end plates provided at either end in the direction of lamination; a passage plate at the side of one of said end plates, in which a supply passage and discharge passage for heat exchanging medium are formed;

an intake pipe and an outlet pipe connected to said supply passage and said discharge passage, respectively, of said passage plate;

wherein said supply passage and said discharge passage of said passage plate have sufficient lengths to allow said intake pipe and said outlet pipe to be connected at arbitrary positions;

wherein tube elements, each of which is provided with a pair of tanks on one side and also with a U-shaped heat exchanging medium passage communicating between said pair of tanks, are laminated alternately with fins over a plurality of levels;

wherein tanks in adjoining tube elements are interconnected to form two tank groups extending in the direction of said lamination, one of said tank groups having a partition at approximately a center thereof such that said one of said tank groups is divided into two portions, the other of said tank groups having no partition;

wherein said supply passage communicates via a heat exchanging medium supply pipe with one of said portions in said one of said tank groups, said one of said portions being further away than the other of said portions from said passage plate, and said discharge passage communicating with the other of said portions of said one of said tank groups; and

wherein said heat exchanger has a so-called 4-pass flow pattern with tanks only on one side, in which,

said heat exchanging medium is supplied to said heat exchanging medium supply pipe from said supply passage to enter approximately half of said tube elements, then enters the remaining tube elements after passing through said U-shaped heat exchanging medium passages of said tube elements and finally reaches said discharge passage after passing through the U-shaped heat exchanging medium passages of said remaining tube elements.

5. A heat exchanger comprising:

a plurality of tube elements laminated alternately with fins over a plurality of levels;

end plates provided at either end in the direction of lamination; a passage plate at the side of one of said end plates, in which a supply passage and a discharge passage for heat exchanging medium are formed;

an intake pipe and an outlet pipe connected to said supply passage and said discharge passage, respectively, of said passage plate;

wherein said supply passage and said discharge passage of said passage plate have sufficient lengths to allow said intake pipe and said outlet pipe to be connected at arbitrary positions; and

wherein partitioning plates are provided in said supply passage and said discharge passage of said passage plate in order to block off excess spaces created above the connecting positions of said intake pipe and said outlet pipe.

5,511,612

OIL COOLER HAVING WATER PIPE REINFORCEMENT

Makoto Tajima, Tokyo; Kei Beppu, Kanagawa; Tomoyuki Mano, Tokyo, and Shigeru Sasaki, Kanagawa, all of Japan, assignors to Calsonic Corporation, Tokyo, Japan

Filed Sep. 23, 1993, Ser. No. 125,656

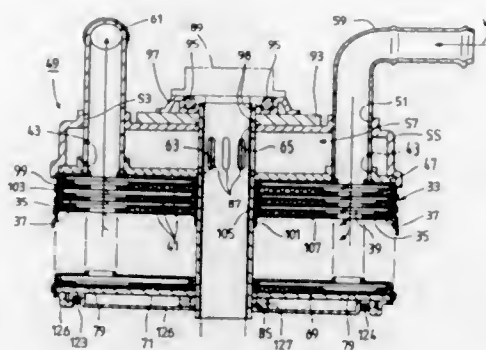
Claims priority, application Japan, Sep. 24, 1992, 4-66563 U
Int. Cl.⁶ F28F 3/08; F01M 11/03; 5/00; F28D 9/00

U.S. Cl. 165—167

5 Claims

1. An oil cooler comprising:

a core portion formed by alternately stacking a plurality of plates (35, 37) and alternately forming cooling water passages (39) and oil passages (41) between the plates, said core portion having an oil return passage extending longitudinally there-through;



an oil tank (57) formed on an upper portion of the core portion (33), the oil tank (57) being formed between an upper plate (47) and a cover plate (55), the upper plate (47) having cooling water passage holes (43) and an oil passage hole (45), the cover plate (55) having water pipe insertion holes (51, 53) on a top surface of the cover plate (55) so as to correspond to the cooling water passage holes (43), the cooling water passage holes (43) and the oil passage hole (45) communicating with the cooling water passages (39) and the oil passages (41) such that oil flows sequentially through said oil passages (41), said oil passage hole (45), said oil tank (57) and said oil return passage; and

two water pipes, (59, 61) passing through the respective pipe insertion holes (51, 53) of the cover plate (55) and through the oil tank (57) to maximize heat transfer from said oil to said water, said water pipes being unperforated between said cover plate (55) and said upper plate (47), said water pipes (59, 61) thus being inserted into the respective cooling water passage holes (43) of the upper plate (47),

wherein said upper plate and said cover plate both support said water pipes, each of said water pipes being supported in at least two points.

5,511,613

ELONGATED HEAT EXCHANGER TUBES HAVING INTERNAL STIFFENING STRUCTURE

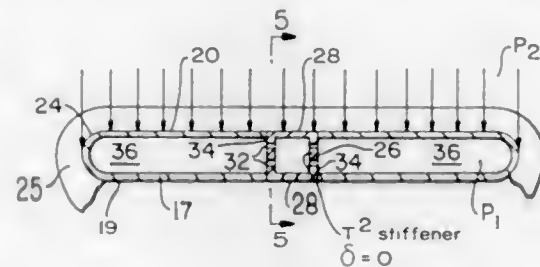
Walter Mohn, North Canton, and Douglas D. Zeigler, Atwater, both of Ohio, assignors to Hudson Products Corporation, Houston, Tex.

Filed Dec. 12, 1994, Ser. No. 353,939

Int. Cl.⁶ F28F 1/02

U.S. Cl. 165—177

39 Claims



27. A flat shaped heat exchanger tube which provides increased resistance to sidewall deflection caused by a differential pressure when an outside surface of the tube sidewall is subjected to a first pressure, and an inside surface of the tube sidewall is subjected to a second different pressure, comprising:

a tube-shaped assembly, located within the heat exchanger tube, for preventing deflection of the tube surfaces due to the pressure differential without interfering with a flow of fluid between separate internal chambers of the heat exchanger tube which are created when the tube-shaped assembly is located within the heat exchanger tube; and
means for securing the deflection preventing means to the inside surface of the heat exchanger tube.

5,511,614

HYDRAULIC SYSTEM FOR SERVICING WATER PUMPS IN WELLS

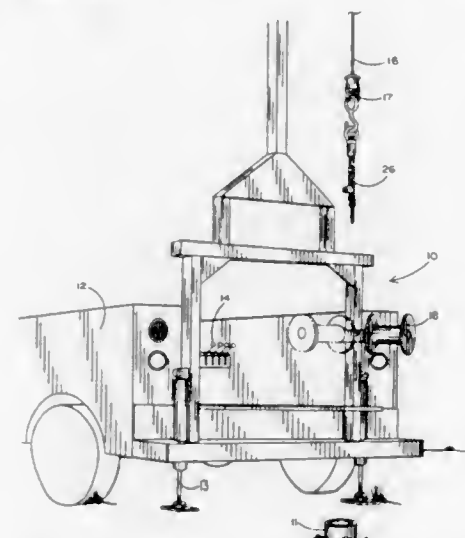
Kenneth L. Jennings, Rte. 2, Box 83-4, Strafford, Mo. 65757

Filed Jan. 10, 1995, Ser. No. 370,651

Int. Cl.⁶ E21B 19/16

U.S. Cl. 166—65.1

12 Claims



1. A pump pulling system for extracting an electric pump from a well casing including a plurality of pipe sections threadably connected in series to provide a continuous pipe connected to the pump; the pump pulling system being used with a hydraulic lift having a lift cable for selected attachment to the pipe sections being lifted through the well casing; the system comprising:

a pulling unit having means for selectively interconnecting said lift cable and an uppermost one of said pipe sections;
a head unit for attachment to said well casing and having means for selectively gripping said pipe sections to permit support of said pump and pipe sections while said uppermost pipe section is disengaged from remaining pipe sections; and
a wire reel connected to a hydraulic motor synchronized to the motion of said hydraulic lift for automatically spooling electrical cable attached to said pump as said pump and pipe sections are withdrawn from said well casing.

5,511,615

METHOD AND APPARATUS FOR IN-SITU BOREHOLE STRESS DETERMINATION

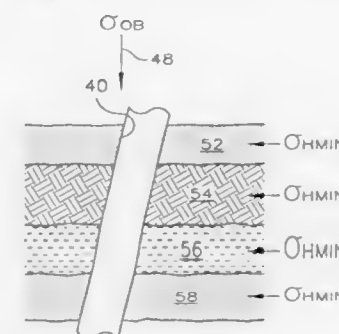
Douglas W. Rhett, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Nov. 7, 1994, Ser. No. 335,288

Int. Cl.⁶ E21B 47/00

U.S. Cl. 166—250.1

16 Claims



1. A method for determining the stress condition of a subterranean formation traversed by a borehole, wherein the stress acts in

a plane normal to said borehole at a depth corresponding to the depth of said formation, said method comprising the following steps:

measuring a first parameter comprising the actual pressure required along a first borehole radius to fracture said subterranean formation;
measuring a second parameter comprising the actual pressure required along a second borehole radius to fracture said subterranean formation, wherein said second radius is offset from said first radius about the axis of said borehole and forms an angle of about sixty degrees with said first radius;
measuring a third parameter comprising the actual pressure required to fracture said subterranean formation along a third borehole radius, wherein said third radius is offset from said first radius and said second radius about the axis of said borehole and forms an angle of about sixty degrees with said second radius; and
calculating the minimum principal stress and maximum principal stress operating in said normal plane based on using said first, second and third parameters in standard equations for two-dimensional axial transformations.

5,511,616

HYDROCARBON RECOVERY METHOD USING INVERTED PRODUCTION WELLS

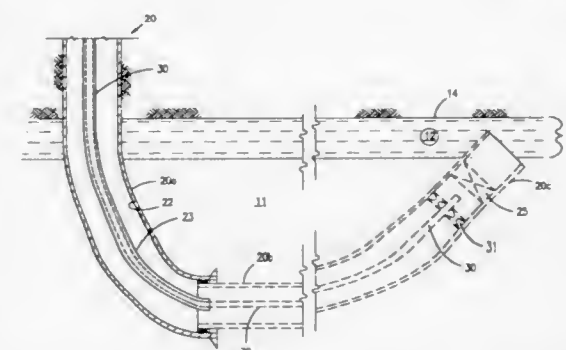
David R. Bert, Bakersfield, Calif., assignor to Mobil Oil Corporation, Fairfax, Va.

Filed Jan. 23, 1995, Ser. No. 376,255

Int. Cl.⁶ E21B 7/06; 36/00; 43/24

U.S. Cl. 166—272

18 Claims



1. A method for producing hydrocarbons from a subterranean reservoir, said method comprising:
injecting steam into said reservoir to heat said hydrocarbons; and

producing said heated hydrocarbons through a production well having an inverted wellbore which extends into and terminating within said reservoir.

14. A production well for producing hydrocarbons from a subterranean reservoir, said well having an inverted well bore comprising:

a substantially vertical, non-inverted portion with angle building to near 90° which extends from the surface to a depth substantially adjacent the top of said reservoir and terminating within;
a substantially horizontal portion integral with said non-inverted portion and extending into said reservoir; and
an upwardly curving tail portion which is integral with said substantially horizontal portion and extending upward towards the top of said reservoir.

5,511,617
APPARATUS AND METHOD FOR TEMPORARILY
PLUGGING A TUBULAR

Philip M. Snider, 12102 Rocky Lake Dr., Houston, Tex. 77070;
 David S. Wesson, Rte. 6, Box 337 A, Waxahachi, Tex. 75165,
 and Lyle W. Andrich, 735 Newport Dr., Mansfield, Tex.
 76063

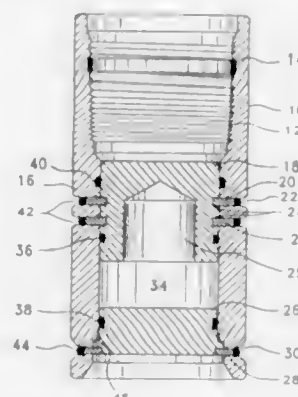
Continuation of Ser. No. 286,064, Aug. 4, 1994, abandoned.

This application Jun. 29, 1995, Ser. No. 496,547

Int. Cl.⁶ E21B 33/13; 33/134

U.S. Cl. 166—291

37 Claims



22. A method for controlling the pressure at which a fluid is introduced into a subterranean well through a tubular, the method comprising:

- (a) securing first and second temporary plugs to a tubular, said plugs being spaced apart so as to define a fluid tight chamber therebetween which is filled with a first fluid at a known pressure, said first plug capable of opening upon application of a predetermined pressure and said second plug capable of opening upon application of a pressure which is less than said predetermined pressure and greater than said known pressure;
- (b) introducing a second fluid into said tubular; and
- (c) applying a predetermined pressure to said second fluid thereby opening said first plug and subsequently opening said second plug, so as to permit said second fluid to flow past said spaced apart locations within a subterranean well.

5,511,618
FILL VALVE

Peter Budde, Chevreuse, France, assignor to Weatherford/Lamb, Inc., Houston, Tex.

Continuation of Ser. No. 283,404, Aug. 1, 1994, Pat. No.

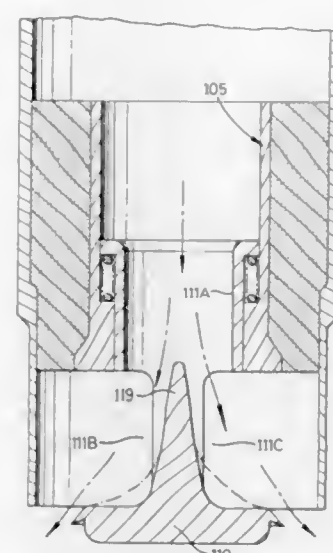
5,450,903. This application Aug. 25, 1995, Ser. No. 519,503
 Claims priority, application United Kingdom, Mar. 22, 1994,
 9405679

Int. Cl.⁶ E21B 34/10

U.S. Cl. 166—321

16 Claims

1. A fill valve for use in cementing operations in the construction of oil and gas wells, which fill valve comprises a tubular housing having a valve seat, a valve member slidably mounted in said tubular housing, and spring means biasing said valve member towards a closed position, wherein said valve member comprises a head engageable with said valve seat of said tubular housing to close the valve, a tubular portion and at least one window in said tubular portion, so that fluid pumped through said tubular portion displaces said valve member relative to said tubular housing to open the fill valve and exit via said at least one window.



5,511,619
POLYMER LINERS IN ROD PUMPING WELLS

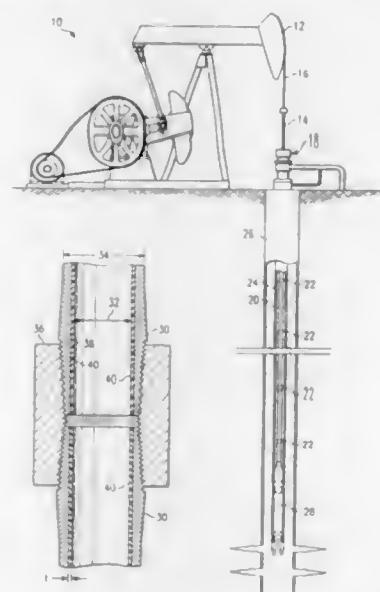
William E. Jackson, 6249 Riders Rd., Odessa, Tex. 79762

Filed Dec. 7, 1994, Ser. No. 350,475

Int. Cl.⁶ E21B 17/00; 43/00

U.S. Cl. 166—369

10 Claims



1. An improved method of producing well fluids from a well being produced by a rod pumping system, said rod pumping system comprising: a plurality of sucker rods disposed within a string of tubing which extends into said well, said string of tubing comprising of a plurality of tubing sections each having a bore and an inside diameter; a down hole pump operably connected to said sucker rods; and means for reciprocating said sucker rods, wherein the improved method comprises using tubing sections having polymer liners disposed within said bore of said tubing sections to eliminate contact between said sucker rods and said tubing string when said sucker rods are being reciprocated.

6. An improved rod pumping system for producing well fluids from a well said rod pumping system comprising:

- a. a plurality of sucker rods disposed within a string of tubing which extends into said well, said string of tubing comprising of a plurality of tubing sections each having a bore and an inside diameter;
- b. a down hole pump operably connected to said sucker rods;

- c. means for reciprocating said sucker rods;
- d. said tubing sections having polymer liners disposed within said bore of said tubing sections to eliminate contact between said sucker rods and said tubing string when said sucker rods are being reciprocated.

5,511,620
STRAIGHT BORE METAL-TO-METAL WELLBORE
SEAL APPARATUS AND METHOD OF SEALING IN A
WELLBORE

John L. Baugh, 7519 Plum Tree Forest Ct., Houston, Tex. 77095, and George J. Melenzyer, 19730 Burle Oaks Ct., Humble, Tex. 77346

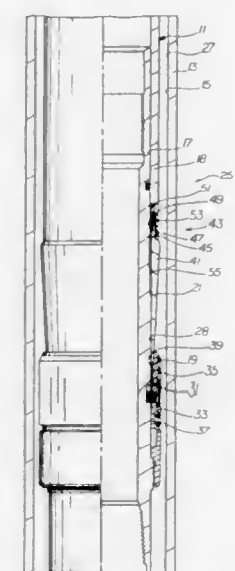
Continuation of Ser. No. 26,365, Mar. 4, 1993, abandoned,

which is a continuation-in-part of Ser. No. 827,411, Jan. 29, 1992, Pat. No. 5,333,692. This application Oct. 3, 1994, Ser. No. 317,109

Int. Cl.⁶ E21B 33/128

U.S. Cl. 166—387

60 Claims



1. A seal apparatus for use in a subterranean wellbore having a remotely-located downhole wellbore tubular disposed therein, said wellbore tubular defining a remotely-located downhole wellbore surface of unknown condition having a particular nominal inner diameter, comprising:

- a conveyance tubular positionable within said subterranean wellbore on a wellbore tubular string at a selected location below said wellbore surface;
- a sealing ring, disposed about at least a portion of said conveyance tubular, said sealing ring having a first surface proximate said conveyance tubular and a second surface, said second surface being a sealing surface with a plurality of portions, with selected ones of said plurality of portions of said sealing ring extending radially from said conveyance tubular in at least one radial dimension and defining at least one metal seal point for selective sealing engagement with said wellbore surface;
- said conveyance tubular and said sealing ring together defining a tool portion with a predetermined outer diameter which determines a particular conveyance clearance relative to said remotely-located wellbore surface of unknown condition having a particular nominal inner diameter;

wherein said seal apparatus is operable in a plurality of modes of operation, including:

- running mode of operation wherein said sealing ring is maintained in a radially-reduced position, to maintain said conveyance clearance and to maintain said sealing ring out of engagement with said wellbore surface for conveyance downward through said subterranean wellbore;

- a sealing mode of operation, during which said sealing ring is substantially deformed by at least as much as 15% to expand radially outward to completely span said conveyance clearance and to place said at least one metal seal point of said sealing ring in sealing metal-to-metal engagement with said wellbore surface, providing a fluid-tight seal at a selected location between said conveyance tubular and said wellbore tubular; and
- a substantially conical wedge ring, the wedge ring being selectively and remotely slidably insertable between the sealing ring and the conveyance tubular to selectively cause the wedge ring to urge said sealing ring between said running and sealing modes of operation.

5,511,621
LOCAL FLOODING FINE WATER SPRAY FIRE
SUPPRESSION SYSTEM USING RECIRCULATION
PRINCIPLES

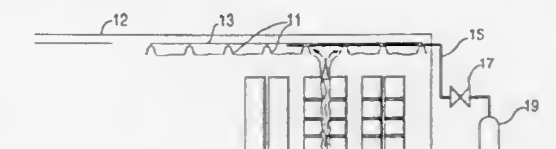
Cheng Yao, Weston, Mass., assignor to Factory Mutual research, Mass.

Filed Apr. 8, 1994, Ser. No. 225,317

Int. Cl.⁶ A62C 35/00

U.S. Cl. 169—17

11 Claims



1. A fire extinguishment system for the extinguishment of a fire within a structure having a ceiling comprising a multiplicity of nozzles distributed over an area within said structure adjacent to and under said ceiling, each of said nozzles including means to actuate such nozzle in response to the presence of a fire in the area of said structure under said nozzle, each of said nozzles including means operable when such nozzle is actuated to discharge extinguishing fluid downwardly from said nozzle and to draw combustion gases from adjacent to said ceiling below said ceiling and project said combustion gases downwardly with said extinguishing fluid, the improvement wherein said system includes means to delay the discharge of extinguishing fluid from actuated nozzles until at least one ring of nozzles around a fire causing actuation of said nozzles have been actuated.

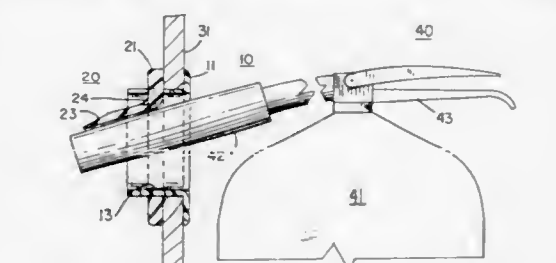
5,511,622
FIRE PORT VALVE
 David M. Thompson, 802 Mantoloking Rd., Brick Town, N.J. 08723

Filed Aug. 1, 1994, Ser. No. 283,638

Int. Cl.⁶ A62C 39/00

U.S. Cl. 169—70

1 Claim



1. A fire port for a nozzle of a fire extinguisher leading into an engine compartment comprising: a hollow device mounted on and

extending through a wall of said engine compartment; means for securing said hollow device to said wall; a stop fitted within said hollow device to seat said hollow device and said engine compartment; and means for connecting a top of said stop to a top of said hollow device by a resilient coupling comprising: an inner flange surrounding said hollow device, and means for connecting an upper portion of said inner flange to said top of said stop, said fire port having a gap along an upper portion of said hollow device to permit said means for connecting said upper portion of said inner flange to said top of said stop to move along inside and outside of said hollow device, and said resilient coupling holding said stop in a position to seal said hollow device, but can flex enough to open said stop when said nozzle of said fire extinguisher is pushed against it to put out any kind of a fire in said engine compartment without having to open any lid of said engine compartment, which would cause substantial introduction of air and oxygen, that would feed said fire.

5,511,623

QUICK HITCH GUIDANCE DEVICE

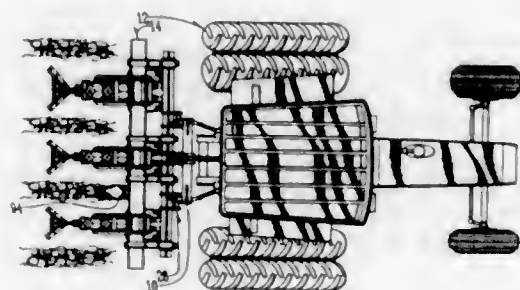
Michael E. Frasier, Lexington, Nebr., assignor to Orthman Manufacturing, Inc., Lexington, Nebr.

Filed Sep. 12, 1994, Ser. No. 304,257

Int. Cl.⁶ A01B 69/06

U.S. Cl. 172—4

6 Claims



1. A guidance device for a tractor-drawn crop implement, comprising:

- a generally inverted, U-shaped frame having means for attachment to a forward end of said implement;
- a linkage means for controllably increasing the distance between one end of said frame and a tractor and decreasing the distance between the other end of said frame and said tractor, including a horizontal connecting rod supported for linear movement with respect to said frame between a right steer position and a left steer position; an upper bell crank responsively connected to said horizontal connecting rod and supported for rotational movement with respect to said frame about an upper pivot point; a vertical connecting rod coupled at one end to said upper bell crank; a lower bell crank responsively coupled to said vertical connecting rod and supported for rotational movement with respect to said frame about a lower pivot point, whereby linear movement of said horizontal connecting rod between said right steer position and said left steer position results in rotational movement of said lower bell crank; and hydraulic means activated by a specified stimulus for controllably moving said horizontal connecting rod between said right steer position and said left steer position.

5,511,624

GUIDING SYSTEM FOR GARDEN TILLER

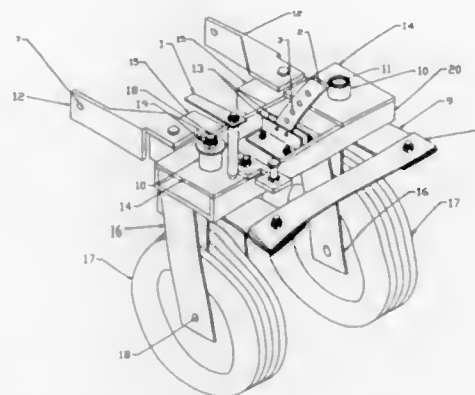
Johnny C. Dunn, 11981 KY HWY 1247, Waynesburg, Ky. 40489

Filed Aug. 29, 1994, Ser. No. 260,208

Int. Cl.⁶ A01B 45/04

U.S. Cl. 172—42

1 Claim



1. A replacement fixably pivotal wheel assembly for use with a front lined rotating garden tiller, the wheel assembly comprising:
 - a main frame having a front and a rear portion;
 - two fixably attached mounting members, each mounting member having a first and second end, the first end of each mounting member being secured perpendicular to the front portion of said main frame;
 - a pair of pivot holes defining a pivot axis through each mounting member adjacent to the second end of each mounting member wherein each mounting member is attached through the use of said pivot holes to a replaced wheel mounting position on the front lined rotating garden tiller;
 - a castor wheel assembly comprising two castor wheels wherein each castor wheel is pivotally attached to a backward-swept mounting bracket and wherein each mounting bracket is pivotally attached to both said main frame and a spacing member, the spacing member being situated to the rear of the main frame and attached to a tongue member rearly extending from each mounting bracket thereby maintaining a predetermined spacing and relative angle between said two castor wheels;
 - a depth regulator assembly comprising two opposing L-shaped members secured substantially at a longitudinal mid-point of said main frame and an arcuate member slidably, adjustably situated between the said two opposing L-shaped members and
 - a stabilizing pin, slidably situated on a vertical axis through the main frame thereby being selectively engageable with the castor wheel assembly.

5,511,625

SOIL LEVELING APPARATUS WITH IMPROVED FRAME AND HITCH

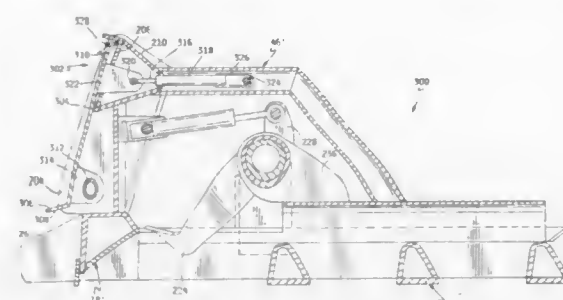
Orlan H. Mork, 6029 225th St. West, Farmington, Minn. 55024
Continuation-in-part of Ser. No. 714,563, Jun. 13, 1991, Pat. No. 5,213,164, which is a continuation of Ser. No. 372,027, Jun. 27, 1989, Pat. No. 5,024,280, which is a continuation of Ser. No. 163,178, Feb. 26, 1988, abandoned, which is a continuation of Ser. No. 856,818, Apr. 28, 1986, abandoned, which is a continuation-in-part of Ser. No. 570,347, Jan. 13, 1984, Pat. No. 4,585,075, which is a continuation-in-part of Ser. No. 224,458, Jan. 12, 1981, Pat. No. 4,448,258. This application May 25, 1993, Ser. No. 68,126

Int. Cl.⁶ A01B 59/043

U.S. Cl. 172—445.1

6 Claims

1. An apparatus for working soil, the apparatus suited for being connected to a skid steer loader type vehicle having two trans-



versely spaced, vertically movable loader arms which may be raised or lowered by powered means carried on the vehicle and one or more tilt cylinder(s) carried on the loader arms for tilting an apparatus connected to the loader arms, comprising:

- a generally rectangular frame having a pair of longitudinal side members and including a plurality of transverse, elongate ground engaging members which are longitudinally spaced apart relative to one another and are fixedly secured together between the pair of longitudinal side members, wherein the transverse, elongate ground engaging members extend along a predetermined length substantially transversely to a forward and a reverse direction of motion of the skid steer loader, the transverse, elongate ground engaging members each having a downwardly extending front face which contacts the soil during forward motion of the loader, a downwardly extending rear face which is configured and positioned to engage the soil deposited behind the ground engaging member during reverse motion of the loader to smooth the soil, and a lower, ground contacting, substantially planar surface extending between the front and rear faces, and wherein the lower ground contacting surfaces of the ground engaging members are substantially coplanar with one another, the front face of at least that ground engaging member which is forwardmost during forward motion of the loader being downwardly inclined relative to the horizontal such that the front face has a lowermost edge which engages the soil during forward motion of the loader, wherein the ground engaging members have a relatively small height in comparison to their predetermined length such that the soil which is encountered by the front faces thereof during forward motion of the loader passes over the ground engaging members to a position behind the ground engaging members; and
- hitch means mounted on said frame for releasably and rigidly connecting the frame to the loader arms and the tilt cylinder(s) of the skid steer loader, wherein the hitch means is positioned on the frame relative to the ground engaging members to push the front faces of the ground engaging members into the soil during forward motion of the frame, whereby the frame can be raised and lowered relative to the ground by the loader arms and the frame can be inclined relative to the ground by the tilt cylinder(s) to vary the effectiveness of the front faces of the ground engaging members against the soil.

5,511,626

HYDRAULICALLY OPERATED SUBSOIL DISPLACEMENT APPARATUS

Henrik Steen, Hjalderup, Denmark, assignor to Breakers A/S, Aalborg, Denmark

Filed Jan. 10, 1995, Ser. No. 370,880

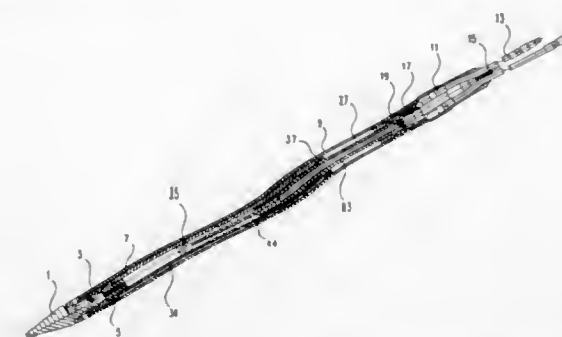
Claims priority, application Denmark, Jan. 11, 1994, 94 00012

Int. Cl.⁶ E21B 4/14

U.S. Cl. 175—19

2 Claims

1. A hydraulically operated subsoil displacement apparatus comprising a shell which surrounds a hydraulic impact mechanism with a linearly slidable hammer, in which under the action of hydraulic oil supplied from a supply of oil under pressure by a first hydraulic hose and withdrawn pressurelessly by a second hydraulic hose to a tank, reciprocating movement of said hammer is created



with blows against a forward or rear impact point inside the apparatus, and in which change of the impact point is effected by axial displacement of a tube which extends centrally and axially into the hammer.

in which pressurized oil is supplied through the first hydraulic hose by a valve connected to the supply of oil under pressure and the second hydraulic hose connected to the tank, said valve being formed to reverse connections of the first and second hydraulic hoses.

the apparatus having a hose union for each hose where each hose union is connected to an oil duct connected to discharge oil to one side of a piston secured to the tube, the piston having at least one oil duct connected to the interior of the tube.

the piston being closed at an end opposite the tube and the apparatus having two fluid conduits for oil which are formed by a series of adjoining ducts and cavities in the apparatus and in the piston for the supply and withdrawal of oil, the two fluid conduits being completely separate in the apparatus.

5,511,627

DOWNHOLE STABILISER

Charles A. Anderson, Sunnyside Farmhouse, Banchory Devenick, Aberdeen AB1 5YD, Scotland

PCT No. PCT/GB92/02225, § 371 Date Jun. 1, 1994, § 102(e) Date Jun. 1, 1994, PCT Pub. No. WO93/11334, PCT Pub. Date Jun. 10, 1993

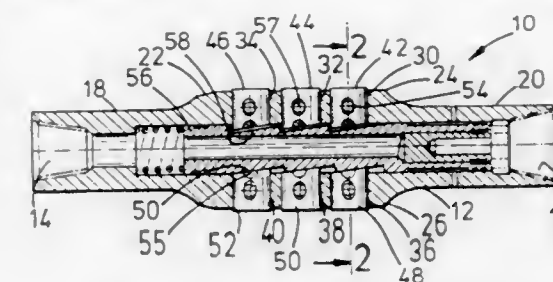
PCT Filed Dec. 1, 1992, Ser. No. 244,569

Claims priority, application United Kingdom, Dec. 4, 1991, 9125778

Int. Cl.⁶ E21B 7/08

U.S. Cl. 175—73

16 Claims



1. A downhole stabiliser for use in a drill string adjacent the drill bit, the stabiliser comprising:

- a hollow and generally cylindrical casing the outer surface of which defines first, second and third angularly spaced protrusions the radially outer surfaces of which define a diameter which is marginally less than the diameter of the bore to be drilled;
- said first and second protrusions each carrying radially extendible and retractable spacer members which are interconnected so that radially outward movement of one member results in radially inward movement of the other member and vice versa, effectively to vary the radial length of the respective protrusions; and

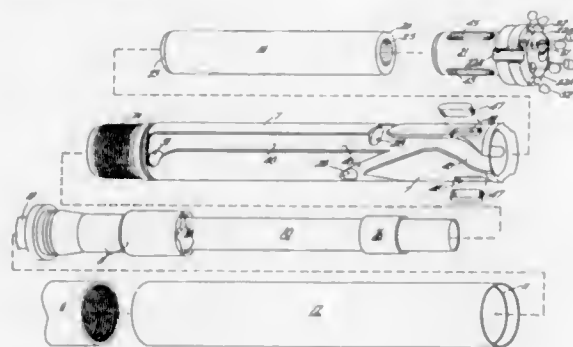
a control mandrel mounted within the casing and selectively movable between first and second positions, the control mandrel defining abutment means for limiting the inward movement of the spacer members, in the first position the mandrel permitting one spacer member to move radially inwards further than the other, and in the second position the mandrel providing the opposite.

5,511,628
PNEUMATIC DRILL WITH CENTRAL EVACUATION OUTLET

Ardis L. Holte, 181 Polk St., Eugene, Oreg. 97402
Filed Jan. 20, 1995, Ser. No. 375,785
Int. Cl.⁶ E21B 4/14

U.S. Cl. 175-296

5 Claims



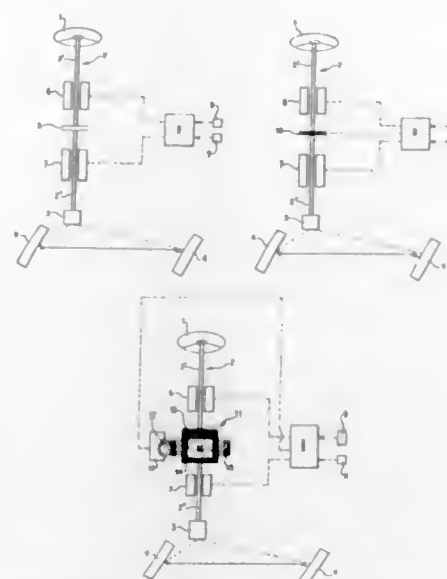
1. A pneumatic percussion drill for attachment to a length of drill pipe and including:
a wear tube;
a barrel housed within said wear tube and defining a first and a second series of exhaust ports and also exhaust channels extending therealong;
a piston slidably carried in said barrel, said piston opening and closing said ports;
a debris discharge tube axially disposed in said piston for coupling to said drill pipe;
a drill bit slidably carried in said barrel adjacent a barrel end and having a head defining an inlet opening for earthen debris, said head defining air outlets each in receiving communication with one of said exhaust channels for the discharge of compressed air into a ground bore formed by the bit head, said drill bit having a shank defining an axial bore in receiving communication through said inlet opening with the ground bore being formed to receive airborne earthen fragments for discharge into said debris discharge tube; and
key means limiting drill bit travel including a series of elongate keys in parallel with the axial bore of the drill bit, keyways and key slots in said drill bit and said barrel.

5,511,629
MOTOR VEHICLE STEERING SYSTEM
Thomas Vogel, Kempten, Germany, assignor to Daimler-Benz AG, Germany
Filed Jan. 28, 1994, Ser. No. 187,508
Claims priority, application Germany, Feb. 16, 1993, 43 04 664.9

Int. Cl.⁶ B62D 5/00; 6/00; 7/00; 3/02
U.S. Cl. 180-79.3

7 Claims

1. A control appliance, comprising a manually actuated handling device, control elements, a drive connection for operatively connecting the handling device and the control elements wherein the drive connection includes an input part and an output part, an automatically controllable motorized drive appliance selectively connectable to the control elements and operable to selectively actuate the control elements autonomously, wherein the drive

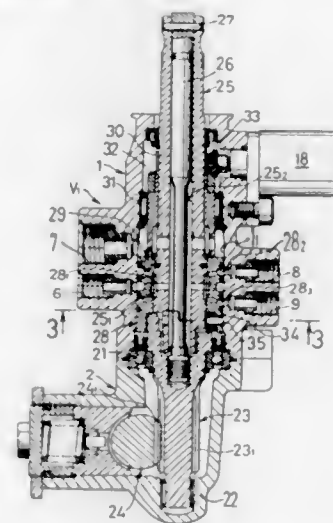


appliance is operatively configured and arranged to one of actively adjust the output part and subject the output part to a torque and, only during an intervention in normal steering control, to overcome a self-locking device effecting a connection between the input part and the output part during the normal steering control, thereby to effect a disconnection of the input part from the output part during the intervention, which disconnection is otherwise prevented by the self-locking device when the drive appliance is separated from an associated energy supply during the normal steering control such that a permanently effective positive connection between the input part and the output part is selectively and effectively separated.

5,511,630
POWER STEERING SYSTEM
Takashi Kohata; Toshihiko Aoyama; Yuichi Okada, and Nobuyoshi Asanuma, all of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Jun. 9, 1994, Ser. No. 257,772
Claims priority, application Japan, Jun. 10, 1993, 5-138116
Int. Cl.⁶ B62D 5/20

U.S. Cl. 180-142

9 Claims



1. A power steering system for assisting in steering of a vehicle and for automatically controlling the steering in response to variations in vehicle path, said system comprising:
(a) a steering wheel;

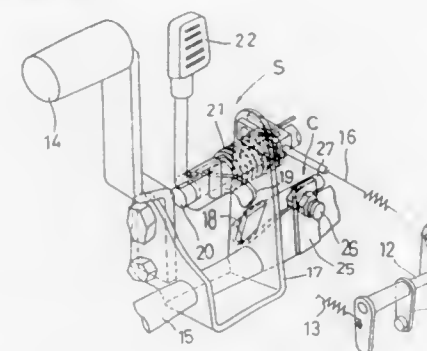
(b) an inner sleeve coupled to said steering wheel for rotating in response to rotation of said steering wheel, said inner sleeve having groove means formed therein;
(c) an outer sleeve positioned around said inner sleeve and coaxial therewith, said inner sleeve and said outer sleeve being rotatable relative to one another, said outer sleeve having groove means formed therein;
(d) rotary valve means formed by the groove means in said inner sleeve and said outer sleeve;
(e) a pinion shaft connected to said outer sleeve;
(f) a rack bar operatively coupled to said pinion shaft;
(g) a torsion bar coupled to said inner sleeve and to said pinion shaft;
(h) connecting means for connecting said pinion shaft and said outer sleeve such that said pinion shaft can rotate relative to said outer sleeve;
(i) actuator means operatively coupled to said outer sleeve for rotating said outer sleeve such that said outer sleeve rotates relative to said pinion shaft and said inner sleeve;
(j) condition detecting means for detecting operating conditions of the vehicle;
(k) control means coupled to an output of said condition detecting means and said actuator means for controlling said actuator means in response to the output of said condition detecting means, wherein operation of said actuator means rotates said outer sleeve with respect to said inner sleeve therein moving corresponding said groove means with respect to one another, said rotary valve means is operated; and
(l) power cylinder means coupled to said rotary valve means, wherein operation of said rotary valve means changes a flow path of hydraulic fluid in said power cylinder means wherein said power cylinder means is moved therein providing an assisting force in steering the vehicle.

5,511,631
RUNNING CONTROL STRUCTURE FOR A LAWN TRACTOR

Hironori Tsuchihashi; Osami Fujiwara; Tuiyoshi Satou; Yoshikazu Togoshi; Toshihiko Hamada; Yoshihiro Kawahara, and Niro Bando, all of Sakai, Japan, assignors to Kubota Corporation, Japan
Filed Apr. 18, 1994, Ser. No. 228,806
Claims priority, application Japan, May 20, 1993, 5-118080; Aug. 31, 1993, 5-215342; Sep. 27, 1993, 5-238673
Int. Cl.⁶ B60K 17/354; 23/08; G05G 13/00; 1/14

U.S. Cl. 180-247

16 Claims



1. A running control structure for a lawn tractor switchable between a two-wheel drive mode and a four-wheel drive mode, comprising:

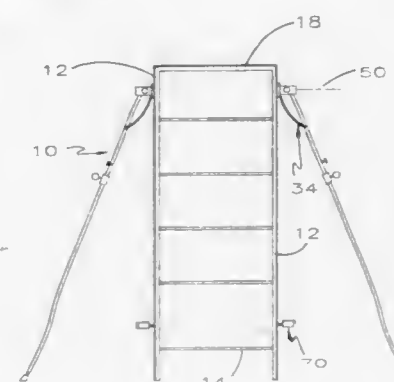
first wheel means;
second wheel means;
first drive means for driving said first wheel means;
second drive means for driving said second wheel means;
drive switching means for switching said second drive means between a driving state and a non-driving state, said drive switching means including control means for controlling said

drive switching means, said control means including a foot-operated control pedal; and
biasing means for biasing said control means to a position corresponding to said non-driving state of said second drive means, wherein said drive switching means includes a lock mechanism for maintaining said second wheel means in a driven state, wherein said drive switching means includes an unlocking mechanism for unlocking said lock mechanism, wherein said control pedal and said unlocking mechanism are depressible together to maintain said second wheel means in said driven state while maintaining said lock mechanism in an inoperative position, and wherein said control pedal and said unlocking mechanism are separately operable by an operator.

5,511,632
LADDER WITH AUXILIARY SUPPORT
Jerry J. Ermis, 5710 Killarney, Corpus Christi, Tex. 78411
Filed Jul. 25, 1994, Ser. No. 282,721
Int. Cl.⁶ E06C 1/38

U.S. Cl. 182-172

10 Claims



1. A ladder for placement on an underlying support surface comprising first and second longitudinal frame members defining a plane and a plurality of steps extending between the frame members and an auxiliary support comprising

a first support member;
means pivotally mounting the first support member on the ladder frame for movement between a first position generally parallel to the ladder and a second position defining an acute angle relative to the first ladder frame member for supporting the ladder against tilting, the pivotal mounting means including a spring biasing the first support member away from the first ladder frame member;
a bracket on the first frame member, a fastener connecting the first support member to the bracket for rotation about an axis and further comprising means limiting movement of the first support member about the axis to a predetermined arc comprising a lug on the first support member for engaging the bracket at the end of the predetermined arc;
a second support member having a ground engaging end and being mounted on the first support member for unimpeded sliding movement from an axially retracted position toward an axially extended position;
means moving the second support member toward the underlying support surface in response to a lack of resistance on the ground engaging end including
a spring biasing the second support member toward the axially extended position,
means locking, in response to an axial load on the support member, the second support member in a plurality of positions between the extended and retracted positions for preventing movement of the second support member toward the retracted position.

5,511,633

SAFETY DEVICE FOR PERSON AND GOODS LIFT AND
TURNSTICK FOR SHIFTING OR RELEASE OF THE
LIFTGAGE

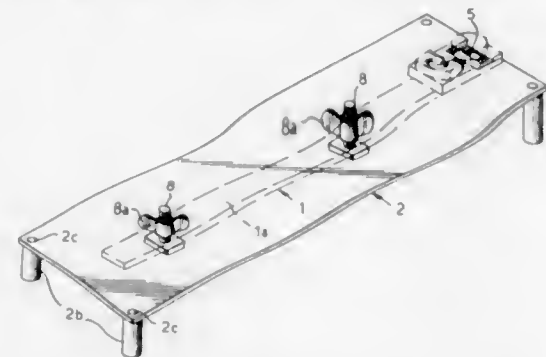
Stein Aker, Borggaten 12B, N-0650 Oslo, Norway
PCT No. PCT/N093/00060, § 371 Date Sep. 23, 1994, § 102(e)
Date Sep. 23, 1994, PCT Pub. No. WO93/21097, PCT Pub.
Date Oct. 28, 1993

PCT Filed Apr. 7, 1993, Ser. No. 307,699

Claims priority, application Norway, Apr. 10, 1992, 921426
Int. Cl.⁶ B66B 11/08

U.S. Cl. 187—263

9 Claims



1. Safety device for a passenger/freight elevator of the shaft elevator type, wherein an elevator turning wheel connected to an elevator drive system comprising an electric motor is provided with a peripheral bead or peripheral axially extending flange for engagement with a turn handle for rotation of the turning wheel to move an elevator car in the event of a power outage, or if the car is wedged or jammed in an elevator shaft, or when the elevator is being serviced, characterized in that the turn handle (1) is releasably disposed in a permanently mounted holder (2) containing a switch (3) for connection/disconnection of the supply of electric current to the elevator drive system, which connecting position for the switch (3) is actuated by the turn handle (1), the circuit being closed when the turn handle (1) is placed in the holder (2) and interrupted when the turn handle (1) is removed from the holder (2).

5,511,634

INSTANTANEOUS ELEVATOR UP-PEAK SECTOR
ASSIGNMENT

Zuhair S. Bahjat, Farmington, and Thomas R. Bean, Simsbury, both of Conn., assignors to Otis Elevator Company, Farmington, Conn.

Continuation of Ser. No. 124,135, Sep. 20, 1993, abandoned.

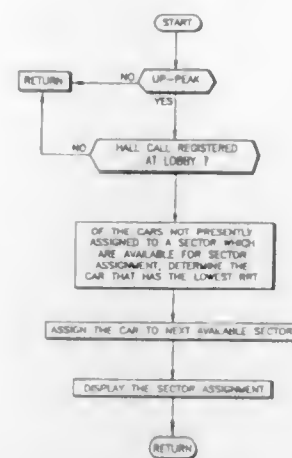
This application Oct. 5, 1994, Ser. No. 318,487

Int. Cl.⁶ B66B 1/20

U.S. Cl. 187—383

1 Claim

1. A method for dispatching elevators from the main floor to upper floors in a building in response to car calls made at the main floor and in response to the location of the cars, characterized by: dividing the floors in the building into a plurality of sectors, adjacent the main floor, less than or equal to the plurality of cars, each sector comprising two or more contiguous floors, the sectors being contiguous with each other; assigning a sector exclusively to one of the cars during a cycle of a cyclical assignment sequence that assigns sectors according to a preset sector order; allowing a car to move away from the main floor in response to car calls only if the car calls are to floors in the sector assigned to the car; indicating at the main floor the floors in a sector assigned to a car; and assigning a different sector to said one car if car calls meeting preset criteria are not made to floors in the sector after the sector is assigned to the car;



characterized by the improvement comprising, in response to a hall call being registered at the main floor:

estimating, for each sector-unassigned elevator car, a remaining response time value based on an estimated amount of time required for the elevator car to reach the lobby taking into account any car calls and any floor hall calls which the elevator car is presently assigned to serve;

comparing the remaining response time values of each of the sector-unassigned elevator cars of the plurality for selecting a sector-unassigned elevator car having a lowest remaining response time value and therefore being the sector-unassigned car which it is estimated will be the first to reach the lobby; assigning a sector of the plurality of sectors to the selected sector-unassigned elevator car to form a sector-assigned elevator car; and moving the sector-assigned elevator car to the lobby to service the assigned sector.

5,511,635

FLOOR POPULATION DETECTION FOR AN ELEVATOR
SYSTEM

Nader Kameli, New Britain, Conn., assignor to Otis Elevator Company, Farmington, Conn.

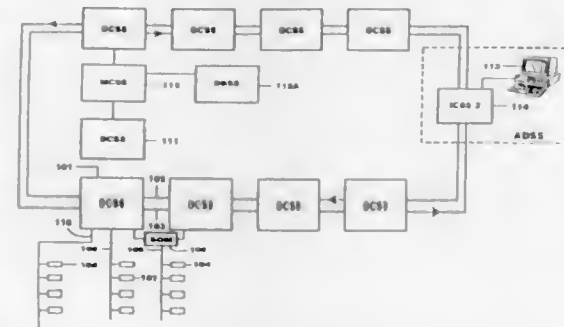
Continuation of Ser. No. 580,887, Sep. 11, 1990, abandoned.

This application Jul. 25, 1994, Ser. No. 280,562

Int. Cl.⁶ B66B 1/28

U.S. Cl. 187—392

5 Claims



1. A method of dispatching a plurality of elevator cars serving a plurality of floors of a building having a lobby floor, comprising: during an interval of time, determining at each stop that each elevator car makes at each of said floors other than said lobby floor a first number of passengers that board the car and providing a first signal indicative thereof, and determining a second number of passengers that de-board the car and providing a second signal indicative thereof; providing, in response to said first and second signals, an indication of a third number of passengers currently on the floor

associated with each of said stops and providing a plurality of corresponding upper floor population signals indicative thereof, said third number increasing for each passenger that de-boards one of said cars and said third number decreasing for each passenger that boards one of said cars; and dispatching said elevator cars to provide service to said floors in response to a process which utilizes said plurality of upper floor population signals.

5,511,636

DRUM BRAKE DEVICE TO FACILITATE VISUAL
CONFIRMATION OF WEAR

Takao Tanaka, Nagoya, Japan, assignor to Nissinbo Industries, Inc., Tokyo, Japan

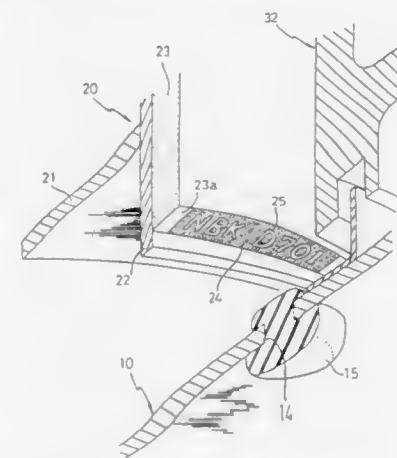
Filed Apr. 21, 1995, Ser. No. 426,607

Claims priority, application Japan, Apr. 26, 1994, 6-110561

Int. Cl.⁶ F16D 66/00; 65/10

U.S. Cl. 188—1.11

6 Claims



1. A device for use with a drum brake which brakes a vehicle by applying a pressure to a brake drum that rotates around the brake shoes positioned to contract and expand on a backplate, said device comprising:

at least one colored strip, located on one or both side faces of a brake lining, that visually confirms the amount of wear in the brake lining; and

a code, superimposed on the colored strip, that indicates the type of material or other characteristics of the brake lining.

5,511,637

BRAKE DEVICE

David T. Walter, Milton Keynes, England, assignor to Wichita Company Limited, England

Filed Sep. 27, 1994, Ser. No. 312,591

Claims priority, application United Kingdom, Oct. 13, 1993, 9321079

Int. Cl.⁶ F16D 65/09

U.S. Cl. 188—73.34

11 Claims

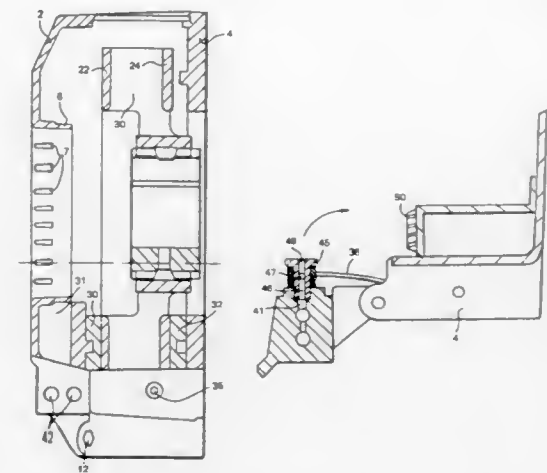
1. A brake device for braking a shaft, said device having:

a brake pad;

a brake disc mounted on said shaft;

at least one actuator having an air supply thereto and having an operative position in which said at least one actuator can be pneumatically powered under pressure from said air supply to urge said brake pad against said brake disc, and an inoperative position in which said at least one actuator can be displaced so as to bring said brake pad out of engagement with said brake disc,

a passage communicating with said at least one actuator, said passage having a relief orifice arranged to be opened to



provide pressure relief on displacement of said at least one actuator from the operative position of the device; and in which, as a consequence of said displacement of said actuator, said air pressure within said at least one actuator is relieved and said air supply to said at least one actuator is at least partially diverted.

5,511,638

RETURN SPRING FOR A DISC BRAKE

Matsuhisa Tsuruta, Toyota, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Continuation of Ser. No. 75,880, Jun. 14, 1993, abandoned.

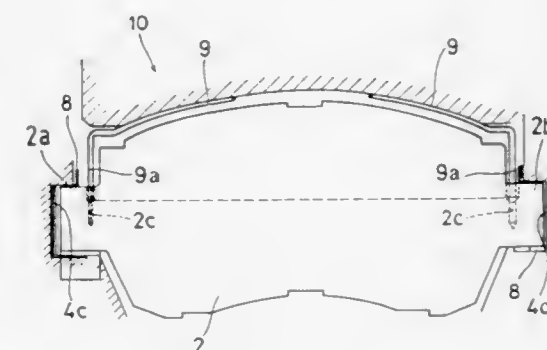
This application Jan. 23, 1995, Ser. No. 376,674

Claims priority, application Japan, Jun. 15, 1992, 4-154857

Int. Cl.⁶ F16D 55/224; F16F 15/06

U.S. Cl. 188—73.38

4 Claims



1. A disc brake for use in a vehicle comprising: a mounting member fixable to the vehicle in proximity to a brake disc;

a cylinder slidably disposed on the mounting member;

a pair of disc pads, each of which includes a pair of supporting portions and a pair of stepped holes, each of said stepped holes having a larger diameter entry portion leading to a smaller diameter portion, each of the pads being supported on the mounting member at the supporting portions; and

a spring member which engages with each of the pads at said smaller diameter portion, said smaller diameter portion lying substantially on a line which connects between radial mid-positions of the supporting portions, the spring member fitting in said stepped holes and forcing outwardly each of the pads so as to be separated from each other.

5,511,639

CONTROL FOR POWER TRANSMISSION TORQUE TRANSMITTING MEMBERS

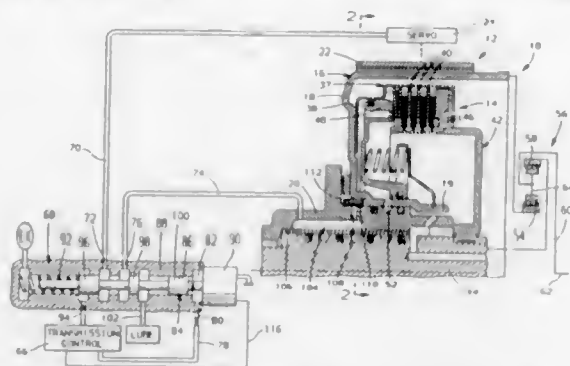
James F. Sherman, Brighton, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Dec. 8, 1994, Ser. No. 351,846

Int. Cl.⁶ F16D 51/00

U.S. Cl. 188—77 R

2 Claims

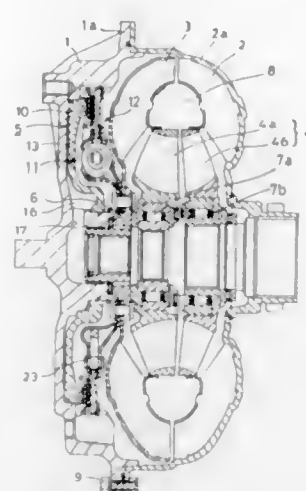


1. In combination, a transmission and control comprising:
a brake drum having an inner hub and bushing;
a shaft supporting the inner hub and bushing;
a brake band surrounding said drum and including selectively

pressurized servo means for engaging the brake band with said drum for establishing a reaction torque thereon, said brake drum being urged to move laterally relative to said shaft when said servo means is pressurized and the reaction torque is imposed on said drum;

passage means for conducting fluid including an opening in said shaft closed by said bushing at a predetermined reaction torque level on said brake drum; and

valve means including a valve spool movable to first and second positions for controlling fluid flow to and from said servo means having a connection with said passage means for exhausting said servo means through said valve means and said passage means when said valve spool is in the first position and the reaction torque is below the predetermined level.



a friction member disposed between said first sideplate and said disc, said friction member being a thrust member; and
an urging member disposed between said second sideplate and said disc, said urging member being a wave spring comprising a stopper portion for stopping relative movement with respect to said disc whereby said disc and said wave spring rotate together.

5,511,641

MECHANICAL BRAKE INTERLOCK MECHANISM FOR A COLUMN-MOUNTED SHIFT CONTROL ASSEMBLY

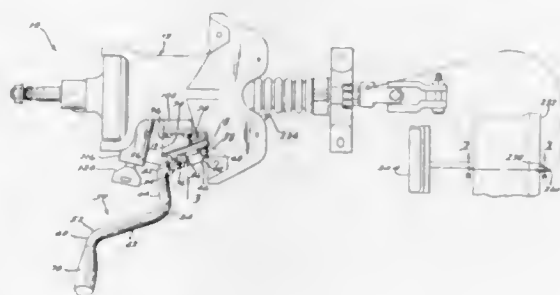
William M. Snell, Grand Blanc; Thomas S. Kaliszewski, Troy, and Rodney L. Eaton, Clarkston, all of Mich., assignors to Chrysler Corporation, Auburn Hills, Mich.

Filed Nov. 21, 1994, Ser. No. 343,052

Int. Cl.⁶ B60K 41/26

U.S. Cl. 192—4 A

7 Claims



1. In a transmission shift control assembly including a detent plate having a plurality of detents formed thereon including a Park detent, a shift lever having an end thereof pivotable into and out of the Park detent and rotatable to selected detents, a pivotally mounted spring-loaded flip cam, a blocker member pivotally mounted on said detent plate, a linkage member operatively connected between said flip cam and said blocker member adapted to selectively pivot said blocker member into and out of engagement with the end of the shift lever while the shift lever is in the Park detent position, a brake lever and associated brake pedal, and a spring for urging the brake lever from a depressed state to an undepressed state, a mechanical brake interlock mechanism comprising spring-loaded cable means operatively connected between said brake lever and said blocker member to prevent said blocker member from being pivoted away from said end of said shift lever until said brake pedal is depressed, said spring-loaded cable means including a spring connected to said blocker member, and a cable operatively connected between said spring and said brake lever.

5,511,640

LOCK-UP DEVICE FOR TORQUE CONVERTER

Takao Fukunaga, Neyagawa, Japan, assignor to Kabushiki Kaisha Daikin Selsakusho, Osaka, Japan

Filed Mar. 15, 1994, Ser. No. 213,186

Claims priority, application Japan, Mar. 18, 1993, 5-012090 U

Int. Cl.⁶ F16H 45/02; F16D 3/14

U.S. Cl. 192—3.28

4 Claims

1. A lock-up torque converter comprising:

a torque converter housing having an impeller formed on an inner surface thereof, and a turbine and at least a first stator disposed therein;

an elastic connecting mechanism disposed within said torque converter housing generally rigidly connected to said turbine having at least one coil spring, said elastic connecting mechanism comprising:

a disc, in contact with said clutch mechanism, and
a first and second sideplate disposed to interpose said disc, connected to said turbine, and elastically connected to said disc;

a selectively engagable clutch mechanism disposed within said torque converter housing adjacent to said turbine; and

a hysteresis torque generating mechanism connected to said elastic connecting mechanism, disposed radially outward from said coil spring and in contact with said clutch mechanism for producing friction in response to engagement of said clutch mechanism, said hysteresis torque generating mechanism comprising:

5,511,642

OVERRUNNING CLUTCH ASSEMBLY

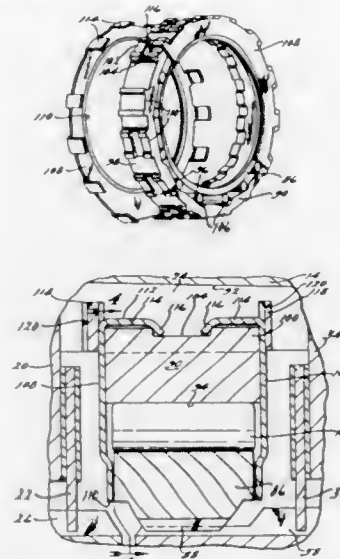
James R. Klotz, Mt. Clemens, and Berthold Martin, Shelby Township, both of Mich., assignors to Chrysler Corporation, Auburn Hills, Mich.

Filed Apr. 11, 1994, Ser. No. 225,671

Int. Cl.⁶ F16D 3/34; F16D 41/04; F16H 3/44

U.S. Cl. 192—45

19 Claims

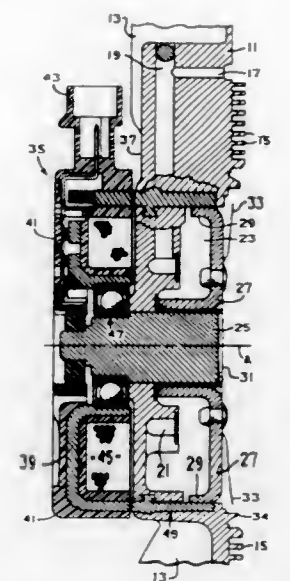


1. An overrunning clutch assembly for an automatic transmission including a transmission housing, an input member, an output member, a plurality of gearsets for changing a ratio of torque between the input member and the output member, and at least one brake assembly to selectively couple predetermined gears of the gearsets to the transmission housing, said overrunning clutch assembly comprising:

an inner race operatively connected to said at least one brake assembly;

an outer race operatively connected to the transmission housing; means disposed between said inner race and outer race for allowing said at least one brake assembly to rotate in only one direction; and

a retainer disposed adjacent said inner race and said outer race and extending radially over said inner race and said outer race for retaining said inner race and said outer race and said means together as a single unit.



fluid inlet port and a valve member being moveable between an open position permitting fluid flow through said inlet port, and a closed position substantially blocking fluid flow through said inlet port; and an actuator assembly operably associated with said first coupling assembly and with said valve means, and operable to move said valve member toward one of said open and closed positions in response to an input; said cover member comprising a nonferromagnetic member, and including an annular ferromagnetic member disposed within said cover member and being generally concentric about said axis of rotation (a), and operable to transmit said input from said actuator assembly to said valve means; characterized by:

(a) said annular ferromagnetic member defines a radially inner surface, and extending radially inward therefrom, an annular dovetail portion;

(b) said dovetail portion defining at least one radially outer surface; and

(c) said cover member including a cast central portion disposed radially inwardly of said annular ferromagnetic member, said cast central portion being disposed in sealing engagement with said radially outer surface of said dovetail portion.

5,511,644

FRICTIONAL ENGAGEMENT DEVICE FOR AN AUTOMATIC TRANSMISSION

Kiyohito Murata, Susono, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

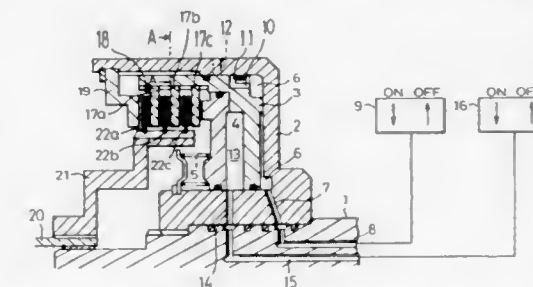
Filed Jul. 29, 1994, Ser. No. 282,441

Claims priority, application Japan, Aug. 24, 1993, 5-209471

Int. Cl.⁶ F16D 25/0638; F16H 3/44

U.S. Cl. 192—85 AA

8 Claims



1. A frictional engagement device in an automatic transmission having a first member and a second member which may be engaged and disengaged by use of oil pressure, said frictional engagement device comprising:

5,511,643

VISCOUS FLUID COUPLING AND IMPROVED FLUXRING FOR USE THEREIN

Richard J. Brown, Marshall, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Filed Aug. 15, 1994, Ser. No. 290,265

Int. Cl.⁶ F16D 35/02

U.S. Cl. 192—58.61

10 Claims

1. A fluid coupling device of the type including a first rotatable coupling assembly defining an axis of rotation (A), said first coupling assembly including a first coupling member and a cover member cooperating to define a fluid chamber therebetween; valve means associated with said first coupling assembly and disposed to separate said fluid chamber into a fluid operating chamber and a fluid reservoir chamber; a second rotatable coupling member disposed in said fluid operating chamber and being rotatable relative to said first coupling member, said first coupling assembly cooperating with said second coupling member to define a viscous shear space therebetween; said valve means being operable to control the flow of fluid between said reservoir chamber and said operating chamber, and means operable to pump fluid from said operating chamber into said reservoir chamber; said valve means defining a

a casing connected to said first member and having at least one first oil passage;

a first piston means disposed in said casing and having at least one second oil passage, said first piston means defining a first oil pressure chamber together with said casing, said second oil passage being connected to said first oil pressure chamber, said first piston means being axially movable relative to said casing by a predetermined distance by supplying pressurized oil into said first oil pressure chamber, and one of said first piston means and said casing being rotationally movable relative to the other by a predetermined angle;

a second piston means disposed in said first piston means, said second piston means defining a second oil pressure chamber together with said first piston means, said second piston means being axially movable relative to said first piston means by supplying pressurized oil into said second oil pressure chamber;

first group of frictional engagement elements being axially spaced and axially slidably connected to said first piston means; and

second group of frictional engagement elements being axially spaced and axially slidably connected to said second member, said second groups of frictional engagement elements facing said first groups of frictional engagement elements respectively,

wherein said second piston means pushes one of said first group of frictional engagement elements and said second group of frictional engagement elements when said second piston means is axially moved by supplying pressurized oil into at least one of said first oil pressure chamber and said second oil pressure chamber,

wherein said first oil passage in said casing is connected to said second oil passage in said first piston means and pressurized oil supplied in said first oil pressure chamber can be discharged when one of said casing and said first piston means rotationally moves relative to the other after said first piston means is axially moved.

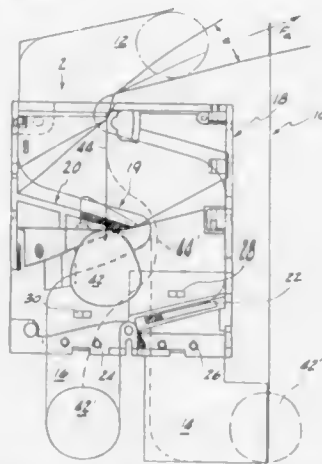
5,511,645

ANTI-STRINGING DEVICE FOR A COIN ACCEPTOR
Anton Glueck, Harsefeld, Germany, assignor to National Rejectors Inc., Buxtehude, Germany
Filed Jun. 6, 1994, Ser. No. 254,582
Claims priority, application Germany, Jun. 7, 1993, 43 18 858.3

Int. Cl.⁶ G07F 1/04

U.S. Cl. 194—203

5 Claims



5. A coin acceptor for inhibiting a user from using a string attached to a coin to defraud the coin acceptor, the coin acceptor having a coin entrance slot for receiving inserted coins and having an acceptance and a rejection channel downstream from the coin entrance slot for sorting valid coins from rejected coins, said coin acceptor comprising:

a main plate;

a supporting plate supported for movement relative to the main plate;

a first coin travel path supported by the supporting plate, wherein the first coin travel path lies between the coin entrance slot and the acceptance and rejection channels and wherein a portion of the first coin travel path is ramped upward toward the coin entrance slot;

a counterfeit coin travel path supported by the main plate, the counterfeit coin travel path being positioned below and running along the first coin travel path for supporting a coin which falls from the first coin travel path in response to the supporting plate being moved relative to the main plate;

wherein the main plate and the counterfeit coin travel path define a slot therebetween which slot is narrower than a thinnest coin to be protected against use of the string and which slot opens towards an end of the coin path;

wherein the slot is positioned to receive the string after the coin to which the string is attached has passed downstream of first the coin travel path.

5,511,646

MULTIPLE PRICE AND SIZE SETTING METHOD FOR VENDING MACHINES

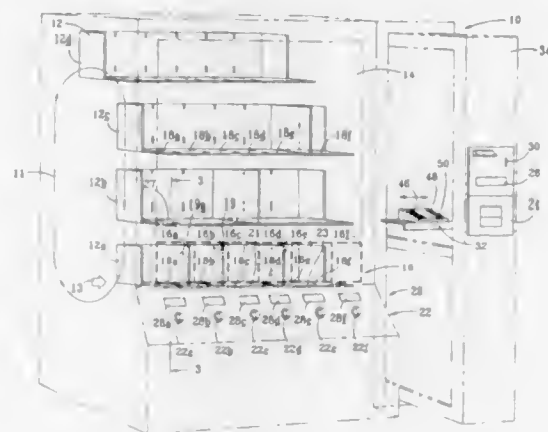
Algert J. Maldanis, Heath, Tex.; David K. Giegerich, Fair Lawn, and Andris C. Sloss, Sussex, both of N.J., assignors to Rowe International, Inc., Grand Rapids, Mich.

Filed Jun. 3, 1993, Ser. No. 71,713

Int. Cl.⁶ G07F 1/158

U.S. Cl. 194—217

3 Claims



1. A method of programming size and price settings for a vending machine comprising the steps of:

- placing said vending machine in a programming mode;
- moving a desired horizontal shelf to a vending position, which shelf has a product-holding area;
- inputting a desired price on a visual display;
- actuating a button corresponding to a leftmost button adjacent to said product-holding area and subsequently actuating a rightmost button adjacent to said product-holding area to set said desired price and size for said product-holding area; and
- taking said machine out of said programming mode to store said price for product-holding area and to place said vending machine into an operating condition.

5,511,647

BALUSTRADE INFORMATION DISPLAY FOR A PASSENGER CONVEYING DEVICE

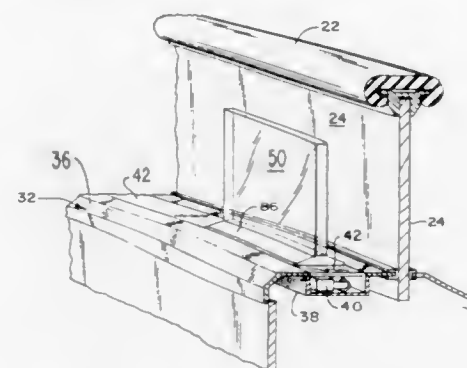
Willy Adrian, Obernkirchen; Peter Borchers, Stadthagen; Michael Fohrer, Berlin; Knuth Wallbaum, Wunstorf; Gerald Wente, Pohle, and Rainer Zimmerman, Belmerstetten, all of, Germany, assignors to Otis Elevator Company, Farmington, Conn.

Filed Apr. 8, 1994, Ser. No. 224,434

Int. Cl.⁶ B65G 17/00

U.S. Cl. 198—335

53 Claims



1. A balustrade outer decking, comprising:

- a channel extending lengthwise;
- a light source, disposed in said channel;
- a cover, wherein said cover encloses said channel and said light source disposed therein, said cover allowing light to pass out of said channel;
- an information display, disposed in said channel, said information display comprising:
- a housing, for enclosing a portion of said channel; and
- a display panel, supported by said housing, said display panel having a thickness, a first portion and a second portion;

wherein light emanating from said light source and passing within said display panel differentiates said first and second portions, thereby allowing information to be displayed by said display panel.

5,511,648

METHOD AND APPARATUS FOR TRIMMING AND INSPECTING PLASTIC CONTAINERS

Ronald S. Kaminski, Bowling Green, Ohio, and Noel B. Eggert, Temperance, Mich., assignors to Owens-Illinois Plastic Products Inc., Toledo, Ohio

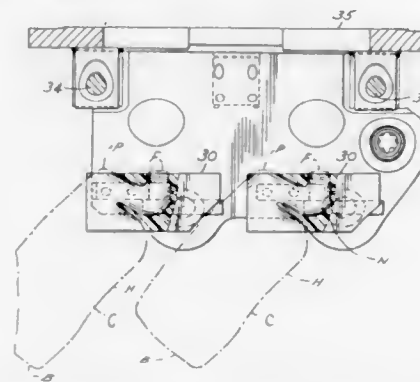
Continuation of Ser. No. 6,392, Jan. 21, 1993, abandoned.

This application Apr. 18, 1994, Ser. No. 229,072

Int. Cl.⁶ B65G 47/24

U.S. Cl. 198—379

11 Claims



1. A method for orienting hollow plastic containers wherein each container has a longitudinal axis and a neck and finish which has

an opening which has an axis that forms an angle with the longitudinal axis of the hollow plastic container for performing trimming functions and inspecting functions on the hollow plastic containers, said method comprising

depositing each container on a horizontal conveyor such that the longitudinal axis of the container is vertical with respect to the conveyor, and

moving each container intermittently past a succession of stations of a trimming and inspection apparatus by moving said conveyor,

providing tooling at at least one station,

at at least one of said stations, clamping solely the neck of each container,

thereafter rotating each clamped container about a horizontal axis such that each container is moved out of engagement with the conveyor to a position such that the axis of the opening in the finish is vertical,

thereafter performing a function on each container by moving the tooling downwardly into engagement with the finish to perform the function while maintaining the neck of each container clamped in the aforesaid position,

thereafter rotating each clamped container to its original position, and

releasing each container onto the conveyor.

5,511,649

SLUDGE COLLECTOR FLIGHT

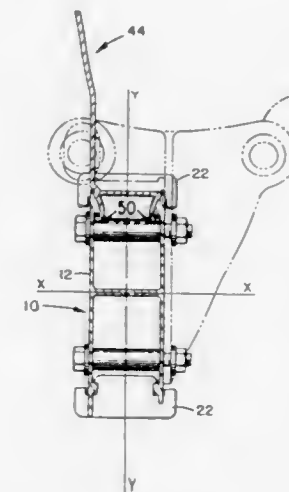
Stephen B. Wilcher, Harleysville, Pa., assignor to FMC Corporation, Philadelphia, Pa.

Filed Aug. 1, 1994, Ser. No. 283,499

Int. Cl.⁶ B65G 19/24

U.S. Cl. 198—731

9 Claims



1. A sludge collector mechanism for scraping settled sludge off the bottom of a settling tank, the sludge collector mechanism including a sludge collector flight comprising:

- an "H"-shaped cross section having a substantially flat front face, a substantially flat rear face and a transverse stem joining the front and rear faces;
 - a first lip extending transversely from proximate an end of the front face; and
 - a second lip extending transversely from proximate a corresponding end of the rear face;
- wherein said "H" shape comprises an open-ended region between said first and second lips.

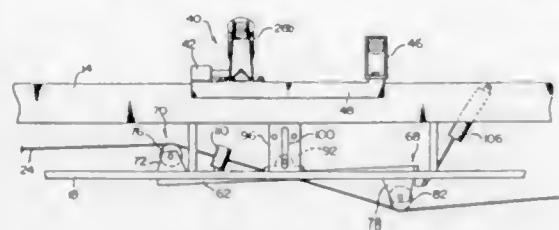
5,511,650

AIR-OPERATED CONVEYOR BELT TENSIONING APPARATUS

Samuel G. Hurworth, Port Angeles, Wash., assignor to Dethur Industries, Inc., Port Angeles, Wash.
Filed Dec. 13, 1994, Ser. No. 356,446
Int. Cl.⁶ B65G 23/44

U.S. Cl. 178—813

5 Claims



1. An apparatus for tensioning a conveyor belt used in a conveyor belt scale system for transporting construction material such as rock and soil over a considerable distance at construction sites, the conveyor belt including an upper run portion for support of the construction material thereon, and a lower return run portion, the conveyor system further including a conveyor frame for supporting the upper run, the apparatus comprising:

an open center tensioning frame assembly having infeed and outfeed end members and two connecting side members, wherein the end members and side members define a tensioning frame plane;

means for mounting the tensioning frame assembly to the conveyor frame beneath the upper run portion of the belt in such a manner that said tensioning frame assembly can move about said mounting means such that as the infeed end of the tensioning frame assembly moves downwardly, the outfeed end thereof moves upwardly and vice versa;

a first set of rollers mounted on the tensioning frame assembly so that they extend substantially across said tensioning frame assembly in the vicinity of the infeed and outfeed ends thereof, a first roller being positioned on a first mounting assembly which extends above the tensioning frame plane at the infeed end of the tensioning frame assembly, while a second roller is positioned on a second mounting assembly which extends below the tensioning frame plane at the outfeed end of the tensioning frame assembly, wherein the return run portion of the belt extends over the first roller, through the open center area of the tensioning frame assembly and under the second roller; and

fluid actuated means connected to said tensioning frame assembly for maintaining precise control over the position of the tensioning frame assembly and hence precise control over the tension on the belt.

5,511,651

ARRANGEMENT FOR THE TRANSPORT OF PRINTED CIRCUIT BOARDS

Klaus Barth, Neukirchen-Vluyn, Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 2, 1994, Ser. No. 333,569

Claims priority, application Germany, Nov. 5, 1993, 43 37 811.0

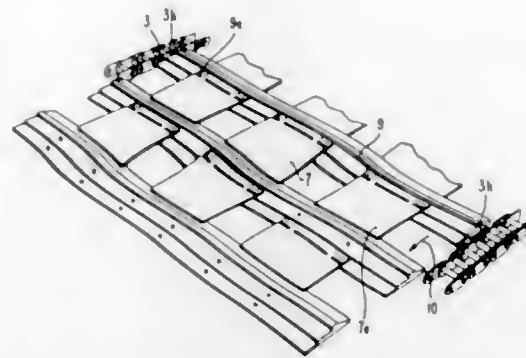
Int. Cl.⁶ B65G 15/10

U.S. Cl. 198—817

11 Claims

1. An arrangement for the transport of circuit boards (7), along a transport path between and/or in various work stations during assembly, the circuit boards being manipulated in a predetermined position, which arrangement comprises

a conveyor chain (3) carrying holding devices (3d) for individual circuit boards (7), which holding devices are spaced apart at distances equal to a plurality of chain links (3c), and transport strip portions (7b) of board material provided on and separable from the circuit boards (7), which strip portions



have no circuit function and can be held by the holding devices (3d) for transport by means of the moving conveyor chain (3).

5,511,652

CONSTRUCTION CONVEYOR BELT

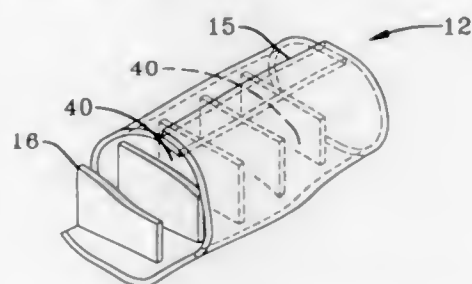
Terry W. McGinnis, 1638 S. Cleveland-Massillon Rd., Akron, Ohio 44321

Filed Jul. 12, 1994, Ser. No. 274,202

Int. Cl.⁶ B65G 15/08

U.S. Cl. 198—819

3 Claims



1. A stretchable conveyor belt having lateral edges separated by a width and a centerline, said conveyor belt comprising:

a first reinforced layer comprising reinforcing cords, said cords being placed in a crisscross pattern, wherein said cords form an angle α with said centerline;

a second reinforced layer comprising reinforcing cords, said cords being placed in a crisscross pattern, wherein said cords form an angle β with said centerline, said angle β being less than said angle α ;

a bottom covering layer;

a top covering layer;

a strip layer of elastomeric material mounted on said top covering layer, said strip layer having a width less than said width of said conveyor belts; and,

locking plates attached to said strip layer, said locking plates having a length equal to said width of said strip layer.

5,511,653

JEWELRY TRAY

Joseph Ovadia, 109 Long Hill Rd., Little Falls, N.J. 07424

Filed May 17, 1994, Ser. No. 245,030

Int. Cl.⁶ B65D 81/16; A47F 3/14

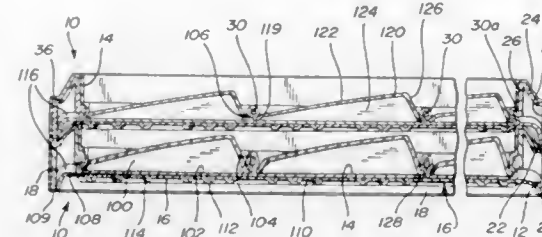
U.S. Cl. 206—6.1

24 Claims

1. A jewelry tray comprising:

a peripheral supporting wall; and

a center portion connected within said peripheral supporting wall, said center portion including a plurality of recesses therein, each said recess being defined by a peripheral side wall and a bottom wall, said bottom wall of each said recess



extending at least partially inwardly of the respective said recess, each said recess including two undercut portions on opposite sides of said recess, each undercut portion extending at a lower end of the peripheral side wall thereof, and a portion of said bottom wall being disposed beneath each said undercut portion to define an inner ledge for supporting a jewelry pad thereon; and

said center portion including a grid structure formed by a plurality of intersecting bars connected within said peripheral supporting wall to define said peripheral side walls of said recesses, said grid structure being open between said plurality of intersecting bars to define openings wherein there is no bottom wall between said intersecting bars; and

a thin sheet of material formed as a skin on an upper surface of said grid structure so as to extend within said openings and partially surround a bottom of said grid structure, thereby defining said bottom walls of said plurality of recesses, and said thin sheet of material extends outwardly from said center portion and is shaped thereat to form said peripheral supporting wall.

5,511,654

SWAB AND SHIELD ASSEMBLY FOR DAUBABLE MATERIAL

Daniel de la Rocha, Miami, Fla., assignor to Catix Holdings, Inc., Miami, Fla.

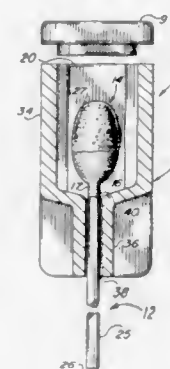
Continuation-in-part of Ser. No. 63,884, May 18, 1993, Pat. No. 5,330,056. This application Feb. 14, 1994, Ser. No.

195,553

Int. Cl.⁶ A45D 44/18

U.S. Cl. 206—15.3

18 Claims



1. A dauber assembly for use in picking up daubable material, comprising:

a disposable, sample swab having an enlarged, generally smooth-surfaced wad at one end and a rod having an exterior surface length extending away from the wad and defining a proximal end zone;

a rigid shield including:

a) a body about said wad having

i) a main internal recess sized and configured to receive and protectively enshroud said wad therein,

ii) an open mouth sized and configured to receive said wad for passage into said main internal recess;

iii) a passageway in open communication with said main recess, sized and configured to snugly receive said rod extending from said wad in embracing relation;

b) mutually intercooperating means on said body of said shield engaging a portion of said exterior surface length of said rod, adjacent said wad end for removably maintaining said rod, wad and shield in a first position wherein the rod, wad and shield are in generally co-axial alignment,

releasable holding means about said shield and wad to constrain said wad and rod within the shield in said first position; and said proximal end zone extending away from said wad and shield comprising handle means to manipulate said swab relative to said shield for movement of said wad out of said main internal recess of said shield to separate said swab from said shield.

5,511,655

MODULE COVER

Kenneth L. Porter, 4623 Hillsdale, Olive Branch, Miss. 38654

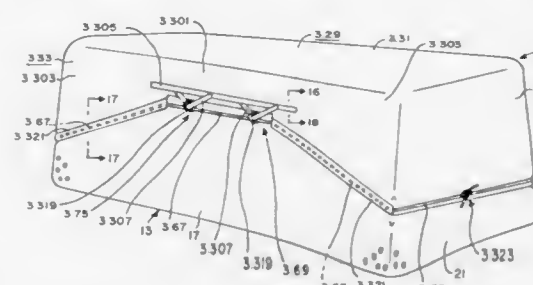
Continuation-in-part of Ser. No. 846,604, Mar. 5, 1992, Pat. No. 5,386,905. This application Aug. 31, 1994, Ser. No.

298,770

Int. Cl.⁶ B65D 71/06

U.S. Cl. 206—83.5

3 Claims



1. In combination:

a) a compressed module of fibrous material having a top, first and second side walls, and first and second end walls; and

b) a cover comprising:

(i) a cap including a top member covering the top of the module, a first side wall member attached to the top member and depending downwardly from the top member and covering at least a portion of the first side wall of the module, a second side wall member attached to the top member and depending downwardly from the top member and covering at least a portion of the second side wall of the module, a first end wall member attached to the top member and depending downwardly from the top member and covering at least a portion of the first end wall of the module, and a second end wall member attached to the top member and depending downwardly from the top member and covering at least a portion of the second end wall of the module;

(ii) a first hanger member secured to the first side wall member of the cap at a point slightly below the top member of the cap;

(iii) a second hanger member secured to the first side wall member of the cap at a point slightly below the top member of the cap and spaced from the first hanger member;

(iv) a third hanger member secured to the second side wall member of the cap at a point slightly below the top member of the cap;

(v) a fourth hanger member secured to the second side wall member of the cap at a point slightly below the top member of the cap and spaced from the third hanger member; and

(vi) strap means extending through the first and second hanger members, through the third and fourth hanger members, and around the first and second end wall members of the cap at a spaced distance below the hanger members; the strap means extending parallel to the top of the module

between the first and second hanger members and between the third and fourth hanger members, extending along a straight, downwardly angled line between the first hanger member and the first end wall of the module, extending along a straight, downwardly angled line between the second hanger member and the second end wall of the module, and extending along a straight, downwardly angled line between the fourth hanger member and the first end wall of the module;

the first and second hanger members are constructed from a single elongated length of material folded to form two spaced apart loops and secured to the first side wall member with each hanger member substantially evenly spaced about the center of the first side wall member;

the third and fourth hanger members are constructed from a single elongated length of material folded to form two spaced apart loops and secured to the second side wall member with each hanger member substantially evenly spaced about the center of the second side wall member.

2. In combination:

a) a compressed module of fibrous material having a top, first and second side walls, and first and second end walls; and

b) a cover comprising:

(i) a cap including a top member covering the top of the module, a first side wall member attached to the top member and depending downwardly from the top member and covering at least a portion of the first side wall of the module, a second side wall member attached to the top member and depending downwardly from the top member and covering at least a portion of the second side wall of the module, a first end wall member attached to the top member and depending downwardly from the top member and covering at least a portion of the first end wall of the module, and a second end wall member attached to the top member and depending downwardly from the top member and covering at least a portion of the second end wall of the module;

(ii) a first hanger member secured to the first side wall member of the cap at a point slightly below the top member of the cap;

(iii) a second hanger member secured to the first side wall member of the cap at a point slightly below the top member of the cap and spaced from the first hanger member;

(iv) a third hanger member secured to the second side wall member of the cap at a point slightly below the top member of the cap;

(v) a fourth hanger member secured to the second side wall member of the cap at a point slightly below the top member of the cap and spaced from the third hanger member; and

(vi) strap means extending through the first and second hanger members, through the third and fourth hanger members, and around the first and second end wall members of the cap at a spaced distance below the hanger members; the strap means extending parallel to the top of the module between the first and second hanger members and between the third and fourth hanger members, extending along a straight, downwardly angled line between the first hanger member and the first end wall of the module, extending along a straight, downwardly angled line between the second hanger member and the second end wall of the module, and extending along a straight, downwardly angled line between the fourth hanger member and the first end wall of the module;

each side wall member of the cap having a midportion that extends down from the top of the module a distance of approximately one fifth of the height of the module, and having triangular-shaped end portions which extend between the midportion and a respective end wall member.

3. In combination:

a) a compressed module of fibrous material having a top, first and second side walls, and first and second end walls; and

b) a cover comprising:

(i) a cap including a top member covering the top of the module, a first side wall member attached to the top member and depending downwardly from the top member and covering at least a portion of the first side wall of the module, a second side wall member attached to the top member and depending downwardly from the top member and covering at least a portion of the second side wall of the module, a first end wall member attached to the top member and depending downwardly from the top member and covering at least a portion of the first end wall of the module, and a second end wall member attached to the top member and depending downwardly from the top member and covering at least a portion of the second end wall of the module;

(ii) a first hanger member secured to the first side wall member of the cap at a point slightly below the top member of the cap;

(iii) a second hanger member secured to the first side wall member of the cap at a point slightly below the top member of the cap and spaced from the first hanger member;

(iv) a third hanger member secured to the second side wall member of the cap at a point slightly below the top member of the cap;

(v) a fourth hanger member secured to the second side wall member of the cap at a point slightly below the top member of the cap and spaced from the third hanger member; and

(vi) strap means extending through the first and second hanger members, through the third and fourth hanger members, and around the first and second end wall members of the cap at a spaced distance below the hanger members; the strap means extending parallel to the top of the module between the first and second hanger members and between the third and fourth hanger members, extending along a straight, downwardly angled line between the first hanger member and the first end wall of the module, extending along a straight, downwardly angled line between the second hanger member and the second end wall of the module, and extending along a straight, downwardly angled line between the fourth hanger member and the first end wall of the module;

each side wall member of the cap having a midportion that extends down from the top of the module, and having triangular-shaped end portions which extend between the midportion and a respective end wall member.

5,511,656

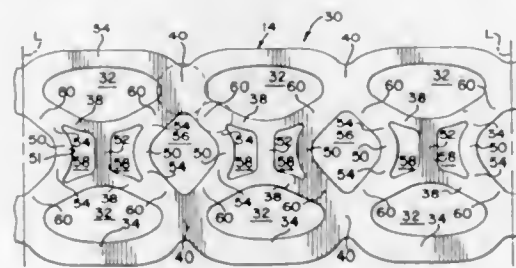
CARRIER STOCK HAVING FINGER-GRIPPING STRAPS CURVED INWARDLY TOWARD EACH OTHER
Robert C. Olsen, Madinah, Ill., assignor to Illinois Tool Works Inc., Glenview, Ill.

Filed Aug. 18, 1994, Ser. No. 292,604

Int. Cl.⁶ B65D 71/50

U.S. Cl. 206—150

5 Claims



1. Carrier stock for machine application to substantially identical cans of a type having a chime at an upper end and having a frusto-conical wall below the chime, the carrier stock being formed

from a single sheet of resilient polymeric material and being formed with outer band segments and inner band segments, said outer and inner band segments defining can-receiving apertures in a generally rectangular array having two longitudinal rows and transverse ranks, the carrier stock being formed with separating webs extending generally transversely when the carrier stock is in a flat, unstressed condition and separating the can-receiving apertures in each longitudinal row, the carrier stock being formed with finger-gripping straps arranged in pairs and configured such that each finger-gripping strap of each pair extends generally transversely between two of the inner band segments and has a center section curved inwardly toward the other finger-gripping strap of the same pair when the carrier stock is in a flat, unstressed condition, wherein each finger-gripping strap has two legs interconnected with the center section thereof, which center section is arcuate, each leg having an extremity connected not only with an associated one of the inner band segments but also with a separating web through a connecting web.

5,511,657 CONTAINER FOR DISPOSING OF HAZARDOUS MEDICAL WASTE

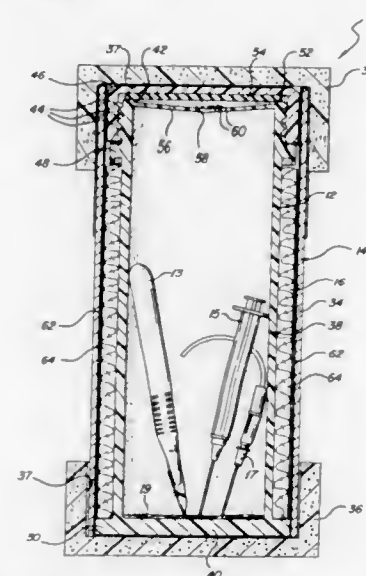
J. Russell Gnau, III, 2404 Starr, Royal Oak, Mich. 48073;
Michael P. Gnau, 2215 Third St., Mandeville, La. 70448;
Vincent A. Valvona, 4405 Cranbrook Trail, Orchard Lake, Mich. 48323, and John R. Gnau, Jr., 3894 Peabody Dr., Bloomfield Hills, Mich. 48302

Filed Dec. 30, 1993, Ser. No. 175,635

Int. Cl.⁶ B65D 81/16; 85/42

U.S. Cl. 206—204

9 Claims



1. A container for disposing of hazardous waste, such container comprising:

an inner receptacle adapted to receive and contain hazardous waste;

an impact resistant outer container, said inner receptacle being disposed within said outer container;

said impact resistant outer container including an open ended cylinder with a pair of end caps removably disposed on either end of said container to completely enclose said inner receptacle;

said inner receptacle including a cylindrical body having a closed end and an open end disposed opposite said closed end, said cylindrical body further including threads disposed about a portion of its circumference at its open end and a threadably removable cap adapted to sealingly close said open end of said body;

said container characterized by including a fluid barrier disposed between said inner receptacle and said outer container, said

fluid barrier preventing any fluid from passing from said inner receptacle to said outer container.

5,511,658

SOFT PACK FOR CIGARETTES

Heinz Focke, and Harald Gosebruch, both of Verden, Germany, assignors to Focke & Co. (GmbH & Co.), Verden, Germany

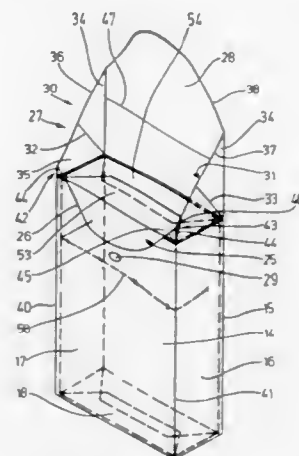
Filed Sep. 1, 1994, Ser. No. 299,408

Claims priority, application Germany, Sep. 1, 1993, 43 29 368.9

Int. Cl.⁶ B65D 85/10

U.S. Cl. 206—271

2 Claims



1. A soft pack for cigarettes, comprising:

a) an inner wrapping enclosing a group of cigarettes on all sides to form a cigarette block (13), said inner wrapping (12) consisting of paper, tin foil or film; and

b) an outer wrapping having a front wall (14), a rear wall (15), two side walls (16, 17), a base wall (18) and an end wall (19) and consisting only of a thin packaging material in the form of thin paper or a plastic film; wherein

c) the outer wrapping has a removal opening (25) which extends in the front wall (14) and the bordering end wall (19), and which permits removal of the cigarettes (10), and

d) the outer wrapping forms a closure flap (27) which closes the removal opening, and which covers the removal opening (25) with an overlap in a closed position of the pack;

wherein the inner wrapping (12) is provided, in the region of the removal opening (25), with a pull-off flap (57) which is delimited by perforations or punchings and whose bottom delimitation, namely a transversely directed perforation line (58), is arranged at least in the region of the front wall (14), at a distance beneath the removal opening (25).

5,511,659

COMPACT DISK RECORD PACKAGE WITH SLIDING COVER MEMBERS

John Bosworth, 601 N. Broadway, Upper Nyack, N.Y. 10960

Filed Nov. 22, 1994, Ser. No. 344,483

Int. Cl.⁶ B65D 85/57

U.S. Cl. 206—308.1

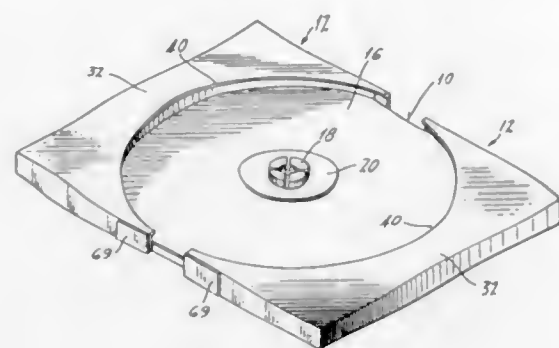
20 Claims

1. A case for a compact disk record, comprising in combination:

a) a base in the form of a flat rectangular slab having top and bottom sides and having in its top side a shallow nest formation to receive broadside and hold a compact disk record,

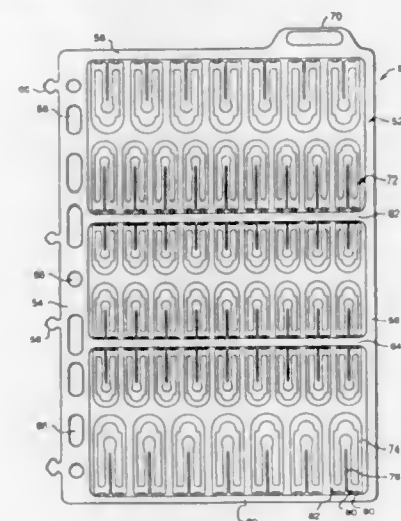
b) a pair of cover members carried by the base at the said top side thereof,

c) cooperable slide mounting means on said base and one of said cover members, mounting said member for movement in a



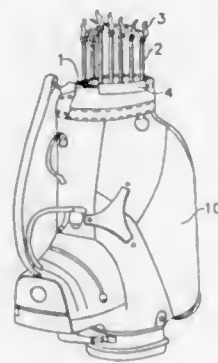
5,511,661
PLASTIC PAPER CLIP AND INTEGRAL SHEET-LIKE PACKAGING THEREOF
 Robert G. Karlis, Hingham, and Gordon A. Vinther, Pepperell, both of Mass., assignors to Clix Products, Inc., Natick, Mass.
 Continuation-in-part of Ser. No. 145,955, Nov. 1, 1993, Pat. No. 5,419,018. This application Aug. 16, 1994, Ser. No. 291,279

U.S. Cl. 206—338 Int. Cl.⁶ B65D 85/24 27 Claims



- plane which is common to the other of said members, said mounting means enabling said one cover member to be moved toward and away from said nest formation.
- d) said members having a pair of edges that face each other.
- e) portions of the facing edge of said one member overlying areas of the nest formation when the member is closest to said formation, thereby to hold captive a disk record that may have been previously inserted in the nest formation.
- f) a panel of sheet material, said panel covering and being adhered to the bottom side of the said base.
- g) said panel of sheet material having folded, angled end portions adapted to overlie opposite end surfaces of the said base.

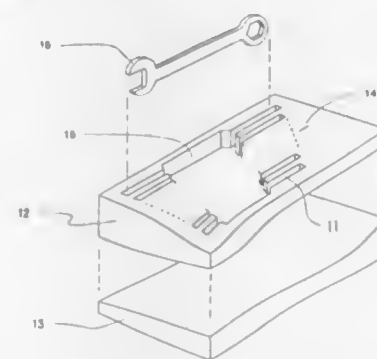
5,511,660
DEVICE FOR SECURING GOLF CLUBS
 Kikuo Yamada, and Eigou Yamada, both of 3-28-3, Sakuragaoka, Seika-cho, Souraku-Gun, Kyoto, Japan
 Filed Apr. 13, 1994, Ser. No. 226,900
 Int. Cl.⁶ A63B 55/00
 U.S. Cl. 206—315.6 8 Claims



1. A device for securing golf clubs in a fixed position within a golf club bag, said device comprising:
- a support receivable within said golf club bag and including means for attaching said support to said golf club bag;
 - said support including a fixed portion and a slidable portion;
 - means for adjusting said slidable portion whereby said support can be adjusted to fit any size golf club bag;
 - at least one post having means for connecting to said support;
 - means for securing a golf club;
 - means for fastening said means for securing to said at least one post;
 - said means for fastening including a plurality of teeth projecting from said post and a plurality of notches on said securing means corresponding to said teeth.

5,511,662
FOAM RUBBER TOOL RETAINER
 Dennis J. Amoroso, 5266 Turnberry Pl., San Jose, Calif., and Harold G. Amoroso, 2200 Monroe St. #1508, Santa Clara, Calif.
 Filed Oct. 25, 1993, Ser. No. 143,493
 Int. Cl.⁶ B65D 85/28

U.S. Cl. 206—373 4 Claims

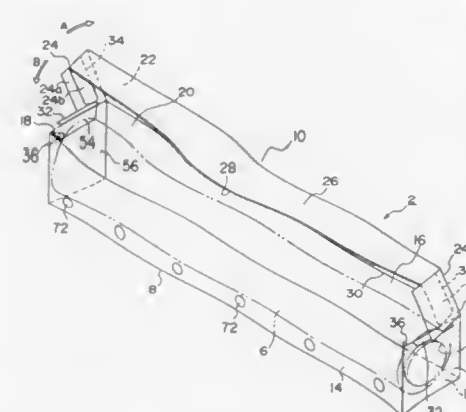


1. A tool retainer for retaining and organizing tools comprising:
- a support layer having a first color, wherein said support layer has a plurality of depths to support tools of different sizes; and
 - a retention layer overlaying said support layer, said retention layer having a second color and a plurality of openings therethrough that retain tools;
 - whereby said first and second colors allow a user to readily recognize which openings in said tool retainer do not contain tools.

5,511,663
PACKAGING CASE HAVING IMPROVED SIDEWALL STRUCTURE
 Noboru Shimura, Fujisawa; Tamotsu Aiba; Takashi Nakamura, both of Chuo, and Teruyoshi Sukegawa, Nihari, all of Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan
 Filed Dec. 9, 1994, Ser. No. 353,516

Claims priority, application Japan, Dec. 15, 1993, 5-72122 U; May 24, 1994, 6-133640

U.S. Cl. 206—395 Int. Cl.⁶ B65D 5/72 46 Claims



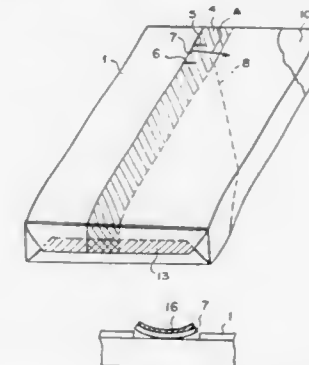
1. A packaging case comprising:
- a case body having a substantially rectangular bottom wall, side walls respectively continuously formed with one pair of opposing edge portions of said bottom wall, and front and rear walls respectively continuously formed with the other pair of opposing edge portions of said bottom wall and extending between said side walls, said case body being adapted to store an object; and
 - a lid having a substantially rectangular top wall continuously and pivotally formed with a top edge portion of said rear wall so as to cover and close an opening portion of said case body which is defined by top edge portions of said side walls, said front wall and said rear wall, lid side walls respectively continuously formed with a pair of edge portions adjacent to an edge portion of said top wall serving as a pivot center, and located outside said side walls of said case body upon closing said opening portion with said top wall, and a lid front wall continuously formed with an edge portion of said top wall which opposes said edge portion serving as the pivot center, extending between said lid side walls, and located outside said front wall of said case body upon closing said opening portion with said top wall,
- wherein outwardly extending flap pieces are continuously and pivotally formed on the top edge portions of said side walls of said case body, stepped portions are formed on inner surfaces of said lid side walls to engage with said flap pieces upon closing said opening portion with said top wall so as to prevent said lid from floating; and a thickness of a predetermined portion of each side wall of said case body which faces to a corresponding one of said flap pieces is set smaller than that of a remaining portion of said each side wall such that an inner surface of said remaining portion is located more inside of said case body than an inner surface of said predetermined portion.
46. A packaging case comprising:
- a case body having a substantially rectangular bottom wall, side walls respectively continuously formed with one pair of opposing edge portions of said bottom wall, and front and rear walls respectively continuously formed with the other pair of opposing edge portions of said bottom wall and extending between said side walls, said case body being adapted to store an object;
 - a lid continuously and pivotally formed with a top edge portion of said rear wall so as to cover and close an opening portion

of said case body which is defined by top edge portions of said side walls, said front wall and said rear wall; and wherein each of said side walls of said case body comprises a first piece extending from said bottom wall, a second piece extending from one of said front and rear walls of said case body and located inside said first piece, and a third piece extending from the other of said front and rear walls of said case body and located inside said second piece, said first to third pieces being adhered to each other with an adhesive, wherein a fold line is formed at a predetermined portion of one of said second and third pieces to form an object removal preventive member by bending inward in said case body a part of one of said second and third pieces after opening said case, and a notch is formed in a portion of said first piece which opposes said part serving as one of said removal preventive member.

5,511,664
WRAPPED ARTICLE
 Satoshi Aramaki, Tokyo, and Makoto Sato, Kanagawa, both of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
 Filed Jun. 21, 1994, Ser. No. 263,444

Claims priority, application Japan, Jun. 21, 1993, 5-033054 U

Int. Cl.⁶ B65D 65/28; 65/32 13 Claims



1. A wrapped article including an article to be wrapped whose outer surface is covered with a wrapping film which constitutes an outermost portion of the wrapped article, the wrapping film comprising a body seal section created by making ends of the wrapping film overlap with each other and bonding them together, the improvement comprising:
- a removal tab portion made up of two slits that are spaced apart from each other by an interval and cut along the edge of the body seal section of an upper wrapping film in the body seal section; and
 - at least one perforated section or indentation which starts from a point at which the perforated section or indentation and an imaginary continuation from at least one of the two slits of the removal tab cross, and which extends in a direction moving away from the imaginary continuation of the other slit, wherein
 - one of a front and a rear surface of the removal tab portion is printed in ink that differs in coefficient of thermal contraction from the wrapping film.
11. A wrapped article including an article to be wrapped whose outer surface is covered with a wrapping film which constitutes an outermost portion of the wrapped article, the wrapping film comprising a body seal section created by making ends of the wrapping film overlap with each other and bonding them together, the improvement comprising:
- a removal tab portion made up of two slits that are spaced apart from each other by an interval and cut along the edge of the body seal section of an upper wrapping film of the wrapping film in the body seal section; and

at least one first perforated section or indentation which starts from a point at which the perforated section or indentation and an imaginary continuation from at least one of the two slits of the removal tab cross, and which extends in a direction moving away from the imaginary continuation of the other slit; and

at least one second perforated section or indentation which starts from a point at which the second perforated section or indentation and the imaginary continuation from the other slit cross, and which extends in parallel to the first perforated section or indentation, wherein

one of a front and a rear surface of the removal tab portion is printed in ink that differs in coefficient of thermal contraction from the wrapping film.

5,511,665

CHILD-RESISTANT PACKAGE

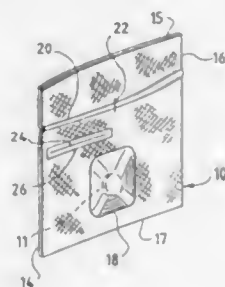
Mark W. Dressel, Lake Zurich, and John M. Bitner, Aurora, both of Ill., assignors to G. D. Searle & Co., Chicago, Ill.

Filed Oct. 31, 1994, Ser. No. 331,757

Int. Cl.⁶ B65D 83/04; 27/100

U.S. Cl. 206—532

19 Claims



1. A child-resistant package comprising first and second layers of tear-resistant material which are sealed together around an inner portion of each layer to provide an unsealed article-receiving pocket between the first and second layers, the first and second layers having a fold line and first means for permitting tearing of the layers on the fold line whereby said pocket can be opened by folding the first and second layers on said fold line and tearing said layers from the tearing means toward the pocket, and the first and second layers having a second tearing means which extends between the first tearing means and the pocket for permitting the first tearing means to be torn away from the portion of the package which contains the pocket.

5,511,666

SALES PROMOTION AID

Peter S. Grip, 40 Masters Dr., Southington, Conn. 06489

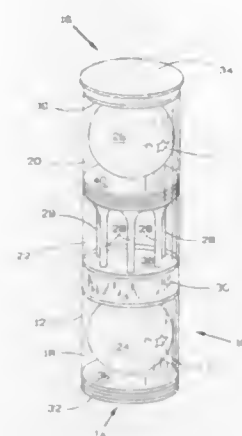
Filed May 23, 1994, Ser. No. 247,692

Int. Cl.⁶ B65D 69/00

U.S. Cl. 206—579

19 Claims

1. A sales promotion aid comprising a package including a tube having first and second ends and first and second compartments, said first compartment extending from said first end toward said second end and said second compartment extending from said second end toward said first end, said compartments containing items related to or useful in pursuing or enjoying a common purpose, said aid further comprising a third compartment between and adjacent said first and second compartments and containing an item related to or useful in pursuing or enjoying the common purpose, and means for closing said first and second ends of said tube, means providing a first partition between said first and third compartments, and means for providing a second partition between said second and third compartments, wherein said items include a first golf ball in said first compartment and a second golf ball in said second compartment.



5,511,667

HONEYCOMB CORNER PROTECTOR

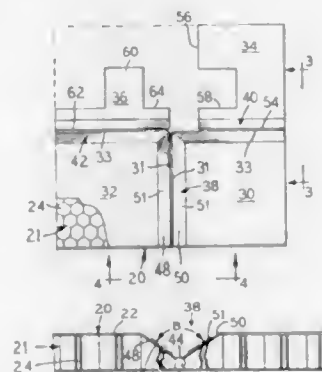
Reuben C. Corder, Michigan City, Ind., assignor to Hexacomb Corporation, Lincolnshire, Ill.

Filed Apr. 18, 1994, Ser. No. 229,375

Int. Cl.⁶ B65D 81/133

U.S. Cl. 206—586

42 Claims



1. A foldable protector for the corner or edge of an object comprising a panel including a honeycomb core, the panel having first, second, third and fourth foldable portions, the first portion being foldably connected to the second portion by a crush slit score, the third portion being foldably connected to the first portion by a crush slit score and positioned perpendicular to the first and second portions in the folded position, the fourth portion being foldably connected to the second portion by a crush slit score, the fourth portion being co-planar with the third portion and perpendicular to the first and second portions in the folded position, one of the third and fourth portions including a notch and the other of the third and fourth portions including a finger, the finger fitting within the notch to connect the third and fourth portions in the folded position, at least one of the crush slit scores having a bevel angle providing a spring biasing action to cause the locking of the finger on one of the third and fourth portions into the notch in the other of the third and fourth portions in the folded position.

8. A corner protector having a flat position and a folded position, the corner protector comprising a panel including first, second, third and fourth portions, the second portion being connected by a crush score to the first portion and positioned perpendicular to the first portion in the folded position, the crush score connecting the first and second portions having a bevel angle providing a spring biasing action between the first and second portions in the folded position, the third portion being connected to the first portion by a crush score and positioned perpendicular to the first and second portions in the folded position, the fourth portion being connected by a crush score to the second portion, the fourth portion being co-planar with the third portion and perpendicular to the first and

second portions in the folded position, the crush score connecting the first and third portions and the second and fourth portions having a bevel angle greater than the bevel angle of the crush score connecting the first and second portions, and a coupling associated with the third and fourth portions for connecting the third and fourth portions together in the folded position such that the spring biasing action between the first and second portions causes the locking of the coupling associated with the third and fourth portions in the folded position.

15. A blank for forming a protector for the corner or edge of an object comprising a panel including foldable first, second, third and fourth portions, the second portion being foldably connected along a central fold-line to the first portion, the third portion being foldably connected along a central fold-line to the first portion, the third portion including a notch and first and second sides, the first side of the third portion being adjacent to and parallel to the fold-line foldably connecting the first and third portions, the second side being parallel to the fold-line foldably connecting the first and second portions and offset therefrom, the notch being cut out of the second side, the fourth portion being foldably connected along a central fold-line to the second portion, the fold-line foldably connecting the second and fourth portions being co-linear with the fold-line foldably connecting the first and third portions and perpendicular to the fold-line foldably connecting the first and second portions, the fourth portion including a finger and first and second sides, the first side of the fourth portion being adjacent and parallel to the fold-line foldably connecting the second and fourth portions, the finger extending from the second side of the fourth portion, such that when the panel is folded, the first, second and third portions are generally perpendicular to each other, the third and fourth portions are co-planar, the finger fits in the notch and the second side of the fourth portion abuts the second side of the third portion to connect the third and fourth portions.

5,511,668

PNEUMATIC SIFTER

Josef Keuschnigg, Lormanberg 67, 8324 Kirohberg a/d Raab, Austria

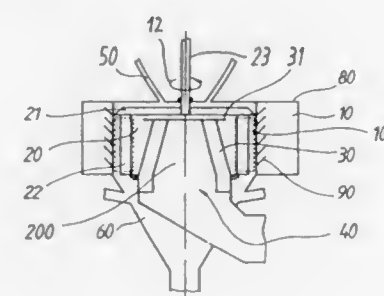
Filed Aug. 16, 1994, Ser. No. 291,429

Claims priority, application Germany, Aug. 19, 1993, 43 27 927.9

Int. Cl.⁶ B07B 4/00; B04B 5/12

U.S. Cl. 209—135

21 Claims



1. A pneumatic sifter, comprising:

a casing having a sifting chamber defined by an axial extension and receiving material to be separated, a coarse particle outlet and air outlet means for discharge of air with fines, said air outlet means including an air outlet chamber surrounded by said sifting chamber and a discharge pipe in prolongation of said air outlet chamber and;

a baffle means arranged about the outer perimeter of said air outlet chamber and projecting into said discharge pipe for guiding air with fines in an axial direction, said baffle means including guide vanes spaced from each other at uniform angular distances and extending approximately over the axial extension of said sifting chamber.

5,511,669

MEMBRANE WASHING APPARATUS FOR FLOTATION DEVICE

Peter G. Bourke, Perth, Australia, assignor to Supaflo Technologies Pty. Ltd, New South Wales, Australia

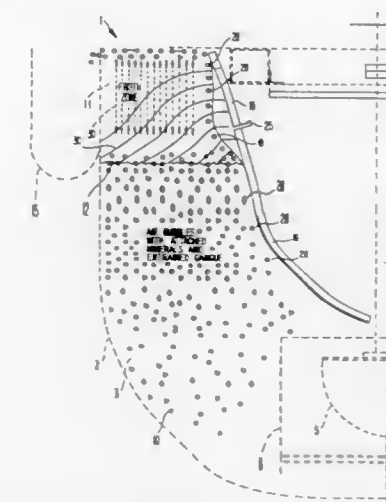
Filed Sep. 2, 1994, Ser. No. 299,627

Claims priority, application Australia, Sep. 6, 1993, PM1057

Int. Cl.⁶ B03D 1/02; 1/14

U.S. Cl. 209—164

23 Claims



1. A flotation device comprising:

a tank to contain a slurry incorporating minerals to be extracted;

aeration means to aerate the slurry within the tank and thereby produce a zone of mineralised froth above the slurry;

a recovery launder to collect the mineralized froth and to direct said froth away from the tank; and

at least one porous diffusion surface in direct contact with the froth, said diffusion surface being permeable so as to allow a washing liquid to diffuse therefrom into said froth;

5,511,670

NEEDLE SORTING DEVICE

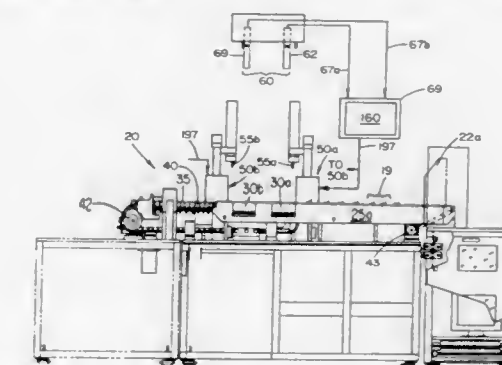
David Demarest, Parsippany, and John F. Blanch, Tinton Falls, both of N.J., assignors to Ethicon, Inc., Somerville, N.J.

Filed Jan. 13, 1994, Ser. No. 181,600

Int. Cl.⁶ B07C 5/02; 9/00

U.S. Cl. 209—540

13 Claims



1. A method for automatically sorting needles comprising the steps of:

(a) singulating a predetermined amount of needles from a bulk receptacle means and randomly depositing said needles upon a first conveyor means;

(b) obtaining an image of said randomly deposited needles upon said first conveyor means and digitizing said image;

- (c) processing said digitized image for obtaining positional and orientation data for one or more of said randomly deposited needles;
- (d) positioning and orienting a transfer means in accordance with said positional and orientation data for said one or more of said randomly deposited needles; and
- (e) transferring said selected randomly deposited needle from said first conveyor means to a second conveyance means based upon said positional and orientation data.

5,511,671
INSTALLATION FOR THE SORTING OF PLATE MATERIAL

Ernst Zumstein, Burgdorf, Switzerland, assignor to Bystronic Maschinen AG, Buetzberg, Switzerland

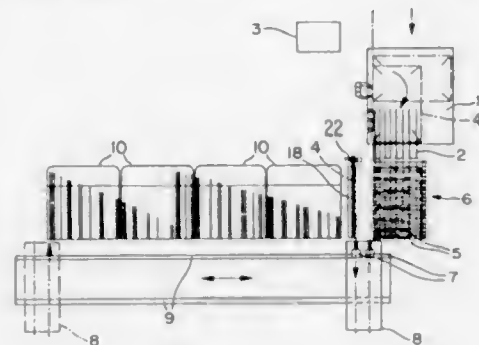
Filed Apr. 13, 1994, Ser. No. 226,981

Claims priority, application European Pat. Off., Apr. 14, 1993, 93810263

Int. Cl.⁶ B07C 5/02

U.S. Cl. 209—542

21 Claims



1. An installation for use in sorting glass plates, comprising:
- at least one compartment carriage comprising a plurality of compartments, each of said compartments having means for holding upright a single plate independently of a size of the plate; and
- a sorting carriage disposed for movement adjacent to said compartment carriage, said sorting carriage comprising at least one conveyor device having means for stepwise loading and unloading said plates into and out of said compartments of said compartment carriage.

5,511,672
SORTING DEVICE AND METHOD

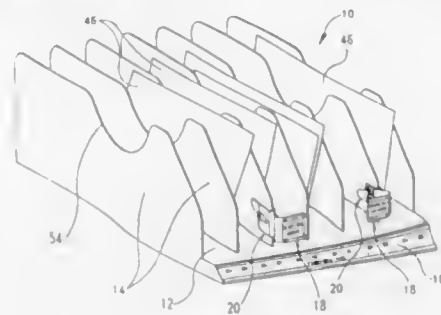
Robert D. Young, 700 Queens Hwy., Accord, N.Y. 12404, and Daniel D. Young, 20 Peak Rd., Stone Ridge, N.Y. 12484

Filed Oct. 25, 1993, Ser. No. 140,880

Int. Cl.⁶ B07C 5/00; B42F 7/00; G09F 3/20

U.S. Cl. 209—546

11 Claims



1. A sorting case arrangement for a mail carrier, comprising a shelf having dividers separating the case into mail receiving compartments with entrances each containing a path through which mail is inserted and removed, and a readily inwardly movable obstruction extending across an entrance path for signaling the mail carrier that special instructions apply to mail that would normally be placed in the particular compartment for the entrance, wherein the instruction is yieldably biased to extend across the entrance, and wherein the yieldably biased obstruction is a flexible strip having another bending action facilitating the removal of mail from the compartment.

5,511,673
STORAGE RACK FOR MECHANICAL DRIVE SOCKETS

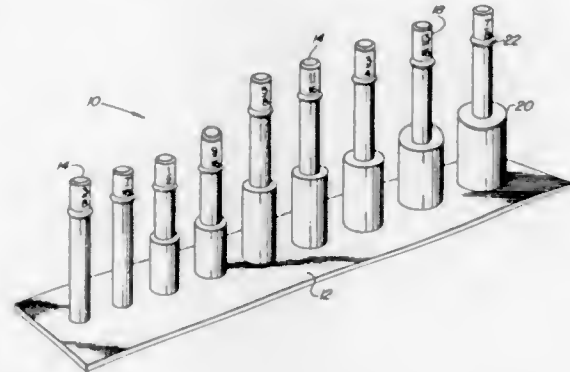
Randall W. Folk, 17483 Farm School Rd., Davis, Ill. 61019

Filed Aug. 22, 1994, Ser. No. 294,161

Int. Cl.⁶ A47F 7/00

U.S. Cl. 211—70.6

5 Claims



1. A storage rack for mechanical drive sockets, comprising:
- (a) a support base; and
- (b) a plurality of rods having a first end and a second end, said rods affixed at their first end to said support base and extending substantially perpendicular therefrom to receive the mechanical drive sockets, said rods being marked with indications of the size of the sockets to be stored thereon, and said rods having a first diameter and a second diameter, said first diameter substantially conforming to the socket drive size and said second diameter substantially conforming to the size of the socket to be stored thereon, wherein said rods include means for removably securing a socket thereon comprising a snap ring.

5,511,674
ACCESSORY TRAY FOR USE IN SURGERY

William E. Boyd, and Lynn D. Boyd, both of 424 Mac La., Muskegon, Mich. 49445

Filed Dec. 14, 1993, Ser. No. 166,683

Int. Cl.⁶ A47F 7/00

U.S. Cl. 211—70.6

17 Claims

1. An accessory tray in combination with a surgical stand for supporting surgical pads, the surgical stand having a surgical tray defining a first planar surface, said accessory tray comprising:
- a support section having an outer surface for receiving said surgical pads;
- a connection section extending from said support section, said connection section including an attachment means for removably connecting said support section to said surgical stand wherein said support section is disposed at an acute angle in relation to said surgical tray planar surface.

5,511,676
COUPLER YOKE WITH TAPERING KEY SLOT REINFORCEMENT

Ralph V. Holmes, Nova Scotia, Canada, assignor to Maritime Steel And Foundries Limited, New Glasgow, Canada

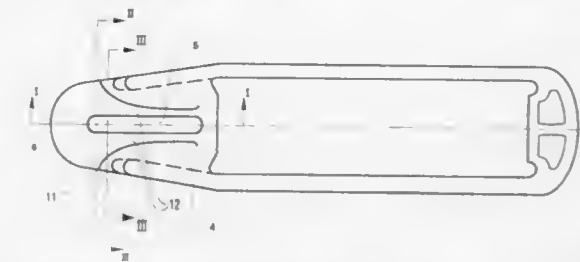
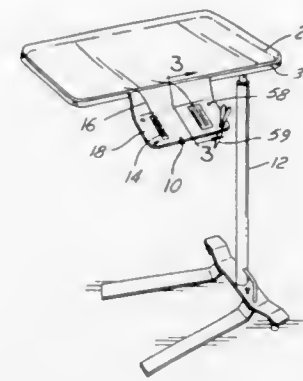
Filed Nov. 16, 1994, Ser. No. 343,891

Claims priority, application Canada, Dec. 17, 1993, 2111804

Int. Cl.⁶ B61G 9/22

U.S. Cl. 213—67 R

3 Claims



5,511,675
SIMPLIFIED FILING SYSTEM

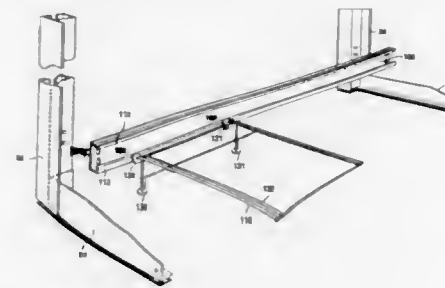
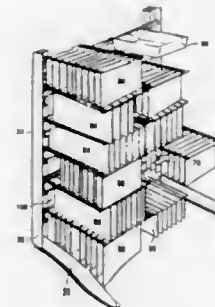
Martin Frederick, New York, N.Y., assignor to Unique Filing & Storage, Ltd., Plainview, N.Y.

Filed Nov. 8, 1993, Ser. No. 148,595

Int. Cl.⁶ A47F 5/00

U.S. Cl. 211—193

15 Claims



1. A simplified filing system comprising a plurality of horizontal support members having attached thereto an equal number of vertical support members, a plurality of horizontal support beams attached at predetermined locations to said vertical support members, each of said horizontal support beams including an upper and a lower guide portion, and a plurality of support carriages, selected ones of said support carriages including first and second roller means releasably attached to said upper and lower guide portions whereby selected ones of said support carriages move laterally along said horizontal support beams, said upper guide portion comprises an elongated recess area which cooperates with said first roller means and said lower guide portion comprises an elongated flange area which cooperates with said second roller means, said support carriages are arranged in a plurality of horizontal rows, a predetermined lower one of said horizontal rows of support carriages being fixed in position and predetermined upper ones of said horizontal rows of support carriages being laterally movable in position, whereby access to lower rows of support carriages is achieved, each of said support carriages include means for storing a plurality of items to be filed in said simplified filing system, and said storing means includes hanging file folders.

1. A yoke for a railway draft gear, said yoke having a head portion comprising two opposed top and bottom walls, and two opposed spaced apart key slot walls disposed between said top and bottom walls, each of said key slot walls comprising a respective elongate key slot capable of operatively receiving therein a draft key of the railway draft gear, and a reinforcing portion surrounding a forward end of said key slot and extending rearwardly along substantially the entire length thereof, said reinforcing portion comprising:

- a thickened nose portion surrounding a forward end of said key slot; and
- a pair of buttress portions disposed on respective sides of said key slot and joining with said nose portion, each said buttress portion having a substantially rectangular cross-sectional area which is a maximum at the forward end of said key slot and which gradually diminishes in both width and depth toward the rearward end of said key slot.

5,511,677
CONTAINER HAVING A TAMPER EVIDENCY SYSTEM

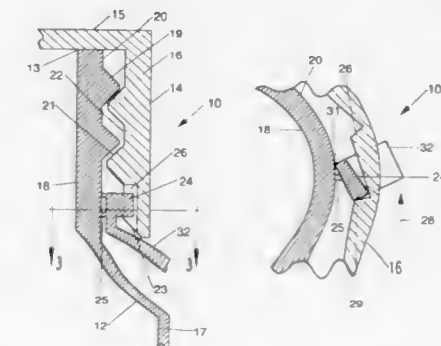
Reuben E. Oder, Union, Ky., assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Mar. 30, 1995, Ser. No. 413,664

Int. Cl.⁶ B65D 41/34

U.S. Cl. 215—252

11 Claims



1. A tamper evidency system comprising:
- a) a container having a body and a finish portion, said finish portion having an outer surface and an open end;
- b) a closure having a top, a wall portion depending from said top, and an open end opposite said top, said wall portion adapted to engage said finish portion of said container in order to close said open end of said finish portion, said wall portion having cam teeth extending inward toward said finish portion; and
- c) a lug extending from said outer surface of said finish portion and located between said finish portion and said cam teeth of

said wall portion of said closure when said closure is installed, said lug being connected to said finish portion by a shearable web, said shearable web having an orientation which enables said lug to be rotated about said shearable web by said cam teeth without interfering with installation when said closure is installed onto said finish portion, said lug engaging one of said cam teeth when said closure is removed from said finish portion, said lug preventing said closure from being removed without first shearing said lug from said finish portion at said shearable web, said lug having a corner which contacts said outer surface of said finish portion when said one of said cam teeth rotates said lug in a closure removal direction, said lug pivoting about said corner upon contact with said finish portion to create a mechanical advantage for shearing said lug from said finish portion at said shearable web.

5,511,678

Patent Not Issued For This Number

5,511,679

CLOSURE FOR RESEALABLE CONTAINER

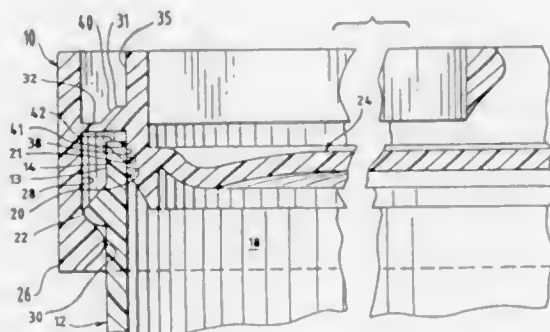
James M. Beck, Buffalo Grove, Ill., assignor to Creative Packaging Corp., Buffalo Grove, Ill.

Filed Apr. 24, 1995, Ser. No. 427,567

Int. Cl.⁶ B65D 17/34

U.S. Cl. 220—270

10 Claims



5. A closure for a container having a generally circular cross-sectional configuration, the container having an open top and a closed bottom and external and internal surfaces, said closure comprising a cap having an upstanding circular wall with upper, medial and lower portions and external and internal surfaces, a circular plate secured to a lower portion of the inner surface of said circular wall in a fluid tight connection, the external diameter of the lower portion of said circular wall being slightly greater than the internal diameter of said container open top so as to form a plug seal therewith, a web extending circumferentially around an external surface of a medial portion of said circular wall, a circular band having upper, medial and lower portions with external and internal surfaces, said band secured to said web at an internal surface of a medial band portion to lie in closely spaced relationship with said circular wall, interengaging means on an inner surface of a lower band portion and on the external surface of said container for securing said closure to said container, and means to separate the band from said circular wall, said means including a circumferential score line on said web and a tear tab connected to a portion of said band.

5,511,680

TEAR-AWAY CANISTER LID

Daniel J. Kinne, Cincinnati, Ohio, assignor to The Procter and Gamble Company, Cincinnati, Ohio

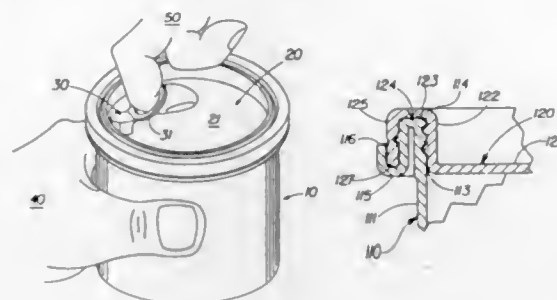
Continuation of Ser. No. 116,434, Sep. 3, 1993, abandoned.

This application Feb. 2, 1995, Ser. No. 383,559

Int. Cl.⁶ B65D 17/40

U.S. Cl. 206—276

18 Claims



1. A two piece frangible opening resealable container, said container comprising:

- a container body with a bottom wall and a sidewall surrounding and extending upward from said bottom wall, said sidewall having an upper annular surface forming an open mouth, said sidewall also having an outwardly projecting rim forming a locking region spaced outwardly of said sidewall;
- a lid for sealing said mouth of said container body, said lid having a cover with an integral pull tab, said pull tab enabling said cover to be pulled upward by a user, said cover having an inner wall which forms the periphery of said cover and said inner wall frictionally contacts said mouth of the container body enabling reclosure of the container after frangible opening, said inner wall having a top annular wall extending outwardly therefrom, said top annular wall having a circumferential failure line located thereon enabling said cover to be frangibly separated from said lid, said lid further having an outer depending wall located outwardly of said failure line and extending downwardly from said top annular wall, said outer depending wall cooperates with the outwardly projecting rim of said container body forming a snap fit engagement, said outer depending wall is further engaged and captured on three sides by said outwardly projecting rim to prevent disengagement of said outer depending wall and retaining said outer depending wall after said container is frangibly opened.

5,511,681

BULKHEADLESS LINER

Stephen D. Podd, 1321 Sherbrooke Street West, Apt. E1, Montreal, Quebec, Canada

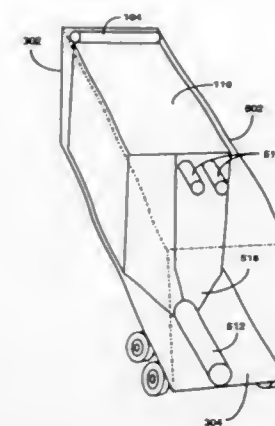
Filed Feb. 4, 1994, Ser. No. 191,773

Int. Cl.⁶ B65D 25/14; B65G 65/34

U.S. Cl. 220—403

28 Claims

1. A liner for transportation of bulk cargo in a front brace bar equipped transport container of the type having a floor, a ceiling, sidewalls, a front wall and a rear door, comprising:
 - an elongated bag of flexible sheet material, the bottom of the bag supported by the floor of the container, the bag further having a rear end located near the door of the container and a front end located substantially near the front wall of the container;
 - a forward liner wall formed by folding two opposing edges of the front portion of the flexible bag such that they come in contact and sealing the opposing edges together;
 - at least one seam formed by sealing the forward liner wall to the top of the flexible bag the seam formed such that top flap is created;
 - at least one seam formed by sealing the forward wall to the bottom of the flexible bag, the seam formed such that a bottom flap is created; and



a first securing sleeve sealed to the bag near the front end, the first securing sleeve formed by rolling the bottom flap or the top flap into a sleeve and sealing the sleeve to the flexible bag, the first securing sleeve having apertures for accepting a brace bar secured to the container near the front wall.

5,511,682

PORTABLE ANIMAL WASTE COLLECTOR/STORAGE APPARATUS

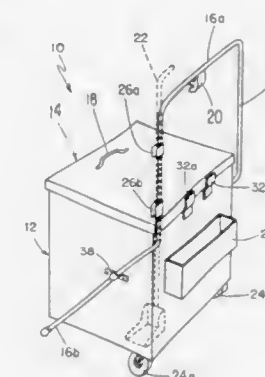
George S. Pace, Hidden Creek, Lake Zurich, Ill. 60047

Filed Dec. 19, 1994, Ser. No. 386,981

Int. Cl.⁶ B65D 85/00

U.S. Cl. 220—404

11 Claims



1. Apparatus for collecting and storing animal waste such as droppings, said apparatus comprising:

- a container including side walls and a bottom portion and having an open top portion;
- a cover attached to an upper portion of said container and moveable between a closed position wherein said cover is disposed over the open top portion of said container and an open position permitting deposit of animal waste in or removal of animal waste from said container;
- hinge means coupling said cover to said back wall at the upper portion of said container to permit said cover to move between said closed position and said open position in a pivoting manner;
- closure means disposed on said container and said cover for maintaining said cover in the closed position;
- a plurality of wheels attached to said container on or adjacent to said back wall at the bottom portion thereof;
- a first handle attached to said container for manually displacing said apparatus, said handle including a generally inverted U-shaped upper portion extending upwardly from the back wall of said container for grasping by a user, an intermediate portion extending downwardly from said upper portion and diagonally across said end walls, and a lower portion extend-

ing downwardly from said front wall, to below said bottom portion for supporting said container when said apparatus is stationary;

a removable liner bag disposed within said container;

a seal disposed intermediate said cover and the open top portion of said container when said cover is in said closed position for confining offensive odors to said container;

retention means for engaging said liner bag and securely maintaining said liner bag within said container; and

mounting means for attaching an animal waste receiving device to said apparatus.

5,511,683

PORTABLE VEHICLE WASH CONTAINMENT LINER SYSTEM

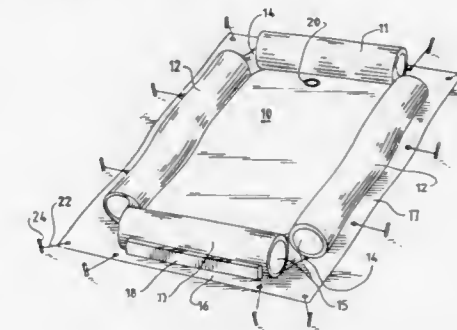
Charles M. Dailey, Peoria, Ill., assignor to Liqui-Green Lawn Care Corporation, Peoria, Ill.

Filed Apr. 28, 1995, Ser. No. 431,144

Int. Cl.⁶ B65F 1/00

U.S. Cl. 220—573

11 Claims



1. A portable wash containment liner system for preventing spills and containing liquid pesticide residues washed and drained from a vehicle situated therein, said system comprising a flexible floor sheet of impervious heavy duty copolymer; four flexible sleeves integrally formed around the periphery of said floor sheet and formed from the same material of the floor sheet; removable resilient solid foam cores of substantially cylindrical shape inserted respectively into the sleeves to form two end and two side walls of a rectangular basin of the system; sealing members formed at the junction of each side and end wall of the rectangular basin to provide sealing and extra upstanding strength; and two rigid bars provided at both sides of one of the end walls to form passing ramps for the vehicle.

5,511,684

CONTAINER WITH MOVABLE BOTTOM PORTION FOR DISPENSING CONTENTS

Edmund A. Weaver, Jr., Racine, Wis., assignor to Kraft General Foods, Inc., Northfield, Ill.

Filed Aug. 26, 1994, Ser. No. 296,732

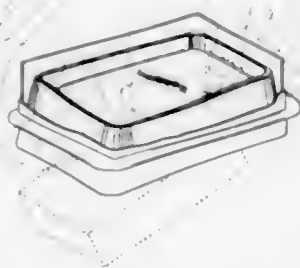
Int. Cl.⁶ B65D 23/00

U.S. Cl. 220—630

2 Claims

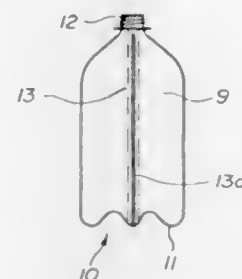
1. A container assembly, comprising:

- a tub having a bottom wall and an upwardly diverging sidewall extending from the bottom wall so as to form an open top receptacle defining an interior volume for receiving contents; the sidewall being upwardly and outwardly tapered and formed of flexible material so as to bend to form a rolling bend with portions of the tub sidewall overlapping one another and joined by a bend having a smooth curved cross section as the tub is turned inside-out with the bottom wall being passed through the tub interior to at least partially eject the contents; an outer housing joined to an upper end of the tub sidewall, and enclosing the tub sidewall, with at least lower portions of the



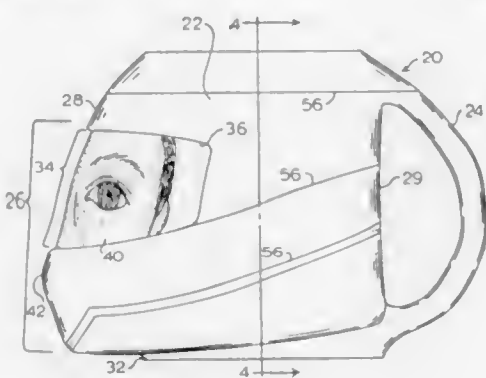
tub being spaced from the outer housing, so as to allow at least the lower end of tub sidewall to bend with the rolling bend within the housing; and
a relatively stiff bottom panel joined to the bottom wall.

5,511,686
CONTAINER MADE OF A SYNTHETIC MATERIAL AND METHOD FOR MAKING SAME
Pierre-Henri Gallay, Collonge-Bellerive, Switzerland, assignor to Jean Gallay S.A., Plans-les-Ouates, Switzerland
PCT No. PCT/CH93/00059, § 371 Date Nov. 9, 1993, § 102(e) Date Nov. 9, 1993, PCT Pub. No. WO93/17918, PCT Pub. Date Sep. 16, 1993
PCT Filed Mar. 8, 1993, Ser. No. 150,025
Claims priority, application France, Mar. 12, 1992, 92 03138 Int. Cl.⁶ B65D 6/08
U.S. Cl. 220—667 36 Claims



1. A container made of synthetic material comprising:
an elongate container wall being formed from a synthetic material;
said container being closed at bottom portion thereof and being open at an opposed upper portion thereof; and
at least one elongate foldable region being formed in said container wall;
wherein said synthetic material forming said foldable region has a different molecular structure from said synthetic material which forms the remainder of said container wall thereby facilitating folding of said container along said foldable region when said container is flattened for disposal.

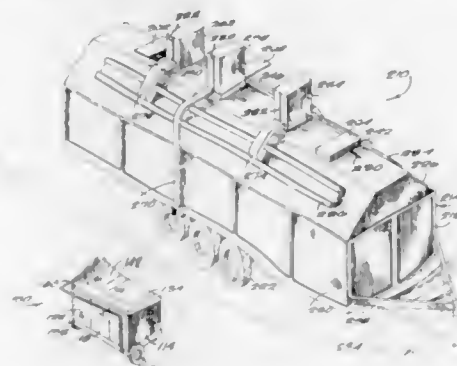
5,511,685
MUG SIMULATING A HELMET AND HELMET WEARER
Richard A. Nelson, Cary, N.C., assignor to Revell-Monogram, Inc., Morton Grove, Ill.
Filed Oct. 4, 1994, Ser. No. 317,761
Int. Cl.⁶ B65D 65/00
U.S. Cl. 220—662 9 Claims



1. A mug, comprising:

- (a) a body having a liquid-holding interior area and an exterior shape simulating a particular helmet style of a particular helmet wearer, said helmet having a viewing window and exterior designs, said exterior shape comprising a surface having a convex front side and a rear side, said convex front side having a window area in the shape of said viewing window;
- (b) a section of a photographic image, showing the eyes and surrounding facial portion of said wearer, said section formed in the shape and size of said window area and affixed to said window area;
- (c) a handle on the rear side; and
- (d) surface designs simulating said exterior designs.

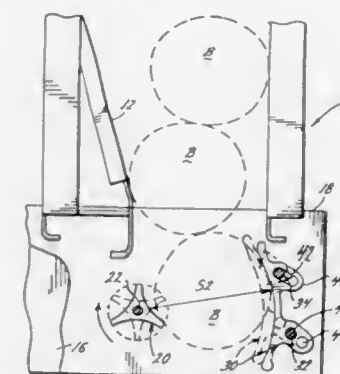
5,511,687
WASTE COLLECTION AND SEPARATION SYSTEM
Billy J. Garrett, Jr.; William L. Aldridge, and Harry R. Elliott, all of P.O. Drawer 3208, Greenwood, S.C. 29648
Filed Mar. 24, 1994, Ser. No. 187,602
Int. Cl.⁶ B65F 3/12
U.S. Cl. 414—407 17 Claims



1. Apparatus for collecting wastes sorted by type, said apparatus for use with a container having a plurality of compartments, each of said compartments holding only one type of said waste, said apparatus comprising:
a housing having an interior, an exterior, and at least one hatch for providing access to said interior of said housing;
a plurality of removable bins carried in said interior of said housing, each compartment of said plurality of compartments corresponding to only one bin of said plurality of bins;

means mounted to said exterior of said housing for moving said container over said hatch and aligning said container therewith so that said container can be emptied into said hatch;
means carried within said housing for distributing said wastes emptied through said hatch into said plurality of bins; and
said housing having a plurality of openings for removing said plurality of removable bins from said interior of said housing.

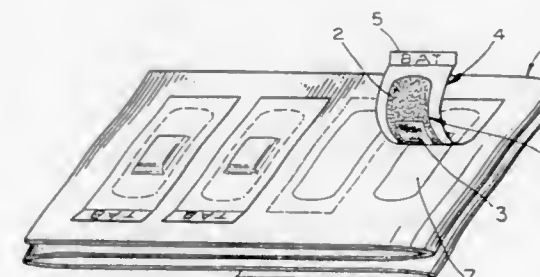
5,511,688
VENDING MACHINE DISPENSING SYSTEM
David W. Duncan; Larry D. Lee, both of St. Louis, Mo., and Kenneth W. Oden, Charles Town, W. Va., assignors to Coin Acceptors, Inc., St. Louis, Mo.
Filed Oct. 14, 1994, Ser. No. 323,363
Int. Cl.⁶ B65G 59/00
U.S. Cl. 221—67 16 Claims



15. A vending machine dispensing system for dispensing articles of different diameter from a storage compartment, the system comprising:

- (a) a storage compartment having an exit passage,
- (b) a turnstile means on one side of the exit passage having an axis of rotation, and
- (c) a stop means disposed in spaced parallel relation to said axis of rotation and means for adjusting the spaced parallel relation from one position to permit passing of one diameter of article between said turnstile and said stop means to another position to permit passing of an article of a different diameter between said turnstile means and said stop means.

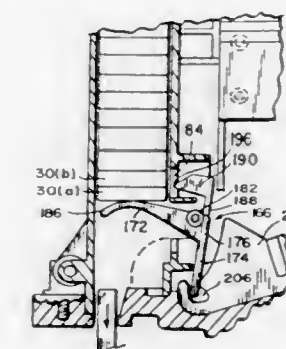
5,511,689
DISPENSING DEVICE FOR ADHESIVE-BACKED ARTICLES
Richard D. Frank, 11909 S. Lake Dr., Houston, Tex. 77077
Continuation of Ser. No. 173,978, Dec. 28, 1993, abandoned.
This application Apr. 20, 1995, Ser. No. 422,078
Int. Cl.⁶ B65H 5/28
U.S. Cl. 221—73 30 Claims



1. A packaged adhesive-backed article, comprising:

an adhesive-backed article having top and bottom surfaces and a first adhesive disposed on at least a portion of said bottom surface;
a backing layer having a top surface, said bottom surface of said adhesive-backed article being removably bonded to said top surface of said backing layer by a first bond formed by said first adhesive; and
a support layer having a bottom surface and a second adhesive disposed on at least a portion of said bottom surface, said top surface of said adhesive-backed article being bonded to said bottom surface of said support layer by a second bond formed by said second adhesive, a portion of said bottom surface of said support layer removably bonded to a portion of said backing layer surrounding said adhesive-backed article to enclose said adhesive-backed article in a sterile condition, said second bond being stronger than said first bond such that when said support layer is separated from said backing layer, said adhesive-backed article remains affixed to said support layer, said support layer configured to allow removal of said adhesive-backed article from said backing layer with the use of one hand and to allow the application of said adhesive-backed article to a recipient surface in a sterile condition with the use of one hand, said second bond being weaker than a bond formed between said first adhesive on said bottom surface of said adhesive-backed article and said recipient surface to which it is applied.

5,511,690
AUTOMATED FEEDER SYSTEM AND APPARATUS
Jeffrey E. Calhoun, Peekskill; Daniel A. Peragine, Jr., Mount Vernon; Emil A. Scordato, Eastchester, all of N.Y., and Gary C. Helstern, West Redding, Conn., assignors to Medical Laboratory Automation, Inc., Pleasantville, N.Y.
Filed May 20, 1993, Ser. No. 64,853
Int. Cl.⁶ B65H 1/00
U.S. Cl. 221—197 18 Claims



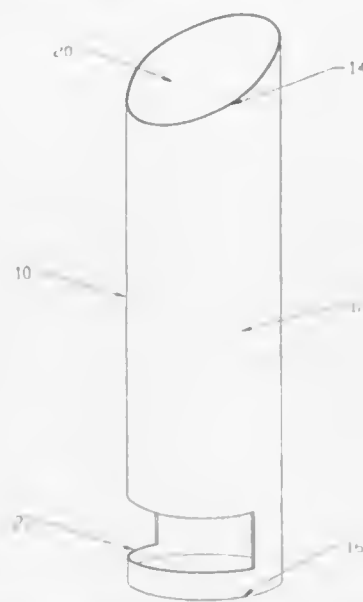
1. A feeder system for sequentially supplying a plurality of objects to a conveyor comprising:
means for retaining the plurality of objects in at least one substantially vertical stack over the conveyor;
a single integrated escapement for said at least one stack, said escapement being pivoted about a pivot between a first position in which said escapement supports the bottom object in said stack and a second position in which said escapement supports the objects in said stack above the bottom object and releases the bottom object to be deposited on the conveyor; and
an actuator for driving said escapement between said first position and said second position.

5,511,691
PLASTIC GROCERY BAG DISPENSER AND STORAGE CONTAINER
 Stanley M. West, Jr., Rte. 4 Box 6357-2, Crawfordville, Fla. 32327

Filed Jul. 25, 1994, Ser. No. 280,346
 Int. Cl.⁶ A47F 1/04

U.S. Cl. 221—311

5 Claims



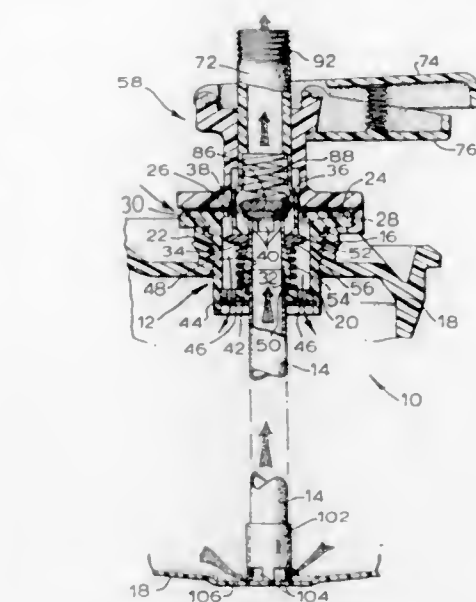
1. A container for holding used plastic grocery bags comprising:
 - a vertically extending sleeve;
 - said sleeve has a top portion, a front, a back, and a bottom portion;
 - said sleeve has a circular cross-section;
 - said circular cross-section includes a first diameter;
 - an open top is located at said top portion;
 - said open top is adapted to receive said used plastic grocery bags;
 - a bottom panel;
 - said bottom panel is integral to said bottom portion of said sleeve;
 - a horizontal slot is in said sleeve at said front of said bottom portion;
 - said slot has a height that is in a range of 1/4 to 1 1/2 inches; and
 - said slot has a length that is 1/2 said first diameter of said sleeve whereby, the above dimensions of the slot effect the release of one bag at a time.

5,511,692
FLUID DISPENSE SYSTEM
 John D. Willingham, Hull, United Kingdom, assignor to Royal Packaging Industries Van Leer B.V., Amstelveen, Netherlands
 PCT No. PCT/G892/01893, § 371 Date Jun. 6, 1994, § 102(e)
 Date Jun. 6, 1994, PCT Pub. No. WO93/08118, PCT Pub. Date Apr. 29, 1993
 PCT Filed Oct. 16, 1992, Ser. No. 211,827
 Claims priority, application United Kingdom, Oct. 18, 1991, 9122256; Mar. 31, 1992, 9207067; Jun. 18, 1992, 9212972
 Int. Cl.⁶ F16L 39/00

U.S. Cl. 222—1

20 Claims

1. A method of dispensing fluid from a sealed container by negative pressure comprising the steps of:
 - matting a coupling head to a dispense valve assembly of a container, the dispense valve assembly sealing the container and having valves, for ingress of ambient air and egress of dispensed fluid respectively, and the coupling head being



- arranged to open the air and fluid valves and form a sealed connection solely with the fluid valve;
- connecting the coupling head to a suction pump;
- pumping fluid out of the container via the fluid valve and the coupling head, whilst ambient air flows into the container via the air valve; and,
- upon completion of dispensation of fluid, removing the coupling head from the dispense valve assembly;
- whereupon the air and fluid valves will close, to reseal the container.

5,511,693
ORAL IRRIGATION APPARATUS AND METHOD OPERABLE FROM A PRESSURIZED WATER SUPPLY FOR SELECTIVELY DISCHARGING A PLURALITY OF LIQUIDS

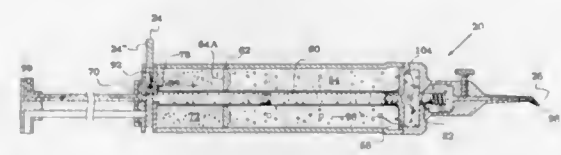
William R. Weissman, North Hollywood; Peter Liapis, Los Angeles; George Sanchez, and Bernardo Baran, both of Woodland Hills, all of Calif., assignors to William R. Weissman, North Hollywood, Calif.

Filed Jun. 7, 1994, Ser. No. 255,928

Int. Cl.⁶ B67D 5/56

U.S. Cl. 222—1

18 Claims



16. A method for dental purposes of dispensing liquids in response to a pressurized supply of a liquid 1, comprising the steps of:
 - providing a housing;
 - defining, with said housing, a chamber for holding a liquid 2, an orifice communicating with said chamber and an inlet port for receiving said liquid 1 from said pressurized supply;
 - providing a piston having first and second faces;
 - receiving said piston slidably in said chamber with said second face abutting said liquid 2;
 - defining, with said housing, a conduit to communicate with said orifice; and
 - coupling said inlet port with a selectable one of said conduit and said piston first face to respectively dispense said liquid 1 or said liquid 2 from said orifice.

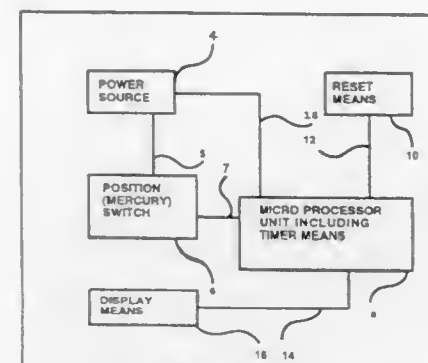
5,511,694
APPARATUS AND ARTICLE FOR DETERMINING AND INDICATING LIQUID CONTENT OF KEGS OR BARRELS

Edward J. Rohm, 250 Locust St., Pittsburgh, Pa. 15229
 Filed Jan. 19, 1994, Ser. No. 183,437

Int. Cl.⁶ B67D 5/12

U.S. Cl. 222—27

11 Claims



1. An article of manufacture in the nature of a handle for the valve of a tap for delivering and dispensing into a container a liquid under pressure which is derived from a source container, said handle containing a display means for indicating the quantity of said liquid currently present in said source container and said handle contains also and in operative relationship to one another a microprocessor means having timing capability, a power source, a position-sensitive electrical switch responsive to operative movement of said valve by said handle, and a reset means for starting a new calculation of aggregate time and liquid remaining in said container, such that said display means exhibits indication dependent upon the aggregate length of time that the said handle has been in its open position.

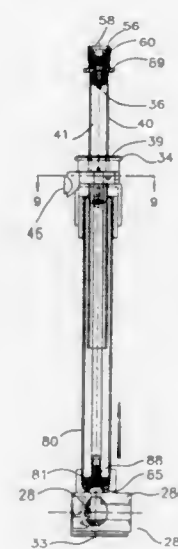
5,511,695
PAINT COLORANT DISPENSER
 Julian-Y.-P. Chia, Ladner, and Gary B. Jenne, New Westminster, both of Canada, assignors to Hero Industries, Inc., Burnaby, Canada

Filed Jun. 13, 1994, Ser. No. 259,330

Int. Cl.⁶ B67D 5/22

U.S. Cl. 222—43

20 Claims



15. A paint colorant dispenser comprising:

169—398 O.G.—96—7: QL3

- a cylinder comprising a tube and a valve body closing a lower end of said tube;
 - b. a valve in said valve body, said valve having a first position wherein said cylinder is in fluid communication with a reservoir and a second position wherein said cylinder is in fluid communication with an outlet;
 - c. a piston slidably and sealingly mounted within said cylinder;
 - d. a piston rod connected to said piston, said piston rod comprising a stop contacting surface;
 - e. a stop support member slidably mounted with respect to said cylinder;
 - f. coarse stop adjustment means for temporarily fixing said stop support member in one of a plurality of positions equally spaced apart by a distance L, said coarse stop adjustment means comprising:
 - i. a plurality of indentations in said stop support member;
 - ii. a sliding pin selectively engageable in one of said indentations;
 - iii. a spring for urging said sliding pin into said one of said indentations; and,
 - iv. a linkage associated with said sliding pin for selectively retracting said sliding pin;
 - g. fine adjustment means mounted to said stop support member, said fine adjustment means comprising:
 - i. a stop mounting plate on said stop support member, said stop mounting plate comprising a threaded aperture axially aligned with said stop contacting surface;
 - ii. a stop member comprising a central threaded portion engaged in said threaded aperture, and a lower stop surface;
 - iii. a knob on said stop member for turning said stop member in said aperture;
 - iv. means for restricting rotation of said stop member and said knob to an angular range, said angular range being no more than one full rotation;
- wherein said threads on said stop member have a pitch such that in rotating said stop member through said angular range, said stop surface moves by a distance of at least L along a line parallel to said axis.

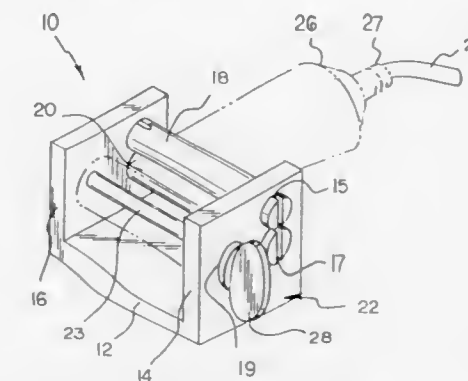
5,511,696
TUBE SQUEEZER AND WINDER APPARATUS
 Herbert A. Gustafson, 210 Belgo Rd., Lakeville, Conn. 06039-1003

Filed Nov. 17, 1994, Ser. No. 341,658

Int. Cl.⁶ B65D 35/28

U.S. Cl. 222—102

9 Claims



1. A tube squizzer apparatus, comprising:
 - a base member,
 - a first squizzer/winder support member connected to a first side of said base member, said first squizzer/winder support member including a first squizzer connection position, a second squizzer connection position, and a winder connection position,
 - a second squizzer/winder support member connected to a second side of said base member, wherein said first side and said

second side of said base member are at opposite sides of said base member, wherein said second squeezer/winder support member includes a first squeezer connection position, a second squeezer connection position, and a winder connection position,

a first squeezer connected between said first squeezer connection position of said first squeezer/winder support member and said first squeezer connection position of said second squeezer/winder support member,

a second squeezer connected between said second squeezer connection position of said first squeezer/winder support member and said second squeezer connection position of said second squeezer/winder support member, wherein said first squeezer and said second squeezer include ends for connection to said first squeezer/winder support member and said second squeezer/winder support member, and

a winder shaft assembly connected between said winder connection position of said first squeezer/winder support member and said winder connection position of said second squeezer/winder support member, wherein said winder shaft assembly includes a shaft portion, adapted to support a squeezable tube, and a handle, connected to said shaft portion, for turning said shaft portion, wherein said shaft portion includes a slot portion adapted to receive an end of the squeezable tube,

wherein said first squeezer/winder support member includes a plurality of lock notches arrayed in a circular pattern on said first squeezer/winder support member adjacent to said first squeezer connection position around said shaft portion of said winder shaft assembly, and

wherein said shaft portion of said winder shaft assembly includes a plurality of lock protuberances arrayed in a circular pattern on said shaft portion, such that said lock protuberances are adapted to be placed in registration with said lock notches.

5,511,697 RECLOSABLE POUCH AND METHOD OF CONSTRUCTION

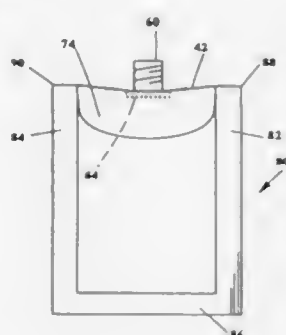
Dana P. Gruenbacher, Fairfield, Ohio, and Dale E. Barker, Hamilton, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Dec. 19, 1994, Ser. No. 359,265

Int. Cl.⁶ B65D 37/00

U.S. Cl. 222—107

14 Claims



1. A reclosable pouch package for dispensing a product, said package comprising:

- a substantially rigid fitment having an inner end, an outer end, and an orifice extending from said inner end to said outer end, said fitment having a flange at said inner end; and
- a piece of thermoplastic film having a hole therein and a depression in said film, said flange of said fitment being bonded to said piece of film at said hole, said piece of film being folded away from said fitment to generate a folded end and overlapping film edges, said overlapping film edges being bonded together to close said pouch except at said orifice in said fitment, said depression in said film being shaped to accommodate said flange of said substantially rigid fitment.

5,511,698 DEVICE FOR SPRAYING A PREDETERMINED DOSE OF A FLUID, AND A METHOD OF FILLING THE DEVICE

Philippe Solignac, Rouen, France, assignor to Etablissements Valois (Société Anonyme), Le Neubourg, France

PCT No. PCT/FR92/00583, § 371 Date Feb. 16, 1994, § 102(e) Date Dec. 27, 1993, PCT Pub. No. WO93/00172, PCT Pub. Date Jan. 7, 1993

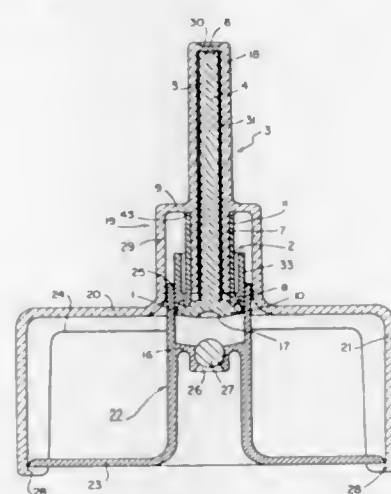
PCT Filed Jun. 26, 1992, Ser. No. 170,326

Claims priority, application France, Jun. 26, 1991, 91 07854; Jul. 10, 1991, 91 08624

Int. Cl.⁶ B05B 11/02; 11/00

U.S. Cl. 222—162

25 Claims



1. A device for spraying a single dose of a fluid in divided form, the device comprising at least:

- a cylindrical tank (1) containing said single dose of fluid;
- a piston (2) slidable in a sealed manner in said cylindrical tank (1);
- a pusher for actuating the piston (2); and
- an outlet passage (5, 6) capable of communicating with said cylindrical tank (1) wherein said piston (2) is slidably mounted on said pusher and is displaceable relative to said pusher between a storage position in which it seals said cylindrical tank and prevents communication between said outlet passage (5, 6) and said cylindrical tank (1), and an actuation position in which it puts said outlet passage (5, 6) into communication with the cylindrical tank (1), the piston being placed so that a pressure obtaining in the cylindrical tank (1) attracts the piston (2) towards its actuation position, and wherein the piston (2) is held in its storage position by wedging, on the pusher, and can be displaced towards its actuation position only if the pressure that obtains inside the cylindrical tank (1) is sufficient for unwedging it, said pressure being obtained by pushing on the pusher.

5,511,699 MANUALLY OPERATED TOOL MECHANISM

Slobodan Tepic, Davos, Switzerland, assignor to AO Research Institute, Davos, Switzerland

Filed Sep. 21, 1994, Ser. No. 309,946

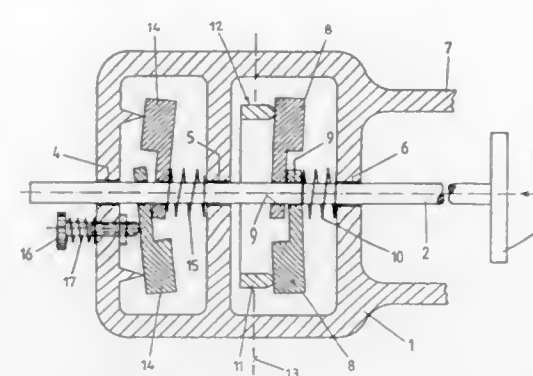
Claims priority, application Austria, Sep. 27, 1993, 1940/93

Int. Cl.⁶ G01F 11/00

U.S. Cl. 222—326

12 Claims

1. A manually operated tool comprising a housing, a push rod having an axis and a diameter, a plurality of bearings mounted in the housing, the push rod being supported by the bearings so as to be axially movable in the housing, a pivotable grip for moving the push rod in an axial displacement direction, a pair of canting blocks mounted between the bearings and arranged symmetrically relative to each other with respect to the push rod axis, each canting block having a first portion, the first portion defining an



opening having a diameter, the push rod extending through the opening, wherein the diameter of the opening is slightly greater than the diameter of the push rod, and a second portion remote from the push rod, further comprising a spring mounted in the housing for biasing the first portions of the pair of canting blocks in a direction opposite the displacement direction, the grip comprising means for transmitting a force applied to the grip to the second portions of the canting blocks, and at least one braking block acting on the push rod for preventing the push rod from being moved in the direction opposite the displacement direction, wherein the first portions of the canting blocks overlap, the canting blocks being constructed as plate shaped members, the first and second portions each having a thickness, wherein the thickness of the first portions is smaller than the thickness of the second portions.

5,511,700 TABLE POT FOR LIQUID SEASONING

Taiichi Oono, 5-28, Biwajima 2-chome, Nishi-ku, Nagoya-shi, Aichi-ken, Japan

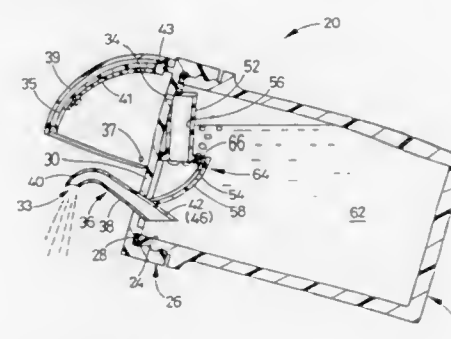
Filed Jul. 6, 1995, Ser. No. 499,060

Claims priority, application Japan, Jul. 18, 1994, 6-165109; Oct. 7, 1994, 6-243228; May 24, 1995, 7-125239

Int. Cl.⁶ B67D 3/00

U.S. Cl. 222—481.5

11 Claims



1. A table pot for a liquid seasoning, comprising:

- a container body having an opening at an upper end thereof, for storing the liquid seasoning therein;
- a lid which is attached to said container body so as to close said opening, said lid having a fluid passage and an air inlet formed in an outer peripheral portion thereof such that the fluid passage and the air inlet are located diametrically opposite to each other;
- means for defining an extended air passage which is connected to an inner open end of said air inlet and has a larger cross sectional area than said air inlet, said extended air passage extending toward said fluid passage while being inclined downwardly of said lid; and
- a shielding member located below an opening of said extended air passage remote from said air inlet, so as to interfere with the flow of bubbles of air from said opening of said extended air passage into the liquid seasoning.

5,511,701 ADJUSTABLE WIDTH GARMENT HANGER

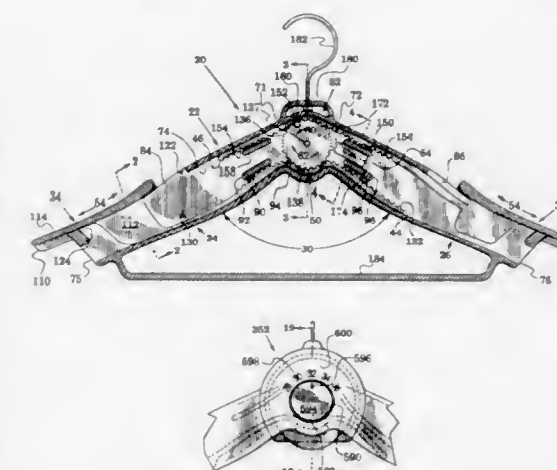
Peter A. Lam, 20104 Wayne Ave., Torrance, Calif. 90503

Filed Feb. 25, 1994, Ser. No. 201,539

Int. Cl.⁶ A47G 25/44; G09F 3/00

U.S. Cl. 223—85

16 Claims



1. An adjustable width garment hanger suitable for supporting coats and the like comprising:

- a medial portion having first and second elongate substantially rigid support arms extending in opposite directions from said medial portion and oriented to define an obtuse angle therebetween, each of said arms having an inner end proximate to said medial portion and an outer end spaced therefrom;
- at least one wheel mounted proximate to said medial portion for rotation about an axis oriented substantially perpendicular to the elongation of said support arms;
- first and second elongate extension members respectively mounted on said first and second support arms for translational movement relative thereto, each of said extension members having an outer end for supporting a coat shoulder and an inner end engaged with the periphery of said wheel; and
- wherein said extension member inner ends each comprise an essentially flexible tongue for extending around a portion of said wheel periphery in contact therewith.

5,511,702 WRIST STRAP FOR CARRYING PAGERS

Chin Y. Yang, 8F, 149, Hang Joe S. Road, Sec. 1, Taipei, Taiwan

Filed Feb. 28, 1995, Ser. No. 395,987

Int. Cl.⁶ A45C 3/14; A45F 3/14

U.S. Cl. 224—219

1 Claim

- 1. A wrist strap for carrying a pager, comprising:
 - a strap having (1) a pocket formed on a rear side thereof for receiving a pager therein, said pocket having an open upper end and a pair of opposing side walls, (2) a through opening formed in one of said pair of side walls for accessing a pager's switches, and (3) a transparent window formed in a front side of said strap for viewing a pager's display there-through, said strap having an elongated band extending from a first end thereof;
 - a side loop coupled to a second end of said strap, said band adapted to be wrapped around a user's wrist for passage of a distal end of said band through said side loop and folding thereover to overlap an intermediate portion of said band with said distal end, said band forming a closure for said open end



of said pocket when wrapped around a user's wrist for retaining a pager therein; and,
fastening means coupled to said band for releasably coupling said distal end of said band to said intermediate portion thereof.

5,511,703

TRADESMAN'S TOOL BELT

Wayne R. Ryerson, Mine Hill, N.J., assignor to W.G.H., Inc., Mine Hill, N.J.

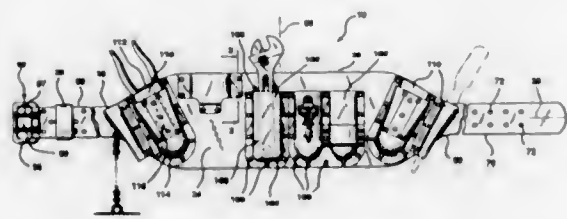
Continuation of Ser. No. 111,186, Aug. 24, 1993, abandoned.

This application Jul. 13, 1994, Ser. No. 274,579

Int. Cl.⁶ A45F 3/00

U.S. Cl. 224—224

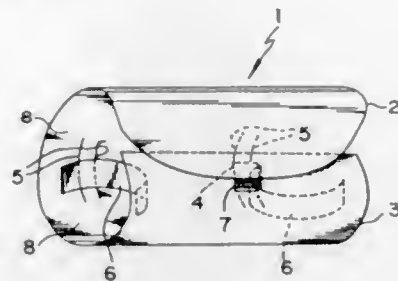
14 Claims



1. A tool belt, comprising:
an elongated, flexible member having a pair of opposed ends, said member having a longitudinal axis, an inner surface and an outer surface;
means for locking the ends of the member together;
means for supporting a wearer's back extending from the flexible member and having an upper edge and a lower edge, wherein the back support means comprises at least one section of the elongated member which is sufficiently wide to effectively provide support to a wearer's back; and,
a plurality of molded tool pockets fixedly mounted to the outer surface of the elongated member such that the pockets are stationary with respect to the elongated member wherein at least one of the tool pockets is positioned entirely between said upper edge and said lower edge of said back support means and is angulated at an acute angle with respect to the longitudinal axis and wherein each tool pocket comprises a member having an open mouth, a closed bottom, and a cavity for receiving tools, wherein the tool pocket is molded such that the it corresponds to the shape of a particular tool.

5,511,704
BELT HOLDER FOR CELLULAR PHONE
John E. Linderer, 1324 Empire St., Fairfield, Calif. 94533
Filed Jan. 6, 1995, Ser. No. 369,496
Int. Cl.⁶ B65D 25/10; A45F 5/00
U.S. Cl. 224—245

3 Claims



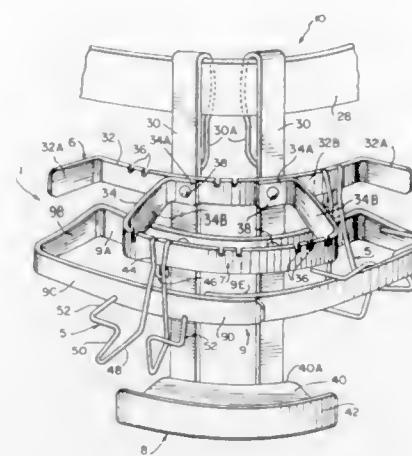
1. A holder for detachably affixing a portable apparatus with an attached antenna to a person comprising:
a body portion having a top edge and a bottom edge and opposite first and second ends,
means on said body portion for attaching said holder to said person,
means for detachably securing said top edge adjacent to said bottom edge,
a cavity being formed when said top edge is secured adjacent to said bottom edge,
said cavity having open first and second ends and a longitudinal axis extending between said open first and second ends,
resilient means for partially closing said open first and second ends,
each of said resilient means comprising a member having a first end and a second end,
each of said first ends of said members being attached to said body portion adjacent, said means for attaching said holder to said person,
each of said second ends of said members being attached to said body portion opposite from said means for attaching said holder to said person,
said resilient means for partially closing said open first and second ends are separate, rectangular elements, each of said rectangular elements is curved and the convex part of each of said rectangular elements face each other and protrude into said cavity,
whereby a portable apparatus with an attached antenna is adapted to be inserted into and secured within said holder in a horizontal position with said antenna protruding through one of said opposite first and second ends.

5,511,705
INTERCHANGEABLE TOOL AND FASTENER
CARRYING AND STORAGE SYSTEM
George C. Dreszer, 51 Baldy Ave., Severna Park, Md. 21146
Filed Feb. 6, 1995, Ser. No. 384,646
Int. Cl.⁶ A45F 5/00

U.S. Cl. 224—252

15 Claims

1. An interchangeable tool and fastener carrying and storage system comprising a generally rigid, open frame structure, said frame structure including at least one rear upright riser, said at least one riser terminating at an upper end in a rearwardly positioned, downwardly projecting hook adapted for attachment to and suspension on a tradesman's work/utility belt and terminating at a lower end in a forwardly projecting horizontal shelf, with said shelf rendering said frame freestanding when not suspended to said belt, a transverse top rail fixedly mounted to said at least one riser and extending to opposite sides of said riser, at least a portion of said top rail being in the form of a closed loop, a transverse, closed loop bottom rail fixedly mounted to said at least one riser below said top rail and being spaced therefrom and parallel thereto, said bottom rail being generally sized and configured to that of the top rail, a

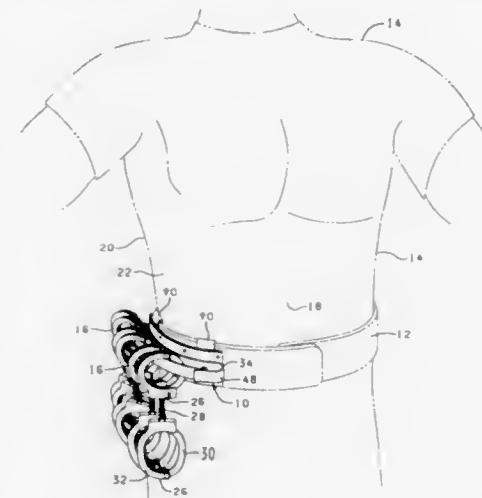


plurality of hanger clips including a U-shaped, upwardly open body portion, each of said clips being sized and configured to receive an item carrying pouch therein, each hanger clip having a hook integral therewith at a top thereof, projecting outwardly therefrom and downwardly thereof for engagement with an edge of one of said rails wherein at least one of said pouches being sized differential than said other pouches and at least one of said hanger clips having a body portion configured to receive said at least one pouch therein, said at least one pouch being selectively supported by at least one of said shelf and said at least one hanger clip wherein said at least one hanger clip is selectively engaged with an edge of one of said rails.

5,511,706
HANDCUFF CARRYING APPARATUS
Dahl Hendrickson, Rte. 2, Box 135A, El Reno, Okla. 73036
Filed Jan. 24, 1995, Ser. No. 378,024
Int. Cl.⁶ A45F 5/00

U.S. Cl. 224—269

13 Claims



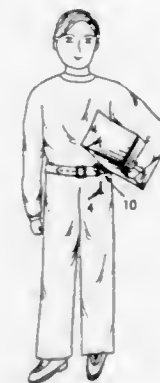
1. A security apparatus comprising:
a plurality of pairs of handcuffs, each pair of handcuffs comprising a pair of interconnected wristlets; a wristlet retaining member having an outward side, an inward side, a first end, and a second end cooperating to define a wristlet receiving slot dimensioned to slidably receive a portion of at least one of the wristlets of each pair of handcuffs, at least one of the wristlets of each pair of handcuffs connected to the wristlet retaining member such that each of the handcuffs is slidably interlocked with the wristlet retaining member with respect to said slot, the outward side of the retaining member including

a rigid portion and a biasing portion having a first end and a second end, the second end of the biasing portion positioned adjacent the rigid portion such that the second end of the biasing portion is selectively movable between a closed position wherein the second end of the biasing portion is biased against the rigid portion to retain the wristlets on the wristlet retaining member and an open position wherein the second end of the biasing portion is deflected away from the rigid portion so as to provide a wristlet receiving passageway in open communication with the wristlet receiving slot and through which the portion of the wristlets disposed in the wristlet receiving slot is slidably passable for disconnecting the wristlet from the wristlet retaining member; and attachment means for attaching the wristlet retaining member to a belt positioned about the waist of an individual.

5,511,707
BOX HOLDER AND CARRIER
Greg Reichert, 1655 Buckingham Rd., Teaneck, N.J. 07666
Filed Jan. 23, 1995, Ser. No. 376,940
Int. Cl.⁶ A45F 5/00

U.S. Cl. 224—270

4 Claims



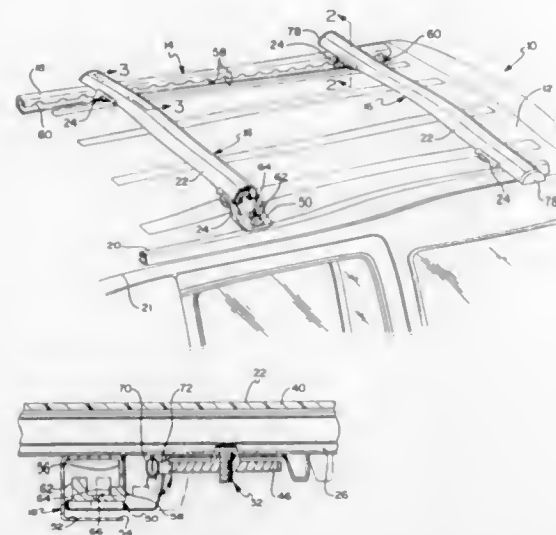
1. A box holder and carrier of the type to be attached to a person for assisting in holding carrying box-like structures comprising:
(a) a vertical planar portion;
(b) a horizontal shelf portion having a rigid top surface disposed at substantially 90 degrees from said vertical planar portion;
(c) means for securing said box holder and carrier to a person in a standing position such that said shelf portion extends horizontally and laterally of said person; and
(d) a "V" shape notch disposed in said top surface and extending in a direction normal to said vertical planar portion for receiving adjacent sides of a box-like structure thereagainst whereby said box-like structure is supported by said box holder and carrier.

5,511,708
ADJUSTABLE CROSSBAR FOR ARTICLE CARRIER
Gary M. Crouce, Port Huron, and Craig A. Stapleton, Rochester Hills, both of Mich., assignors to Advanced Accessory Systems L.L.C., Port Huron, Mich.
Filed Oct. 15, 1993, Ser. No. 136,671
Int. Cl.⁶ B60R 9/00

U.S. Cl. 224—321

17 Claims

1. An adjustable crossbar, for article carrier rails with a channel having a restricted opening and having a plurality of recesses, comprising:
an elongated rail;
at least one slider, said slider having an end for restrictedly removable engagement with the article carrier rail, said end having a first protrusion and a second protrusion and said second protrusion dimensioned for being receivable in each of said plurality of recesses in a first position for preventing



movement of the crossbar in a longitudinal direction of the rails, and said protrusions being linearly aligned in and adapted to be displaceable to said first position and a second position along a direction perpendicular to said restricted opening, said first protrusion adapted to restrict removal of said end from the channel as said elongated rail is slid along the carrier rail with said end in said second position, and as said slider is displaced along said perpendicular direction so that said second protrusion fits within said recesses in said first position to lock the crossbar in a fixed position along the carrier rail;

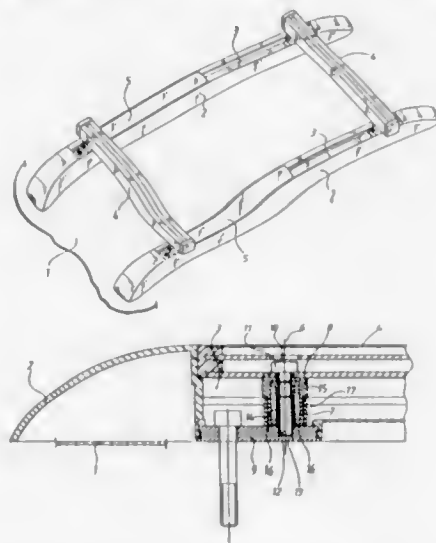
- a guide for slidably carrying said at least one slider along a portion of said elongated rail;
- a latch carried by each said slider for fixedly locating the position of said slider along said elongated rail; and
- a lock for selectively locking said latch in the fixedly locating position.

5,511,709

ROOF RACK FOR MOTOR VEHICLES
Fritz Fisch, Wuppertal, Germany, assignor to Happich Fahrzeug-Dachsysteme GmbH, Germany
Filed Jun. 27, 1994, Ser. No. 266,432
Claims priority, application Germany, Jun. 29, 1993, 43 21 535.1

Int. Cl.⁶ B60R 9/045; 9/05
U.S. Cl. 224—321

13 Claims



1. A roof rack for the roof of a vehicle comprising:
a pair of laterally spaced apart, generally parallel roof strips extending longitudinally along the roof of the vehicle;
rails, each rail having a respective support strip thereon included as part of the roof strip, the support strip being supported to the respective roof strip at a vertical axis which enables the support strip to be rotated around the vertical axis for bringing an end of the support strip to and away from the other of the roof strips; means for selectively locking the support strip in the position along the respective roof strip or rotated to contact the other roof strip;

means at the vertical axis for enabling the support strip to be vertically displaceable along the vertical axis with reference to the roof strip, including means for locking the support strip selectively in a lowered vertical position and an upraised vertical position.

5,511,710

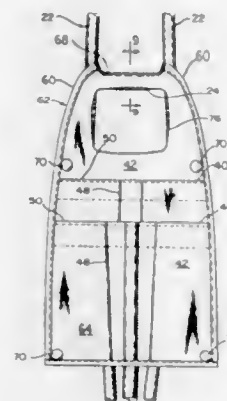
FABRIC ACCESSORIES FOR CRUTCHES AND WALKERS, PROVIDING CARRYING EXPANDABLE VOLUMES FOR PERSONAL USE ITEMS AND SHOPPING ITEMS, AND PRESENTING REFLECTIVE FABRIC PORTIONS THEREOF FOR OBSERVATION BY OTHERS

Robert D. Woods, 231 Park Ave. South, North Bend, Wash. 98045, and Sandra E. Radcliffe, 19119 68th Pl. West, Lynnwood, Wash. 98036

Division of Ser. No. 888,353, May 21, 1992, Pat. No. 5,340,005. This application Aug. 9, 1994, Ser. No. 288,543
Int. Cl.⁶ B60R 11/00

U.S. Cl. 224—407

5 Claims

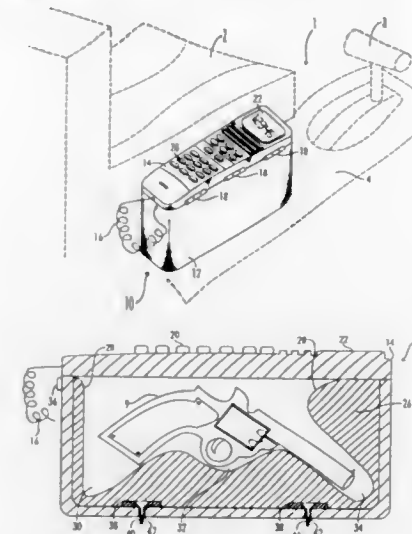


1. Fabric accessory adapted for securement to a crutch to provide carrying expandable volume pockets for receiving personal use items and shopping items, comprising fabric materials sewn to integrally provide:

- a. a top central portion of the fabric materials having a width adapted to match a width of a handle of a crutch and adapted to be draped over such a handle of a crutch creating like opposite side portions;
- b. depending continuing like opposite side portions of the fabric materials, each having an opening adapted to be located just below such a handle of a crutch, which openings together will later accommodate an entry and positioning of a hand of a person using a crutch;
- c. depending continuing like opposite side portions of the fabric materials, extending downwardly from the openings, which are adapted to accommodate a positioning of a hand, each having vertically arranged, overlapping, open top, pleated, carrying expandable volume pockets for receiving personal use items and shopping items.

5,511,711
CAMOUFLAGED GUN HOLDER FOR A VEHICLE
Richard F. Kunz, 1464 Madera Rd., Unit N, Suite 306, Simi Valley, Calif. 93065
Filed Jun. 10, 1994, Ser. No. 258,199
Int. Cl.⁶ B60R 11/00
U.S. Cl. 224—539

20 Claims



1. A camouflaged item holder for holding at least one item in an anterior of a vehicle, the holder comprising:

- a housing having an interior for holding at least one item and having an opening to the interior, and the housing having an exterior shaped to match with a portion of the interior of the vehicle;
- a lid having an appearance of a portion of an electronic device for use in the interior of the vehicle, and having dimensions to cover the opening to the interior of the housing;
- at least one hinge that couples the housing to the lid so that the lid can be opened and closed; and
- at least one mounting structure that is used to firmly secure and couple the housing to the interior of the vehicle to prevent movement of the housing relative to the vehicle;

wherein when the lid is in a closed position, the lid and housing appear like a single unit having a function other than holding an item such that the presence of the at least one item is camouflaged inside the interior of the vehicle.

5,511,712

WEB GUIDE ROLLER WITH DIRECTIONALLY SWITCHED DRIVE COUPLING

Helmut Holm, Erlabrunn; Volker G. Rauh, Hettstadt, and Karl-Heinz A. Schneider, Würzburg, all of Germany, assignors to Koenig & Bauer Aktiengesellschaft, Würzburg, Germany

Filed Nov. 23, 1994, Ser. No. 346,294

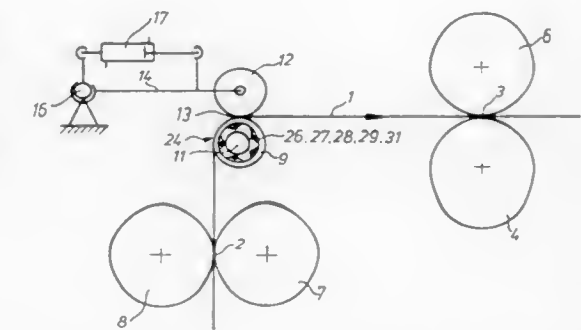
Claims priority, application Germany, Nov. 23, 1993, 43 39 766.2

Int. Cl.⁶ B65H 43/00; 20/02; B41F 13/54
U.S. Cl. 226—11

9 Claims

1. A device for preventing damage to a production apparatus with rotating cylinders including blanket cylinders in a web fed rotary printing press, said device comprising:

- a first material web gripping location;
- a second material web gripping location positioned downstream in a direction of material web travel from said first material web gripping location;
- a rotatably supported material web guide roller positioned intermediate said first and second material web gripping locations and being rotated in a first direction and at a first rotational speed by a material web passing around said web guide roller;



a rotatably supported driven shaft driven in said first direction and at a second rotational speed less than said first rotational speed and rotatably supporting said web guide roller; and

a directionally switched coupling selectively operable in response to a break in a material web intermediate said material web guide roller and said second material web gripping location and a resultant decrease in rotational speed of said material web guide roller from said first speed to said second speed to driveably couple said driven shaft to said web guide roller.

5,511,713

LATERAL STATIC GUIDE FOR A WEB LOOP OF VARIABLE WIDTH

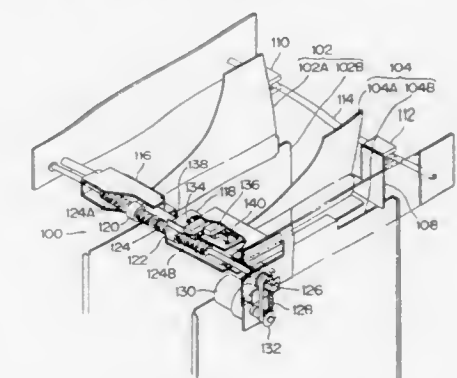
Yasunobu Sakaguchi, Kanagawa; Koji Nakajima, and Junichi Kurumisawa, both of Saitama, all of Japan, assignors to Fuji Photo Film Co., Ltd., Kagawa, and Fuji Photo Optical Co., Ltd., Saitama, Japan

Filed Jan. 10, 1994, Ser. No. 179,335

Claims priority, application Japan, Jan. 19, 1993, 5-006450
Int. Cl.⁶ B65H 23/26

U.S. Cl. 226—199

19 Claims



1. A construction for guiding and holding an image recording material, comprising:

- guiding means for guiding and holding an image recording material such that said image recording material is curved in a loop shape and is slack;
- moving means for moving said guiding means;
- sensing means for sensing a position of said moving means and for outputting signals indicating said position; and
- control means for receiving the signals output by said sensing means and for controlling said moving means based on the signals.

5,511,714
SEALING DEVICE FOR THE DRIVER MEMBER OF A
PNEUMATICALLY OPERATED DRIVING TOOL FOR
FASTENERS

Joachim Bauer, Hamburg; Klaus Albrecht, Bad Oldesloe, and
Rolf Krahmer, Ahrensburg, all of, Germany, assignors to
Joh. Friedrich Behrens AG, Ahrensburg, Germany

Filed Nov. 16, 1993, Ser. No. 153,314

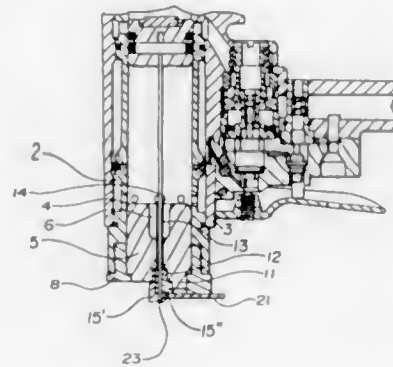
Claims priority, application Germany, Dec. 2, 1992, 9216394

U

Int. Cl.⁶ B25C 5/13

U.S. Cl. 227—130

13 Claims



1. A pneumatically operated driving tool, comprising a driver member, which has a forward end, a working cylinder, a working piston slidably arranged in said working cylinder for movement between an upper and a lower dead center, a resilient stop member having an opening and an inner face, the stop member defining the lower dead center of the working piston movement, the driving member being secured to said working piston and extending through the opening of said stop member, further comprising a control valve, a trigger and a first cylinder space above said working piston, wherein the control valve is actuated by the trigger to alternatively connect the first cylinder space with a source of compressed air and to atmosphere, a piston return space, which contains air, in communication with a second cylinder space below said working piston, into which the piston return space air is displaced while a working stroke of the working piston is performed, upon which the displaced piston return space air returns said working piston into the upper dead center when the first cylinder space is vented to atmosphere by means of said control valve, the driving tool still further comprising a plate-shaped mouth tool having an extension portion and a driving channel for guiding said driver member, a magazine opening into said driving channel, and a vent passage extending from the inner face of said stop member along said driving channel towards the forward end of said driver member, the vent passage venting the second cylinder space below said working piston to atmosphere until the downwardly moving driver member closes off said vent passage, said stop member comprising a recess facing said mouth tool, said recess sealingly receiving the extension portion of said mouth tool in a resiliently biased engagement between said recess and said extension portion.

5,511,715
FLYWHEEL-DRIVEN FASTENER DRIVING TOOL AND
DRIVE UNIT

John P. Crutcher, Cincinnati; Delbert E. Lucas, Fairfield;
David A. D'Amico, Lebanon, and Erick D. Hunter, Center-
ville, all of Ohio, assignors to Sencorp, Newport, Ky.

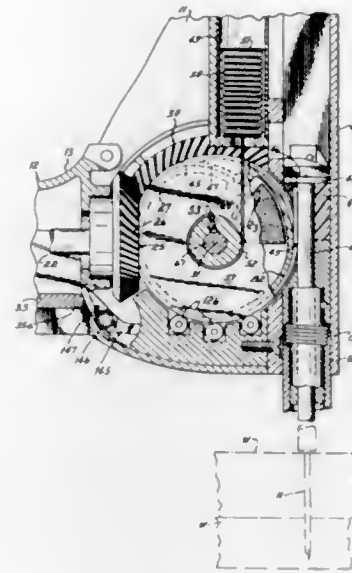
Continuation-in-part of Ser. No. 12,884, Feb. 3, 1993, Pat. No.
5,320,270. This application Jan. 5, 1994, Ser. No. 177,840

Int. Cl.⁶ B25C 1/06

U.S. Cl. 227—131

25 Claims

5. A tool for driving fasteners, said tool comprising:
a fastener driving ram in said tool;



a magazine disposed with respect to said tool for delivering a fastener to a position approximate an end of said ram so that said ram can engage and drive said fastener from said tool;
a rotatable flywheel;
a motor for rotating said flywheel;
a rotatable drum;
a first cable attached to and extending between said drum and said ram;
a clutch for selectively coupling said flywheel to said drum to rotate said drum and pull said first cable to drive said ram in a fastener driving stroke to drive said fastener;
a spring for returning said ram to a start position after a fastener has been driven, wherein said spring is attached to said drum and is loaded when said drum is selectively driven by said flywheel;
and further including a second return cable attached between said spring and said drum, said drum including a first cable wind-up circumferential surface and said tool including a second cable wind-up circumferential surface connected for re-winding said drum and of less diameter than that of said first cable circumferential wind-up surface.

5,511,716
FORWARD ACTING, STAPLE MACHINE WITH PASSIVE
RELEASE

Joel S. Marks, Los Angeles, Calif., assignor to Worktools, Inc.,
Chatsworth, Calif.

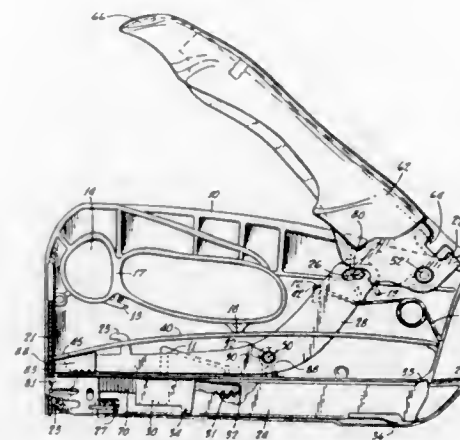
Division of Ser. No. 290,088, Aug. 12, 1994, Pat. No.
5,427,299, which is a continuation-in-part of Ser. No. 74,941,
Jun. 10, 1993, Pat. No. 5,407,118. This application Jun. 5,
1995, Ser. No. 461,714

Int. Cl.⁶ B25C 5/06

U.S. Cl. 227—132

6 Claims

1. A fastening device comprising:
a housing having a front end with finger openings, a bottom, and an internal wall;
a vertical track having a base coextensive with the housing bottom, and located at the front end of the housing;
a plunger slidably disposed within the vertical track;
an ejection opening in the housing bottom at the base of the vertical track;
a wobble lever having a front end and a back end, hingeably attached to the internal wall at a first pin, wherein the back end includes an open slot;
a roller linkage disposed within the open slot;
a handle lever having a distal end and a proximal end, wherein the proximal end is hingeably attached to the internal wall, and includes a bearing surface engaging the roller linkage;



a lateral pressure spring attached to the internal wall and the back end of the wobble lever, biasing the front end of the wobble lever in a first vertical direction;
a flat spring pivoting on the internal wall linked to the front end of the wobble lever through an angled tab to bias the front end in a first lateral direction, and biasing the front end of the wobble lever in the first vertical direction, and wherein the front end of the flat spring engages the plunger;
a release ledge disposed on the internal wall near the front end of the wobble lever, laterally positioning the front end of the wobble lever in a second lateral direction that has an opposite sense to the first lateral direction;
a means for feeding fasteners, disposed in the housing placing a fastener at the base of the vertical track;
wherein depressing the distal end of the handle lever displaces the back end of the wobble lever in the first vertical direction by transfer of force through the roller linkage;
wherein the displacement of the wobble lever pivots the front end thereof in a second vertical direction having an opposite sense to the first vertical direction, and simultaneously displacing the plunger in the second vertical direction;
wherein continuous displacement of the front end of the wobble lever slides the front end thereof out of engagement with the release ledge and the angled tab forces the front end of the wobble lever in the first lateral direction disengaging the front end of the wobble lever from the flat spring;
wherein the released flat spring moves in the first vertical direction and simultaneously moves the plunger in the first vertical direction, and the plunger striking a fastener in the vertical track and ejecting the fastener out of the housing through the ejection opening;
wherein the lateral pressure spring biases the back end of the wobble lever in the first lateral direction and pivoting the front end of the wobble lever in the second lateral direction; and
wherein the lateral pressure spring biases the front end of the wobble lever in the first vertical direction, pivoting the back end of the wobble lever in the second vertical direction and the wobble lever slidably and resiliently engaging a return cam thereby displacing the front end of the wobble lever in the first lateral direction, positioning the front end of the wobble lever in engagement with the front end of the flat spring.

5,511,717
MEANS FOR ALIGNING THE EDGES OF PLATE-LIKE
BODIES TO BE WELDED

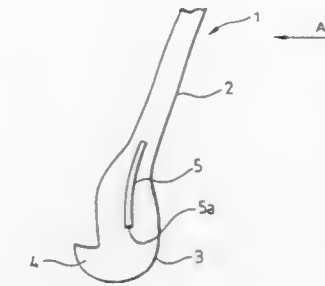
Tuomo Uusitalo, Isojoenranta 44, FIN-28240 Pori, Finland
Filed Apr. 11, 1995, Ser. No. 367,329

Claims priority, application Finland, Sep. 4, 1992, 923970
Int. Cl.⁶ B23K 37/04

U.S. Cl. 228—49.4

6 Claims

1. Means for aligning the edges of plate-like bodies for welding said edges together, comprising a plate-like support member to be



inserted into a gap between the edges to be welded, and support means positioned on the opposite sides of the plates and arranged to press the edges of the bodies to be welded into the same plane, the support member being provided on one side with an abutment which is transverse to the support member and intended to be positioned against the surface of the upper body on the side of the abutment; the support member being further provided at one edge with a plate-like pointed end support positioned at a distance from the abutment and forming an angle with the support member on the side opposite to the abutment, and turning means for turning the aligning means in the direction of the joint to be welded, whereby, to align the bodies to be welded, the support member is inserted into the gap between the bodies with the pointed end support ahead and then turned into an upright position so that the abutment will bear against the surface of the upper body on its side and the pointed end support presses the lower surface of the other body towards the abutment so that the plates are displaced substantially into the same plane.

5,511,718
PROCESS FOR MAKING MONOLAYER
SUPERABRASIVE TOOLS
James T. Lowder, Columbus, and Robert W. Evans, Worthing-
ton, both of Ohio, assignors to Abrasive Technology, Inc.,
Westerville, Ohio

Filed Nov. 4, 1994, Ser. No. 334,671

Int. Cl.⁶ B23K 1/20

U.S. Cl. 228—103

3 Claims

1. In a method for making braze monolayer abrasive tools performing the steps of:
a) applying braze alloy particles to an abrasive tool blank form;
b) making a weight determination of the braze alloy particles applied to said blank form;
c) comparing the weight of the braze alloy particles determined in step (b) to a first weight target and determining if the weight of the braze alloy particles meets the first weight target;
d) applying a monolayer of superabrasive particles to the blank form if said comparison determination is positive to form a tool assembly;
e) making a weight determination of the superabrasive particles applied in step (d);
f) comparing the weight of the superabrasive particles determined in step (e) to a second weight target and determining if the weight of the superabrasive particles meets said second weight target; and
g) placing said tool assembly in a brazing atmosphere to cause said braze alloy to melt and bond said superabrasive particles to said tool blank form if the comparison determination in step (f) is positive.

5,511,719

PROCESS OF JOINING METAL MEMBERS

Toshihiro Miyake, Inuyama; Katuya Bando, Anjo; Toshiaki Yagura, Nukata, and Koji Kondo, Toyohashi, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

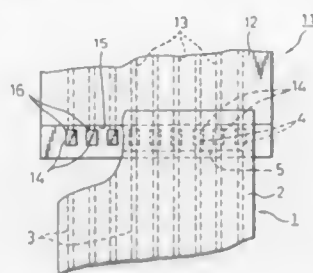
Filed Jun. 1, 1994, Ser. No. 251,921

Claims priority, application Japan, Jun. 1, 1993, 5-158024

Int. Cl.⁶ B23K 1/20

U.S. Cl. 228—106

5 Claims



- 1 A process of joining metal members, comprising the steps of: providing a first group of a plurality of metal members, each metal member having a solder bead formed thereon; providing a second group of a plurality of metal members, each metal member of said second group having a solder bead formed thereon; abutting said first group of metal members against said second group of metal members by direct contact between said solder beads; applying ultrasonic vibration through said solder beads of said first and second groups of metal members; terminating said application of ultrasonic vibration; and thereafter, heating and thereby fusing said solder beads to join said first and second groups of metal members.

5,511,720

FLEXIBLE METAL HOSE CONNECTOR AND METHOD OF FORMING SAME

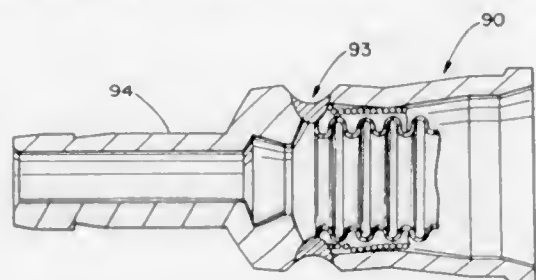
Stephen J. Zaborski, Bedford, and Gregory Kreczko, Hudson, both of Ohio, assignors to Swagelok Quick-Connect Co., Hudson, Ohio

Continuation-in-part of Ser. No. 348,722, Dec. 1, 1994, which is a continuation-in-part of Ser. No. 897,441, Jun. 2, 1992, Pat. No. 5,404,632. This application Feb. 10, 1995, Ser. No. 386,527

Int. Cl.⁶ B23K 31/02; F16L 51/02

U.S. Cl. 228—136

6 Claims



1. A method of securing a fitting to a flexible cylindrical metal hose end wherein the flexible metal hose includes a corrugated tube with a braid received over the tube, the method comprising the steps of:

- a) providing a metal fitting including a generally cylindrical first body section having a first end and a second end with a cylindrical bore sized to closely receive the end of the flexible metal hose extending axially inwardly from the first end toward the second end to define a continuous cylindrical side

wall terminating in a radially inwardly extending shoulder, the side wall being of a relatively uniform first thickness from the first end to a first point spaced a short distance from the shoulder and a substantially thinner second thickness from the first point to the shoulder;

- b) cutting the end of the hose to terminate the corrugated tube and the braid in substantially the same plane perpendicular to the axis of the hose;
- c) inserting the cut end of the hose into the cylindrical bore of the fitting to bring the cut end into engagement with the shoulder;
- d) deforming the first body section radially inward to mechanically interlock the braid, tube, and fitting together; and,
- e) welding the fitting to the braid and tube in the area of the thinner second thickness of the first body section from the first point to the shoulder.

5,511,721

BRAZE BLOCKING INSERT FOR LIQUID PHASE BRAZING OPERATIONS

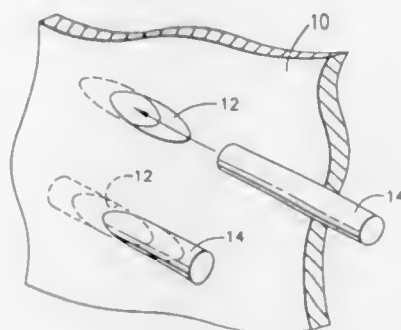
Wayne A. Demo, Fairfield, Ohio, and John R. Planchak, Ksherten, Netherlands, assignors to General Electric Company, Cincinnati, Ohio

Filed Nov. 7, 1994, Ser. No. 334,981

Int. Cl.⁶ B23K 1/20; B23P 15/04

U.S. Cl. 228—216

9 Claims



1. A method for preventing the flow of a joining material into a void in an article during a joining operation, the method comprising the steps of:

forming a preform insert comprising a refractory metal oxide powder dispersed in a polymeric solid such that the preform insert is a flexible solid having a shape and size sufficient to fill the void in the article;

- inserting the preform insert in the void in the article such that the preform insert fills the void in the article;
- applying the joining material to a surface of the article;
- heating the article so as to melt and flow the joining material and burn off the polymeric solid so as to leave the refractory oxide in the void, such that the refractory oxide prevents the flow of the joining material into the void during the heating step;
- cooling the article; and
- removing the refractory oxide.

5,511,722

RECLOSABLE FLIP-TOP CARTON

Rodney D. Dixon, Burlington, N.C., assignor to Mebane Packaging Corporation, Mebane, N.C.

Filed Nov. 21, 1994, Ser. No. 342,727

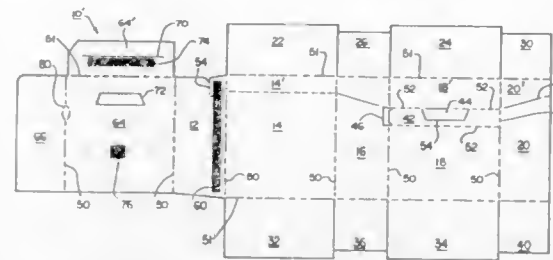
Int. Cl.⁶ B65D 5/66; 5/68

U.S. Cl. 229—225

16 Claims

1. A flip-top reclosable carton for packaging articles, said carton comprising:

- (a) front, rear and side wall panels, said side wall panels having generally horizontally extending slits to form the side wall



panels of a flip-top and said rear wall panel being scored to form a hinge between said flip-top and the bottom portion of said carton;

- (b) top and bottom wall panels foldably attached to at least one of said front rear and side panels;
- (c) a perforated tear strip located on said front panel and extending between said slits in said side panels, whereby removing said tear strip allows said flip-top to be opened;
- (d) a closure, said closure including a locking tab formed along the bottom front edge of said flip-top and a first inner front panel adjacent to said front panel having an aperture adapted to receive said locking tab; and
- (e) a second inner panel foldably attached along the top edge of said first inner panel and extending below said aperture to overlie said aperture to prevent said articles in said carton from spilling through said aperture.

5,511,723

COMBINATION FAUCET AND METHOD OF MIXING HOT WATER WITH COLD WATER

Toshio Eki, and Toshiharu Ohtsuka, both of Kitakyushu, Japan, assignors to Toto Ltd., Japan

PCT No. PCT/JP93/01712, § 371 Date Jul. 22, 1994, § 102(e) Date Jul. 22, 1994, PCT Pub. No. WO94/12920, PCT Pub. Date Jun. 9, 1994

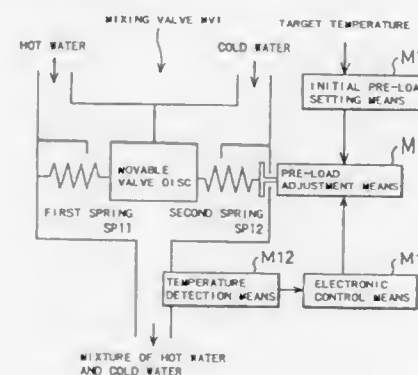
PCT Filed Nov. 22, 1993, Ser. No. 256,768

Claims priority, application Japan, Nov. 25, 1992, 4-339619; Nov. 30, 1992, 4-345364; Jan. 8, 1993, 5-018169

Int. Cl.⁶ G05D 11/00; 23/13

U.S. Cl. 236—12.12

19 Claims



1. A combination faucet comprising:

- a mixing valve having a movable valve member for adjusting a mixing ratio of hot water to cold water;
- a first spring comprising a material which varies a spring constant of said first spring according to a temperature variation in a predetermined temperature range, said first spring pressing said movable valve member in a predetermined first direction for reducing the ratio of said hot water to said water mixture of hot water and cold water flowing out of said mixing valve;
- a second spring for pressing said movable valve member in a predetermined second direction opposite to said predetermined first direction;

5,511,724

ADAPTIVE CLIMATE CONTROL SYSTEM

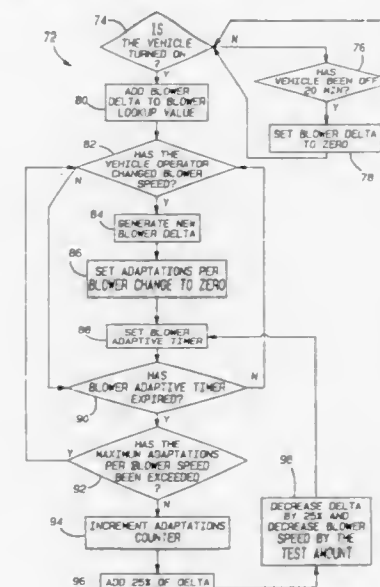
Ronald D. Freiburger, Kokomo; Peter A. Thayer, Indianapolis, both of Ind., and Diane M. Wills, San Diego, Calif., assignors to Delco Electronics Corporation, Kokomo, Ind.

Filed Nov. 23, 1994, Ser. No. 344,189

Int. Cl.⁶ F24F 7/00

U.S. Cl. 236—49.3

24 Claims



1. A method of adapting an electronic climate control system associated with a vehicle to the preferences of an operator of the vehicle, said method comprising the steps of:

- calibrating the electronic climate control system to provide a predetermined air mixture delivery and blower speed for each program number of a range of program numbers, said program numbers being determined by a combination of vehicle parameters that effect the climate within the vehicle, said parameters including a temperature set point controlled by the vehicle operator;
- recalibrating the air mixture delivery for a particular program number that is based on current vehicle parameters when the vehicle operator adjusts the temperature set point; and
- recalibrating the blower speed for a particular program number that is based on current vehicle parameters when the vehicle operator adjusts a blower speed control that controls the blower speed.

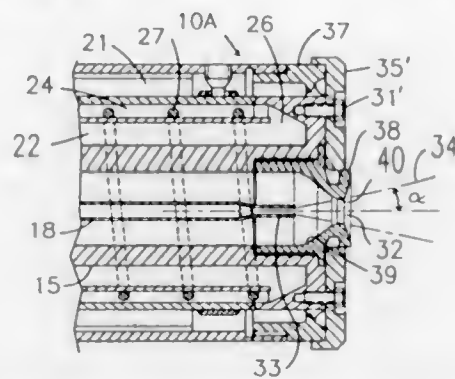
5,511,725

METHOD AND NOZZLE FOR SUPPLYING PASTE FUEL TO A FLUIDIZED BED

Stephen N. Barker, Stevenson, Great Britain, and Thomas Wallin, Hallstahammar, Sweden, assignors to ABB Carbon AB, Sweden

PCT No. PCT/SE92/00665, § 371 Date Mar. 17, 1994, § 102(e) Date Mar. 17, 1994, PCT Pub. No. WO93/06417, PCT Pub. Date Jan. 4, 1993

PCT Filed Sep. 25, 1992, Ser. No. 211,010

Claims priority, application Sweden, Sep. 27, 1991, 9102828
Int. Cl.⁶ F23C 11/02; F23K 5/00; B01J 4/00; F27B 15/08
U.S. Cl. 239—8 8 Claims

1. A method for comminuting paste fuel supplied from a nozzle to a fluidized bed, wherein the fuel in the nozzle is pressed against an annular end surface tapering towards a nozzle outlet, and is distributed by means of a jet of splitting air ejected from the nozzle centrally of the fuel flow, upstream of the nozzle outlet, comprising the additional step of imparting the shape of a cone to the jet of splitting air in the absence of a cone shaped deflection cone at the nozzle outlet, with an outer edge of the cone of splitting air being tangent to an inner edge of the nozzle outlet.

5,511,726

NEBULIZER DEVICE

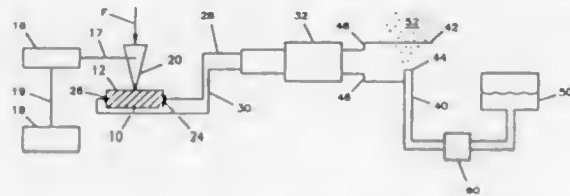
Bernard J. Greenspan, Richland, Wash.; Owen R. Moss, Cary, N.C.; Keith E. Schieffer, Gahanna, Ohio, and James L. Elck, Benton City, Wash., assignors to Battelle Memorial Institute, Richland, Wash.

Continuation-in-part of Ser. No. 823,922, Jan. 22, 1992, abandoned, which is a continuation of Ser. No. 248,558, Sep. 23, 1988, Pat. No. 5,115,971. This application Feb. 23, 1993, Ser. No. 95,815

Int. Cl.⁶ B05B 1/08; 5/025

U.S. Cl. 239—102.2

11 Claims



1. A nebulizer which is adapted for producing finely divided aerosols having uniformly sized droplets yet which may be manually powered by hand-gripping pressure, said nebulizer comprising:

- (a) a piezoelectric crystal,
- (b) means for manually deforming said crystal so as to generate a high voltage,
- (c) a projection constructed and arranged for being supplied with a flow of liquid to be atomized,
- (d) means for applying said voltage generated by said crystal to said projection,

(e) means for regulating the value of the voltage as applied to said projection, as well as for automatically controlling the duration of said application of said voltage in order to provide a predetermined dose of said liquid, and

(f) means for mechanical positive displacement fluid control for controlling a total amount of liquid supplied with each crystal deformation and subsequently atomized by the projection.

5,511,727

WAVE SPRINKLER WITH IMPROVED ADJUSTABLE SPRAY ASSEMBLY

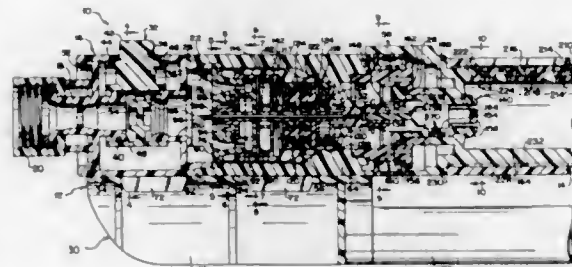
Lawrence P. Heren; Jerry R. Hayes, both of East Peoria, Ill., and Thomas R. Krueger, Edgewood, Ky., assignors to L. R. Nelson Corporation, Peoria, Ill.

Filed Jun. 1, 1994, Ser. No. 252,555

Int. Cl.⁶ B05B 3/16; 1/16

U.S. Cl. 239—242

14 Claims



1. A wave sprinkler assembly comprising a housing and base assembly providing a water inlet for communication with a source of water under pressure and an outlet communicating with said inlet,

a tubular spray assembly mounted on said housing and base assembly for oscillatory movement with respect thereto, said tubular spray assembly having an inlet end disposed in sealed water communicating relation with said outlet so that an interior of said tubular spray assembly receives water under pressure from said outlet, a closed end and a series of longitudinally spaced water stream outlets between said inlet end and said closed end,

an oscillating mechanism carried by said housing and base assembly constructed and arranged to be operable by water flowing between said water inlet and said outlet to oscillate said tubular spray assembly when said water inlet is communicated with a source of water under pressure,

said tubular spray assembly including a tubular member and an elongated strip of flexible material having a number of said series of longitudinally spaced water stream outlets extending therethrough,

said tubular member including an elongated section having transverse opening-defining and interior strip-engaging surfaces thereon,

said strip having interior pressure responsive and exterior mounting surfaces therein constructed and arranged so that when said strip is inserted within said tubular member through an end thereof and moved radially outwardly into an operative position with respect to said elongated section of said tubular member the interior pressure responsive and exterior mounting surfaces of said strip are engaged respectively (1) by the water under pressure within the interior of said tubular spray assembly and (2) by an interior-strip-engaging surface of said tubular member so that engagement of the water under pressure with the strip enhances engagement of the strip with the tubular member,

each water stream outlet in said strip extending within an opening in said tubular member defined by an opening-defining surface of said tubular member so that water under pressure within the interior of said tubular spray assembly issues from said series of longitudinally spaced water stream outlets as a series of longitudinally spaced water streams which oscillate

as the tubular spray assembly is oscillated to provide a desired sprinkler pattern on a ground area to be sprinkled,

said tubular spray assembly including a second elongated strip of flexible material having a number of said series of longitudinally spaced water stream outlets extending therethrough, said second strip having interior pressure responsive and exterior mounting surfaces therein constructed and arranged so that when said second strip is inserted within said tubular member through an end thereof and moved radially outwardly into an operative position with respect to said elongated section of said tubular member the interior pressure responsive and exterior mounting surfaces of said second strip are engaged respectively (1) by the water under pressure within the interior of said tubular spray assembly and (2) by an interior strip-engaging surface of said tubular member so that engagement of the water under pressure with the strip enhances engagement of the strip with the tubular member, each water stream outlet in said second strip extending within an opening in said tubular member defined by an opening-defining surface of said tubular member so that water under pressure within the interior of said tubular spray assembly issues from said series of longitudinally spaced water stream outlets as a series of longitudinally spaced water streams which oscillate as the tubular spray assembly is oscillated to provide a desired sprinkler pattern on a ground area to be sprinkled,

the number of water stream outlets in each of said strips constituting half of the series of water stream outlets, said water stream outlets in each strip being arranged in adjacent pairs, each adjacent pair extending within a separate opening in said tubular member defined by a transverse opening-defining surface of said tubular member, said tubular member being molded of plastic material with the elongated section having a thickness on one side of the openings therein greater than a thickness on an opposite side thereof so that in the molding operation the plastic material flows between the openings from the one side of greater thickness to the opposite side.

5,511,728

DUAL FLUID ATOMIZER FOR HIGH SOLIDS SOIL PASTE CONTAINING PEBBLES OR AGGLOMERATES

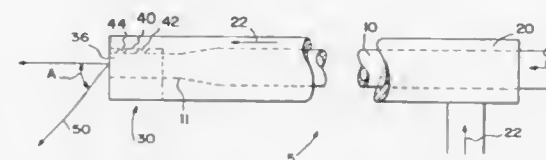
Ralph T. Bailey, Uniontown, Ohio, assignor to The Babcock & Wilcox Company, New Orleans, La.

Filed Jun. 2, 1994, Ser. No. 252,805

Int. Cl.⁶ F23D 11/10

U.S. Cl. 239—423

15 Claims



1. An atomizer for atomizing a material having a high content of solid particles, the atomizer comprising:

an inner conduit for channeling a flow of the material; an outer conduit surrounding the inner conduit, the outer conduit and the inner conduit defining an annular space therebetween, the outer conduit for channeling a flow of air in the space; the inner conduit and the outer conduit forming a discharge end; discharge means at the discharge end of the inner conduit and the outer conduit for discharging an atomized spray which includes the air flow and the material flow, the discharge means being made of a wear-resistant and high temperature-resistant material; and

means for channeling the air flow into the material flow at the discharge end for creating the atomized spray, the discharge means including a first wall, a second wall and a third wall, the first wall being connected to the second wall and the

second wall being connected to the third wall, also the first wall, the second wall, the third wall and the means for channeling the air flow into the material flow defining an opening therebetween, the atomized spray being discharged through the opening.

5,511,729

WASTE COMMINATOR AND CUTTER ELEMENTS THEREFOR

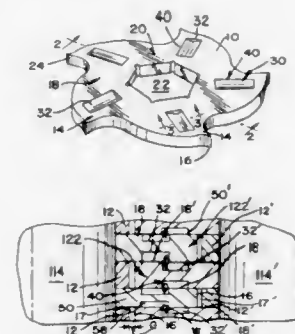
Paul Husain, Bensenville, Ill., assignor to Yeomans Chicago Corporation, Melrose Park, Ill.

Filed Aug. 15, 1994, Ser. No. 290,210

Int. Cl.⁶ B02C 18/06; 18/16; 18/40

U.S. Cl. 241—46.01

26 Claims



1. A comminator for reducing the size of waste particles entrained within a stream of waste, comprising:

a housing defining a comminution chamber, the housing having an inlet which leads into the comminution chamber and an outlet which leads out of said comminution chamber;

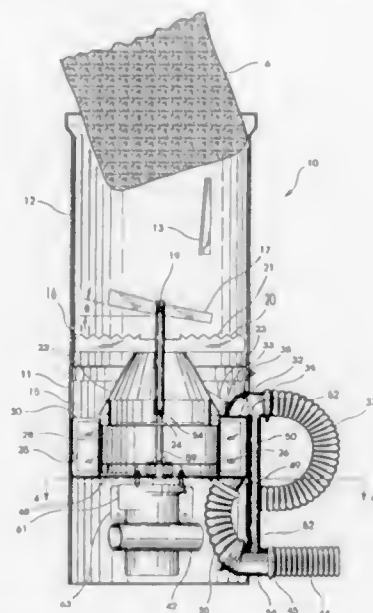
a comminution assembly disposed within said chamber including two rotatable stacks of cutting assemblies disposed in said comminution chamber, each of said cutting assemblies including a plurality of cutter elements axially arranged thereon and separated from each other by a plurality of intervening spacer elements, said cutter elements and spacer elements having different diameters such that said spacer elements define interspaces between adjacent cutter elements of each of said cutting assemblies, said two cutting assemblies being further

intermeshed with each other in a manner whereby a cutter element of one cutting assembly generally opposes and lies substantially coplanar with a spacer element of the other of said two cutting assemblies and wherein a portion of said cutter element projects into a coplanar interspace of an opposing cutting assembly, said cutter elements each having a body portion of predetermined thickness bounded by opposed surfaces, the cutter element body portion including a hub portion which bears against adjoining spacer elements, said cutter elements further including cutting teeth extending outwardly from said cutter element body portion, each of said cutter elements further having a cutting zone defined thereon between said cutting teeth and hub portions thereof, said cutter elements further including surface interruption means disposed in said body portion cutting zone which define a plurality of individual waste particle-receiving pockets spaced apart from each other in a preselected pattern on at least one of said opposed planar surfaces of said cutter element body portions and disposed within said cutting zone, whereby each said individual pocket is associated with an individual cutting tooth, said pockets further defining isolated contact surfaces in said cutter element body portion opposed surfaces against which waste particles may be held and further comminuted.

5,511,730
INSULATION BLOWER HAVING HANDS-FREE
METERED FEEDING

Michael W. Miller, 9920 N. 100 W., Markle, Ind. 46770, and
Kerry W. Miller, 404 W. Central Ave., Bluffton, Ind. 46714
Filed May 18, 1994, Ser. No. 245,765
Int. Cl.⁶ B02C 13/286; 18/22; 23/18
U.S. Cl. 241—57

21 Claims



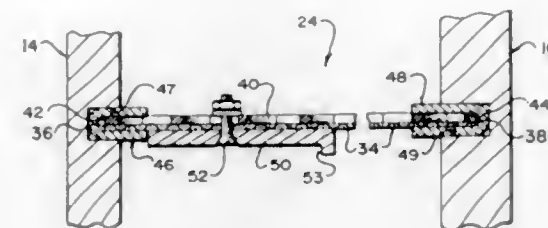
1. A thermal insulation blower comprising:
 - a base frame;
 - a vertical axle;
 - a motor mounted on said frame and having a drive shaft attached to one end of said vertical axle;
 - a hopper sized to receive a bale of thermal insulation attached to said frame;
 - a rotating bale stripper positioned in said hopper and attached to said vertical axle;
 - a blower attached to said frame;
 - a rotating chamber wheel attached to said vertical axle beneath said rotating bale stripper, said wheel having a plurality of chambers distributed around said vertical axle that open upward toward said rotating bale stripper;
 - a stationary air lock attached to said frame and including upper and lower walls sized to enclose at least one of said plurality of chambers and further having a pair of openings;
 - a first conduit connecting said blower to one of said pair of openings of said air lock; and
 - a second conduit having one end connected to the other of said pair of openings;
- wherein said rotating bale stripper includes a stripper having a plurality of spoke members extending radially outward from said vertical axle and a center post feeder attached to said vertical axle above said stripper; and
- wherein said center post feeder is sized and shaped to bore upwardly through a bale of thermal insulation placed in said hopper when said vertical axle is rotating.

5,511,731
SCREEN CONSTRUCTION FOR FLOUR MILLS
Arnold Schmidt, Box 99, Maple Creek, Saskatchewan, Canada
Filed Feb. 28, 1994, Ser. No. 202,813
Claims priority, application Canada, Mar. 18, 1993, 2091954
Int. Cl.⁶ B02C 13/284

U.S. Cl. 241—74

8 Claims

1. A rotary mill for milling grain into flour, comprising:
 - a first end wall;
 - an inlet in the first end wall;



- a closed second end wall opposed to the first end wall;
- a substantially horizontal cylindrical screen having first and second ends;
- first and second screen support means securing the first and second ends of the screen assembly to the first and second end walls, with the screen surrounding the inlet;
- a milling rotor rotatable on a horizontal axis and extending centrally through the screen; and
- a cylindrical within the screen and extending along the screen from the first end thereof, the wear strip comprising part of the first screen support means.

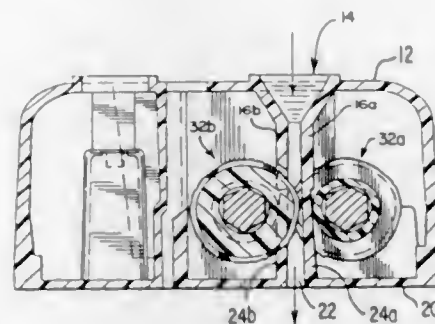
5,511,732
DOCUMENT SHREDDING MACHINE WITH
CONTINUOUS STRIPPER

Bruce R. Kroger, Rockford; Richard A. Hassert, Wheaton;
Anthony C. Storie, Naperville, and James V. Baker, Hoffman
Estates, all of Ill., assignors to Fellowes Manufacturing Com-
pany, Itasca, Ill.

Filed Dec. 28, 1994, Ser. No. 365,568
Int. Cl.⁶ B02C 18/16

U.S. Cl. 241—166

2 Claims



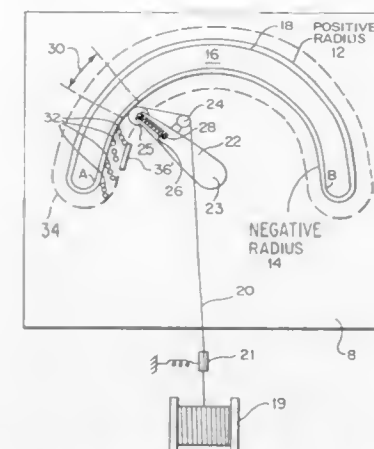
1. A paper shredding machine including a cutting mechanism that defines a cutting area, the paper shredder comprising:
 - a. a top housing unremovably joined to a bottom housing;
 - b. a continuous stripper that extends from the top housing through the cutting area and to the bottom housing comprising upper teeth integrally formed onto the top housing and unremovably joined to lower teeth integrally formed onto the bottom housing.

5,511,733
NEGATIVE RADIUS COIL WINDERS
Swarm S. Kalsi, Pt. Salonga, N.Y., assignor to Northrop Grum-
man Corporation, Los Angeles, Calif.
Filed Feb. 23, 1994, Ser. No. 200,486
Int. Cl.⁶ B65H 81/00; H01B 11/04; H01F 7/06

U.S. Cl. 242—437.3

2 Claims

1. A winding apparatus capable of forming a coil on a surface of a negative radius, comprising:
 - means for supplying wire for the coil;



- roller means for applying a length of wire to the negative radius surface;
- means for urging the applied wire against points on the surface as the roller means passes the points, and maintaining the applied wire thereagainst;
- wherein the urging means comprises:
 - a plate located perpendicular to the axis of the coil and in spaced overlying relation to the surface, the plate having a series of arcuate rows of holes, the rows having successively decreasing radii; and
 - a plurality of pins to be sequentially positioned in the holes, behind a traversal path of the roller means and in contact with the applied wire to prevent separation of the applied wire and the surface.

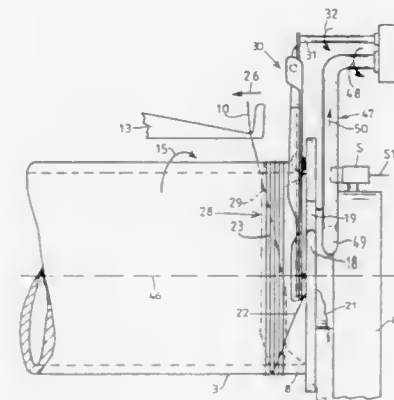
5,511,734
METHOD AND APPARATUS FOR SEVERING THE FREE
YARN END OF A YARN RESERVE WINDING

Jürgen Enger, and Hermann-Josef Vest, both of Mönchenglad-
bach, Germany, assignors to W. Schlafhorst AG & Co.,
Mönchengladbach, Germany
Continuation of Ser. No. 392,412, Feb. 22, 1995, abandoned,
which is a continuation of Ser. No. 45,041, Apr. 7, 1993, aban-
doned. This application Jul. 31, 1995, Ser. No. 509,655
Claims priority, application Germany, Apr. 8, 1992, 42 11
749.6

Int. Cl.⁶ B65H 54/38; 54/71

U.S. Cl. 242—18 PW

10 Claims



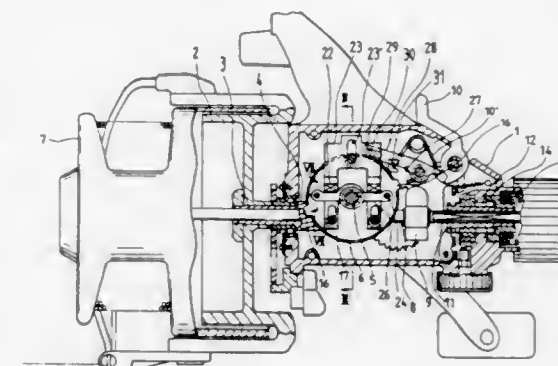
1. A method for winding a yarn reserve on a tube of a bobbin before a yarn package is wound, which comprises:
 - initially placing a piece of yarn on an end of a tube of a bobbin and leaving a free yarn end;
 - covering and fixing the piece of yarn in place with a small number of yarn windings of a yarn reserve; and

severing the yarn at a severing position defined on the tube between the yarn reserve and the tube end while the bobbin is rotating.

5,511,735
SPINNING REEL FOR FISHING WITH DRAG
OPERATION AND SPOOL FREE STATES
Kyoichi Kaneko, Tokyo, Japan, assignor to Daiwa Seiko, Inc.,
Tokyo, Japan
Filed Apr. 15, 1994, Ser. No. 227,879
Claims priority, application Japan, Apr. 16, 1993, 5-112501
Int. Cl.⁶ A01K 89/01

U.S. Cl. 242—245

4 Claims



1. A spinning reel for fishing, comprising:
 - a reel casing;
 - a spool shaft which reciprocates in an axial direction during rotation of a handle shaft, said spool shaft being linked to said handle shaft through a reciprocating mechanism located within said reel casing, wherein a spool is provided at a first axial end of the spool shaft and a drag mechanism is provided at a second axial end opposite from the first axial end;
 - a rotor for winding line onto said spool;
 - a switch means for selectively switching between a spool free state in which said spool shaft is decoupled from said drag mechanism and a drag state in which said spool shaft is operatively coupled to the drag mechanism;
 - a clutch means for selectively engaging the handle shaft with a drive gear, said clutch means being switched between a torque transmission state wherein the rotor is driven through the drive gear by the handle shaft and a rotor free state wherein the rotor rotates independently of the handle shaft; and
 - a return means, provided between the switching means and the clutch means, for returning both the spool from the spool free state to the drag state and the rotor from the rotor free state to the torque transmission state, during rotation of the handle shaft.

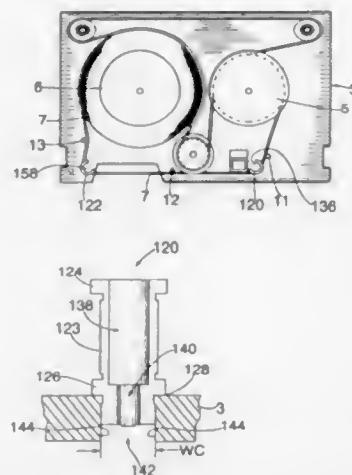
5,511,736
TAPE CASSETTE AND GUIDE PIN
Yoshinori Miura, Shiogama, Japan, assignor to Sony Corpora-
tion, Tokyo, Japan, and Sony Electronics Inc., Park Ridge,
N.J.

Filed Jun. 20, 1994, Ser. No. 262,205
Int. Cl.⁶ G11B 23/107

U.S. Cl. 242—346

13 Claims

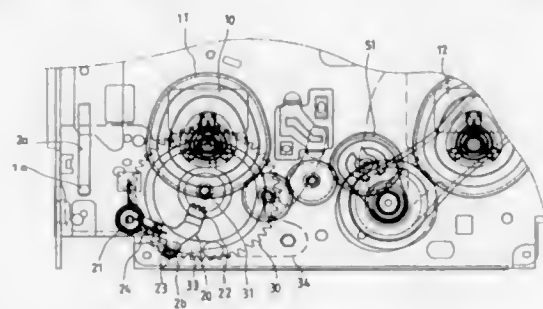
2. A tape cassette, comprising:
 - a cassette casing having at least one aperture;
 - a plurality of reels for advancing tape between said reels, said reels being rotatably mounted within said casing;
 - at least one guide pin positioned for guiding said tape to said reels, said guide pin having:



a cylinder including first and second ends and an interior hole extending between said first end and said second end to form a hollow cylinder having a cylinder wall, said wall having an outer surface;
first and second flanges extending from said outer surface to divide said outer surface into a tape contact section located between said first flange and said second flange and a press fit section located adjacent said second flange on the opposite side thereof from said first flange; and
a slot extending through said wall and between said first end and said second end to form, in a first position, opposed resilient members having a frusto conical shape in said press fit section, wherein upon insertion of said press fit section into said aperture, said opposed resilient members are compressed to a second position and are biased to move toward said first position thus forming a press fit in said aperture for securing said guide pin in said aperture.

5,511,737
BRAKE DEVICE FOR MAGNETIC RECORDING AND REPRODUCING APPARATUS
Myung G. Kang, Seoul; Seong S. Kang; Sung H. Choi, both of Kyungki-Do; Mun C. Joung, Seoul; Byoung G. Jang, Kyungki-Do; Kye Y. Ryu; Hyo C. Yu, both of Seoul, and Sang J. Lee, Kyungki-Do, all of, Rep. of Korea, assignors to Goldstar Co., Ltd., Seoul, Rep. of Korea
Continuation of Ser. No. 73,600, Jun. 9, 1993, abandoned.
This application Apr. 13, 1995, Ser. No. 421,028
Claims priority, application Rep. of Korea, Jun. 17, 1992, 10706/1992; Jun. 17, 1992, 10709/1992; Jun. 23, 1992, 10921/1992
Int. Cl.⁶ G03B 1/04; 1/04; G11B 15/32
U.S. Cl. 242—355.1

6 Claims

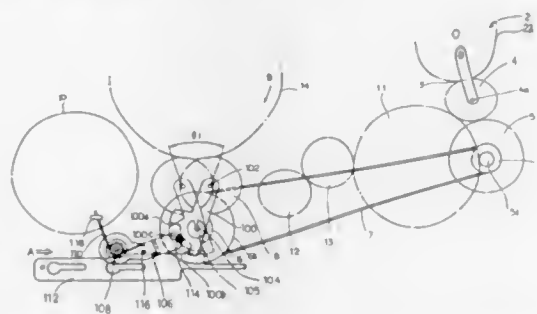


1. A recording and reproducing apparatus comprising:
a deck mechanism including a stationary base plate and a slide base slidably mounted for horizontal movement on said stationary base plate;

a tape supply reel table and a tape take-up reel table mounted on said slide base;
a reel brake device including:
a reel brake rotatably mounted on said slide base so as to brake at least one of said tape supply reel table and said tape take-up reel table, said reel brake having an operating member extending from a surface of said reel brake;
means for biasing said reel brake for rotation in a first direction; and
a drive gear rotatably mounted on a surface of said stationary base plate, said drive gear being provided with an operating protrusion for pushing said operating member of said reel brake in a direction opposite said first direction during a final stage of horizontal movement of said slide base on said stationary base plate, the position of the slide base relative to the stationary base plate determining the position of the operating member relative to the operating protrusion, thereby changing the braking condition of said at least one of said tape supply reel table and said tape take-up reel table.

5,511,738
IDLER CONTROLLING APPARATUS OF A MAGNETIC RECORDING/REPRODUCING APPARATUS
Jae K. Seo; Do Y. Choi, and Gun C. Park, all of Suwon, Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Kyungki-Do, Rep. of Korea
Filed Sep. 19, 1994, Ser. No. 308,580
Claims priority, application Rep. of Korea, Sep. 22, 1993, 93-19111
Int. Cl.⁶ G11B 15/26
U.S. Cl. 242—356

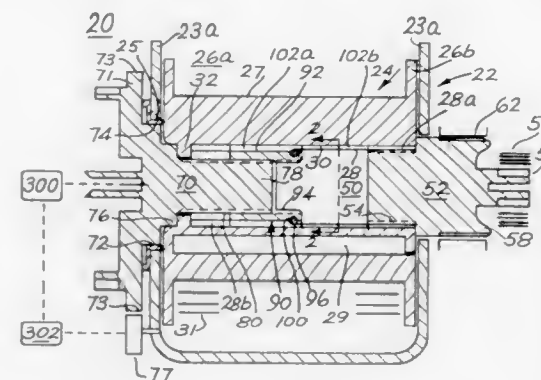
5 Claims



1. In a magnetic recording/reproducing apparatus of the type having a drum, an upper chassis and a lower chassis;
said upper chassis having thereon a supply reel and a take up reel for supplying and taking up a travelling tape;
said lower chassis having thereon a driving source and an idler mechanism for providing the power of said driving source selectively to said supply and take up reels; said idler mechanism being positioned on said lower chassis to swing through a swing angle θ_1 where it meshes with said supply reel when at one extreme of said swing and meshes with said take up reel when at the other extreme of said swing;
and a ring gear operative during loading and unloading of said tape onto and off of said drum; the improvement comprising:
idler controlling apparatus responsive to said ring gear for selectively permitting said idler mechanism to swing through said angle θ_1 and limiting said idler mechanism to a swing through an angle θ_2 , where θ_2 is wholly within θ_1 and wherein the extremes of the swing through angle θ_2 do not permit said idler mechanism to mesh with either said supply reel or said take up reel.

5,511,739
RETRACTOR HAVING A SINGLE SIDED ENERGY ABSORBING SPOOL
Niels Dybro, Utica, and Harold J. Miller, III, Troy, both of Mich., assignors to AlliedSignal Inc., Morristown, N.J.
Filed Nov. 28, 1994, Ser. No. 345,195
Int. Cl.⁶ B60R 22/28
U.S. Cl. 242—379.1

3 Claims

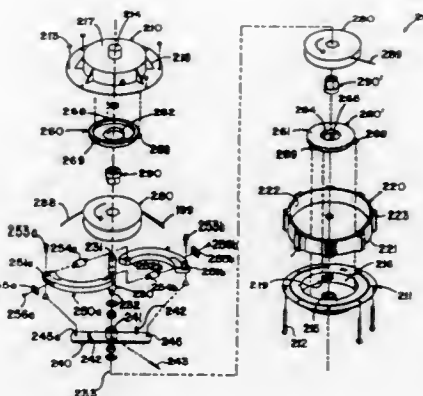


2. An energy absorbing seat belt retractor comprising:
a frame;
a spool rotatably mounted relatively to the frame for protracting and retracting a safety belt wound thereabout,
a lock wheel operatively coupled to the spool, including a plurality of lock teeth associated therewith;
first means for engaging the spool upon sensing a one of a vehicle deceleration and seat belt extraction above certain determinable levels;
second means located within the spool joining the lock wheel to the spool for probe biting relative movement therebetween below a threshold input force level generated in part by occupant load on the seat belt and for generating a controlled energy dissipating reaction force on the seat belt after the input force exceeds the threshold level to permit a controlled rotation of the spool and the controlled payout of the seat belt from the spool, the second means includes:
an axle assembly (50) including third means (90, 90', 90'') movably disposed therein for dissipating energy as it moves by extruding adjacent material, including a splined and threaded carrier translationally movable relative to one of the lock wheel and spool, wherein the carrier includes a plurality of hardened balls (96) proximate its periphery, movable against material of an inner bore of the spool to extrude such material as the balls move with the carrier.

5,511,740
RESISTANCE MECHANISM FOR EXERCISE EQUIPMENT
Craig A. Loubert, Minneapolis; Stephen S. Peterson, Maple Grove, and Stephen A. Rose, Minneapolis, all of Minn., assignors to NordicTrack, Inc., Chaska, Minn.
Filed Mar. 31, 1994, Ser. No. 220,800
Int. Cl.⁶ A63B 21/015
U.S. Cl. 242—381

20 Claims

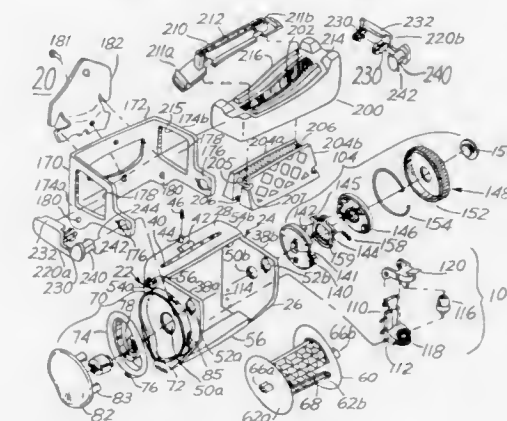
1. A resistance mechanism for exercise equipment, comprising:
a flexible line;
a reel;
a first line securing means on said reel for securing said flexible line to said reel, wherein an end of said flexible line is secured to said first line securing means, and said flexible line is wound about said reel;
a resistance means for resisting unwinding of said flexible line from said reel;
a rewinding means for rewinding said flexible line about said reel; and



a second line securing means on said reel for securing a replacement line to said reel, wherein said flexible line can be completely unwound from said reel and held while an end of said replacement line is secured to said second line securing means, such that said replacement line will automatically wind onto said reel when said flexible line is freed from said first line securing means.

5,511,741
WEB CLAMPING RETRACTOR MECHANISM WITH SWINGING HOUSING
Jeffrey N. Zolkower, Southfield, and Rudy V. Thomas, Sterling Heights, both of Mich., assignors to AlliedSignal Inc., Morristown, N.J.
Filed Sep. 30, 1994, Ser. No. 315,645
Int. Cl.⁶ B60R 22/405; 22/42
U.S. Cl. 242—381.1

7 Claims



1. A retraction mechanism comprising:
a winding housing having a wedge pusher member;
a spool having an axis of rotation fixedly supported within the winding housing, the spool rotationally supported in the winding housing having webbing wound thereon;
a rewind spring for rewinding the webbing onto the spool;
sensor means responsive to one of vehicle deceleration or web acceleration in excess of a determinable limit for pre-blocking the rotation of the spool prior to the initiation of web clamping;
support frame means for rotationally supporting the winding housing, web clamping means supported in the support frame means, in a deactivated condition, for clamping the webbing when activated, wherein after the pre-blocking of the spool and in response to a continued force on the web the winding housing rotates against a bias force of a bias spring located between the winding housing and the support frame means urging the web pusher member into engagement with the web clamping means to clamp the web therebetween.

5,511,742

APPARATUS AND METHOD FOR PRODUCING A SINGLE COIL OF A DOUBLE RUN PIPE

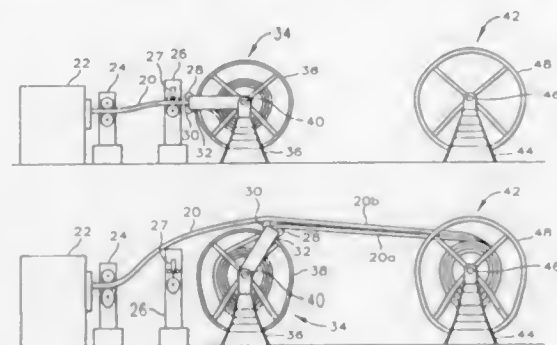
Jimmie G. DeMasters, Wylie, Tex., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Nov. 14, 1994, Ser. No. 339,430

Int. Cl.⁶ B65H 61/00

U.S. Cl. 242—470

13 Claims



1. A method for coiling a plastic pipe having a first portion and a second portion, where the method comprises:
- attaching a first end of said first portion of pipe to a spooler having a first spool;
 - coiling the first portion of said plastic pipe about said first spool;
 - folding said pipe at the second end of said first portion of said plastic pipe to create a folded section;
 - attaching said folded section to a coiler having a second spool; and
 - simultaneously coiling said first portion and said second portion about said second spool such that said first portion is uncoiled from said first spool as it is coiled onto said second spool.

5,511,743

MEDIA INPUT SELECTOR AND METHOD

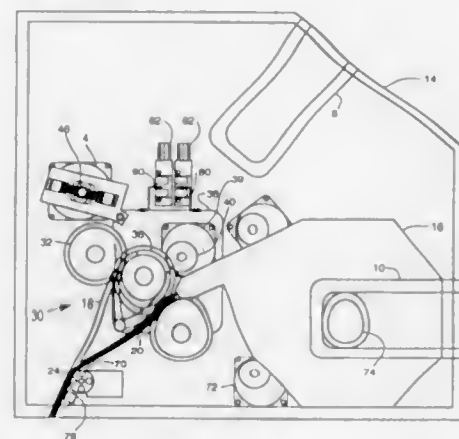
Edward P. Kozlowsky, Sanford, Me., and Joseph R. Lyons, Jr., Wilmington, Mass., assignors to Miles, Inc., Wilmington, Mass.

Filed Nov. 23, 1993, Ser. No. 156,459

Int. Cl.⁶ B65H 19/10; 20/02

U.S. Cl. 242—526

11 Claims



1. A method for selecting media from one of two media supply cassettes to feed the media into a media path, comprising the steps of:
- inputting a command designating a selected supply cassette;
 - automatically positioning a moveable drive roller to be in driving contact with one of two driven rollers respectively mounted adjacent the two media supply cassettes, said posi-

tioning of the drive roller in response to said inputting of the command, to pitch between the drive roller and the one of two driven rollers adjacent to the selected supply cassette a leading edge of media extending out from the selected supply cassette into a feed path of the selected supply cassette; and, c. driving the drive roller thereby rotating said one of two driven rollers and feeding the media out from the selected supply cassette through the feed path and into the media path.

5,511,744

ROLL PAPER FEEDING APPARATUS FACILITATING ROLL PAPER SETTING OPERATION

Takashi Abe; Naoto Yoshino; Takeshi Okoshi, and Hiroyasu Ishizuka, all of Saltama, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

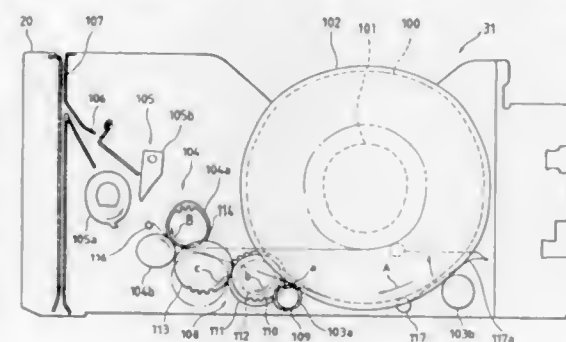
Filed Oct. 14, 1993, Ser. No. 135,631

Claims priority, application Japan, Oct. 30, 1992, 4-292870

Int. Cl.⁶ B65H 16/08

U.S. Cl. 242—564.5

9 Claims



1. A roll paper feeding apparatus comprising:
- roll paper holding means for holding roll paper, paper being supplied from the roll paper by rotation of the roll paper holding means;
 - rotary support means for supporting the roll paper holding means so as to rotate following the rotation of the roll paper holding means;
 - rotary paper holding means disposed in the vicinity of a paper set position, for holding the paper supplied from the roll paper; and
 - rotational force transmission means for transmitting rotational force of the rotary support means to the rotary paper holding means.

5,511,745

VECTORABLE NOZZLE HAVING JET VANES

Lawrence C. Faupell, North Logan; Steven R. Wassom, Smithfield, and Joseph J. Kliger, North Ogden, all of Utah, assignors to Thiokol Corporation, Ogden, Utah

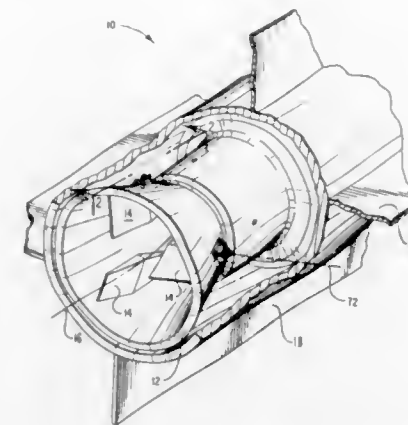
Filed Dec. 30, 1994, Ser. No. 366,848

Int. Cl.⁶ F02K 9/90; 9/84; F42B 10/66

U.S. Cl. 244—3.22

20 Claims

1. A system for providing pitch, yaw, and roll control during the flight of a vehicle, comprising:
- a thrust vector control (TVC) nozzle for providing pitch and yaw control during flight of the vehicle, the TVC nozzle capable of being rotatably mounted to the vehicle and including a forward end, an aft end, and a longitudinal axis;
 - at least two jet vanes mounted aft of the forward end of the TVC nozzle and positioned generally about the longitudinal axis of the TVC nozzle to receive combustion products passing through the TVC nozzle, each of the jet vanes being rotatably mounted about a corresponding vane axis such that the jet vanes may be positioned at predetermined angles with respect



- to the longitudinal axis of the TVC nozzle, thereby providing roll control during flight of the vehicle; and
- a jet vane actuation mechanism, the jet vane actuation mechanism being in communication with each jet vane for controlling the angle at which the jet vane is positioned, the jet vane actuation mechanism configured to rotate the jet vanes about their respective axes at identical angles such that the jet vanes provide only roll control during flight of the vehicle.

5,511,746

CONVERTING WRIST TO FINGER KITE HANDLE

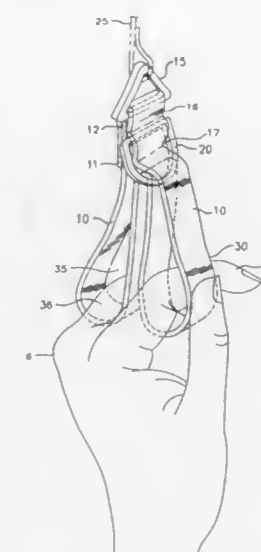
Todd Hostetter, Seattle, Wash., assignor to Kathy Goodwind, Seattle, Wash.

Filed Sep. 6, 1994, Ser. No. 300,228

Int. Cl.⁶ A63H 27/04; 27/08

U.S. Cl. 244—155 A

14 Claims



1. A converting wrist to finger kite handle comprising:
- a strip of flexible material formed into a band with an opening sized for a hand;
 - a kite string attachment means integral to said flexible strip;
 - a conversion means permitting said material to be formed into a plurality of loops, said conversion means attached to the strip, separate from and adjacent to said kite string attachment means.

5,511,747

ARRANGEMENT FOR THERMAL PROTECTION OF AN OBJECT, SUCH AS A THERMAL SHIELD

Pierre Parrot; Philippe Lalanne, both of Bordeaux; Philippe Herman, Saint Medard en Jalles, and Jean-Louis Tisne, Martignas, all of, France, assignors to Aerospatiale Societe Nationale Industrielle, Cedex, France

Continuation of Ser. No. 45,472, Apr. 13, 1993, abandoned.

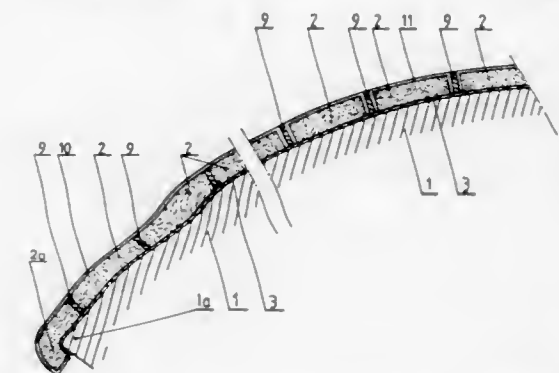
This application Nov. 30, 1994, Ser. No. 352,685

Claims priority, application France, Apr. 23, 1992, 92/05260

Int. Cl.⁶ B64G 1/58

U.S. Cl. 244—158 A

13 Claims



1. An arrangement for thermal protection of an object, comprising:
- a frame structure;
 - thermal insulating material covering said frame structure, said thermal insulating material comprising a porous aggregate of fibers selected from the group consisting of carbon short fibers and silica short fibers, said fibers comprising a diameter of less than or equal to 10 micrometers, and a length less than or equal to 700 micrometers;
 - a binder linking said fibers together, said binder comprising the same constituent as said fibers; and
 - said aggregate comprising a specific gravity of between about 0.2 and 0.5, and is in the form of at least one monobloc element, said at least one monobloc element is attached to a surface of said frame structure, and a fixing adhesive layer is discontinuously positioned between inner faces of said plurality of slabs and said surface of said frame structure.

5,511,748

METHOD FOR EXTENDING THE USEFUL LIFE OF A SPACE SATELLITE

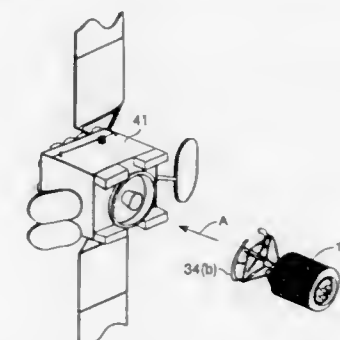
David R. Scott, 1300-B Manhattan Ave., Manhattan Beach, Calif. 90266

Filed Nov. 12, 1993, Ser. No. 152,459

Int. Cl.⁶ B64G 1/24; B64C 37/02; B64D 5/00

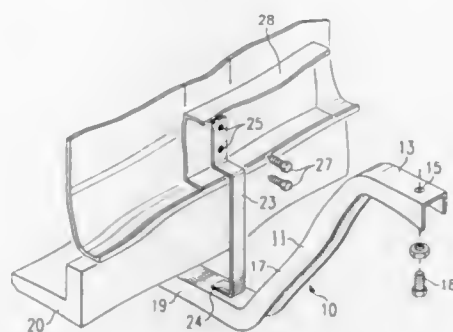
U.S. Cl. 244—161

1 Claim



1. A method for adjusting the life of a target satellite said method comprising

- a) mechanically connecting an unmanned extension spacecraft to said target satellite, forming a docked satellite-spacecraft combination, said unmanned extension spacecraft including:
- guidance, navigation and control systems carried by said spacecraft for position control of said docked satellite-spacecraft combination; and
 - an onboard propellant supply carried by said spacecraft for position control of said docked satellite-spacecraft combination; and
- b) activating said guidance, navigation and control systems carried by said spacecraft to provide position control for said satellite-spacecraft combination.



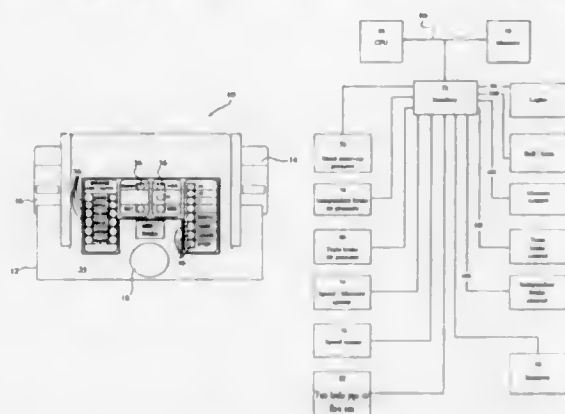
5,511,749

REMOTE CONTROL SYSTEM FOR A LOCOMOTIVE
Folkert Horst, Pierrefonds; Oleh Szklar, St-Hubert; Kelly Dolg, Nepean; George R. Cass, and J. L. Bousquet, both of Montreal, all of, Canada, assignors to Canac International, Inc., Montreal, Canada

Filed Apr. 1, 1994, Ser. No. 221,704
Int. Cl.⁶ B61L 3/00

U.S. Cl. 246—187 A

16 Claims



1. A remote control system in connection with a locomotive including a main tank with compressed air under pressure, a pneumatic brake line in which compressed air flows, and a member applying tractive power, said remote control system comprising:

- a transmitter for generating an RF signal; and
- a slave controller mounted on-board the locomotive, said slave controller having a first sensor responsive to the pressure of the compressed air in the main tank of the locomotive and a second sensor responsive to the flow of compressed air in the pneumatic brake line, said slave controller being responsive to outputs of said sensors to enable application of tractive power to the locomotive only when the pressure in the main tank is above a predetermined level and the flow of air in the pneumatic brake line is below a predetermined level.

5,511,750

MOUNTING BRACKETS FOR MOTOR VEHICLE RUNNING BOARDS

Martin Evenson, Dallas, Tex., assignor to Morgan Industries, Inc., Dallas, Tex.

Filed Mar. 21, 1994, Ser. No. 210,925
Int. Cl.⁶ F16M 11/00

U.S. Cl. 248—200

7 Claims

1. A bracket for mounting a running board to a motor vehicle comprising:

- a z-shaped member having an upper portion for securing the bracket to an underside of the vehicle and a lower portion for supporting a running board, the lower portion being vertically and laterally displaced from the upper portion to provide correct location of the running board;

and a securing arm secured to and extending upwardly from the lower portion for securing the bracket to a rocker panel of the vehicle, the securing arm being formed of a thin gauge sheet material that is relatively deformable to enable an upper portion of the securing arm to conform to a slope of the rocker panel of the vehicle and to be secured thereto.

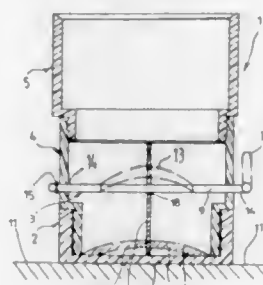
5,511,751

STRUCTURE OF A STAND FOR LIQUID VESSELS
Hung C. Shen, No.12, Alley Chi Hsiang, Tung Shan Rd., Tsao Tun Town, Nan Tou, Taiwan

Filed Nov. 16, 1993, Ser. No. 152,747
Int. Cl.⁶ F16M 13/00

U.S. Cl. 248—205.8

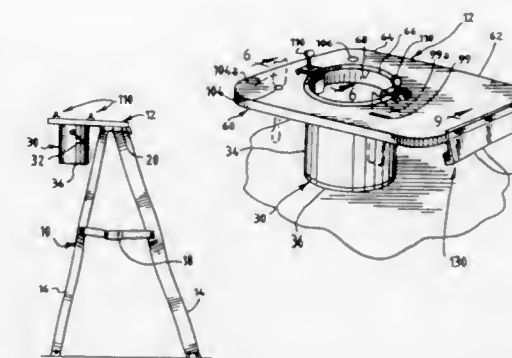
1 Claim



1. A structure of a stand for supporting liquid holding vessels on a base surface, comprising:

- a support cylinder having a longitudinally directed bore extending from a closed bottom end to an open upper end for receiving the liquid holding vessels therein, said support cylinder having screw threads formed on an external surface thereof adjacent said closed bottom end;
- a receiving cylinder formed by a longitudinally extended substantially rigid first tubular wall member coupled to said support cylinder, said first tubular wall member defining a longitudinally directed through bore extending between opposing open upper and lower ends of said receiving cylinder, said receiving cylinder having screw threads formed on an internal surface of said first tubular wall member adjacent said upper end thereof for threaded engagement with said screw threads of said support cylinder;
- an elastic base formed of a pliant material and having an upper end coupled to said lower end of said receiving cylinder, said elastic base having a cylindrical contour defined by a second tubular wall member having an open upper end, and an end wall member integrally formed at a lower end of said second tubular wall member, said end wall member having opposing internal and external surfaces, said elastic base being coupled to said receiving cylinder by engagement of an external surface of said first tubular wall member adjacent said lower end of said receiving cylinder by an internal surface of second tubular wall member; and,

means for lifting a central portion of said end wall member disposed within said receiving cylinder, said lifting means including (1) a lift plank member having one end coupled to said central portion of said end wall member and a through opening formed in an opposing end thereof, and (2) a lifting shaft rotatably coupled to said receiving cylinder, said lifting shaft having an arcuate central portion coupled to said lift plank member through said through opening formed therein and a pair of linearly directed end portions passing through respective through bores formed in opposing sides of said first tubular wall member, whereby rotation of said lifting shaft raises said lift plank and thereby lifts said central portion of said end wall member while a perimeter portion of said end wall member remains in contiguous contact with the base surface for creating a suction force between said external surface of said end wall member and the base surface.



5,511,752

SUCTION CUP WITH VALVE

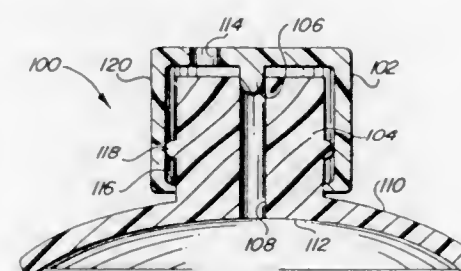
Brig E. A. Trethewey, 4238 N. 68th Pl., Scottsdale, Ariz. 85251-2312

Filed Jun. 2, 1994, Ser. No. 253,063

Int. Cl.⁶ F16B 47/00

U.S. Cl. 248—205.9

3 Claims



1. A valved suction cup assembly, said assembly comprising in combination:

- a cup element defining a concave space;
- a stem having a first cross-section extending from said cup element;
- a passageway extending through said stem from the concave space to an opening in the surface of said stem; and
- a cap having a second cross-section and being axially repositionable upon said stem for selectively opening and closing said opening in said stem as a function of the position of said cap relative to said stem, the relative cross-sections of said stem and said cap accommodating tilting of said cap relative to said stem to open and close said opening in said stem.

5,511,753

PAINT CAN HOLDER

Randy R. Lage, 1867 Slippery Rock Rd., Naperville, Ill. 60565

Filed Dec. 7, 1994, Ser. No. 350,812

Int. Cl.⁶ E04G 3/08

U.S. Cl. 248—238

10 Claims

1. A paint can holder adapted for suspending a paint can with the mouth of the can open to enable painting directly from the can, said can having a sealing rim around its mouth, which comprises:

- a paint can support adapted to be mounted on a ladder, means for mounting said support on a ladder,
- said support including a collar portion adapted for seating on said sealing rim with the mouth of the can open and covering the rim while seated thereon,

said collar portion defining an opening substantially registering with the inner periphery of said paint can rim when seated thereon,

a sealing ring depending from said collar portion adjacent to said opening defined thereby and adapted for being received telescopically within said paint can rim with the mouth of the can open when the collar portion is seated on the rim, in a friction fit between the sealing ring and said inner periphery of the paint can rim, to prevent flow of paint therebetween, and means for detachably connecting said paint can to said support for suspending the paint can from the support with said collar portion seated on said rim and said sealing ring received within said rim in said friction fit.

5,511,754

CUP HOLDING DEVICE

Christian J. Johannsen, 2665 S. Bayside Dr., #1200, Coconut Grove, Fla. 33133

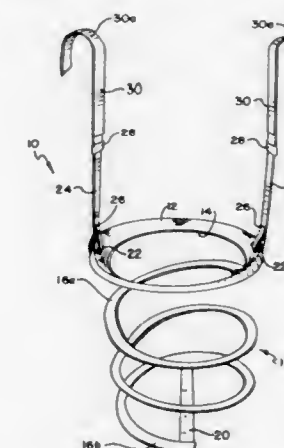
Continuation of Ser. No. 149,673, Nov. 9, 1993, abandoned.

This application Oct. 11, 1994, Ser. No. 320,371

Int. Cl.⁶ A47K 1/08

U.S. Cl. 248—311.2

7 Claims



1. A cup supporting device for securement onto a frame, comprising:

- a main body member having an opening through which a cup can be inserted;
- supporting means for supporting said main body member from the frame, said supporting means including:

- at least one strap, said at least one strap having a first end connected with said main body member and a second end, and
 - hook means for hooking onto the frame, said hook means being connected to the second end of said at least one strap;
- a helical coil spring for holding said cup therein and for restraining sideward movement of said cup, said helical coil spring having first and second opposite ends and a middle section connecting said first and second ends, with only said first end being secured to said main body member and said middle section and said second end hanging freely such that said

helical coil spring extends downwardly from said main body member, said helical coil spring surrounding an area in alignment with said opening in said main body member, said helical coil spring compressing such that coils thereof are in contact with each other when said helical coil spring is placed on a surface and said main body member is unsupported by said supporting means, and said helical coil spring expanding such that coils thereof separate from each other by a distance depending upon the weight of said cup held thereby when said main body member is supported by said supporting means; and

stop means for supporting said cup, said stop means being secured to said second end of said helical coil spring.

5,511,755

RESILIENT CONTAINER HOLDER

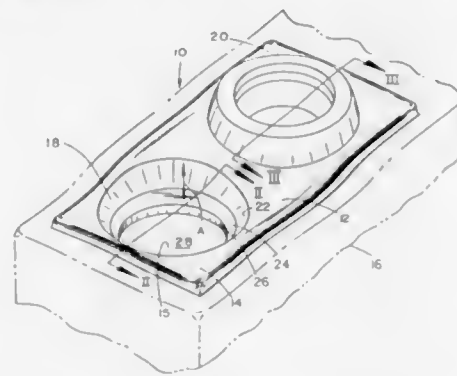
David J. Spykerman, Zeeland, Mich., assignor to Prince Corporation, Holland, Mich.

Filed Oct. 5, 1994, Ser. No. 318,469

Int. Cl.⁶ A47K 1/08

U.S. Cl. 248—311.2

23 Claims



1. A container holder for a vehicle comprising:

a cup-shaped member including a section of resilient material shaped to flex over-center between a first position forming a first container holder and a second position forming a second container holder, the section of resilient material being configured to hold the cup-shaped member in the first position when moved to the first position and also being configured to hold the cup-shaped member in the second position when moved to the second position, so that the first and second container holders can be selectively formed as desired.

5,511,756

BALL GLOVE HOLDING AND MANAGING DEVICE
Ronald E. Spradling, 301 E. Boardwalk Dr., Ft. Collins, Colo. 80525

Filed Mar. 11, 1994, Ser. No. 209,783

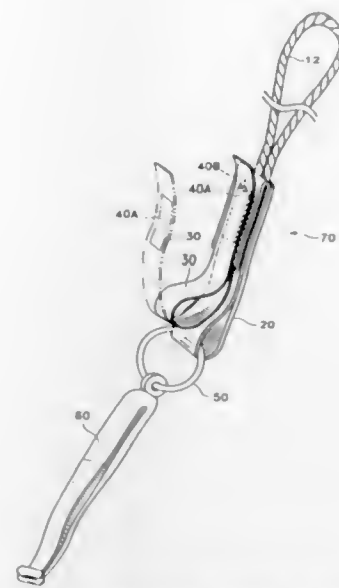
Int. Cl.⁶ A23B 71/00

U.S. Cl. 248—316.7

1 Claim

1. A device for temporarily attaching a ball glove to a support, said device comprising:

- (a) a flexible cord shaped in the form of a loop and having a first end and a second end;
- (b) a flexible strap body having:
 - (i) a first end having an opening that encloses said first and second ends of said flexible cord; and
 - (ii) a second end looped back and attached to said strap body to form a second loop;
- (c) a flexible key strap having:
 - (i) a first end attached to said flexible strap body; and
 - (ii) a second end for releasably attaching to said flexible strap body and retaining an object;



- (d) a first section of hook and loop fastener material attached to said first end of said flexible key strap;
- (e) a second section of hook and loop fastener material attached to said second end of said flexible key strap for attaching said second end of said flexible key strap to said first end of said flexible key strap;
- (f) a key ring interlocking said second loop formed by said flexible strap body;
- (g) a clip for retaining said ball mitt having:
 - (i) a ring-shaped top interlocking said key ring;
 - (ii) a first prong extending away from said ring-shaped top having a proximate end, a mid-section and a distal end;
 - (iii) a second prong extending away from said circular top having a proximate end, a mid-section and a distal end and defining a slot with said first prong, said slot having:
 - (a) a tapered opening formed by said distal ends of said first and second prongs to allow insertion of said ball mitt;
 - (b) a narrow retaining section for retaining the wrist strap of said ball mitt, defined by said distal ends of said prongs;
 - (c) a mid-section for holding said wrist strap during storage, defined by said mid-sections of said prongs.

5,511,757

PLATEN FOR STACKING WHEELED ARTICLES

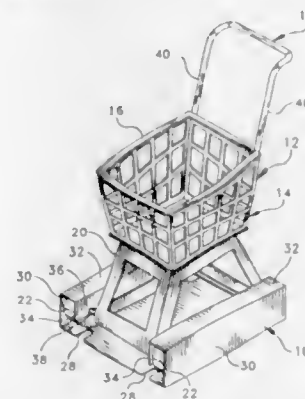
Michael S. Freeland, 46 Whisper Dr., Worcester, Mass. 01609

Filed Jun. 2, 1994, Ser. No. 252,821

Int. Cl.⁶ A47B 91/00

U.S. Cl. 248—346.03

9 Claims



1. A platen for stacking a wheeled article comprising a bottom wall, and two side portions joined to opposite sides of said bottom wall,

wall, said side portions including an outer flange which extends upwardly from said bottom wall, and an inside flange depending from said outside flange which extends downwardly in spaced relation to said outside flange thereby forming a spacing therebetween, said inside flange including spaced slots in the lowermost edge thereof, said wheeled article being received on said bottom wall between said side portions, said side portions being folded over the wheels of said article so that said wheels are received in said spacing, said spaced slots in said inner flange engaging with the hubs of said wheels.

5,511,758

FOLDING STAND FOR NOTEBOOK COMPUTERS

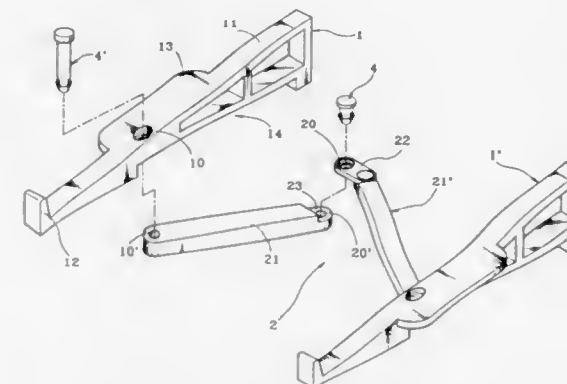
Wan-Sheng Hsu, No. 62, Lane 35, Yu-Shih Rd., Wu-Ku Hsiang, Taipei Hsien, Taiwan

Filed Jan. 25, 1995, Ser. No. 378,554

Int. Cl.⁶ A47B 97/04

U.S. Cl. 248—461

3 Claims



1. A folding stand comprising two parallel supports, each support having a flat top wall for supporting a notebook computer and an elongated bottom opening; and a folding brace connected between said parallel supports and turned between an operative position, in which said parallel supports are spaced from each other, and a non-operative position, in which said parallel supports are abutted against each other, said folding brace comprising two bracing bars and a link, each bracing bar having one end pivotally connected to one end of the bottom opening of one support by a split bolt and an opposite end pivotally connected to one end of said link by a split bolt, said bracing bars being respectively received in the bottom openings of said supports when said folding brace is turned to said non-operative position.

5,511,759

HYDRAULIC CHAIR HEIGHT ADJUSTMENT MECHANISM

Larry DeKraker, Holland, Mich., and Richard P. Thorn, Erie, Pa., assignors to Steelcase, Inc., Grand Rapids, Mich.

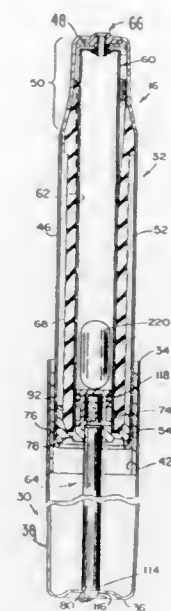
Filed May 26, 1994, Ser. No. 249,544

Int. Cl.⁶ A47C 7/00

U.S. Cl. 248—575

73 Claims

71. A hydraulic actuator, comprising:
a cylinder including incompressible fluid therein;
a piston disposed within said cylinder;
a rod connected to said piston;
a valve on said cylinder for controlling flow of the incompressible fluid into and out of the cylinder; and
a compressible shock absorber disposed within said cylinder and immersed in the incompressible fluid such that said incompressible fluid compresses the compressible shock absorber volumetrically when the incompressible fluid is loaded.



5,511,760

POST INSTALLABLE SELF LOCKING MACHINE LEVELING DEVICE

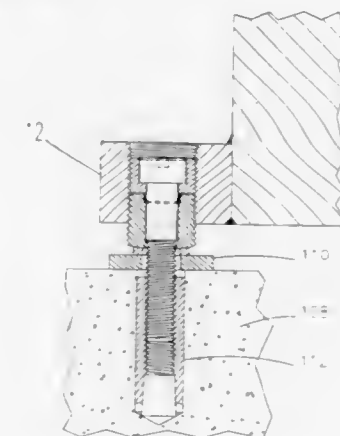
Goro Kambara, 13730 Via Encantado, Valley Center, Calif. 92082

Filed Nov. 2, 1993, Ser. No. 147,133

Int. Cl.⁶ F16M 13/00

U.S. Cl. 248—650

6 Claims



1. A machine leveling device comprising:

- (A) a mounting element for a machine that requires leveling having a female thread therethrough;
- (B) a screw;
- (C) a mounting surface having a female threaded hole to engage with said screw;
- (D) adjusting screw means for adjusting the distance between said mounting element and said mounting surface having a succession of two elongated cylindrical male threaded bodies, #1 body and #2 body each body having a first end and a second end and wherein is included:
 - (D1) coupling means in between said second end of said #1 body and said first end of said #2 body for connecting said two bodies rotationally while allowing an axial movement engagement with said female threaded bore with said coupling means within said mounting element;
 - (D2) a plurality of radial slots for attaching a tool for rotation of said adjusting screw means at said second end of said #2 body; and

(D3) surface engaging means for mounting said adjusting screw means to said mounting surface at said first end of said body

(D4) centrally located bore therethrough which bore has a diameter larger than the diameter of said screw;

whereby said machine leveling device is capable of adjusting and locking the distance between said mounting element and said mounting surface by turning said adjusting screw means and tightening said screw while said surface engaging means provides full complimentary contact;

(E) and further including an adapter bushing means for providing an equivalent adjustment distance for thin mounting elements, said adapter bushing means having an annular body and center bore having a female thread to engage with said adjusting screw means and a male threaded portion and an enlarged end portion, said enlarged end portion including:

(E1) turning means for attaching a tool to facilitate installation into a female threaded hole of corresponding size in said thinner mounting element;

(F) and further including:

(F1) spacer means for occupying the space between said turning means of said adapter bushing means and said mounting element.

5,511,761

APPARATUS AND METHOD FOR FORMING MONOLITHIC FOOTINGS AND FOUNDATION

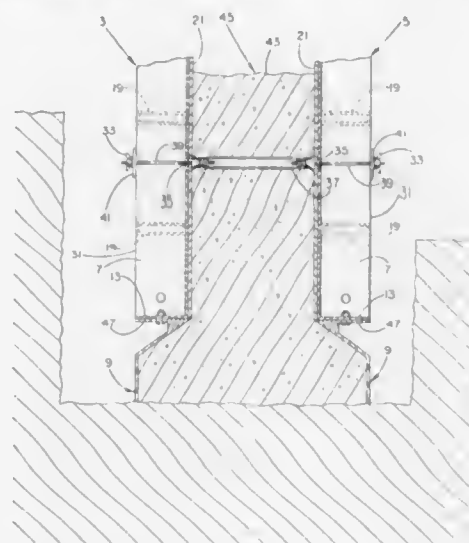
Allan A. Schultz, Rte. 2, Box 79, New Richland, Minn. 56072

Filed Feb. 3, 1994, Ser. No. 191,071

Int. Cl.⁶ E04G 11/20

U.S. Cl. 249—34

19 Claims



14. A wall forming apparatus for constructing monolithic concrete walls and footings, comprising:

(a) at least one pair of rigid wall forming panels being spaced apart and oppositely disposed relative to one another, each of said wall forming panels having elongated top, bottom and side peripheral frame portions, a separate inner planar concrete forming surface attached to said frame portions, and an opposing outer surface;

(b) each of said opposing wall forming panels having an elongated rigid footing forming member depending from said bottom peripheral frame portion thereof, thereby defining at least one pair of spaced opposing integral footing and wall forming units with a coextensive concrete receiving cavity therebetween for forming a monolithic concrete footing and wall;

(c) means for positively connecting each of said footing forming members to said wall forming panel from which it depends;

(d) tying means disposed above said footing forming members and extending between said opposing wall forming panels for maintaining said opposing footing and wall forming units in desired spaced relation during the pouring of concrete within said concrete receiving cavity; and

(e) each of said opposing footing and wall forming units being independently prefabricated as separate integral one-piece portable units and constructed to be free of interconnecting structure extending directly between said opposing footing forming members to facilitate free release of said footing and wall forming units as independent integral one piece units upon release of said tying means after proper hardening of the monolithic concrete wall and footing formed thereby.

5,511,762

CONSUMABLE FORM WITH DEGRADABLE LINING

Charles W. Connors, Jr., Chicago, and James S. Irwin, Geneva, both of Ill., assignors to Magneco/Metrel, Inc., Addison, Ill.

Continuation-in-part of Ser. No. 153,266, Nov. 15, 1993,

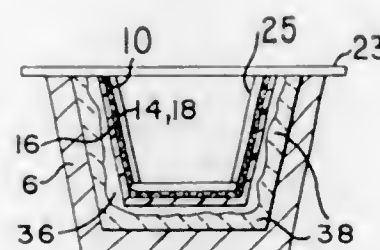
which is a continuation of Ser. No. 893,377, Jun. 4, 1992, abandoned, which is a continuation of Ser. No. 673,954, Mar. 22, 1991, abandoned. This application Nov. 22, 1993, Ser. No. 156,563

The portion of the term of this patent subsequent to Nov. 15, 2013, has been disclaimed.

Int. Cl.⁶ B28B 7/34; 7/36; F27D 1/16

U.S. Cl. 249—115

8 Claims



1. A mold for forming an open top, walled member having side walls and a bottom surface of a molten metal containment vessel, which walled member has sufficient structural integrity to support a molten metal poured in said member, comprising:

an inner wall comprising an inner lining entirely covering an inner surface of a perforated sheet metal screen having a plurality of openings therein and comprising inner side walls and an inner bottom surface for shaping inner surfaces of said side walls and said bottom surface of said open top, walled member; and

an outer wall defining a volume of space substantially containing said inner wall, wherein said inner wall and said outer wall are spaced a sufficient distance relative to each other to define a space so that said side walls and said bottom surface of said open top, walled member of said molten metal containment vessel are formed therebetween, said walled member so formed having said sufficient structural integrity to support a molten metal poured in said member.

5,511,763

FOOT OPERATED STOP VALVE

Ronald D. Green, 1719 Zlinnia Ln., San Jose, Calif. 95124

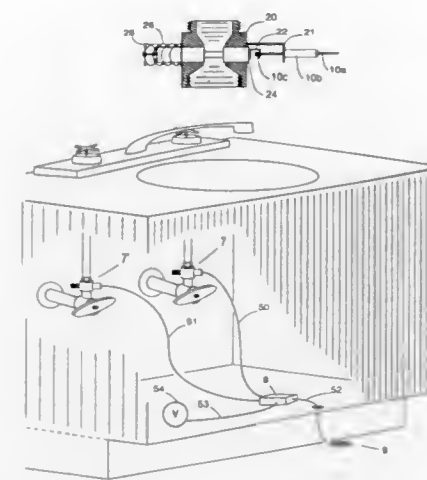
Filed Jul. 1, 1994, Ser. No. 269,891

Int. Cl.⁶ F16K 31/02; 31/62; G05G 1/14

U.S. Cl. 251—129.02

19 Claims

1. A foot-operated water control valve, comprising: at least one valve means for controlling water flow through a water supply pipe, said valve means having an open position and a closed position.



a biasing means for biasing said valve means toward said open position,

a pedal having an on position and an off position,

a means for connecting said pedal to said valve means such that, when a pressure is applied to said pedal to move said pedal from said on position to said off position, said valve means is urged from said open position to said closed position, and in the absence of a pressure on said pedal said biasing means urges said valve means from said closed position to said open position.

5,511,764

SELF-EXHAUSTING WELDING STATION

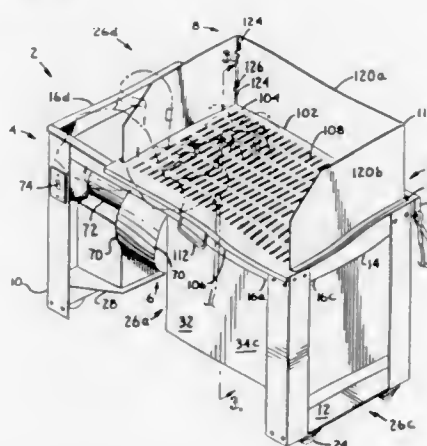
Charles M. Wonseller, Larned, Kans., assignor to A. A. Doerr Mercantile Co., Larned, Kans.

Filed Nov. 29, 1994, Ser. No. 346,074

Int. Cl.⁶ B23K 7/08

U.S. Cl. 266—49

1 Claim



1. A self-exhausting welding station, which includes:

(a) a frame assembly having:

- (1) four legs each having upper and lower ends;
- (2) a pair of base members each extending between a respective pair of leg lower ends at a respective side of said frame assembly;
- (3) a platform frame having a generally rectangular configuration with front, back, first side and second side sections, said platform frame being mounted on said leg upper ends;
- (4) said platform frame having a cross-sectional configuration with a web, an outwardly-extending upper flange and an inwardly-extending lower flange;
- (5) a plurality of castors mounted on said base members; and

5,511,765

CUTTING TORCH ATTACHMENT FOR FACILITATING CUTTING CIRCULAR HOLES

William G. Shippen, 4412 N. State Rd. 17, Pretty Prairie, Kans. 67570

Filed Jul. 20, 1995, Ser. No. 504,771

Int. Cl.⁶ B23K 7/10

U.S. Cl. 266—70

20 Claims

1. An attachment for use with a cutting torch having a plurality of tubes extending between a handle portion and a head portion of the torch, said attachment comprising:

(6) a motor/fan mounting subassembly mounted on said frame at a downstream side of said frame assembly;

(b) an exhaust system including:

- (1) a filter cabinet with bottom, upstream side, front and back panels;
- (2) said filter cabinet being upwardly open;
- (3) said filter cabinet having a downstream side and forming a truncated funnel with an outlet opening thereat;
- (4) an upstream cross piece extending between said filter cabinet front and back panels;
- (5) an intermediate cross piece extending between said filter cabinet front and back panels;
- (6) a downstream cross piece extending between said filter cabinet front and back panels;
- (7) upstream, intermediate and downstream filter frames extending between said filter cabinet front and back panels;
- (8) said filter cabinet having an upper edge projecting upwardly above a level of said platform frame upper flanges;
- (9) said filter cabinet having a cabinet flange extending outwardly therefrom and resting on said platform frame lower flanges;

(10) upstream, first intermediate, second intermediate and downstream filter receivers formed by said cross pieces and said filter frames;

(11) upstream and first intermediate steel mesh filters mounted in said upstream and first intermediate filter receivers respectively;

(12) a second intermediate filter including a fibrous pad mounted within said second intermediate filter receiver;

(13) a bag filter with multiple, juxtaposed pockets each open in an upstream direction and closed in a downstream direction mounted in said downstream filter receiver;

(14) a filter cabinet cover including a panel, a filter lip and gasket means mounted on an underside of said panel, said cover being selectively mounted on top of said filter cabinet for enclosing intermediate and downstream chambers thereof;

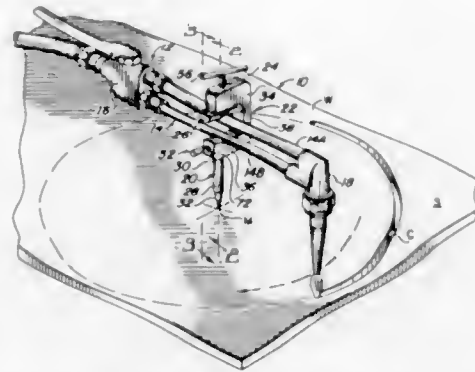
(15) said filter cabinet having an upwardly-open upstream chamber, an intermediate/filter chamber receiving said filters and a downstream chamber terminating at said filter cabinet downstream end;

(16) a fan mounted on said cabinet downstream end and communicating therewith; and

(17) a motor drivingly connected to said fan;

(c) a work area assembly including:

- (1) a work surface with a panel having multiple slot perforations therein and a lip depending downwardly therefrom along a front edge thereof; said panel being hingedly mounted to said platform frame back section;
- (2) a plurality of receivers formed in said work surface panel;
- (3) a welding shield subassembly including rear, upstream side and downstream side panels selectively interconnected by panel retaining clips and panel retaining pins;
- (4) a plurality of welding shield mounting pins each extending downwardly from said welding shield subassembly and receivable in a respective work surface panel receiver; and
- (5) a grounding bracket mounted on said work surface panel and depending downwardly therefrom for electrically grounding same.



- (a) a center locating member having an upper end portion and a lower pointed end for engaging a surface of a workpiece;
- (b) a support member including
- a top portion having a first bore defined vertically therethrough and an internal screw thread formed in the top portion within the bore;
 - a bottom portion underlying and spaced below said top portion; and
 - means for securing said upper end portion of said center locating member to said bottom portion of said support member;
- (c) an actuating stem disposed through said first bore in said top portion of said support member, said actuating stem having an upper end disposed above said top portion of said support member, a lower end disposed below said top portion of said support member, and an external screw thread defined on said actuating stem between said upper and lower ends thereof and threadably engaged with said internal screw thread in said first bore of said top portion of said support member; and
- (d) a clamping member rotatably mounted on said lower end of said stem actuating below said top portion and above said bottom portion of said support member such that by turning said actuating stem in one direction relative to said support member said clamping member is moved downward toward said bottom portion of said support member so as to clamp the tubes of the cutting torch between said clamping member and said bottom portion of said support member, whereas by turning said actuating stem in an opposite direction relative to said support member said clamping member is moved upward away from said bottom portion of said support member to unclamp from the tubes of the cutting torch.

5,511,766

FILTRATION DEVICE

Achilles Vassilicos, Allegheny County, Pa., assignor to USX Corporation, Pittsburgh, Pa.

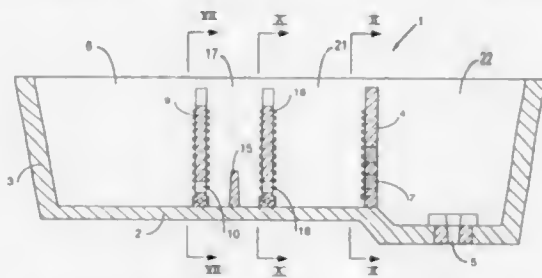
Continuation of Ser. No. 12,490, Feb. 2, 1993, abandoned.

This application Sep. 28, 1994, Ser. No. 313,944

Int. Cl.⁶ C22B 9/02

U.S. Cl. 266—78

11 Claims



1. A tundish for use with molten metal comprising:
- a container having refractory bottom and a plurality of refractory side walls forming a cavity for holding and directing the flow

of molten metal therein; at least one refractory filter wall extending completely across the cavity to opposed refractory side walls of the container, said refractory filter wall being of essentially the same height as the refractory side walls and extending transverse to the direction of molten metal flow so as to divide said cavity into at least one upstream chamber and at least one downstream chamber; said refractory filter wall having filter means for removing inclusions from said molten metal as the molten metal flows from the upstream chamber through the filter means to the downstream chamber, said filter means having an initial flow resistance coefficient that is a design characteristic of said filter means; said container having at least one passage for permitting unfiltered flow of a portion of the molten metal from the upstream chamber to the downstream chamber, said passage having a cross sectional area greater than 0.75 square inches, said cross sectional area of the passage being selected based upon said initial flow resistance coefficient of the filter means so as to accomplish a desired initial distribution of the volume of flow of molten metal through said filter means with respect to the volume of flow through said opening.

5,511,767

COPPER SMELTING APPARATUS

Nobuo Kikumoto, and Osamu Iida, both of Tokyo, Japan, assignors to Mitsubishi Materials Corporation, Tokyo, Japan

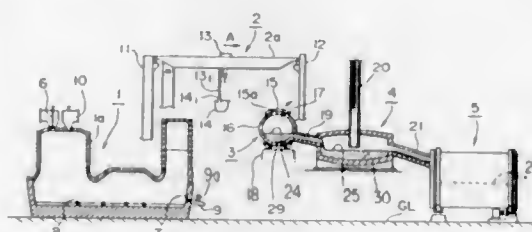
Filed Oct. 31, 1994, Ser. No. 331,888

Claims priority, application Japan, Jun. 3, 1994, 6-122887

Int. Cl.⁶ C21B 7/00

U.S. Cl. 266—143

5 Claims



1. A copper smelting apparatus, which comprises:
- a batch operated matte smelting furnace, said smelting furnace melting, oxidizing and smelting copper concentrates to produce and discharge a molten matte in batches;
- a matte transporter receiving and transporting the molten matte withdrawn in batches from a lower portion of said matte smelting furnace; and
- a continuous converting furnace having a first launder attached thereto, said first launder continuously receiving the molten matte transported by said matte transporter, said continuous converting furnace performing oxidation of the molten matte introduced through said first launder to continuously produce a blister copper melt, and having a second launder attached thereto, said second launder discharging the blister copper melt;
- a matte holding container having an upper inlet opening at a top portion thereof, said matte holding container receiving and temporarily holding the molten matte transported in batches by said matte transporter, said first launder being connected to said matte holding container and continuously introducing molten matte into said continuous converting furnace wherein said matte transporter comprises:
- a ladle receiving the molten matte withdrawn in batches from said matte smelting furnace; and
- a crane transporting said ladle loaded with the molten matte to said matte holding container, discharging the molten matte from said ladle into said inlet opening of said matte holding container, and transporting said ladle back to said matte smelting furnace.

5,511,768

TAP HOLE PLUGGING DEVICE

Victor Kremer; Emile Lonardi, both of Grand Duchy, Luxembourg, and Philippe Malivoir, Thionville, France, assignors to Paul Wurth S.A., Luxembourg

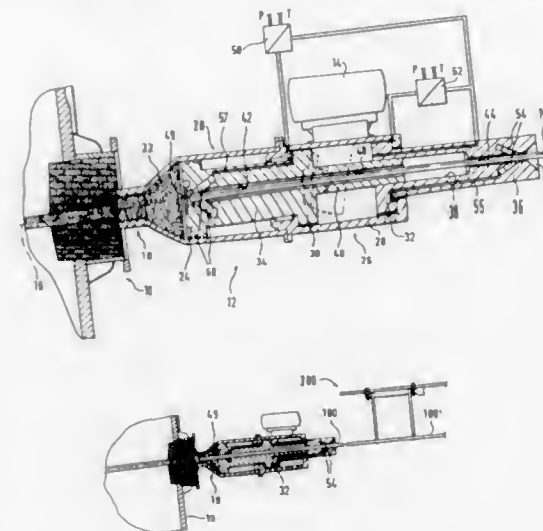
Filed Jan. 13, 1995, Ser. No. 372,462

Claims priority, application Luxembourg, Jan. 17, 1994, LU 88 453

Int. Cl.⁶ C21C 5/48

U.S. Cl. 266—273

13 Claims



1. Apparatus for plugging a tap hole comprising:
- an elongated housing;
- a plugging nose-piece at one end of said housing, said plugging nose-piece having a discharge orifice, and said plugging nose-piece having a plugging axis;
- a first chamber in said housing for receiving tap-hole clay;
- an expulsion piston in said plugging chamber for the expulsion of the tap-hole clay;
- first actuator means positioned in said housing along said plugging axis, said first actuator means being connected to said expulsion piston so as to be able to move said expulsion piston in the first chamber between a rear position and the plugging nose-piece, and vice versa;
- first control means for causing movement of said first actuator means and said expulsion piston;
- a first channel for the passage of a piercing rod, said first channel passing through said expulsion piston and said first actuator means, said first channel being along said plugging axis;
- second actuator means positioned in said housing along said plugging axis, said second actuator means having a second channel for the passage of a piercing rod, said second channel being along said plugging axis;
- second control means for causing said second actuator means to move between a rear end-of-travel position and a front end-of-travel position and vice versa; and
- first gripping means for gripping and releasing a piercing rod introduced into said second channel, said first gripping means being carried by said second actuator means and being moved along said plugging axis by said second actuator means to push the piercing rod, by successive travels of the said second actuator means between its rear end-of-travel position and its front end-of-travel position, along the plugging axis through the said second channel and the said first channel in the direction of the plugging nose-piece.

5,511,769

SHEET MATERIAL COLLATING APPARATUS

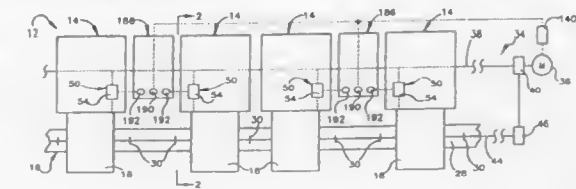
Richard D. Wamsley, Dayton, and Gary Cooper, Jr., Miami, both of Ohio, assignors to AM International, Inc., Mt. Prospect, Ill.

Filed Oct. 31, 1994, Ser. No. 331,961

Int. Cl.⁶ B65H 39/04; 3/06

U.S. Cl. 270—58

22 Claims



1. A sheet material collating apparatus comprising a sheet material conveyor having a plurality of sheet material receiving locations, a plurality of hoppers disposed at spaced apart locations along said sheet material conveyor, each of said hoppers holding a plurality of sheet material articles, a plurality of feed drums which are operable to sequentially feed sheet material articles from each of said hoppers to the sheet material receiving locations in said sheet material conveyor, a main drive system, a plurality of secondary drive systems which are connected with said main drive system and said feed drums and are operable to transmit force from said main drive system to said feed drums, each of said secondary drive systems including a transmission which is connected with said main drive system and with one of said feed drums and is operable between an initial condition in which said transmission is ineffective to transmit force to drive said one of said feed drums, a first condition in which said transmission is effective to transmit force to drive said one of said feed drums at a first speed, and a second condition in which said transmission is effective to transmit force to drive said one of said feed drums at a second speed which is greater than the first speed, and control means for controlling operation of said plurality of transmissions, said control means being selectively operable to effect operation of each of said transmissions between said initial, first and second conditions.

5,511,770

SHEET MEDIA HANDLING SYSTEM WITH INTERRELATED INPUT ALIGNMENT AND OUTPUT SUPPORT

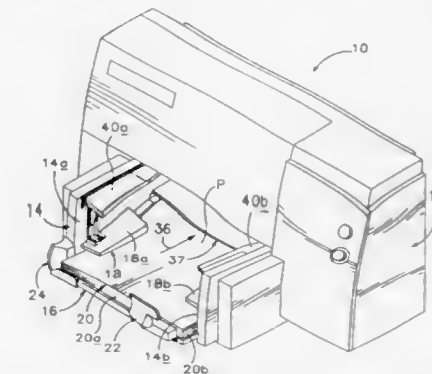
Sandra Y. Okazaki, Vancouver, Wash., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Sep. 23, 1994, Ser. No. 311,084

Int. Cl.⁶ B65H 5/22

U.S. Cl. 271—4.01

18 Claims



1. A sheet media handling system for use in a sheet processor having vertically-stacked input and output ports, said handling system comprising:
- a lower support structure configured to support sheets for delivery to the sheet processor's input port;

an upper support structure at a predetermined level above said lower support structure, said upper support structure being configured to at least partially support sheets expelled outwardly from the sheet processor's output port; and an alignment mechanism including an upstanding member which is adjustable independently of said upper support structure to align sheets supported by said lower support structure, said upstanding member extending upwardly to at least said predetermined level to supplement support of expelled sheets by said upper support structure.

5,511,771

DOCUMENT HANDLER WITH VARIABLE SIZE INPUT TRAY VARYING WITH REGISTRATION

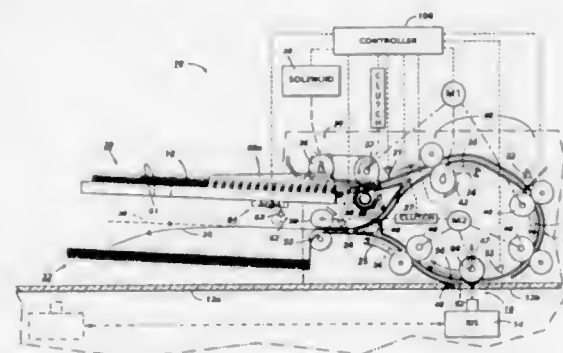
Robert E. Rubsach, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Nov. 3, 1994, Ser. No. 333,698

Int. Cl.⁶ B65H 5/22

U.S. Cl. 271—4.01

1 Claim



1. A document handling system with an imaging station, a document output tray, and a document input tray overlying said document output tray, said document input tray being adapted to supportably stack therein for feeding multiple document sheets of varying sizes for sequentially feeding the document sheets from the stack of document sheets to said imaging station, which document sheets are then fed from said imaging station to said document output tray under said document input tray, wherein said document input tray has a resettable stack registration side guide system with upstanding opposing document edge guides resetably conformable to the lateral dimensions of said stack of document sheets loaded in said document input tray by movement of at least one said edge guide towards or away from the other; said document input tray further comprising a substantially planer document stack supporting tray surface with a lateral area for fully supporting the stack of document sheets in said document input tray between said upstanding opposing document edge guides, and wherein said document input tray document stack supporting tray surface comprises at least two mutually telescoping portions which automatically telescope within one another to vary said lateral area of said document stack supporting tray surface upon said resetting of said resettable side guide system to conform to the lateral dimensions of a stack of documents loaded into said document input tray, and wherein the lateral area of said document input tray stack supporting tray surface is defined by the opposing outer lateral edges of said telescoping portions, and at least one said outer lateral edge automatically moves toward said other outer lateral edge as said document edge guides are moved towards one another, so that the lateral dimensions of said overlying document input tray automatically shrink for smaller documents to reduce the obstruction of, and improve the view of, and access to, said underlying document output tray.

5,511,772

OSCILLATING ROTARY HOPPER

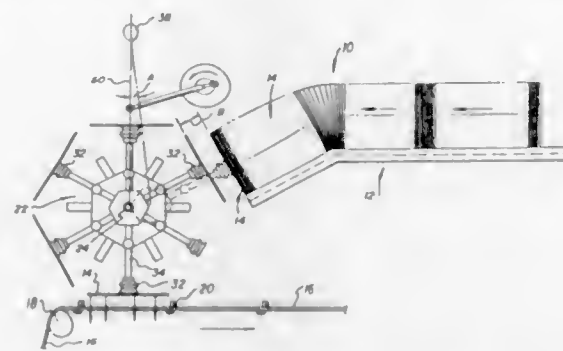
Robert H. Ganz, Saddle River, N.J.; Loretta R. Ganz, executrix, and Robert S. Marcus, executor, both of No. 8, Ridgecrest Rd., Saddle River, N.J. 07458

Filed Aug. 25, 1994, Ser. No. 296,188

Int. Cl.⁶ B65H 5/08

U.S. Cl. 271—12

8 Claims



1. An oscillating rotary hopper comprising a hopper rotary shaft, at least one member carrier carried by said hopper shaft for rotation with said hopper shaft, a pivot shaft, a conveyor and a member supply, at least one member in said member supply, at least one support arm pivotally mounted on said pivot shaft for oscillatory movement to move said member carrier back and forth forwards and away from said member supply and parallel to said conveyor, and said member carrier and said conveyor moving in the same direction and at the same speed when said member carrier is aligned with the conveyor.

5,511,773

COMPENSATING SUPPORT ARRANGEMENT

Manfred Burger, Bahngasse 2/11, A-2320 Schwechat, Austria

PCT No. PCT/EP93/01331, § 371 Date Feb. 4, 1994, § 102(e)

Date Feb. 4, 1994, PCT Pub. No. WO93/25459, PCT Pub.

Date Dec. 23, 1993

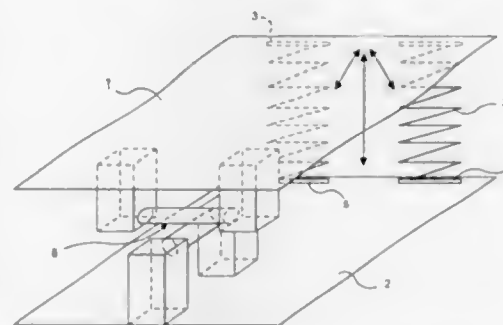
PCT Filed May 27, 1993, Ser. No. 190,145

Claims priority, application Australia, Jun. 12, 1992, 1201/92

Int. Cl.⁶ B65H 1/08

U.S. Cl. 271—148

18 Claims



1. A compensating support arrangement for a stack of envelopes located on a stacking table of a printer for aligning an uppermost envelope for a take-off suction device of the printer arranged above the uppermost envelope with operational accuracy, comprising: a base plate adapted to be supported on the stacking table; a bearing plate arranged at a distance above the base plate and providing a support surface for supporting the envelope stack, said support surface being arranged substantially in one plane; at least one spring element arranged between the base plate and bearing plate adapted for lifting the uppermost envelope into alignment with the suction device; and

means for holding and guiding the bearing plate in position

relative to said base plate,

said bearing plate being moveable between unloaded and loaded positions relative to said base plate, said bearing plate being substantially parallel to said base plate while occupying said unloaded position.

5,511,774

ADJUSTABLE PRESSURE ROLLER FEEDING ASSEMBLY

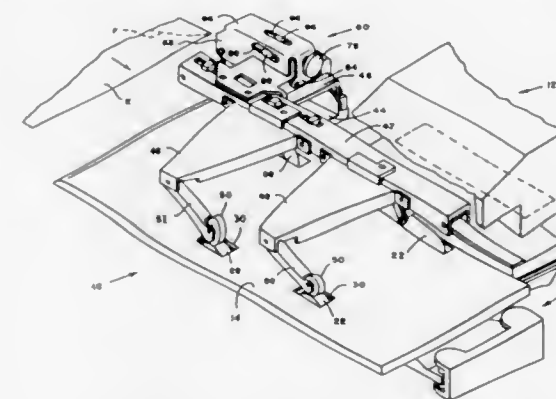
Thomas M. Lyga, Torrington, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.

Filed Sep. 8, 1994, Ser. No. 303,305

Int. Cl.⁶ B65H 5/02

U.S. Cl. 271—273

8 Claims



1. In a paper feeding machine having means defining a feed path along which various items of paper are adapted to be fed and feed roller means disposed on one side of said feed path for feeding said items of paper along said feed path, an adjustable pressure roller device for maintaining proper feeding pressure between said items of paper and said feed roller means, said device comprising:

A. a back up pressure roller disposed on the opposite side of said feed path in juxtaposition to said feed roller means,

B. means mounting said pressure roller for movement toward and away from said feed roller means to vary the amount of pressure exerted by said pressure roller against a paper item disposed between said pressure roller and said feed roller means between a preset maximum and zero, said mounting means including:

an elongate housing mounted in spaced relationship to said paper feed path,

an arm pivotally connected to said housing adjacent one end of said arm for movably supporting said pressure roller, said arm having an integral finger that extends beyond said one end of said arm, said pressure roller rotatably mounted to the other end of said arm for movement toward and away from said feed roller means,

resilient means interconnected between said finger and said housing for normally urging said pressure roller toward said feed roller means, and

C. actuating means for controlling the direction and extent of movement of said pressure roller,

whereby said pressure feeding device can accommodate a wide variety of thicknesses, types and grades of paper without risk of mutilating or misfeeding the paper.

5,511,775

LOW REBOUND SPORTS TARGET

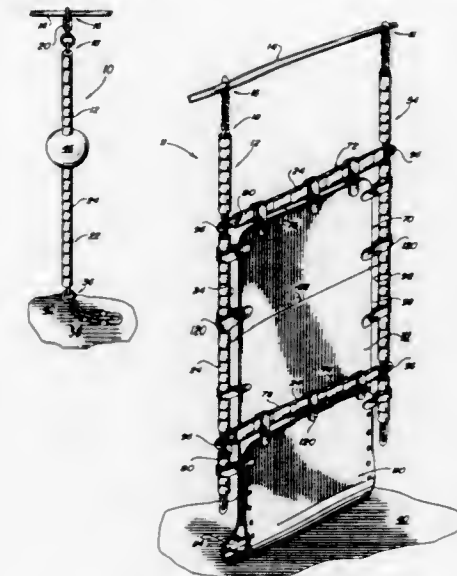
Alan D. Parks, 1351 Charlotte St., Altamonte Springs, Fla. 32701

Continuation-in-part of Ser. No. 57,047, Apr. 30, 1993, Pat. No. 5,370,386. This application Sep. 28, 1994, Ser. No. 314,228

Int. Cl.⁶ A63B 69/00

U.S. Cl. 273—26 A

31 Claims



1. A sports target comprising:

a support;

an elongated vertical member having a top end hingedly affixed to the support for freely suspending the member from the support, the vertical member uniformly resilient for receiving an object delivered to the member by a player, and in combination with the free suspension of the member, absorbing energy of the object for sufficiently limiting rebounding of the object from the member to a safe position for the player; and flexible tubing having a bore dimensioned to receive the member, the tubing covering the member along a substantial portion of the member, the tubing sufficiently flexible for receiving the object a multiplicity of times for providing effective reuse of the object by the player, the tubing providing a visual feedback response to the player after receiving the object.

5,511,776

ROLLER HOCKEY STICK BLADE

Mark W. Huru, Hancock, Mich., assignor to Christian Brothers, Inc., Warroad, Minn.

Continuation of Ser. No. 209,841, Mar. 11, 1994, abandoned.

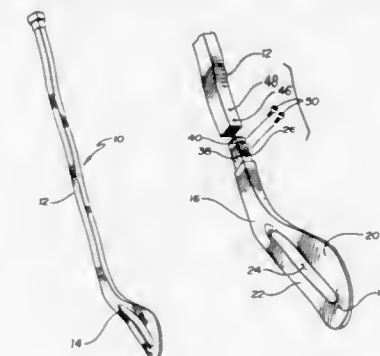
This application Mar. 10, 1995, Ser. No. 402,396

Int. Cl.⁶ A63B 59/12

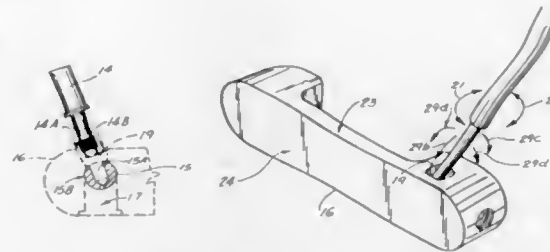
U.S. Cl. 273—67 A

20 Claims

1. A ball hockey stick having a handle and a blade wherein said



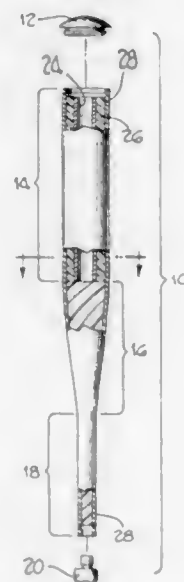
blade comprises a heel end, a toe end, a bottom edge, a top edge, and a ball receiving opening comprising an elongated opening positioned between said top and bottom edges and being elongated in the direction extending from said heel end to said toe end, said blade having a centerline axis extending the length of said blade midway between said top edge and said bottom edge, and a substantial portion of said elongated opening extending above said centerline axis.



- an elongated shaft having an upper end portion with a gripping surface and a lower end portion that includes an enlarged spherical tip portion with a center point;
- a putter head having an external surface and a socket for receiving the enlarged spherical tip portion of the shaft;
- a plurality of openings extending between the socket and the external surface along lines that extend to the center point;
- a plurality of set screws extending through the openings, each having a pointed end to engage the enlarged tip portion of the shaft; and
- wherein each of the set screws forms an angle with the other set screw; and
- alignment means interfacing the spherical tip portion and putter head for restricting adjustability of the putter head relative to the shaft to two planes.

5,511,777
BALL BAT WITH REBOUND CORE
Larry A. McNeely, Huntington Beach, Calif., assignor to Grover Products Co., Los Angeles, Calif.
Filed Feb. 3, 1994, Ser. No. 191,300
Int. Cl.⁶ A63B 59/06
U.S. Cl. 273—72 A

15 Claims



- A damped core bat comprising:
 - a cylinder having a cavity therein bounded by cavity walls, the cylinder including a barrel portion, a tapered portion and a handle portion;
 - a free floating tubular shape inner damper;
 - a resilient attenuator sleeve disposed over the inner damper; wherein the free floating inner damper is disposed inside the cavity without contacting the cavity walls and the resilient attenuator sleeve is compressed between the inner damper and the cavity walls.

5,511,778

Patent Not Issued For This Number

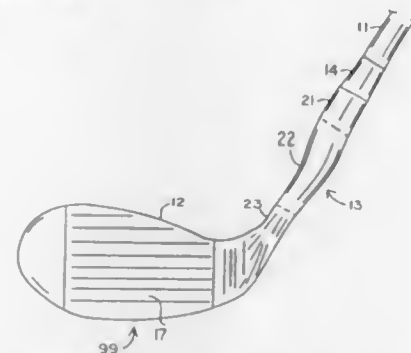
5,511,779
ADJUSTABLE GOLF PUTTER HEAD
Frederick C. Meyers, 7 W. Ayres St., Hinsdale, Ill. 60521, and Charles H. Travis, 212 Middaugh, Clarendon Hills, Ill. 60514
Continuation-in-part of Ser. No. 239,452, May 9, 1994, Pat. No. 5,390,918. This application Nov. 23, 1994, Ser. No. 344,087
Int. Cl.⁶ A63B 53/02
U.S. Cl. 473—246

17 Claims

7. An adjustable golf putter comprising:

5,511,780
GOLF CLUB HOSEL
Ernie Vadersen, 13000 Sawgrass Village Cir., Suite 30, Ponte Vedra Beach, Fla. 32082
Filed Jul. 6, 1995, Ser. No. 498,604
Int. Cl.⁶ A63B 53/02
U.S. Cl. 473—309

9 Claims

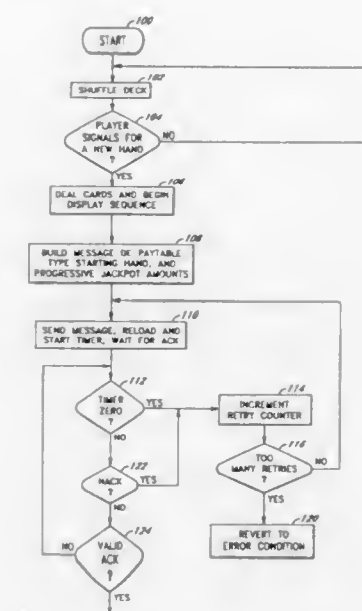


- In a golf club comprising a club head, a club shaft and a hosel connecting said club head to said club shaft, the improvement comprising a hosel comprising an upper segment adjoined to a middle segment adjoined to a lower segment; said upper segment being circular in cross-section and adapted to receive the golf club shaft; said middle segment being tapered and circular in cross-section, whereby the diameter of said middle segment adjacent said upper segment is greater than the diameter of said middle segment adjacent said lower segment; and said lower segment being elliptical in cross-section.

5,511,781
STOP PLAY AWARD WAGERING SYSTEM
Michael W. Wood, Denham Springs, La.; Hugh J. Shaddick, Henderson, and Richard S. Schneider, Las Vegas, both of Nev., assignors to United Games, Inc., Las Vegas, Nev.
Filed Feb. 17, 1993, Ser. No. 18,953
Int. Cl.⁶ A63F 1/00
U.S. Cl. 273—85 CP

62 Claims

1. A player interactive gaming system comprising:

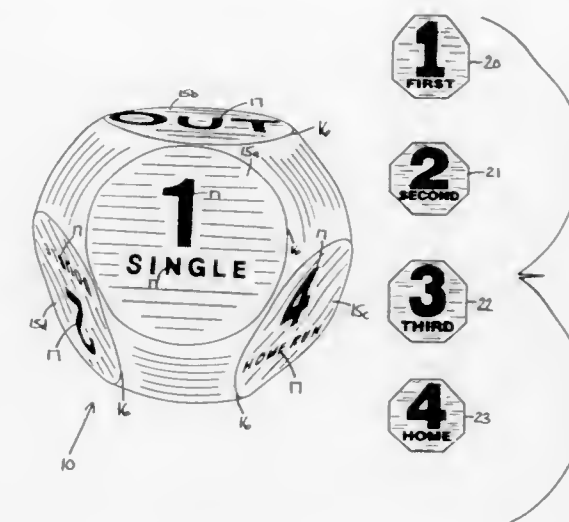


- a selected number of elements each having identifying characteristics, wherein certain combinations of said elements are defined to be winning combinations;
- an element assigning system, having access to said selected number of elements and receiving player input signals, which assigns and displays to said player a plurality of said elements;
- a stop play award system responsive to the identifying characteristics of at least one element assigned to said player for establishing a stop play award prior to said player being assigned a final one of said elements wherein the value of said stop play award is based at least in part on the probability that said at least one element will, in combination with another of said selected number of elements, comprise one or more of said winning combinations;
- a final award system responsive to the identifying characteristics of the at least one element and the assignment of the final one of said elements for establishing a final award; and
- an award distribution system responsive to the stop play award system, the final award system and player input signals, for distributing to said player the winning final award when the elements assigned to the player include said final one of said elements and when the combination of elements assigned to the player includes at least one of said winning combinations and for distributing to the player the stop play award when said distribution system receives a player input signal indicating said player has accepted said stop play award.

5,511,782
BALL GAME DEVICE AND METHOD OF USING THE SAME
Jerry P. Maley, 1812 S. Third, Bismarck, N. Dak. 58504
Filed Feb. 10, 1995, Ser. No. 386,676
Int. Cl.⁶ A63B 67/00
U.S. Cl. 273—93 R

9 Claims

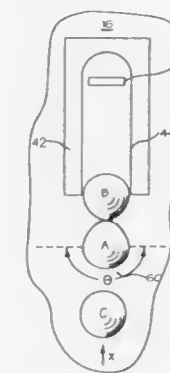
- A method of using a ball game device comprising, in combination, the steps of:
 - providing a playing surface having a plurality of base members disposed in spaced relationship to one another;
 - providing a generally spherical body made of a resilient material and having eight generally equally sized faces displaying indicia thereon and describing probable outcomes in a base-ball game, said faces being flat-surfaced for resting upon said playing surface; putting said spherical body into play upon said playing surface; and



responding to the outcome displayed upon said face being face up relative to said playing surface upon said spherical body coming to rest upon said playing surface.

5,511,783
BALL MOMENTUM TRANSFER PLAY FEATURE FOR A PINBALL GAME
John A. Popadiuk, and John W. Skalon, both of Chicago, Ill., assignors to Williams Electronics Games, Inc., Chicago, Ill.
Filed Jun. 5, 1995, Ser. No. 463,929
Int. Cl.⁶ A63F 7/30
U.S. Cl. 273—118 R

4 Claims



- In combination: a rolling ball game including an inclined playfield and a momentum play feature comprising:
 - an inclined playfield;
 - a guide assembly having two rails defining a captive ball travel area on said playfield;
 - at least one captive ball disposed within said travel area;
 - an impact element secured to the playfield, adjacent said captive ball travel area, for transferring momentum from said game ball to said at least one captive ball; and
- one of said captive balls rests against said impact element during game play to receive momentum when said game ball strikes said impact element.

5,511,784

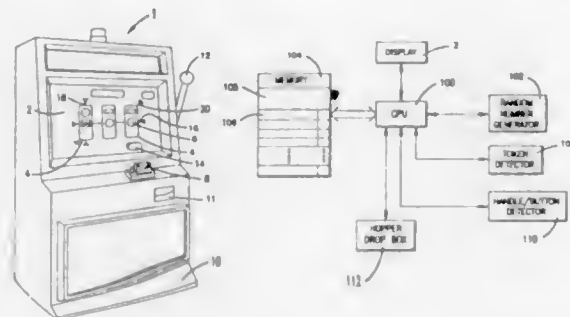
METHOD AND APPARATUS FOR DIRECTLY GENERATING A RANDOM FINAL OUTCOME OF A GAME

Kevin Furry, and Jess Tode, both of Bozeman, Mont., assignors to Video Lottery Technologies, Inc., Bozeman, Mont.
Filed May 9, 1994, Ser. No. 239,755

Int. Cl.⁶ A63F 5/04

U.S. Cl. 273—143 R

33 Claims



1. An apparatus for determining an outcome of a game, said gaming apparatus comprising:
memory means for storing a plurality of possible outcomes divided into multiple subsets, each subset including a win/loss tier and at least one series of indicia;
generating means for generating a random number;
scaling means for scaling said random number by a factor other than one to obtain an outcome identifier from a plurality of outcome identifiers, said outcome identifier designating a resulting outcome;
assigning means for assigning a plurality of outcome identifiers to corresponding win/loss tiers representing amounts to be paid out;
determining means for determining a resulting win/loss tier and payout and for determining a resulting series of indicia to be displayed based directly upon said outcome identifier; and
displaying means for displaying the resulting series of indicia corresponding to said resulting win/loss tier.

5,511,785

GOLF CLUB WITH SHAFT RECESSING DIVOT TOOL

Richard E. Rusin, Jr., 6120 W. Tropicana A-16/368, Las Vegas, Nev. 89103

Filed Dec. 6, 1994, Ser. No. 349,886

Int. Cl.⁶ A63B 53/00; A01B 1/04; 1/24

U.S. Cl. 473—286

11 Claims

1. A golf club having an elongate shaft with a first end portion having a ball striking surface thereon and a second end portion for gripping by a user, said shaft at said second end portion being hollow and having an inner surface and outer surface, said club further comprising:

a divot fixing tool comprising a body having a first end portion and a second end portion including at least one elongate ground-engaging prong, said tool moveable between a first position in which said tool is retracted substantially within said club and a second position in which said tool extends outwardly of said club, and including locking means comprising a pin connected to said shaft and an elongate slot in said tool body for retaining said tool in said retracted and extended positions.



5,511,786

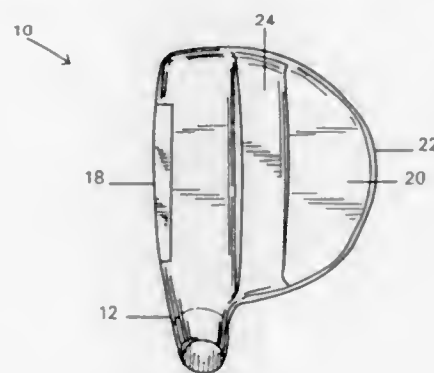
WOOD TYPE AERODYNAMIC GOLF CLUB HEAD HAVING AN AIR FOIL MEMBER ON THE UPPER SURFACE

Anthony J. Antonious, 7738 Calle Facil, Sarasota, Fla. 34238
Filed Sep. 19, 1994, Ser. No. 308,422

Int. Cl.⁶ A63B 53/04

U.S. Cl. 473—327

11 Claims



1. A wood type golf club head including a heel, toe, top surface, rear surface, and front including a ball striking face, said top surface being coincident with an upper part of said ball striking face wherein the improvement comprises:
aerodynamic means formed on said top surface creating an air flow configuration to reduce the aerodynamic drag on the club head providing greater acceleration and increased club head speed for a given force when swinging the club;
said aerodynamic means including a raised aerodynamic air foil member extending upwardly from said top surface and having a longitudinal axis in a heel-to-toe direction and located on said top surface between said front and said rear surface.

5,511,787

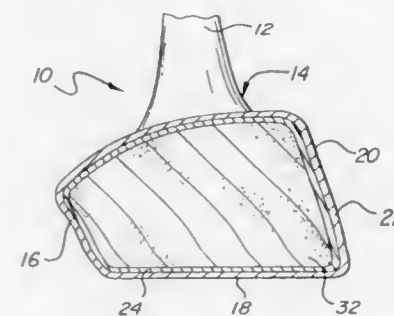
GOLF CLUB

Charles S. Baum, Traverse City, Mich., assignor to The Baum Research & Development Co., Traverse City, Mich.
Continuation of Ser. No. 247,846, May 23, 1994, abandoned, which is a continuation of Ser. No. 919,174, Jul. 23, 1992, Pat. No. 5,338,024, which is a continuation-in-part of Ser. No. 760,102, Sep. 16, 1991, abandoned, which is a continuation-in-part of Ser. No. 518,782, May 4, 1990, Pat. No. 5,114,144.
This application Mar. 10, 1995, Ser. No. 402,318

Int. Cl.⁶ A63B 53/04

U.S. Cl. 473—329

12 Claims



1. A golf club having a head with a ball impacting face consisting of:
an outer layer of wood veneer overlying and bonded to an inner layer of fiber reinforced resin, both layers being fully impregnated with resin and both having a general extension parallel to and in substantial conformance with the entire ball impacting face of the club, both layers being supported so as to allow their resilient deformation upon impact of the face with a golf ball.

5,511,788

GOLF WRIST TRAINING APPARATUS

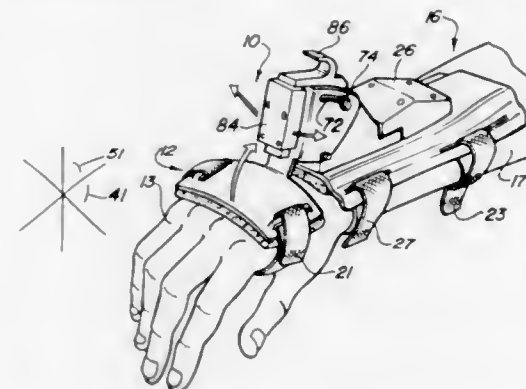
Michael P. Manley, 1090 Oakwood, Ortonville, Mich. 48462;
William Corder, 1206 Stonehurst Rd., Anderson, S.C. 29625,
and David A. Cullon, 4317 Lake George Rd., Dryden, Mich. 48428

Filed Aug. 16, 1994, Ser. No. 291,125

Int. Cl.⁶ A63B 69/36

U.S. Cl. 473—213

30 Claims



1. A golf training apparatus to assist in controlling wrist movement of a golfer-in-training during address, backswing, downswing, impact, and follow-through, the apparatus comprising:
(a) means to attach a hand-attachment member of the apparatus to a first hand and a forearm-attachment member of the apparatus to such forearm of the first hand of the golfer-in-training, the hand-attachment member relative to the forearm-attachment member forming an angle in a forward/backward plane, the forward/backward plane being normal to the first hand; and

(b) restraint means to limit movement of the hand-attachment member relative to the forearm-attachment member within a range of motion in the forward/backward plane when the restraint means is engaged, the angle in the forward/backward plane being adjustable.

5,511,789

GOLF SWING TRAINING DEVICE

Yoshikazu Nakamura, 4-25, Kamigasa 1-Chome, Kusatsu-Shi, Shiga 525, Japan
PCT No. PCT/JP94/00219, § 371 Date Jan. 4, 1995, § 102(e)
Date Jan. 4, 1995, PCT Pub. No. WO94/19070, PCT Pub. Date Sep. 1, 1994

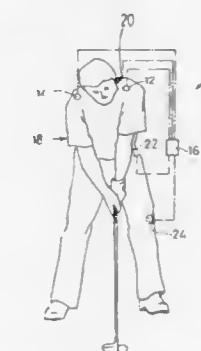
PCT Filed Feb. 14, 1994, Ser. No. 313,116

Claims priority, application Japan, Feb. 16, 1993, 5-051430;
Dec. 23, 1993, 5-347842

Int. Cl.⁶ A63B 69/36

U.S. Cl. 473—202

10 Claims



1. A golf swing training device, comprising:
detecting means for detecting that one of the shoulders of a golfer is in contact with or closest to the chin when the golfer has gotten into the back swing from the address position,
notifying means for notifying the contact or closest approach detected by said detecting means to the golfer via a controller by a sound or speech,
transmitting means for transmitting signals selected from the group consisting of electric currents, mechanical vibrations and sound waves indicating the contact or closest approach detected by said detecting means to the golfer's knee and/or waist on the side of the pivoting foot after weight shift.

5,511,790

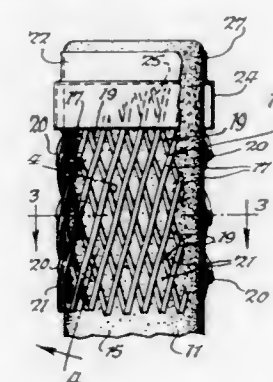
PUTTER GRIP ATTACHMENT

Anthony P. Duran, 135 Main St., Depew, N.Y. 14043
Continuation of Ser. No. 132,563, Oct. 6, 1993, abandoned.
This application May 17, 1995, Ser. No. 443,099

Int. Cl.⁶ A63B 53/14

U.S. Cl. 473—201

8 Claims



1. A putter grip sensitizer attachment for installation over an existing putter grip for sensitizing the feel of a putter to the hands of a golfer comprising a first series of a plurality of inner plastic strips, a second series of a plurality of outer plastic strips, said plurality of outer plastic strips in their entirety being located outwardly of said plurality of inner plastic strips, said plurality of outer plastic strips extending transversely to said plurality of inner plastic strips and crossing said plurality of inner plastic strips at crossover points, said first series of inner plastic strips and said second series of outer plastic strips forming an elongated tubular mesh, and said outer plastic strips having slightly elevated portions with respect to adjacent portions of said outer strips at crossover points, and securing means for securing said elongated tubular mesh in position relative to a putter grip.

5,511,791

THREAD WOUND GOLF BALL

Tadahiro Ebisuno, Nishinomiya; Keiji Moriyama; Kazushige Sugimoto, both of Akashi, and Tsutomu Hirau, Nishinomiya, all of, Japan, assignors to Sumitomo Rubber Industries, Ltd., Hyogo, Japan

Filed Aug. 10, 1994, Ser. No. 288,002

Claims priority, application Japan, Aug. 13, 1993, 5-222166
Int. Cl.⁶ A63B 37/08

U.S. Cl. 473—354

8 Claims

1. A thread wound golf ball comprising:
 - a liquid center;
 - a rubber thread layer wound on said liquid center to form a thread wound core; and
 - a cover covering said thread wound core, wherein said liquid center comprises a paste and a center bag covering the paste and the paste has a viscosity at 23° C. (measured by a B type viscometer) of 15 to 70 poise.

5,511,792

PIRATE'S TRAP BOARD GAME

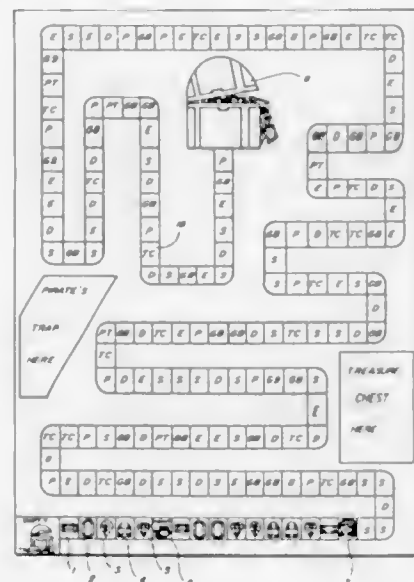
Dawn M. Simmons, P.O. Box 70, and Laurie L. Buchanan, P.O. Box 15, both of, Fidelity, Ill. 62030

Filed Mar. 6, 1995, Ser. No. 399,333

Int. Cl.⁶ A63F 3/00

U.S. Cl. 273—251

7 Claims



1. A board game with a pirate's theme, comprising:
 - (a) a game board having a serpentine pathway divided into discreet spaces including a starting space, and an ending

"open treasure space", wherein said spaces have randomly placed illustrations of various jewels or pirate-related objects; (b) a cubic die having corresponding illustrations of the various jewels and some of the pirate-related objects on each face; (c) a Treasure Chest containing "Treasure Chest" cards and corresponding Treasure Chest spaces on said game board; (d) a pirate's cave containing "pirate's trap" cards and corresponding pirate spaces on said game board; (e) player's tokens for movement along said serpentine pathway.

5,511,793

COMPOSITE CHESS GAME AND METHOD

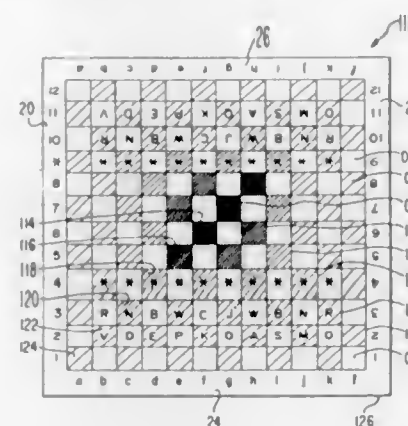
James S. Watt, Kapaa, Hi., assignor to Quantum Development, Inc., Carson City, Nev.

Filed Jun. 8, 1992, Ser. No. 895,596

Int. Cl.⁶ A63F 3/02

U.S. Cl. 273—260

24 Claims



22. A method of play for a generic chess-type strategy game, comprising:

A) providing the following elements: 1)

- 1) a square checkered gameboard playing surface comprising at least a four by four, sixteen square board;
- 2) two contrasting sets of six pieces, each set comprising:
 - a) three different types of simplex playing pieces comprising:
 - (1) a first-simplex playing piece,
 - (2) a second-simplex playing piece, and
 - (3) a third-simplex playing piece, and
 - b) three different types of duplex playing pieces comprising:
 - (1) a first-duplex playing piece,
 - (2) a second-duplex playing piece, and
 - (3) a third-duplex playing piece.

B) placing said simplex playing pieces and said duplex playing pieces upon said gameboard playing surface by any mutually agreed upon procedure, and starting positions.

C) alternating turns by both players in alternate sequence moving individual said simplex playing pieces, and individual said duplex playing pieces, and capturing opponent's individual said simplex playing pieces, and individual said duplex playing pieces, moving one piece each turn,

D) manipulating said simplex playing pieces, and said duplex playing pieces on said gameboard according to the following rules:

- 1) moving individual said simplex playing pieces according to the following movement and capturing patterns:
 - a) moving a first-simplex playing piece according to a pattern 'a'; or orthogonally,
 - b) moving a second-simplex playing piece according to a pattern 'b'; or diagonally,
 - c) moving a third-simplex playing piece according to a pattern 'c'; or one jumping dog-leg or two squares

orthogonally, followed by one square orthogonally at right angles to the first direction, and jumping over any intervening pieces.

2) moving individual said duplex playing pieces according to the following movement and capturing patterns:

- a) moving a first-duplex playing piece according to alternative patterns 'a' and 'b',
- b) moving a second-duplex playing piece according to alternative patterns 'a' and 'c',
- c) moving a third-duplex playing piece according to alternative patterns 'b' and 'c',

E) winning the game by:

- 1) eliminating all of an opponent's playing pieces from the board, and
- 2) accepting an opponent's resignation.

5,511,794

COIN GAME MACHINE REQUIRING PLAYER SKILL

Tohru Katamoto, Saitama, Japan, assignor to American

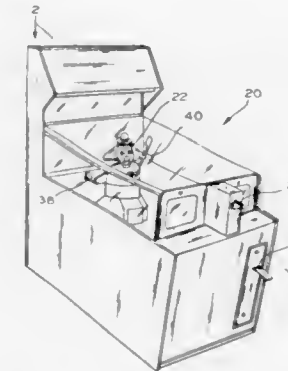
Sammy Corporation, Elk Grove Village, Ill.

Filed Aug. 31, 1994, Ser. No. 305,450

Int. Cl.⁶ A63F 9/00

U.S. Cl. 273—440

24 Claims



1. A coin game machine comprising a revolving mechanism having a plurality of arms, each of said arms having a target associated therewith, a chute positioned to deposit a coin dropped off said chute and into said target if an arm of said revolving mechanism is properly positioned under said chute when said coin drops therefrom, and storage means for capturing coins which drop when said target is not properly positioned under said chute when said coin drops off said chute.

5,511,795

COMBINED SEGMENTED AND PNEUMATIC SEAL FOR DRUM-TYPE FURNACES

Winfried Laubach, Oberhausen, and Thomas Gerlach, Neukirchen-Vluyn, both of, Germany, assignors to Mann Gutehoffnungshütte Aktiengesellschaft, Oberhausen, Germany

Filed Feb. 4, 1994, Ser. No. 191,646

Claims priority, application Germany, Feb. 5, 1993, 43 03 298.2

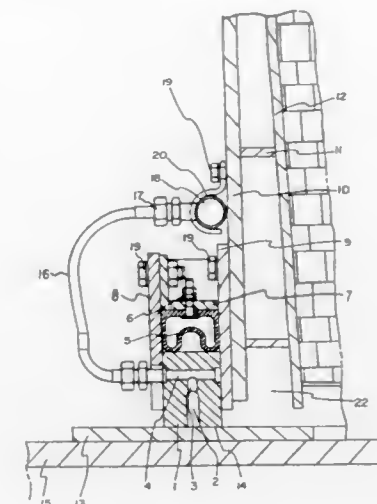
Int. Cl.⁶ F16J 15/46

U.S. Cl. 277—34

17 Claims

1. A sealing medium seal device for sealing rotary drums of a drum-type furnace unit, the unit including a stationary chamber surrounding one end for charging in a charge and with a chamber surrounding another end for receiving the discharge, the flue gases and residues and the unit having an annular axially extending sealing flange which is arranged on each end of a rotary drum, the sealing medium seal device comprising:

- a wearable sealing ring seated on said annular sealing flange of said rotary drum, said wearable sealing ring being formed of



individual sections, each individual section of said sealing ring being provided with a circumferential groove, with hole connected to said circumferential groove, and a sleeve connected to said hole, said sleeve being closed on one side and having a sealing medium connection on another side;

a sealing element front flange and a sealing element rear flange, said sealing ring being arranged displaceably between said sealing element front flange and said sealing element rear flange;

a deformable, pneumatic sealing element with a pressurized medium, said pneumatic sealing element being arranged above said sealing ring between said front flange and said rear flange; and

a closing flange arranged between said sealing element front flange and said sealing element rear flange above said pneumatic sealing element.

5,511,796

METAL LAMINATE GASKET WITH SEALING SHIM

Tsunekazu Udagawa, Ichikawa, Japan, assignor to Ishikawa Gasket Co., Ltd., Tokyo, Japan

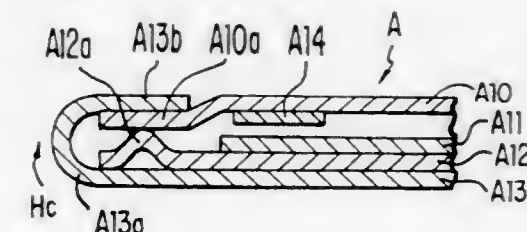
Filed Sep. 28, 1993, Ser. No. 127,577

Claims priority, application Japan, Oct. 1, 1992, 4-068732 U

Int. Cl.⁶ F16J 15/08

U.S. Cl. 277—180

7 Claims



1. A metal laminate gasket for an internal combustion engine having at least one hole to be sealed, comprising:

a plurality of metal plates extending substantially throughout an entire area of the engine and laminating together to form a metal laminate gasket, said gasket having a first hole corresponding to the hole of the engine,

auxiliary sealing means formed around the first hole for sealing therearound, said auxiliary sealing means being compressible when the gasket is tightened and including a curved portion situated inside the first hole and a flange located on an outer metal plate in said metal plates for forming the metal laminate gasket, and

an annular shim situated between the metal plates and located outside the auxiliary sealing means with the flange relative to and at a predetermined distance away from the first hole, said shim surrounding the auxiliary sealing means without overlapping the flange and being non-compressible so that when the gasket is tightened, resilient surface pressure is formed on the auxiliary sealing means immediately outside the hole of the engine while non-resilient surface pressure is formed on the shim outside the auxiliary sealing means away from the first hole, said surface pressure on the shim being greater than that on the auxiliary sealing means to thereby securely seal around the first hole without causing deformation of the hole of the engine due to high surface pressure around the hole.

5,511,797

TANDEM SEAL GASKET ASSEMBLY

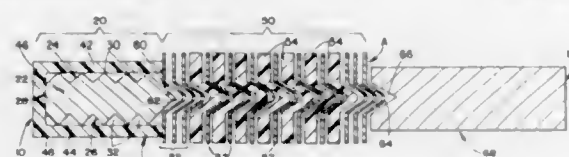
Chris T. Nikirk, and Francis L. Seidel, both of Houston, Tex., assignors to Furon Company, Laguna Niguel, Calif.

Filed Jul. 28, 1993, Ser. No. 98,642

Int. Cl.⁶ F16J 15/00

U.S. Cl. 277—204

16 Claims



1. A gasket assembly comprising:

- a metal ring having opposed first and second faces interconnected along an inner periphery, at least one of the faces having a profiled configuration defined by concentric ridges radially spaced apart by depressions;
 - a plastic envelope received over at least a portion of the metal ring faces for sealing against highly corrosive process media or where high purity is required; and
 - a fire resistant seal disposed radially adjacent the plastic envelope for maintaining seal integrity in response to elevated temperatures,
- the fire resistant seal being a spiral wound seal including layers of strip metal and fire resistant packing material.

5,511,798

EMI GASKET

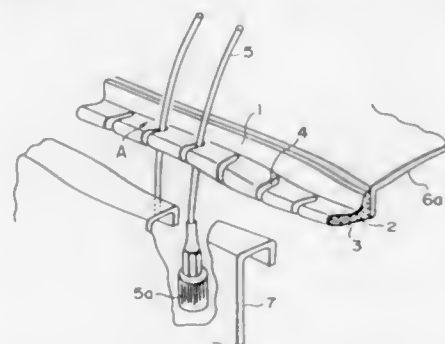
Ryusaburo Kawamoto, Tokyo, and Kengo Suzuki, Miyagi, both of Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Jul. 14, 1994, Ser. No. 275,110

Claims priority, application Japan, Jul. 22, 1993, 5-181466
Int. Cl.⁶ F16J 15/32; H05K 9/00

U.S. Cl. 277—205

12 Claims



1. An Electromagnetic Interference ("EMI") gasket for shielding electromagnetic or electrostatic interferences penetrating into a casing through openings, comprising:

a belt comprising an inner buffer member and having a V-shaped uniform cross-section and a length, said V-shaped cross section having a first side and a second side opposite said first side;

an outer conductive coating covering said belt;

a plurality of parallel grooves provided in said first side of said V-shaped cross-section of said belt, said parallel grooves being positioned in a direction perpendicular to the length of said belt;

means for holding an optical fiber in a groove of said parallel grooves; and

means for holding said first side of said V-shaped cross-section toward said second side of said V-shaped cross section between two parallel conductive plates of said casing, and for compressing said belt between said two parallel conductive plates.

5,511,799

SEALING DEVICE USEFUL IN SEMICONDUCTOR PROCESSING APPARATUS FOR BRIDGING MATERIALS HAVING A THERMAL EXPANSION DIFFERENTIAL

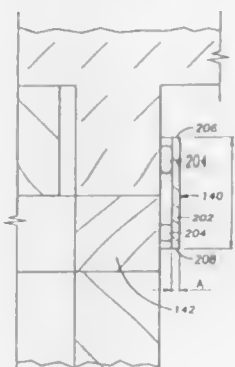
Robert E. Davenport, San Jose, and Avi Tepman, Cupertino, both of Calif., assignors to Applied Materials, Inc., Santa Clara, Calif.

Filed Jun. 7, 1993, Ser. No. 73,029

Int. Cl.⁶ F16J 15/08

U.S. Cl. 277—236

13 Claims



1. A sealing apparatus useful in semiconductor processing when a first portion of a semiconductor processing chamber is operated at one pressure while a second portion of said processing chamber is operated at a higher pressure and when said sealing apparatus is used to isolate said first and second portions of said process chamber, said sealing apparatus comprising: a thin, metal-comprising layer brazed along a first edge to a first material surface by a first bead of brazing material and brazed along a second, opposing edge to a second material surface by a second bead of brazing material, wherein said first material surface and said second material surface exhibit a difference in linear thermal expansion coefficient of at least 3×10^{-3} in./in./°C., measured at 600° C., wherein said thin, metal-comprising layer bridges said first and second material surfaces, sealingly contacting said first and second material surfaces only through said first and second beads, and wherein a seal is created by said sealing apparatus so that the operational pressure on one, first major surface of said thin metal-comprising layer can be different from the operational pressure on the other, second major surface of said thin metal-comprising layer.

5,511,800

RECIPROCAL CHUCK FOR PAVING BREAKER

Steven W. Drumbheller, and Ted C. Chang, both of Roanoke, Va., assignors to Ingersoll-Rand Company, Woodcliff Lake, N.J.

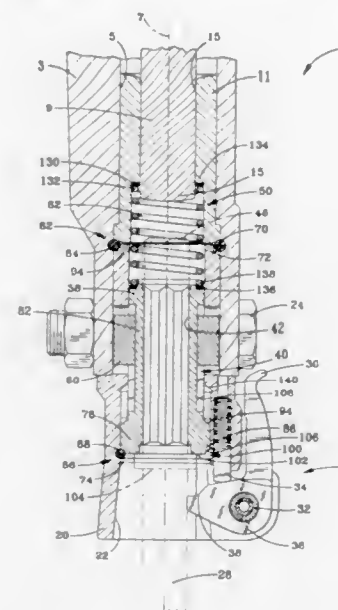
Division of Ser. No. 234,743, Apr. 28, 1994, Pat. No. 5,431,235.

This application Mar. 6, 1995, Ser. No. 399,251

Int. Cl.⁶ B25D 17/08

U.S. Cl. 279—19.1

1 Claim



1. A reciprocal chuck for a paving breaker comprising:

- a. an elongated tubular body terminating at a top end and terminating at a bottom end;
- b. said top end forming a top shoulder, said top shoulder adapted to seat thereabove, simultaneously, an annular wear pad and an annular elastic biasing means;
- c. said body having an inner surface forming a bore, said inner surface being polygonally shaped, as viewed in horizontal cross-section, the same shape as a top end portion of amoil shank;
- d. said body having an external surface extending between said top and bottom ends, said external surface, adjacent said bottom end, forming a radially extending collar;
- e. said body at said bottom end forming a bottom shoulder further comprising:
 - i. at first portion, a surface for contacting as a stop a protruding collar of amoil shank; and
 - ii. at a second portion, a grooved surface for stopping said chuck at said second stop position in said paving breaker; and
- f. said external surface having at least one keyway extending longitudinally therealong between said top and bottom ends, for receiving a key slidably therein.

5,511,801

INTEGRATED COLLET AND CHUCK DEVICE

Roger J. Kanaan, Easley, and Edward H. Martin, Anderson, both of S.C., assignors to Power Tool Holders, Inc., Wilmington, Del.

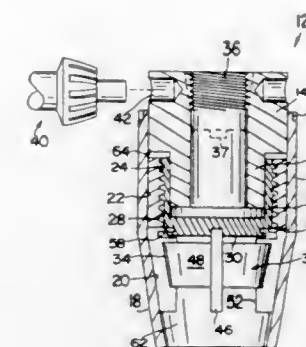
Filed Apr. 1, 1994, Ser. No. 221,889

Int. Cl.⁶ B23B 31/20

U.S. Cl. 279—52

21 Claims

1. An integrated collet and chuck device, comprising:
- a body member, said body member configured to be non-movably fixed to a drive spindle of a driving tool;
 - an outer sleeve member disposed concentric about at least a portion of said body member, at least a portion of said sleeve member being rotatable relative to said body member;



- a nut configured within said sleeve member so as to be rotatable therewith relative to said body member, said nut comprising an inner diameter engaging surface;
- a screw member disposed rotatably concentric within said nut, said screw member comprising an outer diameter engaging surface complementing said nut inner diameter engaging surface, said screw member being movable longitudinally relative to said nut through driving engagement of said nut inner diameter engaging surface and said screw member outer diameter engaging surface, said screw member further comprising a collet engaging surface;
- a collet receiving chamber defined axially forward of said screw member and having a frusto-conical inner diameter surface for carrying a machine tool collet;
- a collet carried within said collet receiving chamber, said collet comprising a frusto-conical outer diameter surface complementing said collet receiving chamber frusto-conical inner diameter surface, said collet in engaging contact with said collet engaging surface of said screw member so as to move longitudinally therewith relative to said nut; and
- wherein upon rotation of said sleeve member relative to said body member, said screw member is driven towards said collet receiving chamber progressively forcing said collet frusto-conical outer diameter surface against said collet receiving chamber frusto-conical inner diameter surface causing said collet to clamp about a machine tool shank carried therein.

5,511,802

SINGLE WHEEL BABY STROLLER

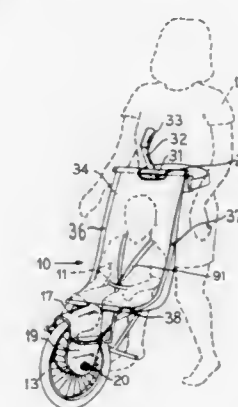
Warwick Aitken, 21 SubBrae Grove, Mount Maunganui, New Zealand, assignor to Warwick Aitken, Mount Maunganui, New Zealand

Filed Dec. 13, 1994, Ser. No. 355,016

Int. Cl.⁶ B62B 9/00

U.S. Cl. 280—1.5

5 Claims



1. A one wheel stroller for a child that can be pushed ahead of a user while running or jogging by a user who pushes the stroller with the hands free comprising a frame member, a ground engag-

ing wheel rotatably supported on a lower portion of said frame member, a child seat attached to said frame member, a horizontally extending plate attached to an upper portion of said frame member and a waist belt attached to opposite ends of said horizontally extending plate which can be placed about the waist of the user to allow the stroller to be moved, said frame member comprises a single longitudinally extending member connecting said upper and lower portions and extending substantially in line between the legs of the user so that the user's legs can freely move backward and forward without engaging the stroller, a horizontal upper bar extending laterally from said upper portion, a lower cross-member extending laterally from said lower portion and a harness attached to said child seat which can be fastened to hold the child in said seat whereby said seat is supported by said upper bar and said lower cross member.

5,511,803

BRAKE FOR ROLLER SKATES

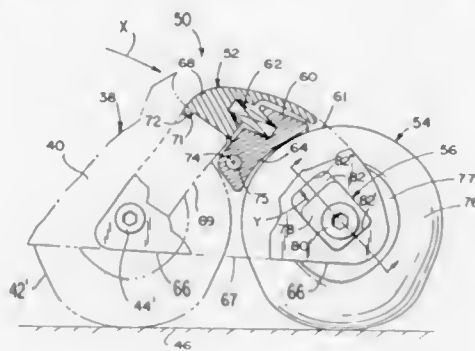
Edward O. Klukos, 10030 152nd Ave., West Olive, Mich. 49460

Filed Sep. 7, 1994, Ser. No. 302,046

Int. Cl.⁶ A63C 17/14

U.S. Cl. 280—11.2

26 Claims



1. A braking system for an in-line roller skate including a wheel-supporting frame, and a plurality of aligned wheels operably supported by the wheel-supporting frame adapted to rollingly engage a skate-supporting surface, comprising:

- an extension member connected to the wheel-supporting frame and extending rearwardly therefrom;
- a brake pad pivotally supported by said extension;
- a braking wheel generally in alignment with the plurality of aligned wheels,
- a spring for biasing said brake pad in a direction against said braking wheel and for maintaining said brake pad in continuous engagement with said braking wheel, said braking wheel being normally spaced above said skate supporting surface and positioned to rollingly engage the skate-supporting surface only when the roller skate is pivoted rearwardly; and
- a support mechanism including a slide member for rotatably supporting said braking wheel, said slide member slidably engaging at least one slot in said extension member, wherein said slide member and said braking wheel are movable relative to said extension member, against the force of said spring, for generating a braking force when the in-line roller skate is tilted rearwardly and said braking wheel engages the skate-supporting surface, the braking force increasing upon increased rearward tilting of the roller skate.

5,511,804

BRAKING DEVICE, PARTICULARLY FOR SKATES

Alfred Pellegrini, Jr., Montebelluna, and Andrea Tormena, Crocetta Del Montello, both of Italy, assignors to Nordica S.p.A., Treviso, Italy

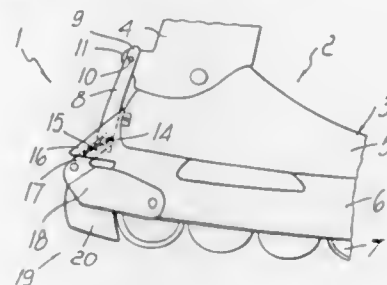
Continuation-in-part of Ser. No. 51,421, Apr. 23, 1993, Pat. No. 5,388,844, which is a continuation of Ser. No. 136,055, Oct. 14, 1993, Pat. No. 5,397,137. This application Feb. 13, 1995, Ser. No. 388,235

Claims priority, application Italy, Apr. 29, 1992, TV92U0025; Sep. 25, 1992, TV92U0046; Oct. 21, 1992, TV92A0120

Int. Cl.⁶ A63C 17/14

U.S. Cl. 280—11.2

9 Claims



1. A braking device in a skate assembly having a forward end, a rearward end, and an extension which extends from said forward end to said rearward end, the skate assembly comprising:

- a shell for supporting a user's foot portion,
 - a quarter arranged above said shell for supporting a user's ankle region and pivotally connected to said shell such that said quarter is pivotable substantially rearwardly into a rearward position and forwardly into a forward position about an axis which is substantially transverse with respect to said extension of the skate assembly, and
 - a plurality of wheels mounted below said shell;
- the braking device comprising:
- a body element pivotally connected to a fixed portion of the skate assembly and having a portion extending rearwardly from a point at which the body element is connected to said fixed portion;
 - a braking element carried downwardly by said rearwardly extending portion of said body element for disengageable engagement into braking contact with a surface supporting said skate assembly;

an actuator comprising at least one rod-like element, said actuator being movably connected at a location intermediate its length to said skate assembly and having opposed end portions connected respectively to a rearward portion of said quarter and said rearwardly extending portion of said body element, whereby said body element pivots with respect to said fixed portion of the skate assembly when said quarter pivots with respect to said shell and said braking element is engaged into braking contact with the surface supporting said skate assembly when said quarter is pivoted in said rearward position and said braking element is disengaged from braking contact with the supporting surface when said quarter is pivoted in said forward position.

5,511,805

BRAKING APPARATUS FOR USE WITH IN-LINE ROLLER SKATES

Neal McGrath, 12 Horseshoe La., Lamont, Ill. 60439

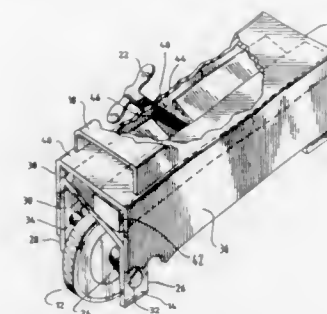
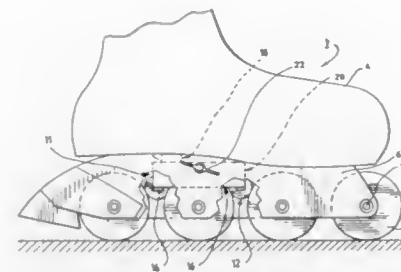
Filed May 12, 1994, Ser. No. 242,111

Int. Cl.⁶ A63C 17/14

U.S. Cl. 280—11.2

3 Claims

1. A self-aligning braking device for use in an in-line roller skate, said in-line skate having a wheel support structure and at least three wheels, each of said wheels having an axis of rotation, said braking device comprising:



at least two braking members, each of said braking members having a braking surface;

a first structure connected to said braking members which positions said braking members relative to said wheels of said skate, said braking surfaces of said braking members engaging and exerting pressure on at least two of said wheels;

a second structure movable relative to said first structure to vary the pressure exerted by said braking members on at least two of said wheels of said in-line skate;

said first structure comprises an axle for each of said braking members, a first U-shaped bracket having said axles of said braking members mounted thereto and a second U-shaped bracket fitting within said wheel support structure, said first U-shaped bracket being positioned for relative movement within said second U-shaped bracket; and

said second structure comprises a wedge and a screw, said wedge being positioned between said first U-shaped bracket and said second U-shaped bracket, said screw rotatably engaging said wedge, said wedge being laterally displaced by rotation of said screw, said first U-shaped bracket and said second U-shaped bracket each having a base side, a lateral displacement of said wedge varying the distance between said base sides of said first U-shaped bracket and said second U-shaped bracket to vary the pressure exerted by said braking members on said at least two of said wheels of said in-line skate.

5,511,806

TWO WAY ROLLING SUITCASE

Edward P. McNair, 59 Chimney Ridge Dr., Morristown, N.J. 07960

Filed Jun. 5, 1995, Ser. No. 468,140

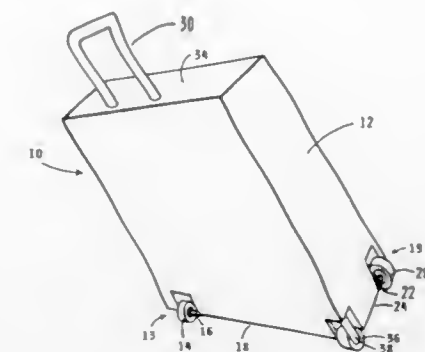
Int. Cl.⁶ B62B 1/16

U.S. Cl. 280—47.2

1 Claim

1. A suitcase comprised of:

- (a) a luggage container comprised of a generally rectangular base having longer and shorter edges;
- (b) a first wheel assembly comprised of at least one wheel rotatably mounted on at least one axle, said axle fixedly mounted parallel to one of said longer edges, said axle mounted adjacent to said longer edge, wherein said wheel projects outwardly of said edge for engagement with a surface;
- (c) a second wheel assembly comprised of at least one wheel rotatably mounted on at least one axle, said axle fixedly mounted parallel to one of said shorter edges, said axle



mounted adjacent to said shorter edge, wherein said wheel projects outwardly of said edge for engagement with said surface;

- (d) wherein said wheel of one said assembly is rotatably mounted perpendicular to said wheel of the other said assembly;
- (e) a caster mounted on a swivel frame, said frame mounted on said base, said frame mounted adjacent to the convergence of the axes of rotations of said first wheel assembly and said second wheel assembly corresponding to a corner of said base, wherein said caster projects outwardly of said convergence for engagement with said surface.

5,511,807

WHEELED HAMPER

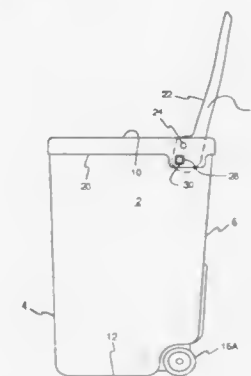
James A. Snyder, 25342 Kerri La., Ramona, Calif. 92065

Filed May 5, 1994, Ser. No. 238,378

Int. Cl.⁶ B62B 1/16

U.S. Cl. 280—47.26

6 Claims



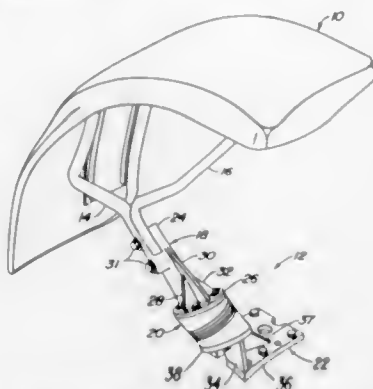
1. A wheeled hamper comprising:

- (a) a bin having an open top and a base,
- (b) wheel means, affixed at the base of the bin, for wheeling the bin when it is tilted onto said wheel means,
- (c) lid means, pivotally affixed to a rim of the open top, for being pivoted between a closed position at which the lid means closes the open top and a fully opened latched position,
- (d) means for releasably latching the lid means at the fully opened latched position, the means for latching securing the lid means in relation to the bin sufficiently to allow use of the lid means as a handle for tilting and wheeling the bin, the means for latching including biased catch posts receivable within corresponding aligned openings, and
- (e) means for holding the lid means stable at a position intermediate the closed and latched positions which includes recesses alignable with the biased catch posts.

5,511,808 FLEXIBLE FENDER MOUNT

Rodney K. Rowland, Brno-Lisen, Czech Rep., assignor to Deere & Company, Moline, Ill.
Filed Jul. 29, 1994, Ser. No. 283,016
Int. Cl.⁶ B62D 25/16
U.S. Cl. 280—157

12 Claims



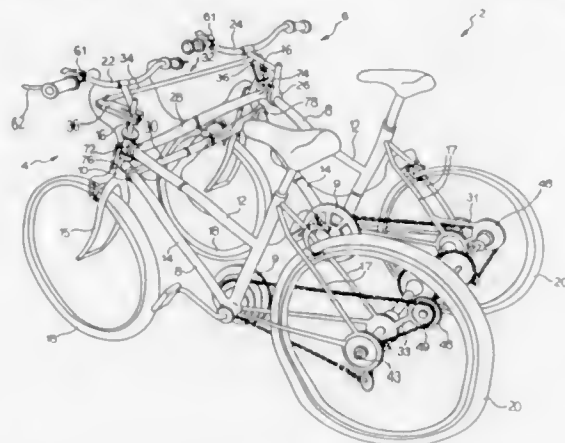
1. In a vehicle having a steerable wheel on an axle, a fender, and a fender mount for supporting the fender on the axle adjacent to the steerable wheel, the fender mount having a bracket fixed to a portion of the axle which pivots with the wheel, an arm fixed to the fender and a flexible member having a first end attached to the bracket and having a second end attached to the arm, characterized by:

the flexible member comprising a bushing being rotatably flexible about a torsion axis and being bendably flexible in directions transverse to the torsion axis, the bushing having a central axis which extends upwardly and rearwardly with respect to a vertical plane containing a rotation axis of the wheel.

5,511,809 PEDAL-POWERED FOUR-WHEEL VEHICLE

David P. Sagi, 18124 Sandringham Ct., Northridge, Calif. 91326
Filed Jun. 27, 1994, Ser. No. 265,799
Int. Cl.⁶ B62K 1/306
U.S. Cl. 280—209

39 Claims



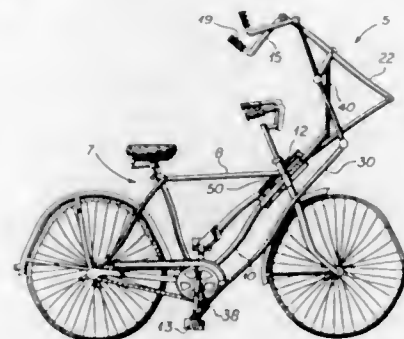
36. A pedal-powered four-wheel vehicle having two bicycles attached in a side-by-side relationship, each bicycle having a driving wheel, and the bicycles including a single intermediate driving shaft extending therebetween and a differential axle coupled between the driving wheels to accommodate the speed difference thereof, where an individual pedalling power of each of the two bicycles is combined to transmit combined power to the intermediate driving shaft, which then transmits the combined

power to the differential axle, which in turn evenly distributes the combined power to the driving wheels of the two bicycles respectively.

5,511,810 HAND DRIVING DEVICE FOR A BICYCLE

Kun-Yuan Tong, 2308 W. Doublegate Dr., Albany, Ga. 31707
Filed Oct. 20, 1994, Ser. No. 326,526
Int. Cl.⁶ B62M 1/12
U.S. Cl. 280—233

10 Claims



1. A removable hand driving device for a bicycle, the bicycle having a frame including an inclined frame member connected to a steering head, a foot crank mechanism that is rotatably attached to the frame, and pedals that are each rotatably connected to the foot crank mechanism, each pedal including an axial shaft formed centrally therethrough, said device comprising:

lever means for transmitting the arm motion of a bicycle rider to the pedals of the bicycle;
bracket means, for supporting said lever means on the bicycle frame;
means for removably fastening said bracket means to the bicycle frame; and
means for removably fastening said lever means to the axial shaft of each bicycle pedal;

whereby said lever means of the driving device is moved by the bicycle rider's hands and arms and the motion of said lever means is transmitted through said driving device to the foot crank mechanism of the bicycle to help power the movement of the bicycle.

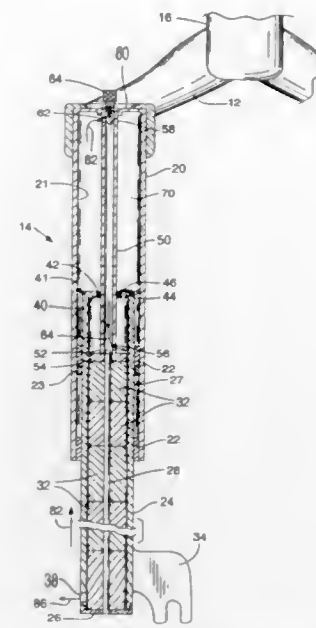
5,511,811 AIR DAMPING FOR BICYCLE SHOCK ABSORBING FORK

James D. Pileggi, Beaverton, Oreg., assignor to Halson Designs, Inc., Wilsonville, Oreg.
Division of Ser. No. 303,071, Sep. 8, 1994, Pat. No. 5,417,446.
This application Apr. 24, 1995, Ser. No. 427,123
Int. Cl.⁶ B62K 25/08
U.S. Cl. 280—276

1 Claim

1. A shock absorbing system for bicycles having a frame and front and rear wheels supporting the frame, said system comprising:

a shock absorbing damper between the frame and one of the front and rear wheels;
said damper comprised of a plunger and an outer cylinder with the plunger slidably received in the outer cylinder;
said plunger and outer cylinder relatively slidable between a contracted position and an extended position;
said plunger and outer cylinder cooperatively defining an air chamber that contracts and expands as the plunger and cylinder slide relatively between the contracted and extended positions respectively, said air chamber having an air passage allowing air leakage into and out of said air chamber, said air passage providing restricted and controlled release of air into

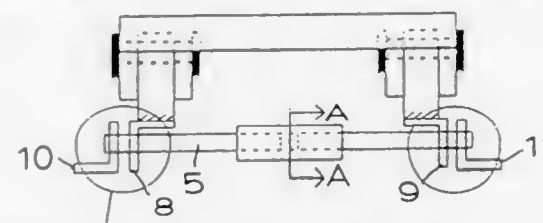


and out of said air chamber to dampen rapid relative sliding of the plunger and outer cylinder.

5,511,812 FIFTH WHEEL COUPLING

Peter J. Milner, West Midlands, England, assignor to Bloxwich Engineering Limited, England
Filed Oct. 4, 1994, Ser. No. 318,785
Claims priority, application United Kingdom, Apr. 29, 1992, 9209259
Int. Cl.⁶ B62D 53/08
U.S. Cl. 280—433

20 Claims



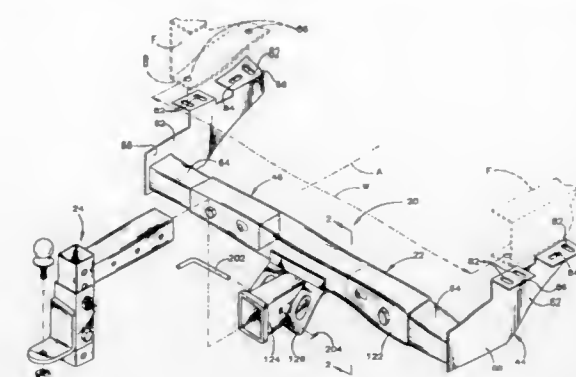
1. A fifth wheel hitch assembly in which said fifth wheel hitch assembly is supported by transverse beams being susceptible to horizontal and vertical deflections, at least one of said transverse beams comprising a sensor having a transducer for measuring said horizontal deflection at the center of said beam and a transducer for measuring said vertical deflection at the center of said beam, said beam comprising two outer parts and an inner part connecting said outer parts, said transducers being placed on said inner part, said inner part serving to actuate said transducers.

5,511,813 ADJUSTABLE WIDTH TRAILER HITCH

Harley A. Kravitz, 3041 Brainard Rd., Pepper Pike, Ohio 44124
Continuation-in-part of Ser. No. 206,960, Mar. 7, 1994, abandoned. This application Mar. 14, 1995, Ser. No. 403,586
Int. Cl.⁶ B60D 1/00
U.S. Cl. 280—495

11 Claims

1. A hitch assembly attachable to a selected one of a set of towing vehicles for connecting a towed vehicle, each towing vehicle of the set having a pair of spaced apart frame portions, each frame portion having a bottom surface, the frame portions of



the vehicles of the set being spaced apart at a variety of different widths each taken in a direction normal to a longitudinal center line of the respective vehicle of the set, certain of the frame portions of the vehicles of the set including bolt patterns in the respective bottom surfaces, at least one of said certain vehicles having a first bolt pattern and at least another of said certain vehicles having a second and different bolt pattern, said hitch assembly comprising:

a) a pair of unitary end members, each end member including a frame connection part for horizontal positioning against and connection to the bottom surface of an associated frame portion of a selected towing vehicle of the set, each end member having a depending suspension part orthogonal to the connection part of the respective end member; each end member also having a transversely extending tubular support part fixed to the suspension part of the respective end member;

b) each of said connection parts having a plurality of elongate openings at least one of which is located to receive a fastener to attach said connection part to the selected towing vehicle via the bolt pattern of one of the bottom surfaces, such selected vehicle being any one of the vehicles of the set including said at least one and said another vehicle, at least one of the openings in said connection part extending in a direction parallel to a longitudinal axis of said support part and at least one of the openings in said connection part extending in a direction perpendicular to said support part axis;

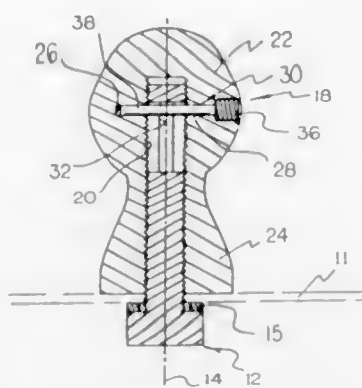
c) each of said support parts having spaced openings each extending through at least one wall of said support part;
d) an elongated tubular intermediate member, the intermediate member being adapted to engage the support parts of said pair of end members in telescopic relationships, said intermediate member having a length less than the smallest width between frame portions of the towing vehicles of the set; and
said intermediate member including at least two, transversely spaced, through openings each alignable with an associated support part opening to form aligned opening pairs, each aligned opening pair being for receipt of a fastener extending through the intermediate member and through the associated support part to prevent relative telescoping movement between the associated support part and intermediate member when in use.

5,511,814 TRAILER BALL LOCK APPARATUS

Jason Floyd, 908 S. Jackson, El Dorado Springs, Mo. 64744
Filed Apr. 13, 1995, Ser. No. 421,526
Int. Cl.⁶ B60D 1/28;1/06
U.S. Cl. 280—507

3 Claims

1. A trailer ball lock apparatus, comprising:
an externally threaded connecting bolt member having a longitudinal axis, wherein said connecting bolt member includes a first longitudinal slot,
a ball assembly which includes an internally threaded, longitudinally oriented, connecting-bolt-receiving well adapted to



receive said connecting bolt member, wherein said ball assembly includes a top ball portion and a base portion, wherein said ball portion includes a pin-receiving well portion extending from a first side of said connecting-bolt-receiving well to a terminating point within the ball assembly, wherein said ball portion includes a pin-receiving channel portion located on a second side of said connecting-bolt-receiving well, and

a locking pin assembly which includes a lock pin portion adapted to extend through said pin-receiving channel portion into said pin-receiving well portion of said ball portion of said ball assembly, wherein said lock pin portion is placed in registration with said first longitudinal slot of said connecting bolt member for preventing rotation of said connecting bolt member within said ball assembly,

wherein said pin-receiving channel portion of said ball portion of said ball assembly includes an internally threaded portion, and wherein said locking pin assembly includes an externally threaded portion adapted to screw into said internally threaded portion of said pin-receiving channel portion.

5,511,815

ALPINE STYLE SKI

Jørgen Karlsen, N-2864, Fall, Norway

Continuation of Ser. No. 98,390, Aug. 2, 1993, abandoned.

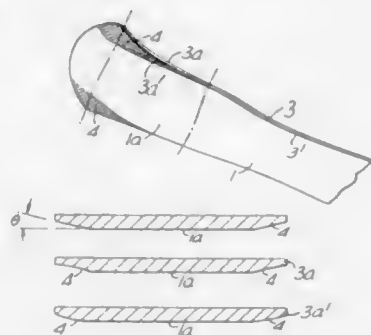
This application Sep. 12, 1995, Ser. No. 526,862

Claims priority, application Norway, Feb. 7, 1991, 91 0487

Int. Cl.⁶ A63C 5/052

U.S. Cl. 280—609

9 Claims



1. A ski comprising:

a main body having a top side and a bottom side, the main body including a body segment and an upwardly bent segment, the bottom side of the body segment including a substantially flat sliding surface defining a plane;

an upturned tip, the tip meeting the upwardly bent segment of the main body at a first transition;

a second transition along the main body;

the main body and the tip including oppositely disposed first and second sides, each of the first and second sides including

oppositely disposed upper and lower edges, the upper and lower edges extending substantially along the length of the ski;

a longitudinal axis extending along the length of the main body and the tip;

the first and second sides along the main body being curved;

the first and second sides of the tip including outwardly extending portions, and the first and second sides of the main body including outwardly extending portions, the outwardly extending portions on the main body extend along at least part of the upwardly bent segment, the outwardly extending portions on the main body tapering outward from the second transition to the first transition, such that the outwardly extending portions of the main body join the outwardly extending portions of the tip at the first transition;

the first transition having a width approximately 15% to 70% greater than the width of the second transition;

the outwardly extending portions of the tip and the outwardly extending portions of the main body forming side sections, each of the side sections including an upper surface and a lower surface, the upper surface extending to the upper edges of the respective first and second sides, the lower surface diverging upwards and extending to the lower edges of the respective first and second sides, and outwards in relation to the longitudinal axis of the ski, the vertical distance between the lower edges of the first and second sides at the first transition and the plane of the sliding surface being at least 10% of the increase in width between the first transition and the second transition.

5,511,816

BASE PLATE AND MOVABLE ANTI-FRICTION DEVICE OF A SKI BINDING

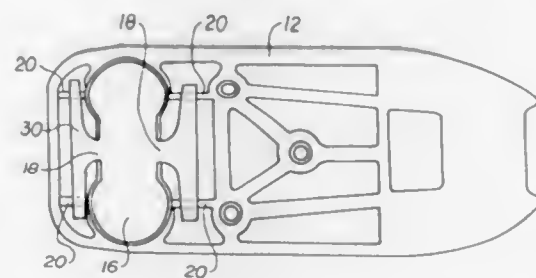
Gerhard Sedlmair, Farchant, Germany, assignor to Marker Deutschland GmbH, Germany

Filed Jan. 12, 1995, Ser. No. 371,956

Int. Cl.⁶ A63C 9/00

U.S. Cl. 280—636

10 Claims



1. A ski binding comprising:

base plate means having upper and lower surfaces for supporting a ski boot, said base plate means having a recess means formed therein;

sole holder means mounted to said base plate means for receiving the sole of a ski boot; and

an anti-friction means for controlling the friction between the ski boot sole and the sole holder means during a lateral release of the ski boot from the sole holder, said anti-friction means comprising:

a rocking member pivotally supported in the base plate for rocking movement about a fixed longitudinal axis of the ski binding relative to said base plate and cooperating with said recess means, said rocking member having at least one transversely disposed end portion along each side of said longitudinal axis, said end portions having at least one upwardly extending protrusion depressingly engageable with said ski boot sole to rock said rocking member to reduce friction between the ski boot sole and the sole holder.

5,511,817

VEHICLE AXLE SUSPENSION SYSTEM

Tamiyoshi Kasahara, Yokosuka; Yohsuke Akatsu, Yokohama; Kenji Kawagoe, Yokosuka; Yutaka Endo, Atsugi, and Hiroshi Noguchi, Utsunomiya, all of, Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

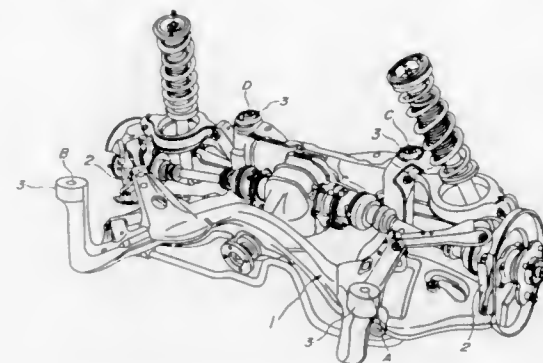
Filed Jun. 4, 1993, Ser. No. 70,919

Claims priority, application Japan, Jun. 16, 1992, 4-156917

Int. Cl.⁶ B60G 11/22

U.S. Cl. 280—717

15 Claims



1. An axle suspension system for use with an automotive vehicle comprising:

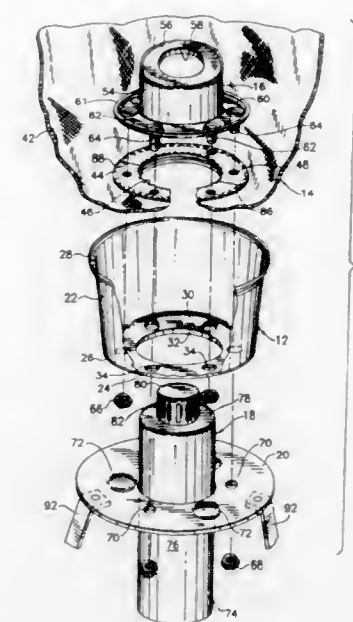
road wheel support members for rotatably supporting road wheels;

a suspension member for supporting the road wheel support members for vertical swinging movement; and

elastic suspension element including at least one front elastic suspension element positioned in front of the road wheel support members for elastically mounting the suspension member to the vehicle and at least two rear elastic suspension elements positioned at different suspension points behind the road wheel support members for elastically mounting the suspension member to the vehicle, each of the elastic suspension elements having no anisotropy in a direction where the elastic suspension element is strained;

the elastic suspension elements being positioned to provide an understeer characteristic when a lateral force acts on a suspension roll center determined by suspension geometry, to rotate the suspension member around a virtual roll axis extending through an elastic center of the front elastic suspension element and an elastic center of the rear elastic suspension elements;

wherein the elastic suspension elements are positioned to place the suspension roll center below an upgrade of the virtual roll axis in a forward direction of the vehicle.



C) an airbag cushion including an inflatable body and a reinforced mounting collar defining a mouth, the mounting collar clamped between the mounting ring of the reaction can and the retainer ring of the retainer secured thereto with the mouth aligned with the inflator-receiving opening in the bottom wall of the reaction can, the inflatable body of the airbag cushion folded and substantially packed in the storage compartment of the reaction can for deployment from the open top thereof; and

D) an inflator for producing inflation gas, the inflator having an elongated cylindrical body and an outlet cap at one end thereof for delivering inflation gas, the inflator secured to the retainer with the inflation gas outlet cap extending through the opening defined by the top wall of the retainer, a portion of the inflator body adjacent the gas outlet cap received in the cylindrical sleeve of the retainer and a portion of the inflator body extending through the inflator-receiving opening in the bottom wall of the reaction can and the mouth of the airbag cushion.

5,511,819

FASTENERLESS AUTOMOTIVE PASSENGER AIRBAG MODULE END CAP

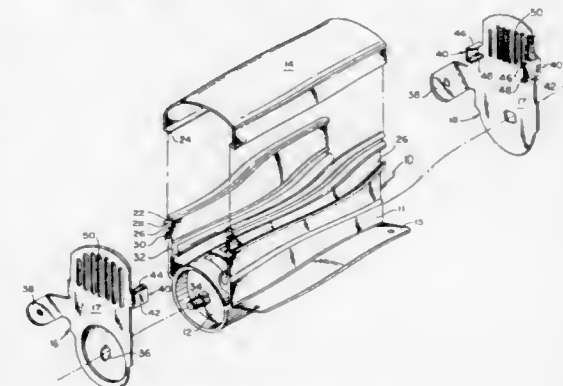
David L. Spilker, Pleasant View, and Donald J. Paxton, Brigham City, both of Utah, assignors to Morton International, Inc., Chicago, Ill.

Filed Mar. 27, 1995, Ser. No. 411,037

Int. Cl.⁶ B60R 21/16; B65D 6/00

U.S. Cl. 280—728.2

3 Claims



1. In an air bag module comprising:

5,511,818

PASSENGER SIDE AIRBAG MODULE

Patrick G. Jarboe, Shelby Township, Mich., and Terry R Davis, Layton, Utah, assignors to Morton International, Inc., Chicago, Ill.

Filed Aug. 16, 1995, Ser. No. 515,563

Int. Cl.⁶ B60R 21/16

U.S. Cl. 280—728.2

20 Claims

1. A passenger side airbag module comprising:

A) a reaction can having a sidewall and a bottom wall defining an open-topped airbag cushion storage compartment, the bottom wall including an integral mounting ring defining an inflator-receiving opening;

B) a retainer having a generally cylindrical sleeve with upper and lower ends, a top wall extending inwardly from the upper end of the cylindrical sleeve and defining an opening, and a retainer ring extending outwardly from the cylindrical sleeve and secured to the mounting ring of the reaction can with the sleeve extending upwardly from the inflator-receiving opening in the bottom wall of the reaction can;

- (1) a generally "U" shaped housing having two upstanding sidewalls connected by a "U" shaped base;
- (2) a pair of endcaps connected to said housing to define a volume adapted to receive an inflator at the bottom of said "U" shaped housing and an air bag cushion assembly between the upstanding sidewalls of said "U" shaped housing;
- and (3) means to connect said endcaps to said housing; the improvement in said connecting means consisting of:
- at least one channel in each of the upstanding walls of said "U" shaped housing; and a pair of tabs bent from each of said endcaps and shaped to enter the channels on the sides of said upstanding sidewalls,
- said end caps being securely fastened to said housing by insertion of said tabs into said channels and staking said channels to said tabs to improve the connection between said end caps and said housing.

5,511,820

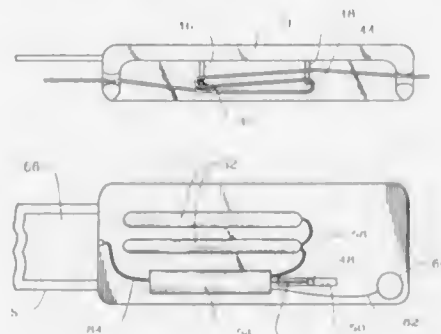
PORTABLE MOTOR VEHICLE SAFETY AIRBAG
J. Paul Hatfield, 8501 Bucyrus Ct., Unit 101, Manassas, Va. 22110

Continuation-in-part of Ser. No. 157,736, Nov. 24, 1993, Pat. No. 5,333,902. This application Jul. 29, 1994, Ser. No. 283,029

Int. Cl.⁶ B60R 21/18

U.S. Cl. 280—733

7 Claims



1. An airbag device for use in a vehicle having passenger seat belts therein, said device comprising a housing having a first guide member secured to said housing and a second guide member mounted so as to be movable with respect to said first guide member, said guide members being mounted to the housing in a cantilever configuration and said housing further comprising a recess sorted in the rear portion thereof and slots formed in the walls of said housing for receiving the side edge of a seatbelt passing from one of said slots, through an S-shaped path around said guide members to the other of said slots, said guide members being so mounted and positioned that the seat belt passing around both of said guide members is capable of exerting a force tending to relatively move said guide members in the event of a collision, said housing including a source of compressed gas and sensor means connected to said second guide member for detecting the relative movement of said guide members, an inflatable airbag adapted to receive gas from said source of compressed gas, whereby upon occurrence of a collision, said sensor means detects the collision and causes release of said compressed gas and inflation of said airbag.

5,511,821
VEHICLE RESTRAINT SYSTEM CUSHION WITH SACRIFICIAL TEAR SEAM

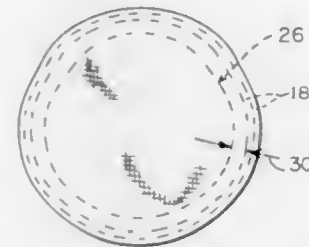
Scott A. Meyer, N. Ogden, and Timothy M. Martersteck, Ogden, both of Utah, assignors to Morton International, Inc., Chicago, Ill.

Filed Dec. 21, 1994, Ser. No. 361,085

Int. Cl.⁶ B60R 21/16

U.S. Cl. 280—743.1

10 Claims



1. An inflatable impact protection air bag cushion having a back panel made of a fabric with a marginal edge and a central portion fastened to a vehicle at a location which provides inflation gas to an opening in the back panel from an inflator in the event of a collision, said air bag also having a front panel made of a fabric with a marginal edge that is joined to the back panel marginal edge by a main seam while the bag is turned inside out with stitches of threads having a strength sufficiently high to cause the cushion fabric to comb at said stitches due to normal maximum inflation gas pressure;
- a sacrificial seam formed to be coextensive with the main seam and having a strength which causes said sacrificial seam to tear during inflation just prior to the time when the maximum inflation gas pressure reaches the main seam; and
- said sacrificial seam being located between said opening and said main seam to be subjected to the maximum inflation gas pressure before said pressure reaches said main seam, said sacrificial seam being spaced generally parallel with the main seam and at a distance from the main seam that is sufficiently small so as not to substantially influence deployment while reducing the final load due to the normal maximum inflation gas pressure the main seam and adjacent fabric experience by an amount sufficient to prevent combing.

5,511,822

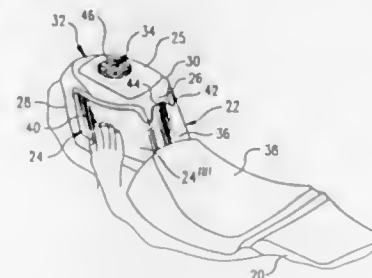
MOTORCYCLE TANK PAD APPARATUS AND METHODS
Daniel B. Wolanski, 13914 - 54th Ave., SE., Everett, Wash. 98208

Filed Oct. 22, 1993, Ser. No. 141,249

Int. Cl.⁶ B60R 13/04

U.S. Cl. 280—770

7 Claims



1. A method of protecting and shielding paint of a metallic gas tank of a motorcycle comprising the steps of:
- (a) cutting a pad of resilient, flexible, magnetic sheet material to a desired shape;
- (b) heating the pad until the pad becomes at least partially remoldable;

- (c) juxtaposing the heated pad in a desired location against the gas tank so that magnetic forces within the sheet material pull the pad against the metallic gas tank;
- (d) smoothing out the heated pad that is magnetically secured to the gas tank to remove air pockets from therebetween;
- (e) allowing the heated pad to conform to the contour of the gas tank; and
- (f) allowing the heated pad to cool and thereby retain the general contour of the gas tank.

5,511,823

IMPACT ABSORBING TYPE STEERING COLUMN APPARATUS WITH A MOTORIZED POWER STEERING DEVICE

Mikio Yamaguchi, and Sakae Matsumoto, both of Takasaki, Japan, assignors to NSK Ltd., Tokyo, Japan

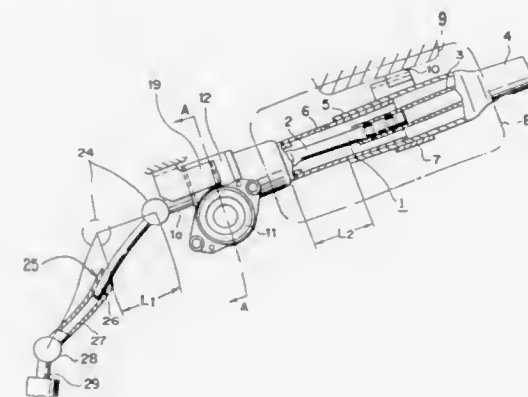
Filed May 24, 1994, Ser. No. 248,211

Claims priority, application Japan, May 28, 1993, 5-033166 U

Int. Cl.⁶ B62D 1/19

U.S. Cl. 280—777

8 Claims



1. An impact absorbing type steering column apparatus with a motorized power steering device, comprising:
- a collapsible steering shaft to which a steering wheel is fixable at a rear end thereof;
- a collapsible steering column in which said steering shaft is rotatably received;
- a housing coupled to a fore end portion of said steering column;
- an electric motor supported by said housing;
- a mechanism disposed in said housing for transmitting a rotational force of said electric motor to said steering shaft;
- a first energy absorbing assembly supporting said steering column on a vehicle body and which allows forward collapsing movement of a part of said steering column in a forward direction while absorbing energy of an impact of a driver with the steering wheel; and
- a second energy absorbing assembly supporting said housing on the vehicle body such that said housing can be displaced in a forward direction to allow forward movement of said steering column and said steering shaft, and which absorbs additional energy of the impact of the driver with the steering wheel during the forward displacement of the housing.

5,511,824

CONVERTIBLE ROLLER FOOTWEAR

Yong E. Kim, 197-53, Gung-dong, Guro-Ku, Seoul, Rep. of Korea

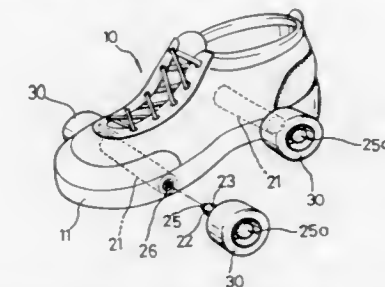
Filed Jan. 31, 1995, Ser. No. 380,754

Claims priority, application Rep. of Korea, Jan. 31, 1994, 94-1782

Int. Cl.⁶ A63G 17/20

U.S. Cl. 280—841

6 Claims



1. A convertible roller footwear comprising in combination:

a sole;

an elongate bushing embedded in the sole and extending in a transverse direction to terminate at opposite open ends, the bushing having an inner circumferential surface and generally hemispherical recesses disposed on the inner circumferential surface in the vicinity of the opposite ends of the bushing;

a plurality of roller assemblies, each including a hollow nipple removably fitted into the bushing, the nipple having a radial through-hole formed adjacent to an internal end of the nipple to receive a ball therein, a pushpin slidably inserted through the nipple, the pushpin having an annular groove for selective communication with the radial through-hole, the pushpin movable between a pushed-in position for allowing the ball to move radially inwardly into engagement with the annular groove and a pulled-out position for causing the ball to move radially outwardly into engagement with the recesses, and a roller rotatably mounted on an external end of the nipple.

5,511,825

STATIONERY

Rudolf E. Van De Pol, P.O. Box 87255, Houghton, South Africa

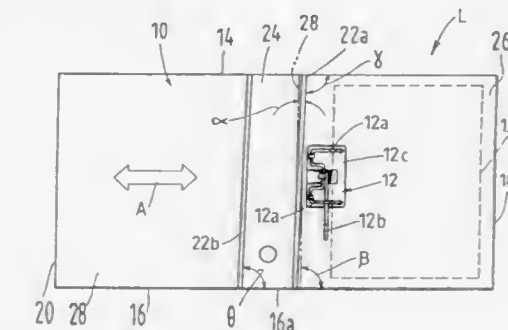
Filed Jul. 26, 1994, Ser. No. 280,519

Claims priority, application South Africa, Jul. 26, 1993, 93/5367; Jun. 7, 1994, 94/3965

Int. Cl.⁶ B42F 13/00

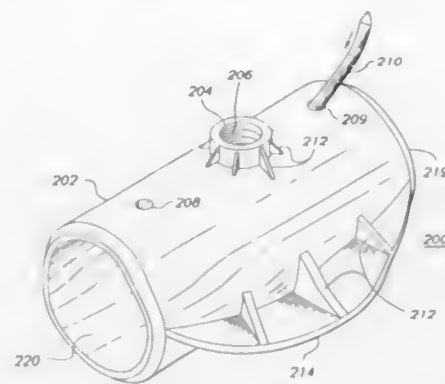
U.S. Cl. 281—36

9 Claims



1. A file comprising a cover having a front wing, a rear wing and a spine between the wings, all having a side edges and upper and lower edges with the side edges of the spine being connected to the inner side edges of the wings; the file further comprising a mechanism secured to the rear wing close to the spine and being arranged to receive and retain thereon punched paper sheets; the lower edge of the spine being inclined relative to the side edges of the spine so that the angle between the lower edge of the spine and side edge between the spine and the front wing is an acute angle.

5,511,826
TOWABLE NONCONDUCTIVE PIPE ADAPTER FOR A SPRINKLER HAVING Laterally EXTENDING SURFACES
 James Clare, Escalon, Calif., and John Himmelberger, Chester Springs, Pa., assignors to CertainTeed Corporation, Valley Forge, Pa.
 Continuation-in-part of Ser. No. 254,348, Jun. 6, 1994. This application Nov. 3, 1994, Ser. No. 333,906
 Int. Cl.⁶ F16L 37/088
 U.S. Cl. 285—5 19 Claims



1. A towable, non-conductive, mechanically locking sprinkler fitting for making a fluid connection between irrigation pipes, comprising:

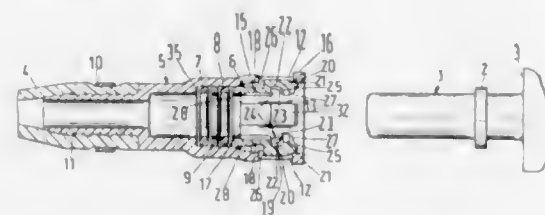
a polymeric tubular fitting member having first and second open ends for mating with a pair of irrigation pipes, said tubular fitting member including a laterally extending, bevelled lower surface for permitting said fitting member to be slid across a field without tipping;

an orifice disposed generally opposite said bevelled lower surface for receiving a sprinkler riser;

said tubular fitting member having an annular recess located along its surface which corresponds with a mating annular recess on at least a first of said irrigation pipes to form an annular cavity; and

a flexible polymeric spline inserted into said annular cavity to form a mechanical lock between said first pipe and said tubular fitting member, said fitting being light-weight for easy towing and non-conductive so as to avoid electrocuting a user.

5,511,827
PUSH-FIT CONNECTOR FOR JOINING TWO FLUID LINES
 Christoph Steinkamp, Biebergemünd, and Bernd Kleinhens, Hasselroth, both of, Germany, assignors to Rasmussen GmbH, Malsfeld, Germany
 Filed Apr. 13, 1995, Ser. No. 422,302
 Claims priority, application Germany, Apr. 18, 1994, 44 13 346.4
 Int. Cl.⁶ F16L 35/00
 U.S. Cl. 285—39 11 Claims



1. Push-fit connector for joining two fluid lines, one of which is provided with a retaining rib, comprising:

a sleeve having a central opening to receive the one fluid line with retaining rib, said sleeve having a plurality of apertures spaced around its circumference;

a latching device within said sleeve having a main body with at least one abutting surface cooperating with a surface within said sleeve to permit limited movement of said latching device within said sleeve along the sleeve longitudinal axis, said latching device having

a pair of elastically flexible retaining arms spaced apart on and extending from said main body generally axially of the sleeve, each said retaining arm having a hook on its free end projecting toward said sleeve longitudinal axis for grasping behind the retaining rib of the one fluid line inserted axially into the latching device between said retaining arms to couple said latching device to the one fluid line, the inner surface of the free end of a hook having an inclined surface which, when said sleeve and said latching device and the one fluid line are moved toward each other, moves over the retaining rib of the one fluid line to spread the retaining arms apart to permit the hook to latch over the retaining rib, each hook also having an external part disposed in a respective aperture that is axially movable of the sleeve within the respective aperture, the front edge of the free end of a said hook having an outer surface inclined toward the sleeve axis which, when the one fluid line moves apart from the sleeve and retaining device, said hook becomes correspondingly more tightly engaged with the retaining rib by said hook front edge inclined outer surface within its respective aperture engaging the sleeve at a first edge of the respective aperture closest to said central opening, each hook also having an internal inclined surface which contacts the retaining rib when the latching device and inserted one fluid line are moved apart from one another to move the retaining arms radially outward of the one fluid line retaining rib and spread the retaining arms apart to allow uncoupling of the one fluid line from said latching device; and

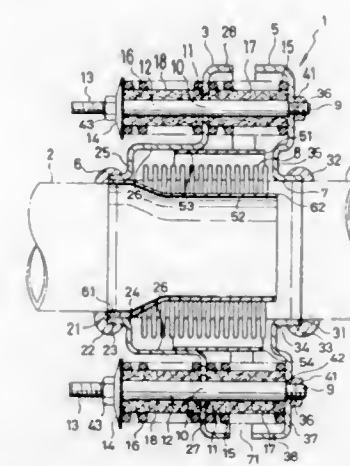
at least one unlatching arm extending generally axially of said sleeve from said latching device body between at least one pair of adjacent retaining arms and having an actuating part projecting outward through a respective one of said apertures to be engaged to move said locking device axially away from said sleeve central opening to uncouple the hooks of the retaining arms from the retaining rib of the one fluid line as the one fluid line is moved away from said locking device.

5,511,828
FLEXIBLE JOINT FOR AUTOMOBILE EXHAUST PIPE
 Kenneth M. Kurek, Geneva, Ill.; Alain M. Pierre, Le Chesnay, France; Takashi Maeda, Fujisawa, and Takeshi Fukukido, Yamato, both of, Japan, assignors to Oiles Corporation, Tokyo, Japan, and Metex Corporation, Edison, N.J.
 Continuation-in-part of Ser. No. 127,560, Sep. 28, 1993, abandoned. This application Jul. 15, 1994, Ser. No. 276,676
 Int. Cl.⁶ F16L 59/16; 59/22
 U.S. Cl. 285—49 48 Claims

1. A flexible joint for an automobile exhaust pipe, comprising: first flange means to be fixed to an exhaust pipe of an engine-side exhaust system;

second flange means to be fixed to an exhaust pipe of a tail pipe-side exhaust system;

flexible bellows tube means having one end to be fixed to said exhaust pipe of said engine-side exhaust system and another end to be fixed to said exhaust pipe of said tail pipe-side exhaust system so as to couple said two exhaust pipes to each other in such a manner that an angle of connection of said two exhaust pipes to each other is changeable by means of a bending of the flexible bellows tube means and said two exhaust pipes are capable of freely moving relatively toward or away from each other in an axial direction by means of an expansion and contraction of the flexible bellows tube means;



coupling shaft means having one end fixed to one of said first and second flange means and an intermediate portion passing loosely through a hole formed in the other one of said first and second flange means;

spring seat means attached to another end of said coupling shaft means;

first coil spring means disposed between said first and second flange means concentrically with said coupling shaft means;

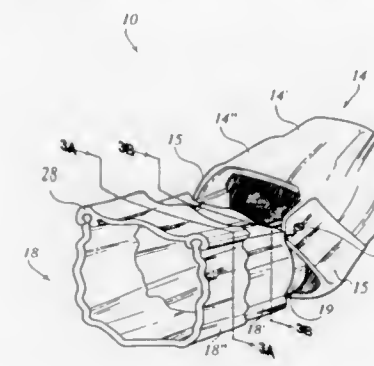
second coil spring means disposed between the other one of said flange means and said spring seat means concentrically with said coupling shaft means;

first resilient hollow cylindrical member means disposed between said first and second flange means concentrically with said coupling shaft means and formed by compressing a wire mesh sheet; and

second resilient hollow cylindrical member means disposed between the other one of said flange means and said spring seat means concentrically with said coupling shaft means and formed by compressing a wire mesh sheet.

said the other one of said first and second flange means having first spring seat portion extending radially for seating said first and second coil spring means, said spring seat portion being disposed at a position corresponding to an axially intermediate position of said bellows tube means.

5,511,829
UNIVERSAL CONNECTOR FOR DOWNSPOUT DRAINAGE EXTENSION
 Jean Sicotte, and Denis Sicotte, both of Winnipeg, Canada, assignors to Metro Eavestroughing Ltd., Winnipeg, Canada
 Continuation-in-part of Ser. No. 990,046, Dec. 14, 1992, Pat. No. 5,375,891. This application Sep. 21, 1994, Ser. No. 309,642
 Int. Cl.⁶ F16L 27/00
 U.S. Cl. 285—176 4 Claims



1. An improved hinged connector for allowing residential downspout pipes to be connected to extension pipes in which down-

spouts with cross sections chosen from the group containing: 3" round metal pipe; 2 1/2" x 2 1/2" square metal pipe; 2 1/4" x 3 1/4" rectangular metal pipe; 2 1/4" x 3" rectangular vinyl pipe; and 2 3/4" round vinyl pipe, may be connected to extension pipes with cross sections chosen from the same group, said connector comprising:

(a) in input tube comprising:

a first input tube segment with an approximately square cross section except that the sides of the square are constructed with channels parallel to the tube longitudinal axis (LA), said channels fashioned to accommodate the insertion of downspouts chosen from the group containing: 2 1/2" x 2 1/2" square metal pipe; 2 1/4" x 3 1/4" rectangular metal pipe; 2 1/4" x 3" vinyl pipe;

a second input tube segment extending from and parallel with the longitudinal axis of the first segment, said second segment having a smaller cross section than that of the first segment, and having also channels parallel to the longitudinal axis of the tube, said channels fashioned to accommodate downspout tubing chosen from the group containing: 3" round metal pipe; 2 3/4" round vinyl pipe; and

an input flange extending from and parallel with the longitudinal axis of said second input tube segment;

(b) an outflow tube comprising:

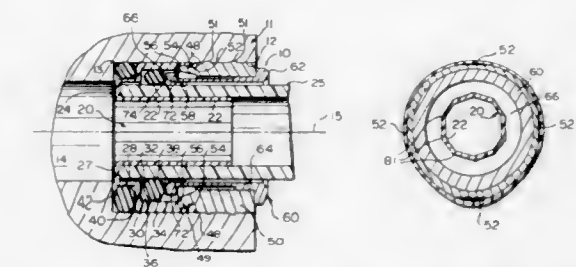
a first outflow tube segment that tapers larger in the direction opposite to that of water flow; said segment having a minimum cross sectional diameter smaller than, and a maximum cross sectional diameter larger than, the smallest minimum inside diameter in the group of drainage extensions;

a second outflow tube segment that tapers larger in the direction opposite to that of water flow; said second outflow segment extending from the first outflow segment and parallel with its longitudinal axis; with the minimum diameter of the second outflow segment being smaller than, and the maximum diameter of the second outflow segment being larger than, the largest minimum inside diameter in the group of drainage extensions; and

(c) pivot pin means through said flange at right angles to the longitudinal axis of said input and outflow tubes allowing said two tubes to hinge relative to one another;

whereby a person may accommodate any of the group of downspouts inside the input tube and any of the group of extensions over top of the outflow tube so that water flows from the downspout through the connector and into the drainage extension.

5,511,830
QUICK CONNECT TUBE COUPLINGS
 Darwin C. Olson, Franklin, Tenn., and John S. Hyska, Vinita, Okla., assignors to Dana Corporation, Toledo, Ohio
 Filed Sep. 20, 1994, Ser. No. 308,906
 Int. Cl.⁶ F16L 33/00
 U.S. Cl. 285—243 8 Claims



1. In a quick-connect coupling, useful to connect tubes or plugs within unstepped bores formed in bodies in alignment with fluid passages, wherein the coupling includes a plastic tubular tube support of an outside diameter suitable for frictionally engaging the inner wall of the tube or plug; a metal sleeve having an inner diameter greater than the outer diameter of the tube or plug and an outer diameter which is substantially the same as the diameter of

the unstepped bore for frictionally retaining the sleeve in the bore; a collet having an outer diameter complementing the inner diameter of the sleeve and an inner diameter greater than the outer diameter of the tubular tube support and slightly less than the outer diameter of the tube or plug, wherein the tube or plug is frictionally retained between the collet and tubular tube support, and at least one O-ring seal is disposed around the coupling, the improvement comprising:

- the tubular tube being made of plastic;
- a base support portion extending radially from the plastic tubular tube support, the base having an axially extending portion with an end facing the sleeve;
- a first latching structure at the end of the axially extending portion, of the plastic tubular tube support; the first latching structure having a plurality of inwardly facing detents; and
- inner and outer ends on the metal sleeve with a second latching structure at the inner end of the metal sleeve, the second latching structure having groove means receiving the detents; the latching structures coupling to positively retain the sleeve on the tubular tube support upon the detents being received in the groove means.

5,511,831

SELF-CENTERING, SELF-SEATING, DOUBLE-SEALING, INTERFERENCE FIT TUBE JOINT

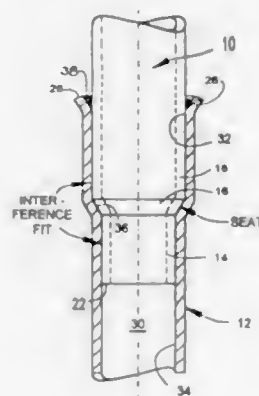
Bohby L. Barton, Camdenton, Mo., assignor to Modine Manufacturing Company, Racine, Wis.

Continuation-in-part of Ser. No. 636, Jan. 4, 1993, Pat. No. 5,398,981. This application Dec. 16, 1994, Ser. No. 357,862

Int. Cl.⁶ F16L 13/14

U.S. Cl. 285—382

6 Claims



1. A tube joint comprising:

- a male tube member including a first cylindrical end of relatively lesser diameter and an adjacent, second cylindrical section of relatively larger diameter;
- a female joint element having a flared end and an internal passage including an emerging cylindrical section of a diameter just less than said relatively larger diameter and an adjacent, interior cylindrical section of a diameter just less than relatively lesser diameter;
- said male tube member being interference fitted into said female joint element, and
- a bead of adhesive about said male joint element and said flared end of said female joint element.

5,511,832 CONTROL BOLT ACTUATING DEVICE

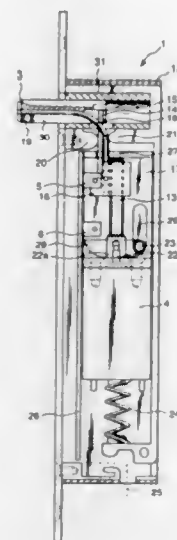
Reiner Künzel, Balingen-Frommern, Germany, assignor to Fritz Fuss GmbH & Co., Albstadt, Germany
Filed May 12, 1994, Ser. No. 241,905

Claims priority, application Germany, May 25, 1993, 43 17 365.9

U.S. Cl. 292—144

Int. Cl.⁶ B05C 1/06

10 Claims



1. A bolt actuating device with a locking unit having a lock bolt and an electric adjusting device, the adjusting device having a direct current electric motor with anticlockwise-clockwise rotation, whose rotation direction is controllable by polarity reversal and in which there is a guide member moveable relative to a gear for transforming the motor rotation into a longitudinal movement along a motor rotation axis, wherein the bolt is oriented transversely to a motor shaft and there is a flexible shaft between the gear and the bolt, with which the longitudinal movement can be transformed into a transverse movement.

5,511,833 LATCHING MECHANISM FOR SLIDING DOORS AND WINDOWS

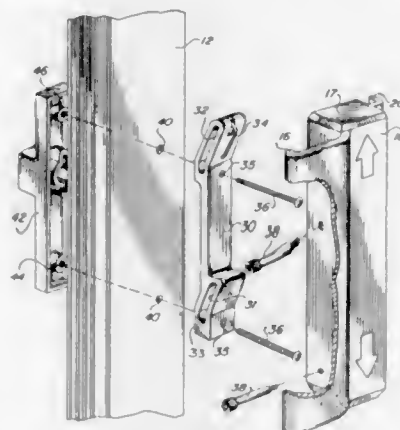
Fred F. Tashman, Scottsdale, and Dale L. Bargman, Jr., Gilbert, both of Ariz., assignors to Tashco Industries, Inc., Gilbert, Ariz.

Filed Aug. 4, 1995, Ser. No. 511,419

Int. Cl.⁶ E05C 1/04; E05B 3/00

U.S. Cl. 292—145

22 Claims



1. A latching mechanism for sliding doors and windows including in combination:

an elongated base member having a rear surface adapted to be secured to a frame and having one of a cam surface and a cam follower on it;

a movable operating member having a generally U-shaped cross section overlying said base member with the other of said cam surface and said cam follower on it, said operating member being movable longitudinally relative to said base member from a first position to a second position with said cam and said cam follower causing said operating member to move toward and away from said rear surface of said base member as said movable operating member is moved between said first and second positions relative to said base member; and an engagement member on said movable operating member for releasable engagement with a cooperating latch part adjacent said base member.

5,511,834

AUTOMATICALLY POSITIONED LATCH ASSEMBLY

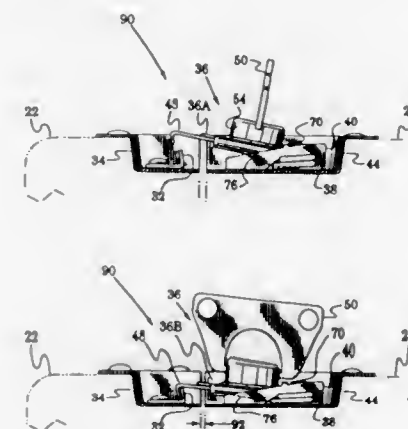
Roger P. Willems, Penn, England, assignor to Penn Fabrication (U.S.A.) Inc., Moorpark, Calif.

Filed Apr. 6, 1994, Ser. No. 223,581

Int. Cl.⁶ F05C 3/04

U.S. Cl. 292—203

1 Claim



1. Apparatus for securing together a body and a lid of a case first and second members, comprising:

- first and second members;
- walls on said members which form a recess when said members lie adjacent to each other;
- a strike member configured for attachment to said first member;
- a support configured for attachment to said second member;
- an arm pivotally carried on said support to pivot toward and away from an initial arm position;
- a resilient element disposed between said arm and said support to urge pivoting of said arm away from said initial arm position;
- a bolt carried by said arm for reciprocal movement therealong to engage said strike member when said arm lies in said initial arm position; and
- an abutment carried by said support and positioned in the path of said arm when it pivots away from said initial position, to abut said arm and prevent pivoting thereof past a ready position that is angularly spaced by less than 45° from said initial position;
- said bolt having a strike-engaging lip that lies at least partially within said recess when said arm lies in said ready position and said first and second members lie adjacent to each other.

5,511,835

LATCH WITH MULTIPLE LOCKING MEANS

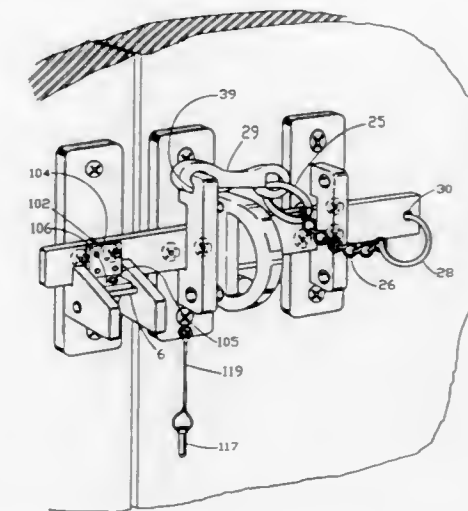
Carl B. Hardee, 2271 Highway 348, Loris, S.C. 29569

Filed Mar. 12, 1993, Ser. No. 31,181

Int. Cl.⁶ E05C 3/04

U.S. Cl. 292—238

5 Claims



1. A latch with multiple locking means for attaching to a door or gate, said latch comprising:

- a. first, second and third supporting bases for attaching to the surface of a door, gate or jamb, said supporting bases being substantially rectangular in shape such that the vertical dimension of each supporting base is larger than the horizontal dimension of the same, there being defined in each said supporting base a number of holes for insertion of screws or bolts therethrough, such holes being located, one toward the top end, one toward the bottom end, and at least two toward the center, spaced horizontally side by side;
- b. a striker comprising an elongate bar rectangular in shape and having first and second ends, said striker in a horizontal position covering the holes located toward the center of said first, second and third supporting bases, said striker having through the first end thereof four holes spaced in two rows wherein each row includes two holes spaced horizontally and side by side, said holes being in the same horizontal, vertical and diagonal planes, said striker including an aperture centrally disposed in the second end thereof;
- c. a double-pronged keeper defining first and second prongs spatially mounted, side by side, on the lower portion of said first supporting base, said prongs inclining from the front portions thereof toward said first supporting base such that said striker is slidable along said incline, said prongs including on the upper sides thereof a notch adjacent to said first supporting base such that said striker falls into and is securely held by said notches, said first prong including in the rear portion thereof an aperture in which a padlock is stored, said double-pronged keeper further including:
 - (1) a rear plate having a top edge, a bottom edge, two vertical ends, a front, and a back, attached between said first and second prongs such that said striker will rest upon the top edge of said rear plate, the back of said rear plate being attached to said first supporting base, and the two vertical ends of said rear plate being attached to inside portions of said first and second prongs;
 - (2) a forward plate having a top, a bottom, a front edge, a rear edge, and a first and a second end attached between said first and second prongs such that a gap is formed between the front edge of said rear plate and the rear edge of said forward plate and such that said forward plate is horizontal and the top of said forward plate lies in the same horizontal plane as the top of said rear plate, said forward plate including an aperture disposed through the center portion thereof;

- d. a first stirrup defining a generally U-shape and including an aperture defined in top and bottom portions thereof, said first stirrup mounted on said second supporting base such that an interstice is formed therebetween in which said striker pivots;
- e. a second stirrup defining a generally U-shape and including an aperture in a bottom portion thereof, said second stirrup mounted on said third supporting base such that an interstice is formed therebetween in which said striker pivots;
- f. a handle for opening and closing the latch by pivoting said striker, having a vertical member and a U-shaped member which are joined to form a substantially D-shape and including apertures defined in the top and bottom portions of the vertical member such that the aperture in the bottom portion of the vertical member communicates with the aperture in the bottom portion of said first stirrup such that a passage is formed through which a padlock may be placed, said aperture in the bottom portion of the vertical member communicating also with the aperture in the bottom portion of said second stirrup such that a passage is formed through which a padlock may also be placed.
- g. a clasp means for prohibiting said striker from sliding and pivoting upward, said clasp means engaging the aperture in the top portion of said first stirrup;
- h. a chain connecting said clasp means to said striker, said chain including on each end thereof a circular band wherein one said circular band is engaged through the aperture centrally disposed through the second end of said striker and the other said circular band is connected to said clasp means, said chain being of such length as to prohibit said striker from sliding when said clasp means is engaged in the aperture in the top portion of said first stirrup;
- i. a ring around which said clasp means is affixed for keeping open a door or gate, said ring screwable into the exterior of an adjacent wall or other surface;
- j. a pivoting assemblage for opening and closing the latch by tilting said striker, said assemblage operable from the side of the door opposite the side to which said bases are mounted.
- k. an additional means for padlocking said latch.

5,511,836

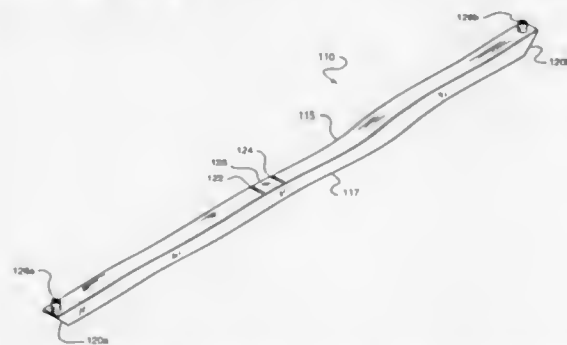
SECURITY DEVICE FOR BULKHEAD DOORS

Gerald K. Murphy, 20 Old Waquoit Rd., East Falmouth, Mass. 02536

Filed Mar. 15, 1995, Ser. No. 404,365
Int. Cl.⁶ E05C 19/18

U.S. Cl. 292—259 R

9 Claims



1. In a bulkhead closure that includes a pair of doors having inside surfaces and outside surfaces and which is hinged to a pair of spaced-apart parallel side pillars so that the doors open out from closed positions to open positions:

- a. a rigid bar, the bar being longer than the distance between side pillars;
- b. contact means located at each end of the bar for engaging the pillars, each contact means having a separately adjustable extension from the bar; and
- c. bar-retention means including a retainer bracket mounted to the inside surface of at least one of the doors, the bar com-

prising slots for receiving the retainer bracket and being movable into engagement therewith so that a flat surface of the bar rests against a flat surface of the retainer bracket, and the bar extends generally perpendicular to the side pillars and bridges the pair of doors.

5,511,837

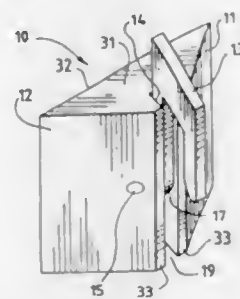
DOOR BLOCK FOR EMERGENCY USE

Edward T. Dempsey, Midlothian; Kenneth B. Cooley, Jr., and Kenneth E. Batty, both of St. Joseph, all of Ill., assignors to E. T. Dempsey Company Inc., Midlothian, Ill.

Filed May 17, 1995, Ser. No. 442,683
Int. Cl.⁶ E05C 19/18

U.S. Cl. 292—288

6 Claims



1. A door block comprising:

a block which can be attached to a door hinge, the hinge having a right leaf and a left leaf, the right leaf and the left leaf being joined by a hinge barrel, the block having a right side which can contact the hinge right leaf and the block having a left side which can contact the hinge left leaf, the block having a distance and a rigidity between the block right side and the block left side sufficient to prevent the door from swinging closed thus bracing the door in open position; and

a hook attached to the block, the hook being disposed so that the hook can removably hang over the hinge left leaf just next to the hinge barrel to hold the block between the hinge right leaf and the hinge left leaf, and so that the hook can removably hang over the hinge right leaf just next to the hinge barrel to hold the block between the hinge left leaf and the hinge right leaf, the hook being attached to the block so that the hook can be retracted into the block when the door block is not in use.

5,511,838

REMOTE LATCH RELEASE DISABLING DEVICE

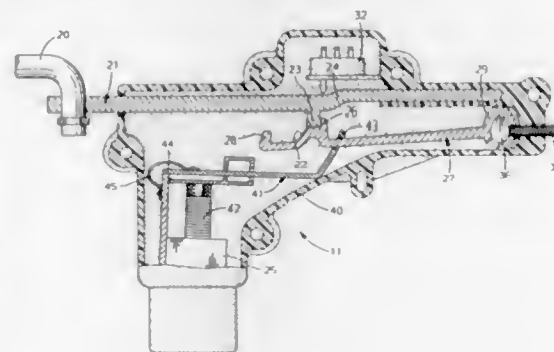
Robert W. Baughman, Mt. Clemens; Gary D. Bree, Clarkston, and Lloyd W. Rogers, Jr., Shelby Township, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Feb. 14, 1994, Ser. No. 195,521
Int. Cl.⁶ E05B 3/00; E05C 3/06

U.S. Cl. 892—336.3

1 Claim

1. A remote latch release disabling device comprising:



- a housing;
- a handle lever guided by the housing for rectilinear movement therethrough and having a leg extending from the handle lever;
- an unlatching lever pivotably carried by the housing including a cam surface normally engaging the leg, a first finger engageable with the leg and a second finger engageable with the leg;
- a pivotable by-pass lever engaging the unlatching lever;
- a spring engaging the by-pass lever to normally bias the cam surface of the unlatching lever against the leg of the handle lever;
- a solenoid capable of preventing the by-pass lever from biasing the cam surface of the unlatching lever against the leg of the handle lever when energized; and
- a switch operated by the handle lever capable of initiating energization of the solenoid.

5,511,839

DOOR OPENER WITH A LOCKABLE, PIVOTABLE LATCH

Fritz H. Fuss, Albstadt, Germany; John S. Rutherford, Virginia Beach, Va., and Gerhard Gonser, Albstadt, Germany, assignors to Fritz Fuss GmbH & Co., Germany

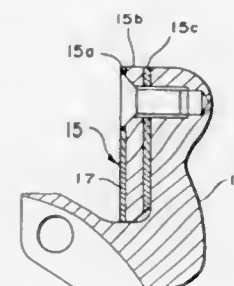
Filed May 26, 1994, Ser. No. 249,210

Claims priority, application Germany, May 26, 1993, 43 17 564.3

Int. Cl.⁶ E05B 15/02

U.S. Cl. 292—341.18

10 Claims



1. A door opener with a lockable, pivotable latch for installation in a door frame, said pivotable latch having a locking surface against which at least one bolt of a door engages in a closed position for fixing the position of the door in the door frame, and said pivotable latch being pivotable between a locked position and an unlocked position, the door being openable following pivoting of the latch into the unlocked position; wherein the latch has a latch base with a receiving surface and a plurality of adapting elements, each of which is selectively and interchangeably connectable to the receiving surface of the latch base; wherein each adapting element is substantially plate-shaped, wherein one side of each adapting element rests on the receiving surface of the latch base and the opposite side of the adapting element is the locking surface and is parallel to said receiving surface; wherein the adapting elements has a respective predeterminable thickness, proper adjustment of the position of the locking surface relative to the at least one bolt of the door in the closed position being obtainable by selection and mounting of at least one of the adapting elements having an appropriate respective predetermined thickness.

5,511,840

STATIC DISSIPATIVE COUPLING OF AN ARTICLE-PICKUP TIP TO A WAND

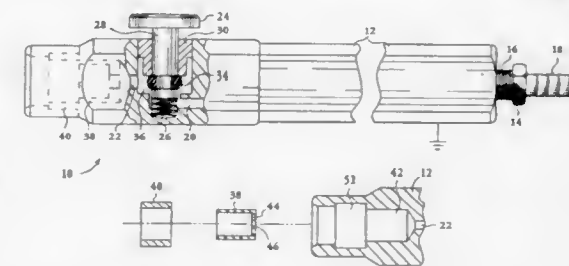
Quincy D. Allison, Boulder Creek, and Howard W. Hendriksen, Los Altos, both of Calif., assignors to H-Square Corporation, Sunnyvale, Calif.

Filed Feb. 16, 1994, Ser. No. 197,210

Int. Cl.⁶ B25J 15/06; H05F 3/04

U.S. Cl. 294—64.1

17 Claims



1. A vacuum-actuated article handling tool comprising:

an electrically conductive body having an air evacuation path; and

a static dissipative means connected to said body for releasably connecting to an article-pickup tip, thereby selectively coupling said pickup tip to said body, said static dissipative means including a current-limiting member having a high resistivity to provide a high resistance electrical path from said body to said pickup tip.

5,511,841

GOLF BALL RETRIEVER DEVICE AND METHOD OF USING SAME

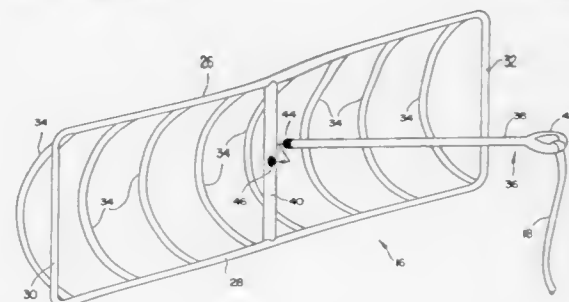
Donavan J. Allen, 101 Cason St., Taylors, S.C. 29687

Filed Jul. 29, 1994, Ser. No. 283,037

Int. Cl.⁶ A63B 47/02

U.S. Cl. 294—66.1

15 Claims



1. A golf ball retriever device for recovering golf balls of a predetermined diameter from hazard situations, said device comprising:

an open frame portion having a pair of longitudinal frame members extending substantially in parallel in a longitudinal direction, said open frame portion having a greater extent in the longitudinal direction and a lesser extent in a transverse direction;

a plurality of ball catching members attached to said open frame portion and contained therein such that said longitudinal frame members of said open frame portion define respective first and second running surfaces for said open frame portion, said plurality of ball catching members being spaced by a spacing less than the predetermined diameter of the golf ball;

an extension portion including at least one elongated extension member having an attachment end situated at an axial location substantially at a midpoint of at least the longitudinal direction of said open frame portion and further having a tie end located forwardly of the open frame portion substantially at a predetermined distance from a midpoint location of both the

longitudinal and transverse directions of said open frame portion, said predetermined distance being sufficient to maintain said open frame portion substantially upright when at rest on one of said longitudinal frame members; and a tether cord of a predetermined length extending from the tie end of said elongated extension member.

5,511,842

SECURITY VEHICLE SYSTEM

John A. Dillon, 23234 Sagebrush, Novi, Mich. 48375

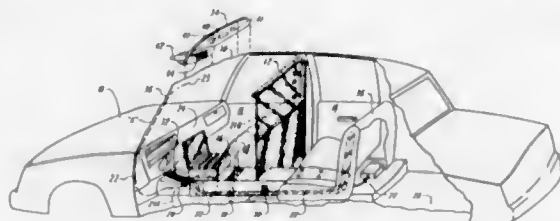
Continuation of Ser. No. 132,570, Oct. 6, 1993, abandoned.

This application Jul. 6, 1995, Ser. No. 498,921

Int. Cl.⁶ B60N 2/00; 3/00

U.S. Cl. 296—24.1

24 Claims



1. Security vehicle system in a motor vehicle having at least four doors, the vehicle having a conventional body, including a front window, roof, floor, trunk, and having front seating, and front A-pillar locations, intermediate B-pillar locations and rear C-pillar locations over which the vehicle roof is suspended over the body and over the seating, the system comprising:

an officer protection barrier for mounting between the B-pillar locations and mating to the roof and floor of the vehicle, said barrier defining a ductwork pass-through adjacent to said floor for passage of ductwork from the area of said dashboard toward said trunk, said barrier creating a rear passenger containment area and a front passenger area, the front and rear passenger areas being isolated from each other by said barrier, and

wherein said barrier is bullet-resistant and comprises a transparent top shield portion and a bottom shield portion, the bottom edge of the bottom portion comprising means for water-tightly mating to the vehicle floor, said top shield portion comprising a transparent top shield which is mounted in said vehicle extending from and to said B-pillar locations and is connected to said roof and said bottom shield portion.

5,511,843

SLANT RAIL TONNEAU COVER

Mark B. Isler, Lordstown; Lawrence D. Saxon, Warren; Wayne Reinhart, Jr., and Kevin Batchelder, both of Lordstown, all of Ohio, assignors to Sport Masters, Inc., Lordstown, Ohio

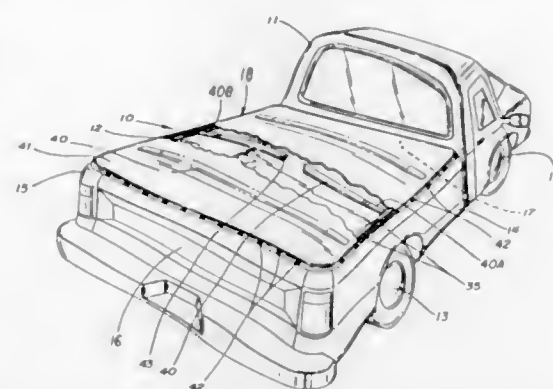
Filed Dec. 1, 1994, Ser. No. 347,678

Int. Cl.⁶ B60P 7/04

U.S. Cl. 296—100

4 Claims

1. A slant rail tonneau cover assembly for use on pick-up truck beds, said truck beds including opposing sidewalls, a front wall and a pivotally supported tailgate; said slant rail tonneau cover comprising a main support frame, having pairs of oppositely disposed rails with connector elements therebetween, said rails comprising an elongated base, an upstanding wall defining a snap insert area and a bow insert area, said snap insert area having an angularly disposed elongated channel portion, an adjustable snap fastener assembly within said snap insert area, said adjustable snap fastener assembly comprising a monolithic resilient mounting portion, a snap fastener base secured to said monolithic mounting portion, and means for aligning said snap fastener base on said monolithic mounting portion, a bow mount insert assembly having a resilient U-shaped body member within said bow insert area, said



bow mount insert assemblies within said opposing bow insert areas are aligned with one another, means for securing said bow mount insert in said bow insert area, support bows removably positioned between opposing bow mount insert assemblies of one of said opposing pairs of said rails.

5,511,844

CONVERTIBLE TOP HAVING SLIDABLY REPLACEABLE BOW

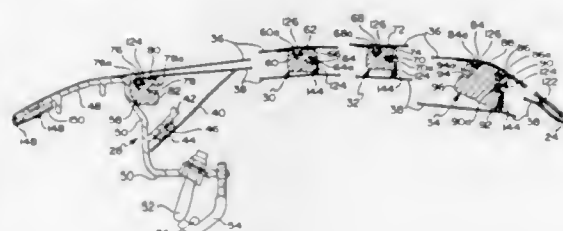
Robert A. Boardman, Pittsford, Mich., assignor to Dura Convertible Systems, Inc., Adrian, Mich.

Filed Oct. 22, 1993, Ser. No. 139,843

Int. Cl.⁶ B60J 7/12

U.S. Cl. 296—107

8 Claims



1. A convertible top comprising

a frame having a header and a plurality of transverse bows, each bow comprising an elongated extruded support member having a transverse channel with an entry slot restricting entry to the channel,

a fabric cover supported by the frame, and

means attaching the cover to the bows of the frame comprising a plurality of transverse cover attachment strips each of which is secured on the fabric cover adjacent one of said support members and has a depending elastomeric retention portion which compresses for passage through the entry slot into the channel of the respective support member and expands in said channel to mount the fabric cover on the frame,

wherein the cover attachment strips' retention portions cooperate to secure the fabric cover against removal from the frame

during normal top operation, while enabling removal of the fabric cover from the frame upon application of a sufficiently large force exerted on each attachment strip to deform its retention portion sufficiently to enable passage thereof back through the respective entry slot, and

wherein each channel and its entry slot are open-ended, enabling dismounting of a selected bow from the fabric cover by endwise sliding of said selected bow relative to its respective attachment strip.

5,511,845

MOTOR VEHICLE COVER WITH LOW PROFILE HOUSING

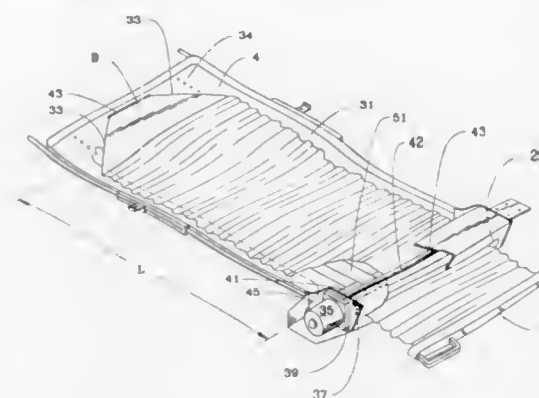
Tom Hindson, 7810 NW 40th St., Coral Springs, Fla. 33065

Filed Mar. 31, 1993, Ser. No. 40,513

Int. Cl.⁶ B60J 11/00

U.S. Cl. 296—136

9 Claims



1. A vehicle cover storage and deployment apparatus comprising:

a means for housing a vehicle cover in an essentially flat manner;

said cover being movable between a retracted, stored position within said housing means in an essentially flat orientation and an extended position covering a vehicle;

a drive means in frictional engagement with said cover for moving said cover between the retracted and extended positions;

a motor means attached to said drive means for moving said drive means; and

a handle means attached to an end of said cover for aiding a user in extending or retracting said cover relative to said vehicle.

5,511,846

RUGGED SCUBA TANK CARRIER

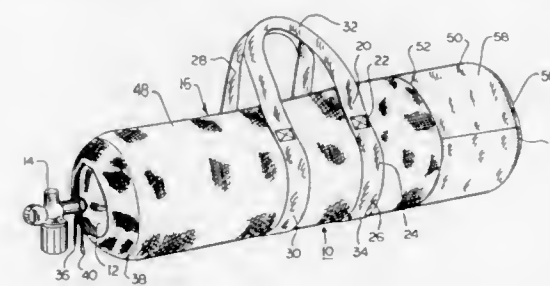
Mark A. Fuller, Graham, N.C., assignor to Fuller Specialty Co., Inc., Burlington, N.C.

Continuation-in-part of Ser. No. 125,191, Sep. 23, 1993, Pat. No. 5,423,586. This application Oct. 4, 1994, Ser. No. 317,388

Int. Cl.⁶ A45C 13/26; B65D 30/06

U.S. Cl. 294—149

9 Claims



1. A carrier for a scuba tank having a nipple end and a bottom end and being of a specific size comprising

a bag open at one end and sized to be snugly fitted onto the scuba tank from over the bottom end of the scuba tank, said bag having an upper portion of porous fabric and a bag bottom of an abrasion-resistant fabric, and

a strap having a first portion sewn to said bag and in encircling relation to at least a portion of said bag and a handle portion, whereby said fabric bag can be snugly fitted onto the scuba tank from over the bottom end of the scuba tank and the combined scuba tank and bag may be conveniently carried using the

strap handle portion as a handle, with said first portion of said strap providing support for the tank.

5,511,847

FRONT END COVERING FOR A MOTOR VEHICLE

Hans Weisbarth, Stuttgart; Albert Hack, Sindelfingen, and Rainer Tiefenbacher, Leinfelden-Echterdingen, all of Germany, assignors to Mercedes-Benz AG, Stuttgart, Germany

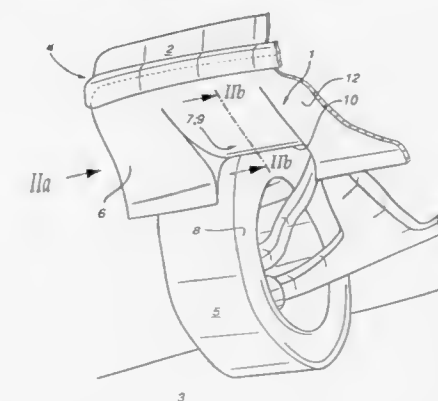
Filed Oct. 6, 1994, Ser. No. 319,001

Claims priority, application Germany, Oct. 6, 1993, 43 34 009.1

Int. Cl.⁶ B62D 35/00

U.S. Cl. 296—180.1

8 Claims



1. A front end air guide covering for a passenger vehicle of the type having a front wheel disposed behind a vehicle front end at a vehicle side and exhibiting a laterally inwardly facing wheel side, said air guide covering comprising:

a first air guide path section aligned with and extending laterally over a front facing end of a vehicle wheel when in an in use straight ahead driving position of the vehicle wheel, and a second air guide path section aligned with the inwardly facing wheel side, which second air guide path section is adjacent to and laterally inwardly of the first air guide path section,

wherein both of said first and second air guide path sections face a roadway over which the vehicle travels when in an in use position on a vehicle,

wherein the first air guide path section is curved concavely in a vehicle rearward direction to form a rearwardly decreasing vertical gap between the roadway and the first air guide path to thereby displace an air stagnation point in front of the vehicle wheel to limit high pressure in a wheel house in front of the wheel, and wherein the second air guide path section is curved convexly and forms a rearwardly increasing vertical gap over the second air guide path section from an intermediate point thereof to a rear end thereof disposed forwardly of said vehicle wheel to thereby direct brake cooling air flow to wheel brakes at the inwardly facing wheel side.

5,511,848

PICKUP TRUCK BED

Herbert O. Mobley, 3919 Bus La., Laurel, Mont. 59044

Filed Nov. 22, 1994, Ser. No. 343,825

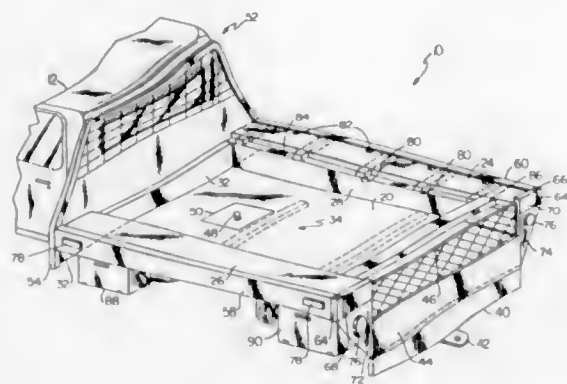
Int. Cl.⁶ B60P 1/00

U.S. Cl. 296—183

18 Claims

1. A pickup bed adapted for use with a pickup truck said truck having a pair of frame members each of said frame members being disposed substantially parallel with a longitudinal axis of said truck, comprising:

a) a plurality of elevating members adapted to be disposed on said frame members, each of said elevating members disposed in a perpendicular orientation with respect to said longitudinal



- axis and also disposed substantially parallel with a plane as defined by said frame members;
- b) a lower plane having opposite ends and opposite sides said opposite sides being parallel with respect to said longitudinal axis and said opposite ends being perpendicular with respect thereto, said lower plane being disposed on said elevating members;
- c) a pair of upstanding walls disposed in a spaced apart relationship that is substantially perpendicular with respect to said lower plane and parallel with respect to said longitudinal axis, each of said pair of upstanding walls having a lower edge and an upper edge, said lower edge disposed at an elevation above said frame members that is substantially equal to the elevation above said frame members that said lower plane is disposed therefrom, and each of said pair of upstanding walls being attached at said lower edge to each of said opposite sides;
- d) a pair of outer elevated planes that are disposed parallel with respect to said lower plane, each of said pair of outer elevated planes having a first edge and a second edge, said first edge of each of said pair of outer elevated planes attached near to said upper edge, said second edge disposed further away from said lower plane than said first edge;
- e) a supporting frame structure assembly disposed about the perimeter of said pickup bed, said supporting frame structure being attached to said second edge of each of said outer elevated planes; and
- said supporting frame structure includes means adapted for transferring a portion of the weight of a cargo placed on said pair of outer elevated planes to said frame members.

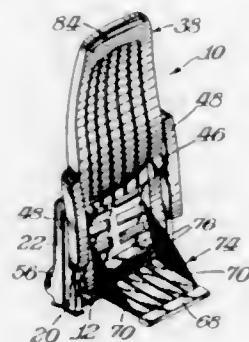
5,511,849 COLLAPSIBLE CHAIR

Steven G. Cahaley, West Chester, and James E. Schinski, Malvern, both of Pa., assignors to The First National Bank Of West Chester, West Chester, Pa.

Filed Sep. 20, 1994, Ser. No. 309,033
Int. Cl.⁶ A47C 13/00

U.S. Cl. 297—129

16 Claims



8. A collapsible chair having an adjustable in-use position and a folded transport position comprising a seat having an ergonomic

upper surface and opposite side surfaces, a pair of front and rear legs on each opposite side of the seat, the front and rear legs of each pair having lower ground engaging ends and upper ends connected to one another by a leg connector pivot pin, the seat also having an opposed pair of front retainer pins and an opposed pair of rear retainer pins outwardly extending from the opposite side surfaces thereof, a front track on the inside surface of each front leg constructed and arranged to receive the opposed pair of front retainer pins and a rear track on the inside surface of each rear leg constructed and arranged to receive the opposed pair of rear retainer pins, a reclining back rest having an ergonomic back surface and a lower end hingedly connected to the seat, a pair of opposed arm rests each having a rear end pivotally connected to the reclining back rest, a back rest reclining adjustment mechanism including a retainer pin outwardly extending from the upper end of each front leg and a series of retainer pin receiving slots formed on the inside of each arm rest, and drum shaped wheel means rotatably mounted to and extending between the rear legs at the lower ends thereof whereby the collapsible chair has an in-use position with the front and rear legs spread apart at the lower ends thereof and a folded transport position with the front and rear legs together, the seat folded down about the front and rear retainer pins and the front and rear leg tracks, and the drum shaped wheel means engaging the ground and wherein the seat includes a separate central portion with opposite sides, hinge means at the front of the seat connecting the separate central portion for swinging movement outwardly and away from the seat about the hinge means, and flexible foldable sides connected between the seat sides and the sides of the separate central portion thereof whereby with the collapsible chair in its folded transport position the separate central portion of the seat and the flexible foldable sides form a cargo transport when the central portion is swung outwardly about the hinge means.

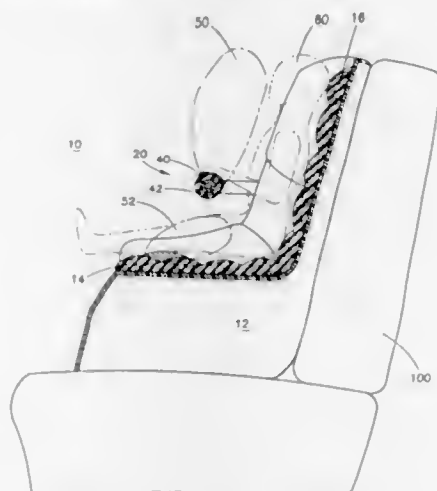
5,511,850 CHILD'S AUTOMOBILE SAFETY SEAT

Jimmy M. Coursey, 310 E. Gordon Ave., Lyons, Ga. 30436
Filed Jan. 3, 1995, Ser. No. 367,854

Int. Cl.⁶ B60N 2/28

U.S. Cl. 297—216.11

3 Claims



1. A children's automobile safety seat, comprising:

an L-shaped frame;
a seat portion and a backrest portion constructed as an integral unit, both of which are connected to the L-shaped frame;
a padded, C-shaped safety bar attached to the L-shaped frame such that the safety bar is disposed in a generally horizontal plane which is parallel to the seat portion;
pivoting means for pivotally connecting a first end of said safety bar to a first side of the L-shaped frame;
disconnecting means for detachably connecting a second end of said safety bar to a second side of the L-shaped frame;

- a first air bag housed within said safety bar and automatically deployable therefrom; and
a second air bag housed within said seat portion and automatically deployable therefrom.

5,511,851 MODULAR STOOL

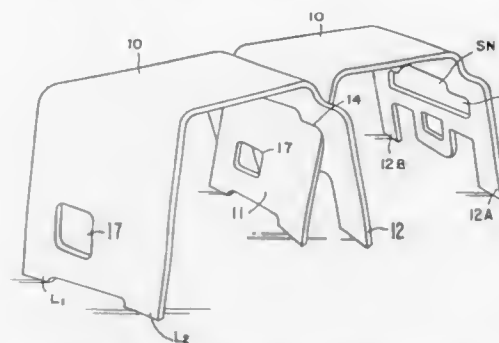
Bashir Zivari, 309 Carroll St., Brooklyn, N.Y. 11231

Filed Jan. 9, 1995, Ser. No. 370,504

Int. Cl.⁶ A47C 1/124

U.S. Cl. 297—249

14 Claims



1. A modular stool capable of functioning in a kindergarten or similar facility as an individual seat for a child, which stool when interlinked with like stools can be used for group seating, said stool comprising:

- (a) a wedge-shaped seat section whose rear end is broader than its front end;
(b) left and right side sections integral with the seat section and outwardly inclined with respect thereto to form an arch, said left side section being defined by a broad panel whose lower edge is notched to define a pair of spaced short legs, said right side section being defined by fore and aft narrow legs joined to the front and rear ends of the seat section; and
(c) a cross beam bridging the narrow legs below the seat section to define a transverse slot whose width is substantially equal to that of the panel, whereby two stools may be interlinked by inserting the panel of one into the slot of the other, said transverse slot having an upper edge which is notched to define a safety space for the fingers of an operator when inserting the panel into the slot.

5,511,852 ADJUSTABLE BACKREST FOR A CHAIR

James L. Kusiak, Grand Rapids, Mich., and Rodney C. Schoenfelder, Minneapolis, Minn., assignors to Herman Miller, Inc., Zeeland, Mich.

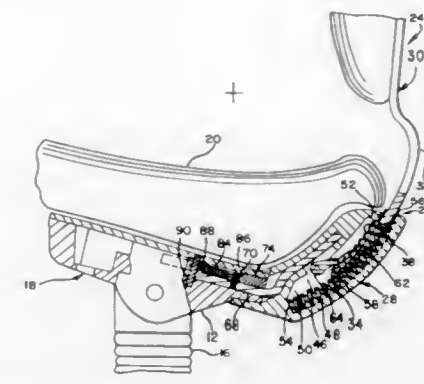
Filed Feb. 25, 1993, Ser. No. 22,138

Int. Cl.⁶ A47C 3/00

U.S. Cl. 297—301.4

23 Claims

1. An apparatus for adjusting the position of a backrest relative to a chair seat, comprising:
said backrest including an elongated stem having a curved lower portion and a lower terminal end;
a spring operably engaging the stem at a point sufficiently distant from said terminal end such that the entirety of the spring is constrained by the stem when the backrest is in a lowered position, wherein said spring operates to bias said stem in an upward direction;
a stationary housing adapted to slidably receive the curved portion of the stem and guide the spring;
a latch mechanism adapted to lock the lower portion of the stem in a plurality of desired fixed positions within the housing such that the back of a user can rest against the backrest in said positions;



5,511,853 RECREATIONAL VEHICLE CENTER CONSOLE SEAT WITH FOLDING ARMREST AND BEVERAGE CONTAINER HOLDER

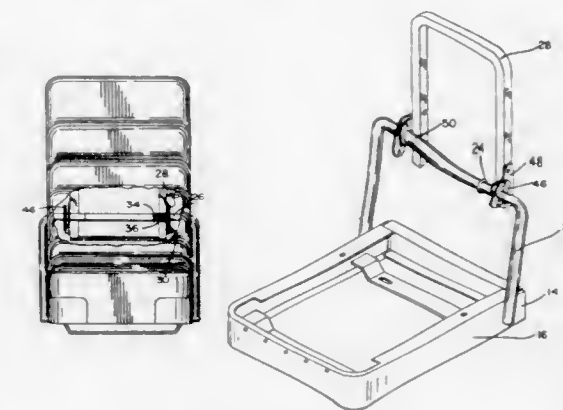
David E. Wallis, Dubuque, Iowa, assignor to Flexsteel Industries, Inc., Dubuque, Iowa

Continuation-in-part of Ser. No. 13,663, Sep. 29, 1993. This

application Apr. 11, 1994, Ser. No. 225,643
Int. Cl.⁶ B60N 2/02; 2/20; 2/46

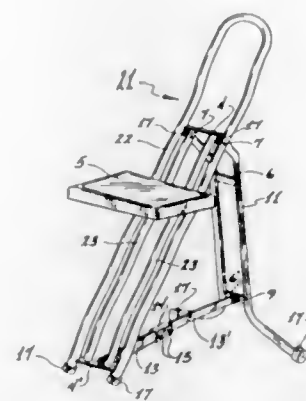
U.S. Cl. 297—364

5 Claims



1. A console and seat assembly comprising:
a seat bottom having a frontal section and rear section with said frontal section having a top and bottom segment with said bottom section having a frame;
a seat back having two sides, the seat back being pivotally connected to said seat bottom and having a means for locking the seat back in an upright position relative to the seat bottom; said means for locking the seat back being disengageable upon application of a lateral force against a side of the seat back; wherein said means for locking the seat back further comprises:
a first U-shaped member extending upwardly from said frame;
a second U-shaped member pivotally mounted to the first U-shaped member;
wherein said first U-shaped member has at least one side plate attached thereto;
said side plate having either an inwardly extending locking pin or an aperture for receiving a pin;
and said second U-shaped member having at least one pivot plate attached thereto, with the pivot plate of the second

U-shaped member having either an outwardly extending locking pin or an aperture;
the pin or aperture of the side plate of the first U-shaped member being positioned to lockingly engage with the pin or aperture of the pivot plate of the second U-shaped member when the seat back is in an upright position, said pin being held in said aperture by a spring means, and,
wherein said spring means includes a spring wrapped around the first U-shaped member and biased between collar and said side plate.



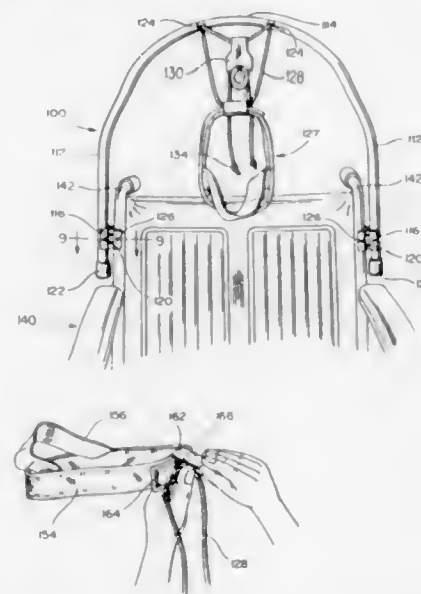
5,511,854

HEAD SUPPORT AND FEEDING AID

James M. Cordia, Rte. 1, Box 211, Oakridge, Mo. 63769
Continuation-in-part of Ser. No. 84,492, Jul. 1, 1993, Pat. No. 5,395,158. This application Jun. 20, 1994, Ser. No. 262,499
Int. Cl.⁶ A47C 7/38

U.S. Cl. 297—393

19 Claims



1. A head support and feeding aid for a patient whose head slumps forward when seated comprising a frame having a lower part for attachment to a seat back and an upper limb part, said upper limb part including aperture means formed therein, a headband for fitting around a patient's forehead, the headband having means for adjusting its circumference, cord means extending from the headband for insertion through the aperture means in the upper limb part of the frame, and releasable clamp means on the cord means for adjusting a length of the cord means between the headband and the frame thereby adjusting the distance of the headband from the frame to suit a patient's head position and whereby said length and said distance can be decreased progressively to draw a patient's head progressively to a more and more upright position.

5,511,855

FOLD-OUT, HEIGHT ADJUSTABLE CHAIR AND SUPPORT STRUCTURE FOR SAME

Robert A. Miles, 68 Klaum Ave., North Tonawanda, N.Y. 14120
Filed Feb. 7, 1994, Ser. No. 192,593
Int. Cl.⁶ A47C 7/00

U.S. Cl. 297—447.2

7 Claims

5. A fold-out, height adjustable chair comprising:
(a) an inverted U-shaped tubular metal main frame;
(b) a pair of horizontal metal cross-bars affixed within the tubular metal main frame, one near the top of same and the other near the bottom of same;

(c) a pair of metal tubes attached to and between the cross-bars and situated substantially in the same plane as the main frame;
(d) a tubular metal double legged back unit pivotally connected to the main frame near the top thereof, the legs of said back unit having angular bends angling away from vertical near the top of said back unit, and said back unit also possessing a pair of horizontal metal cross-bars, the first of said pair of cross-bars being located slightly below the angular bends in the legs of the back unit and the second of said pair of cross-bars being located near the bottom of the back unit, and the legs of the back unit being bent substantially at right angles outwardly at the bottom of the back unit;
(e) locking metal bar means affixed to each of the lower horizontal cross-bars of the main frame and of the double legged back unit, said bar means functioning to limit any change in distance between the main frame and the double legged back unit when the bar means is in its maximum length position;
(f) dual cylindrical support means extending across the front and the rear of the inverted U-shaped main frame capable of providing height adjustment of a seat for the chair;
(g) structural support means for supporting a seat for the chair, said structural support means being mechanically linked to the dual cylindrical support means; and
(h) a seat for the chair, said seat comprising a plywood base atop and affixed to the structural support means of (g) above and said seat also comprising a seat cover and foam padding.

5,511,856

CABLE ACTIVATED HARNESS RETRACTOR FOR CHILD SEAT

David D. Merrick, Ethel: Allan R. Lortz, Noblesville; James R. Chinnl, and Jeffrey E. Peterson, both of Indianapolis, all of Ind., assignors to Indiana Mills & Manufacturing, Inc., Westfield, Ind.

Continuation-in-part of Ser. No. 14,111, Feb. 5, 1993, Pat. No. 5,380,066, which is a continuation-in-part of Ser. No. 897,872, Jun. 19, 1992, abandoned. This application Feb. 1, 1994, Ser. No. 189,964

Int. Cl.⁶ A47C 31/00; A41F 1/00

U.S. Cl. 297—476

16 Claims

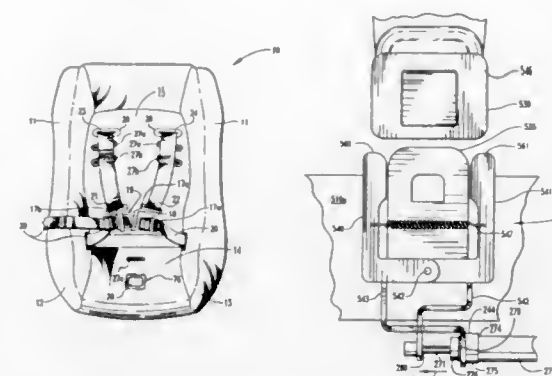
1. A retractor for use with a child seat having a harness and interengaged combination of a tongue and seat belt buckle comprising:

a frame;

a spool to wrapingly receive a portion of said harness and having an axle and end walls at least one of which is configured as a ratchet wheel with said spool rotatably mounted to said frame;

a first spring mounted to said frame and normally urging said spool to rotate to a retracted position whereat a portion of said harness is wrapped thereon;

a locking bar parallel to said axle and mounted to said frame to be movable between a normal removed position whereat said locking bar is located apart from said ratchet wheel and a



locking position whereat said locking bar lockingly engages said ratchet wheel limiting movement of said spool;
a cable having a first end attached to said locking bar and further having an opposite second end, said cable movable from a first position whereat said locking bar is in said removed position to a second position whereat said cable moves said locking bar to said locking position; and

actuator means mountable to a child seat and connected to said second end of said cable, said actuator means including a pair of independently movable members, said actuator means operable upon movement of said movable members to move said cable to said second position, said cable movable to said first position when said movable members are released, further said actuator means is disposed within said seat belt buckle and wherein said tongue includes a pair of separable buckle tongues, said pair of buckle tongues contactable with said movable members.

5,511,857

WHEEL CAP FOR AUTOMOBILE

Takashi Ichikawa, and Noboru Ohtsuka, both of Aichi, Japan, assignors to Kabushiki Kaisha Tokai Rika Denki Seisakusho, Aichi, Japan

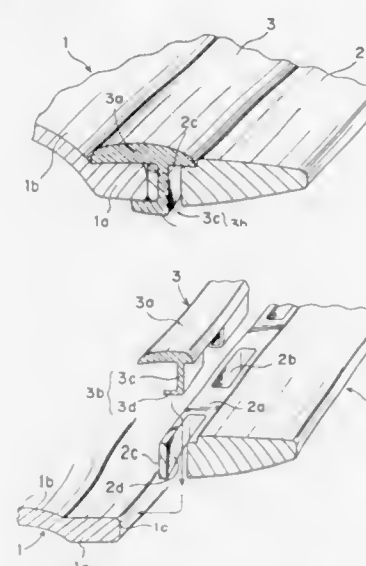
Filed Apr. 7, 1995, Ser. No. 418,384

Claims priority, application Japan, Apr. 7, 1994, 6-069275

Int. Cl.⁶ B60B 7/01

U.S. Cl. 301—37.23

12 Claims



1. A wheel cap for an automobile comprising:
a wheel cap body being formed approximately in a disk shape, a flexible annular molding which is fitted around a periphery of the wheel cap body, and

an elastic annular clamping member for securing the flexible annular molding to the wheel cap body,
the flexible annular molding having a radially inward peripheral

edge part which has a radially inward surface in engagement with a radially outward surface of the wheel cap body and which has at least one through-hole penetrating through in a direction of thickness of the flexible annular molding,

the elastic annular clamping member having an annular base part which overlaps an outside surface of a radially outward peripheral edge part of the wheel cap body and an outside surface of the radially inward peripheral edge part of the flexible annular molding, and at least one engaging claw, corresponding to the through-hole of the flexible annular molding, which extends inside from a back of the annular base part,

the engaging claw having a stem part which extends through the through-hole of the flexible annular molding, and a locking tip part which bends radially inwardly from a tip portion of the stem part to hold the radially outward peripheral edge part of the wheel cap body and the radially inward peripheral edge part of the flexible annular molding together between the locking tip part and the annular base part.

5,511,858

Patent Not Issued For This Number

5,511,859

REGENERATIVE AND FRICTION BRAKE BLEND CONTROL

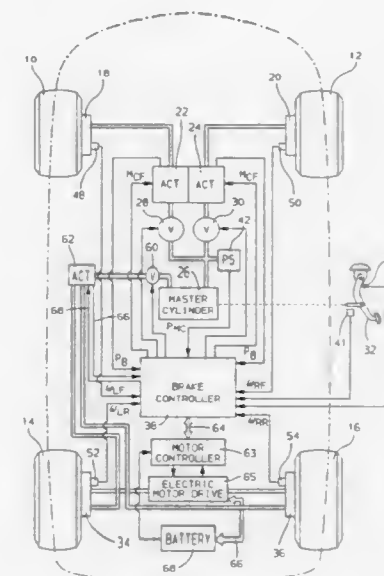
Alexander Kade, Grosse Pointe Woods; Allen J. Walenty, Macomb, and Kevin G. Leppke, Rochester Hills, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Aug. 25, 1995, Ser. No. 519,871

Int. Cl.⁶ B60T 13/74

U.S. Cl. 303—3

2 Claims



1. A regenerative and friction brake blend control method for use in a vehicle with at least one positionable hydraulic brake actuator for achieving friction braking and an electric propulsion motor with regenerative braking capability wherein an amount of regenerative braking achieved is indicated by a signal, wherein the method comprises the steps of:

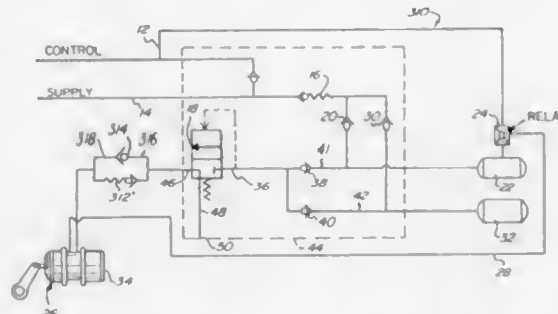
determining a hydraulic actuator position command indicating a desired vehicle braking;
determining, responsive to the hydraulic actuator position command, a regenerative braking command;
commanding the electric propulsion motor to regeneratively brake the vehicle responsive to the regenerative braking command;
receiving the signal indicative of regenerative braking achieved; converting the signal indicative of regenerative braking achieved to an actuator position reduction signal;
subtracting the actuator position reduction signal from the hydraulic actuator position command to determine a difference command; and
commanding the brake actuator according to the difference command, wherein the brake actuator and the regenerative braking together achieve the desired vehicle braking.

5,511,860

**BRAKE SYSTEM FOR HEAVY DUTY SEMI-TRAILER
BRAKE SYSTEMS**
Steven D. Wallestad, and Joseph C. Spenser, Kansas City, Mo.,
assignors to Midland Brake, Inc., Kansas City, Mo.
Filed Nov. 29, 1994, Ser. No. 346,396
Int. Cl.⁶ B60T 13/00

U.S. Cl. 303—7

20 Claims



1. In a brake system for a trailer having a supply fluid line connected to a reservoir by a pressure protection valve and a check valve, said reservoir being operably connected to a spring brake, the improvement comprising:
a spring brake pressure protection valve provided in a line connecting said reservoir with said spring brake, said spring brake pressure protection valve being maintained in a closed position until fluid pressure at a reservoir side of said spring brake pressure protection valve is sufficient to fully release said spring brake, said spring brake pressure protection valve being maintained in an open position when fluid pressure at said reservoir side thereof is sufficient to fully release said spring brake.

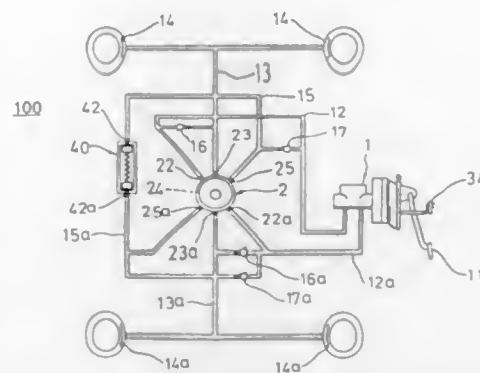
5,511,861

**INTERMITTENTLY BRAKING APPARATUS FOR ANTI-
LOCKING PURPOSE**
Shu-Yen Liu, P.O. Box 55-47, Taipei, Taiwan
Filed Jan. 9, 1995, Ser. No. 370,196
Int. Cl.⁶ B60T 15/58; 8/48

U.S. Cl. 303—113.1

3 Claims

1. A braking apparatus comprising:
a braking system (100) including a brake master cylinder (1) for delivering hydraulic oil for braking purpose upon treading of a brake pedal (11) pivotally mounted in a vehicle;
a plurality of wheel cylinders (14, 14a) for a plurality of front and rear wheels of the vehicle for braking the wheels by the hydraulic oil delivered from said master cylinder (1) as controlled by a multi-pass rotary valve (2) and an expansion-cylinder (40); and



said multi-pass rotary valve (2) having a rotor (24) rotatably mounted in said rotary valve (2) for alternatively delivering and interrupting the hydraulic oil from said master cylinder (1) to said wheel cylinders (14, 14a) for intermittently braking and releasing the wheels for anti-locking purpose, and said rotor (24) driven by a driving motor (36) of an electrical driving circuit (3) including: a power source (31), a starting switch (34) normally switching off the driving circuit (3) as urged by said brake pedal (11) of said brake master cylinder (1) of said braking system when not in braking operation and operatively switching on the driving circuit (3) when treading the pedal (11) for braking purpose, an indicator lamp (35) operatively lit on when the starting switch (34) is actuated for braking operation, and said driving motor (36) electrically connected to the power source (31) and controlled by the starting switch (34) for on and off operation of said motor, and a motor shaft (361) axially connected with the rotor (24) of the valve (2) by aligning an axis of the motor shaft (361) with a rotating axis (241) of the rotor (24);

the improvement which comprises:

said multi-pass rotary valve (2) including: a housing (21) confining a rotor chamber (20) in the housing (21), the rotor (24) rotatably mounted in the rotor chamber (20) and having a plurality of thrusting cavities (26, 26a, 26b, 26c) circumferentially recessed in the rotor (24), a plurality of blade portions (27, 27a, 27b, 27c) generally radially formed on the rotor (24) each blade portion separating every two neighboring thrusting cavities (26), a first and a second input port (22, 22a) formed on the housing (21) of the valve (2) and communicating with a hydraulic oil delivery conduit (12) for directing the hydraulic oil into each thrusting cavity in the rotor (24) for thrusting the rotor (24) for its rotation, a first and a second braking outlet (23, 23a) formed on the housing (21) of the valve (2) and communicating with the hydraulic oil distributing conduit (13) for delivering the hydraulic oil to the wheel cylinders (14, 14a) for braking vehicle wheels, and a first and a second returning port (25, 25a) formed on the housing (21) of the valve (2) and communicating with the hydraulic oil returning conduit (15) for returning the hydraulic oil to the expansion-cylinder (40), with each said thrusting cavity rotatably alternatively confining and communicating each said input port and each said braking outlet preliminarily for delivering the hydraulic oil from the delivery conduit (12) to the distributing conduit (13) for wheel braking purpose; and confining and communicating each said braking outlet (23) and each said returning port (25) secondarily for returning the hydraulic oil from the distributing conduit (13) to the returning conduit (15) for returning the hydraulic oil into the expansion-cylinder (40); and

said rotor (24) having four blade portions (27, 27a, 27b and 27c) radially formed on said rotor (24) and rotatably mounted in the housing (21) of the multi-pass rotary valve (2) about said rotating axis (241) longitudinally secured in the housing (21), and including: a first, second, third and fourth thrusting cavity (26), (26a), (26b) and (26c) circumferentially recessed in the rotor (24) each said thrusting cavity generally parabolic shaped having a shallow recess portion (261) adjacent to a first blade portion (27) and a deep recess portion (262) continuously arcuate shaped from the shallow recess portion

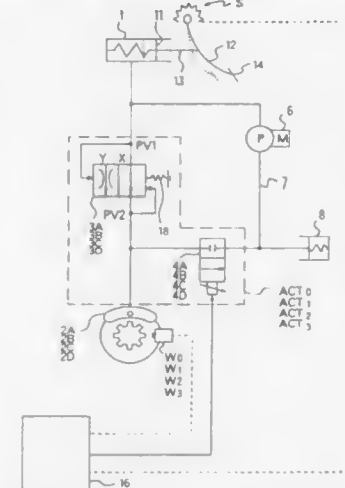
(261) towards a second blade portion (27a) neighbouring the first blade portion (27); and said four blade portions (27), (27a), (27b) and (27c) generally spirally formed about the rotating axis (241) of the rotor (24) with each blade portion separating every two neighbouring thrusting cavities; and four small recesses (28), (28a), (28b) and (28c) formed on the circumference face of each said blade portion (27), (27a), (27b) and (27c); and each said input port and each said returning port confined in each quadrant of a rotating circle of 360 degrees of the rotor chamber (20) of the valve (2) with each said braking outlet generally disposed in a central portion between each said input port and each said returning port, and with each said input port disposed about an input axis inclinedly intersecting a cylindrical wall of the rotor chamber (20) to be operatively extrapolatively tangential to the recess portions parabolic shaped when each said blade portion is started at a zero degree of each quadrant of the rotating circle, thereby primarily communicating one said input port with one said braking outlet by one said thrusting cavity and blocking one said returning port by one said blade portion; and secondarily communicating one said braking outlet and one said returning port by one said thrusting cavity and blocking one said input port by one said blade portion, for intermittently braking and releasing of the wheel cylinders (14, 14a) for anti-locking purpose.

5,511,862

ANTI-LOCK BRAKE CONTROLLING APPARATUS
Hideaki Fujioka, Itami, Japan, assignor to Sumitomo Electric Industries, Ltd., Osaka, Japan
Filed Mar. 18, 1994, Ser. No. 214,554
Claims priority, application Japan, Apr. 7, 1993, 5-080674
Int. Cl.⁶ B60T 8/00

U.S. Cl. 303—113.4

17 Claims



1. An anti-lock brake controlling apparatus including a master cylinder for feeding an operation fluid to a wheel cylinder side in accordance with a stepping quantity of a brake pedal, and a fluid pressure controlling valve for controlling a fluid pressure of said wheel cylinder, said apparatus further comprising:
pedal stroke quantity detecting means for detecting said stepping quantity of the brake pedal;
said pedal stroke quantity detecting means including means for detecting a friction coefficient of a road surface;
means for providing a signal for controlling said fluid pressure controlling valve responsive to, at least, said friction coefficient of said road surface detected by said pedal stroke quantity detecting means;
wheel speed detecting means for detecting a speed of each wheel of a vehicle;
wheel movements calculating means for calculating wheel movements, including at least a wheel speed responsive to said wheel speed detecting means; and

vehicle body speed estimation calculating means for calculating an estimated vehicle body speed in a position of each wheel responsive to said wheel movements calculating means and a stepping quantity of the brake pedal detected by said pedal stroke quantity detecting means.

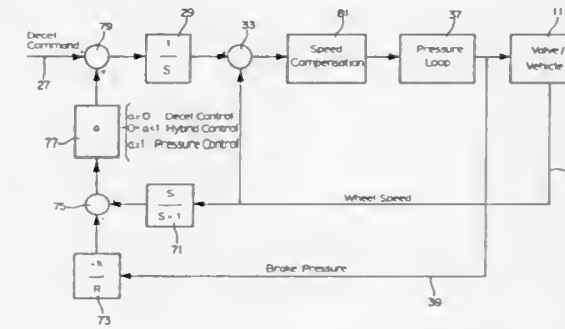
5,511,863

HYBRID BRAKE CONTROL SYSTEM

Peter J. Suh, South Bend, Ind., assignor to Alliedsignal Inc., Morristown, N.J.
Continuation-in-part of Ser. No. 966,219, Oct. 26, 1992, Pat. No. 5,333,942. This application Jul. 8, 1994, Ser. No. 273,035
Int. Cl.⁶ B60T 8/34

U.S. Cl. 303—113.4

9 Claims



1. In a wheeled vehicle having means for supplying pressurized brake fluid to actuate vehicle wheel brakes of the vehicle, a brake control system for providing anti-skid control comprising:
an operator actuatable input control for determining a supply of operator commanded pressurized brake fluid to at least one of said vehicle wheel brakes;
first means responsive to operator input to control the pressure of the brake fluid supplied to the one vehicle wheel brake;
second means responsive to operator input to determine commanded wheel deceleration;
means for measuring wheel velocity;
first means responsive to measured wheel velocity for providing a deceleration upper bound on the magnitude of the wheel deceleration;
second means responsive to measured wheel velocity for determining the magnitude of wheel deceleration;
means responsive to the determined magnitude of wheel deceleration and the pressure of the brake fluid supplied to the one vehicle wheel brake for modifying the operator input;
means for comparing the commanded wheel deceleration and the deceleration upper bound and for selecting the lesser in magnitude; and
means responsive to the comparing means for supplying the modified operator commanded pressurized brake fluid to said vehicle wheel brake in the event that the commanded wheel deceleration is selected and for supplying a lesser pressure determined by the deceleration upper bound in the event the deceleration upper bound is selected.

5,511,864

ELECTROMAGNETIC VALVE, IN PARTICULAR FOR HYDRAULIC BRAKING SYSTEMS PROVIDED WITH A SLIP CONTROL

Hans-Dieter Reinartz, Frankfurt am Main; Erhard Beck, Weilburg, and Dieter Dinkel, Eppstein, all of, Germany, assignors to ITT Automotive Europe GmbH, Germany

PCT No. PCT/EP93/00410, § 371 Date Oct. 4, 1994, § 102(e) Date Oct. 4, 1994, PCT Pub. No. WO93/19961, PCT Pub. Date Oct. 14, 1993

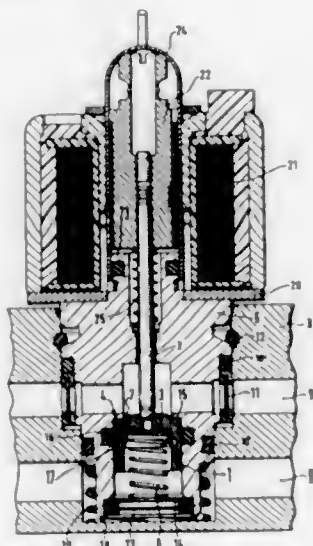
PCT Filed Feb. 22, 1993, Ser. No. 313,281

Claims priority, application Germany, Apr. 4, 1992, 42 11 307.5

Int. Cl. B60T 8/36

U.S. Cl. 303—119.2

5 Claims



1. An electromagnetic valve, comprising:
 - a valve support member having a valve sleeve sealed to said valve support member
 - a valve accommodating member enclosing said support member,
 - a hold-on magnet enclosed by the valve sleeve performing a stroke in response to an electrically energizable magnetic coil provided on the valve sleeve,
 - a valve needle attached to the hold-on magnet,
 - a valve seat member fixed within the valve support member and adapted to engage said valve needle to control a pressure fluid communication between at least one first and one additional pressure fluid passageway, wherein said valve seat member is cap shaped and open opposite the valve needle and has an annular groove therein, and is coaxially displaceable with respect to the valve needle, and
 - a detachably connected cap shaped diaphragm member seated within the valve seat member, an outwardly flared open end engaging the annular groove of the valve seat member.

5,511,865

APPARATUS FOR RESONANCE CONTROL IN A BRAKE INTERVENTION TRACTION CONTROL SYSTEM

Mark L. Howell, Leamington Spa, England, assignor to Lucas Industries public limited company, Solihull, England

Filed Sep. 7, 1994, Ser. No. 301,581

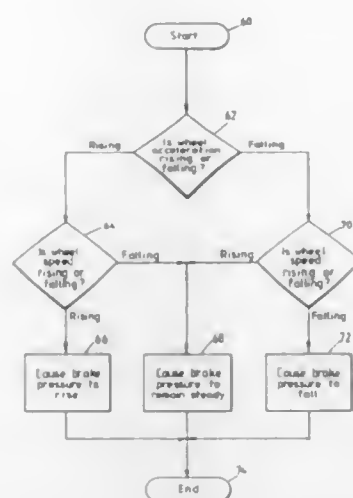
Claims priority, application United Kingdom, Sep. 7, 1993, 9318502

Int. Cl. B60T 8/24

U.S. Cl. 303—139

8 Claims

1. An apparatus for resonance control for a brake intervention traction controller arranged to perform traction control by braking of at least one driven wheel, said apparatus comprising:
 - a detector detecting a rate of change of acceleration of said at least one driven wheel and a controller in communication



with said detector, said controller increasing said braking of said at least one driven wheel in response to said detector when an increase in said rate of change of acceleration is detected by said detector.

5,511,866

ANTI-SKID CONTROL SYSTEM FOR AN ELECTRICALLY OPERATED VEHICLE

Mitsutaka Terada, Anjo; Masamoto Ando, Toyota, and Toshiyuki Sakai, Kariya, all of, Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

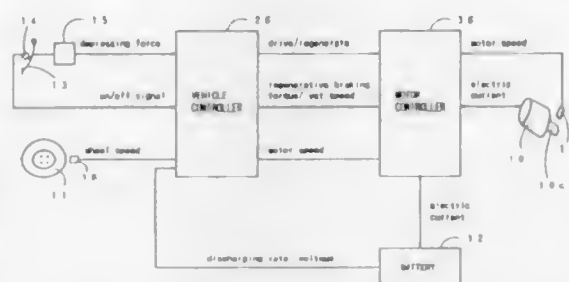
Filed Jun. 2, 1994, Ser. No. 253,260

Claims priority, application Japan, Jun. 4, 1993, 5-134617

Int. Cl. B60L 7/18

U.S. Cl. 303—152

6 Claims



1. An anti-skid control system for an electrically operated vehicle having an electric motor operatively connected to a wheel of said vehicle and a regenerative braking system connected to said electric motor, comprising:
 - wheel speed detection means for detecting a wheel speed of said wheel;
 - skid detection means for detecting a skidding condition of said wheel in response to said output signal of said wheel speed detection means;
 - means for setting a desired decreasing wheel speed when said skid detection means detects the skidding condition of said wheel; and
 - control means for controlling a regenerative braking torque of said electric motor in accordance with a control mode selected from a torque control mode for providing the regenerative braking torque in proportion to operation of a brake operating member, and a rotation control mode for controlling the regenerative braking torque to rotate said electric motor at a predetermined speed corresponding to the desired decreasing wheel speed, said control means changing said torque control mode to said rotation control mode when said skid detection means detects the skidding condition.

5,511,867

METHOD AND SYSTEM FOR DRIVETRAIN OSCILLATION DETECTION AND CONTROL FOR ANTI-LOCK BRAKE SYSTEMS

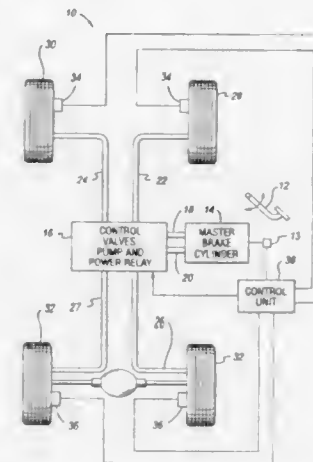
Mark S. Luckevich, Ann Arbor, Mich., and Dan Negrin, Wiesbaden, Germany, assignors to Kelsey-Hayes Company, Livonia, Mich.

Filed May 5, 1995, Ser. No. 437,436

Int. Cl. B60T 8/32

U.S. Cl. 303—191

22 Claims



1. A method for detecting drivetrain-induced oscillation having a predetermined frequency experienced by a vehicle during an anti-lock braking event and controlling an anti-lock brake system accordingly, the vehicle having a plurality of wheels including at least one driven wheel and at least one non-driven wheel and the anti-lock brake system capable of cyclic control of brake pressure, the method comprising:
 - sensing a wheel speed of the wheel and generating a corresponding wheel speed signal;
 - determining whether the vehicle is experiencing drivetrain-induced oscillation based on the wheel speed signal;
 - if the vehicle is experiencing drivetrain-induced oscillation, applying brake pressure having a predetermined magnitude to the driven wheel at approximately the same frequency as the frequency of oscillation of the drivetrain-induced oscillation.

BOOSTER RECOIL MECHANISM FOR ENDLESS TRACK MACHINE

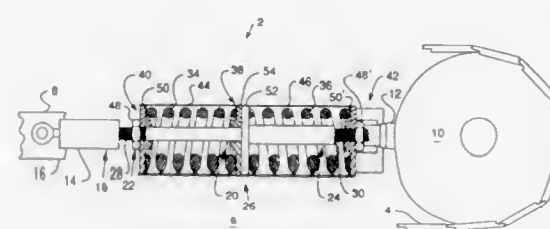
Larry G. Eftfield, Edelstein, Ill., assignor to Caterpillar Inc., Peoria, Ill.

Filed Oct. 12, 1994, Ser. No. 322,249

Int. Cl. B62D 55/30

U.S. Cl. 305—31

7 Claims



1. A recoil mechanism for an endless track of a material working machine having a frame and a moveable track engaging wheel, comprising:
 - a connecting member attachable to the track engaging wheel;
 - a hydraulic cylinder having first and second end portions, said first end portion being connectable to the machine frame;

- a longitudinally extending recoil frame having first and second end portions and a middle portion, said first end portion being connectable to the second end portion of the hydraulic cylinder and the second end portion being attachable to the connecting member, said first and second end portions having threads formed thereon and said middle portion having a flange connected thereto;
- a first spring having a first compression rate and being positioned about the first end portion of the recoil frame;
- a second spring having a second compression rate different from the compression rate of the first spring, said second spring being positioned about the second end portion of the recoil frame;
- a first moveable spring stop assembly positioned at the middle portion of the recoil frame at a location between said middle portion flange and said first spring;
- a second moveable spring stop assembly positioned at the first end portion of the recoil frame at a location between the hydraulic cylinder the first spring and in contact with said first spring;
- a third moveable spring stop assembly positioned on the second end portion of the recoil frame at a location between the connecting member and the second spring and in contact with said second spring;
- a first housing extending about and covering the first spring and being connected to the first spring stop assembly; and
- a second housing extending about and covering the second spring, being connected to the third spring stop assembly, and moveable into contact with the first spring stop assembly.

5,511,869

REPLACEMENT ENDLESS VEHICLE TRACKS

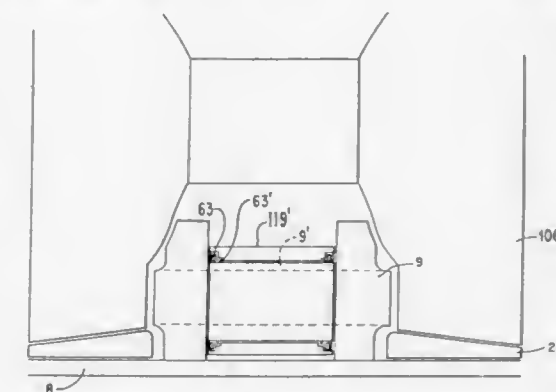
John W. Edwards, Arcadia; Daniel R. Harper, and Quinton B. McNew, both of Ft. Myers, all of Fla., assignors to Edwards, Harper, McNew & Company, Mt. Myers, Fla.

Continuation-in-part of Ser. No. 106,569, Aug. 16, 1993, Pat. No. 5,482,364, which is a continuation-in-part of Ser. No. 926,521, Aug. 10, 1992, Pat. No. 5,368,376, which is a continuation-in-part of Ser. No. 749,896, Aug. 26, 1991, abandoned. This application Jun. 21, 1994, Ser. No. 262,909

Int. Cl. B62D 55/21

U.S. Cl. 305—35 R

19 Claims



5,511,870

RUBBER TRACK FOR VEHICLES

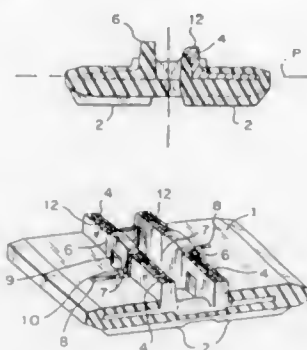
Renato Mal, Verona, Italy, assignor to Mal S.p.A., Verona, Italy

Filed Mar. 28, 1994, Ser. No. 218,645

Int. Cl. B62D 55/24

U.S. Cl. 305—38

7 Claims



1. A rubber track for vehicles, comprising a rubber structure exhibiting on an external road-facing surface a series of shaped reliefs and on a vehicle-roller-facing internal surface a series of metal rail tracts, partially sunk into the rubber structure and projecting from said internal surface; said rail tracts being set in an aligned sequence along and forming at least one complete line along the internal surface, and providing at least one rigid plane for rollers of the vehicle to run on, wherein each of the rail tracts includes a longitudinally extending rubber extension, forming a single piece with the rail tract and projecting further than said rail tract from the internal surface, and having a convex inner surface; the rubber extension being separated from a following rail tract by a recess cut perpendicularly to a level plane rubber structure.

5,511,871

AUTOMATIC LIBRARY SYSTEM WITH DATA CARTRIDGE CAROUSEL

Warren L. Dalziel, Monte Sereno, Calif., assignor to Storage Technology Corporation, Louisville, Colo.

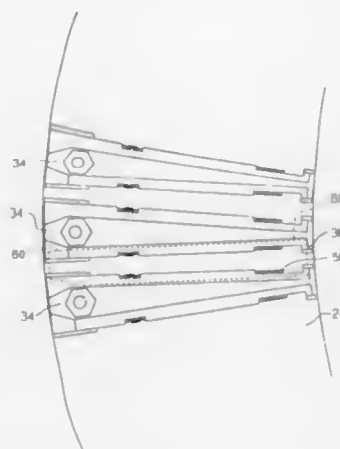
Continuation of Ser. No. 983,345, Nov. 30, 1992, abandoned.

This application Jul. 18, 1994, Ser. No. 276,878

Int. Cl. A47B 81/06; G11B 15/68

U.S. Cl. 312—9.46

11 Claims



1. An automatic library system for tape data cartridges comprising:
at least one tape drive;
a carousel for carrying cartridges;
driving means for rotating the carousel;

first bidirectional manipulator means for pushing cartridges out of the carousel to the tape drive and for pulling cartridges into the carousel from the tape drive;

an express port for inserting and removing single cartridges in the carousel from outside the automatic library system, rotatable from a first position to a second position; and
second bidirectional manipulator means for pushing a cartridge out of the carousel and into the express port and for pulling a cartridge out of the express port and into the carousel when the express port is in the first position;

the express port being accessible for manual insertion or removal of a cartridge when the express port is in the second position.

5,511,872

BUILDING SYSTEM FOR MOVABLES

Palle Clemmensen, Beder, Denmark, assignor to Byrum A/S, Skive, Denmark

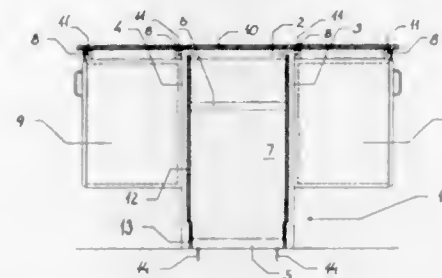
Filed Mar. 31, 1994, Ser. No. 222,745

Claims priority, application Denmark, Apr. 5, 1993, 93 00191

Int. Cl. A47B 77/06

U.S. Cl. 312—107

16 Claims



1. A modular building system for building movables consisting of (1) a plurality of frame units, each frame unit comprising four frame members connected together in opposing pairs at right angles, (2) table tops including edge lists, wash basins, gas, electric and air fittings, and writing modules, said table tops being attachable to the frame units, (3) carrying frames for mounting to an underside of a table top, (4) table top modules for providing table top surfaces at differing heights, (5) a plurality of parts attachable to the frame units or the table tops, said parts being selected from the group consisting of cabinet modules, drawer modules, front panels, rear panels, side panels, base panels, supporting legs, cable trays, piping channels and bracing crosses, and (6) means for securing said parts to the frame units or the table tops.

5,511,873

CABINET FOR THE STORAGE AND DISPLAY OF JEWELRY

Sharon A. Mech, 12551 W. 159th St., Lockport, Ill. 60441

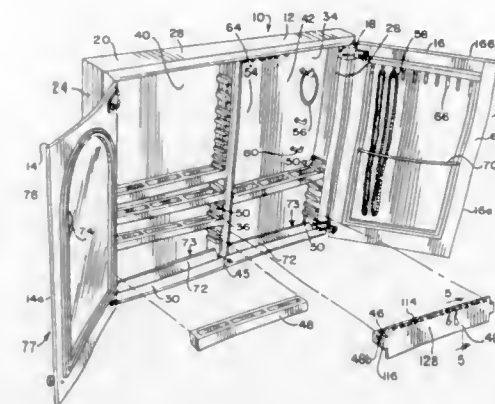
Filed Sep. 9, 1994, Ser. No. 303,955

Int. Cl. A47B 67/02; A47G 1/12; G02B 5/08

U.S. Cl. 312—227

8 Claims

1. A cabinet for the storage and display of jewelry comprising:
a generally rectangular housing having a first generally vertically extending sidewall, a second generally vertically extending sidewall, a top sidewall and a bottom sidewall, all the sidewalls being connected to each other to form a peripheral wall having interior and exterior side surfaces, a rear planar wall connected to and extending between said sidewalls, a generally vertically extending middle wall having opposite side surfaces between first and second sidewalls to form a first compartment and a second compartment within said housing;
a first door pivotally connected to said housing and adapted to pivotally close said first compartment and a second door to pivotally close said second compartment, at least one of said



first door and second door having a mirror extending over at least a portion of an exterior surface, a plurality of first hanging hooks to retain necklaces arranged on an interior surface of at least one of said first and second doors; and
a plurality of horizontally extending shelves configured to fit within at least one of said compartments, said shelves including a generally horizontally extending strip for supporting jewelry, at least one of said shelves including a frontal vertical strip having upper and lower edges and opposite side edges, said frontal vertical strip attached to said horizontal strip, said vertical strip including a plurality of slots disposed along said upper edge for retaining earrings, said middle wall and said first and second sidewalls adapted to removably hold said shelves in a vertically separated arrangement, said middle wall including a plurality of vertically spaced elongated supports on both opposite side surfaces and said first and second sidewalls including vertically spaced elongated supports on said interior side surface of said peripheral wall, said elongated supports horizontally aligned with said elongated supports on said middle wall to removably hold said shelves in a horizontal position.

5,511,874

DRIVE TRANSMISSION MECHANISM FOR BIAxIAL EXTRUDER

Yoshio Ikegami; Masashi Konno; Koji Minagawa; Norifumi

Fukano; Tatsuya Uemura, and Tatsuo Yagi, all of Takasago, Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

PCT No. PCT/JP93/01039, § 371 Date Mar. 23, 1994, § 102(e) Date Feb. 23, 1994, PCT Pub. No. WO94/02302, PCT Pub. Date Mar. 2, 1994

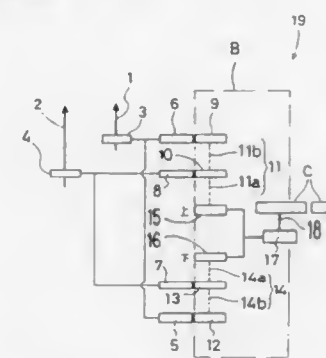
PCT Filed Jul. 26, 1993, Ser. No. 211,051

Claims priority, application Japan, Jul. 27, 1992, 4-220648; Jul. 27, 1992, 4-220649

Int. Cl. B29B 7/58

U.S. Cl. 366—100

3 Claims



1. A drive mechanism for a biaxial extruder having first and second output shafts connected to first and second screws, comprising:

first and second output gears respectively fitted on the first and second output shafts such that said first and second output gears are mutually offset on axes of the first and second output shafts, wherein a distance between said first screw and said first output gear is shorter than a distance between said second screw and said second output gear;

a first lower gear and a first upper gear respectively meshing with said first output gear, said first lower gear and said first upper gear being vertically spaced across the axis of the first output shaft;

a second lower gear and a second upper gear respectively meshing with said second output gear, said second lower gear and said second upper gear being vertically spaced across the axis of the second output shaft;

a common drive source; and

a reduction gear train for quartering a drive force from the common drive source equally and distributing the quartered drive force to said first lower gear, said first upper gear, said second lower gear and said second upper gear, said reduction gear train comprising:

a) an upper intermediate shaft comprising torsion bars and having an upper input gear and first and second upper distribution gears mounted thereon, said first and second upper distribution gears respectively meshing with said first and second upper gears;

b) a lower intermediate shaft comprising torsion bars and having a lower input gear and first and second lower distribution gears mounted thereon, said first and second lower distribution gears, respectively meshing with said first and second lower gears; and

c) a center shaft having a drive gear meshing with said upper and lower input gears,

wherein a spacing of said first upper distribution gear from said upper input gear on said upper intermediate shaft is greater than a spacing of said second upper distribution gear from said upper input gear on said upper intermediate shaft, and wherein a spacing of said first lower distribution gear from said lower input gear on said lower intermediate shaft is equal to a spacing of said first upper distribution gear from said upper input gear on said upper intermediate shaft and is greater than a spacing of said second lower distribution gear from said lower input gear on said lower intermediate shaft.

5,511,875

SYSTEM FOR THE PREPARATION OF A FLUID CONCENTRATE INTENDED FOR MEDICAL USE

Lennart Jönsson, Furulund, and Stefan Knutsson, Bjärred,

both of Sweden, assignors to Gambro AB, Sweden

Continuation-in-part of Ser. No. 3,844, Jan. 11, 1993, Pat. No.

5,344,231, which is a continuation of Ser. No. 643,468, Jan.

22, 1991, abandoned. This application Jun. 17, 1994, Ser. No.

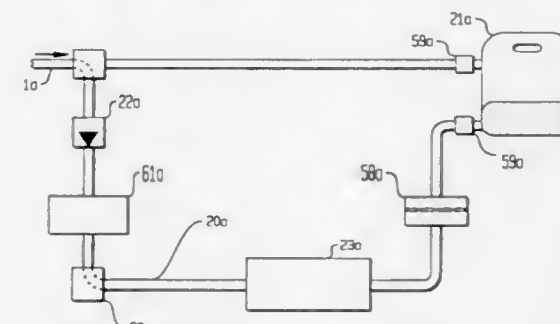
261,721

Claims priority, application Sweden, Feb. 19, 1990, 9000586

Int. Cl. B01F 15/02; G05D 11/02

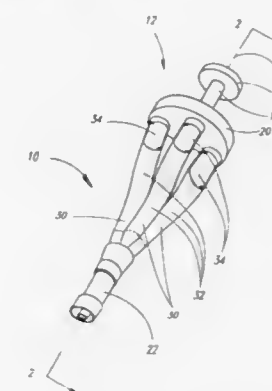
U.S. Cl. 366—136

8 Claims



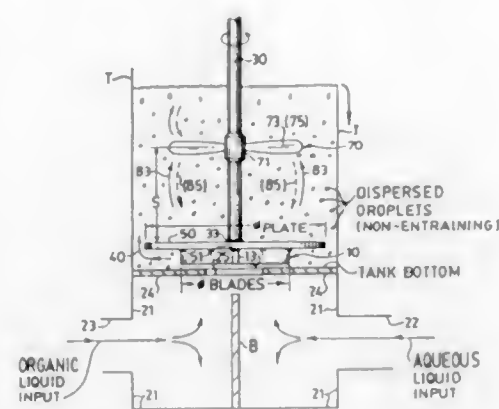
1. An apparatus for preparing a solution for use as a dialysis concentrate solution comprising:

19 Claims



47 Claims

a radial flow extension plate disposed adjacent a second opposing face of said radial flow impeller and extending radially outwardly therealong by a radial distance beyond said blade terminating circle.



5,511,882

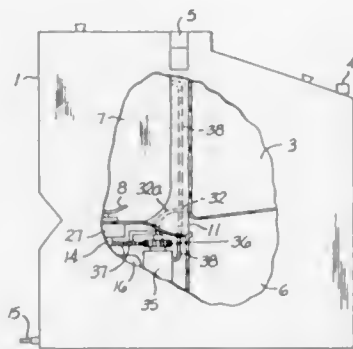
BATH ROOM SOAP RECYCLING DEVICE

Vincent Anwanah, and John Anwanah, both of 12015 Prest, Detroit, Mich. 48227

Filed Mar. 3, 1995, Ser. No. 398,357

Int. Cl.⁶ B01F 7/16

U.S. Cl. 366—314



I. A soap particle recycling device comprising:

- a housing (26) having internal partitions therein forming a water chamber (3), a mixing chamber (7), a liquid soap storage chamber (6), and a motor chamber;
- said partitions being constructed so that the motor chamber is directly below the mixing chamber, and the liquid soap storage chamber is directly below the water chamber;
- a rotary blade means (8) in said mixing chamber for agitating water and soap particles to form a soap solution in the mixing chamber;
- an electric motor (16) in said motor chamber, shaft means (12) driven by said motor and connected to said blade means, whereby the blade means is powered by said motor;
- a water pump (35) in said motor chamber; first water passage means (32) gravitationally connecting said water chamber to said pump; a first manual control means (2) controlling flow through said first water passage means;
- a second water passage means (38) connecting said pump to said mixing chamber so that when the pump is supplied with water from said first water passage means, the pump delivers a pressurized stream of water through said second water passage means to said mixing chamber;
- drive means (37, 36) mechanically connecting said motor to said pump whereby the pump is powered by the motor;
- a soap solution passage gravitationally connecting said mixing chamber to said liquid soap storage chamber; and a second manual control means (5) controlling flow through said soap solution passage, whereby soap solution is enabled to flow gravitationally from said mixing chamber to said liquid soap storage chamber when said second manual control means is actuated.

5,511,883

HANG TAB FOR CONTAINERS

John Clark, Hoffman Estates, and Karl Hoffman, Arlington Heights, both of Ill., assignors to Plitek, L.L.C., Des Plaines, Ill.

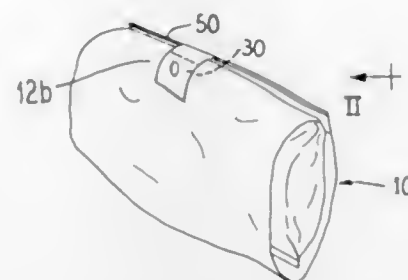
Continuation of Ser. No. 29,530, Mar. 11, 1993, abandoned.

This application Dec. 29, 1994, Ser. No. 366,020

Int. Cl.⁶ B65D 33/14

U.S. Cl. 383—22

3 Claims



I. A package for holding articles on a display rack in a retail outlet, comprising:

- a pouch for holding the articles having a sealed top end;
- a hang tab secured to said pouch and having a tab portion extending above said pouch, said hang tab having an adhesive portion applied to said tab portion and a release layer covering said adhesive portion, and an aperture penetrating said tab portion.

5,511,884

RECLOSABLE PLASTIC BAG WITH EASY OPEN AND EASY RECLOSE PROFILES

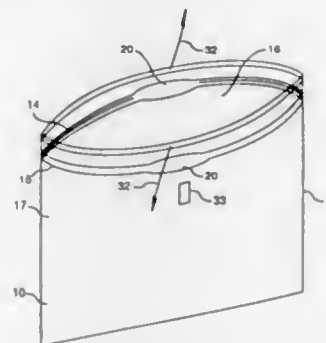
Edward C. Bruno, 15336 Penwood Pl., Aurora, Colo. 80015, and Roger A. Davison, 8761 Galen Ct., Denver, Colo. 80229

Filed Dec. 5, 1994, Ser. No. 349,196

Int. Cl.⁶ B65D 33/01; 33/24

U.S. Cl. 383—63

7 Claims



I. A reclosable plastic bag having a bottom, sides, sealed side edges, and a mouth comprising:

- a) engaging and mating profiles positioned on said sides adjacent and parallel to said mouth for closing said mouth when said profiles are engaged;
- b) a selected section of at least one of said profiles intermediate said side edges comprising a flattened non-engaging section to maintain a part of said mouth of said bag open;
- c) said selected non-engaging section enabling the remaining major portions of said profiles to be more readily disengaged to open said mouth by initiating a separating action starting at said non-engaging section; and
- d) said selected non-engaging section permitting any air in said bag to escape therethrough as said profiles are engaged when reclosing said bag.

5,511,885

COMPOSITE FLANGED BEARING HAVING ANTI-ROTATION FEATURE

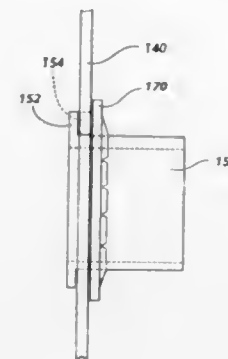
Raymond C. Coleman, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Feb. 18, 1994, Ser. No. 198,721

Int. Cl.⁶ F16C 43/02

U.S. Cl. 384—439

2 Claims



1. A bearing mounted in a thin wall, for supporting a shaft adapted to rotate, comprising:

- a cylindrical main body, adapted to be inserted into an opening in the thin wall, defining an axial bore therethrough for supporting the shaft;
- an annular flange integral with a first end of said main body, said flange abutting the thin wall;
- an anti-rotation device, integral with said flange, cooperating with the thin wall to prevent rotation of the bearing; and
- an attachment device to secure the bearing to the thin wall to prevent the bearing from moving in a direction substantially perpendicular to said flange, wherein said attachment device comprises a friction push out in sliding engagement with said main body to secure the bearing to the thin wall.

5,511,886

BEARING SEAL WITH OIL DEFLECTORS

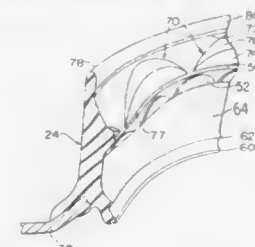
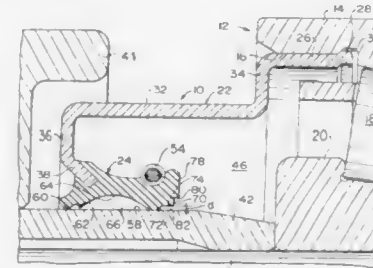
Danny R. Sink, Chester, Va., assignor to Breco Incorporated, Petersburg, Va.

Filed May 23, 1994, Ser. No. 247,842

Int. Cl.⁶ F16C 33/76; B61F 15/22; F16J 15/54

U.S. Cl. 384—486

21 Claims



1. In combination with an anti-friction bearing assembly including coaxial inner and outer relatively rotating bearing components

defining a sealed lubricant-containing cavity therebetween, a radial sealing assembly for sealing the cavity, the sealing assembly including a rigid support ring having a generally cylindrical body portion adapted to fit within and form a lubricant-tight seal with a radially inwardly directed cylindrical bore in the outer bearing component and a resilient ring-shaped sealing body mounted on the support ring in position to form a lubricant seal with a radially outwardly directed cylindrical surface coaxial with and relatively rotating with respect to said cylindrical bore, the sealing body including a dust sealing lip adapted to contact and form a dust seal with said radially outwardly directed cylindrical surface and a primary sealing lip forming a lubricant seal with said radially outwardly directed cylindrical surface, said primary sealing lip comprising,

- a generally frustoconical surface directly facing the sealed lubricant-containing cavity;
- a plurality of generally wedge-shaped oil deflectors integrally formed on and projecting from said generally frustoconical surface into said sealed lubricant-containing cavity, said oil deflectors being arranged in an annular ring around said primary sealing lip, each said deflector being defined by a first surface extending in radially outwardly spaced generally opposed relation to said radially outwardly directed cylindrical surface and intersecting said generally frustoconical surface along a first line, and an oil deflecting surface intersecting said first surface and said generally frustoconical surface, each said oil deflecting surface including a leading and a trailing surface portion each inclined axially relative to the direction of relative rotation of said inner and outer bearing components from an apex spaced axially from said first line to a point of intersection with said first line.

5,511,887

ADAPTOR FOR INNER BEARING RING BORE

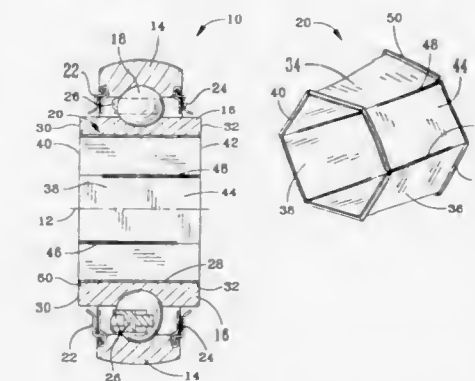
Walter P. Waskiewicz, Bristol, Conn., assignor to The Torrington Company, Torrington, Conn.

Filed Jun. 30, 1995, Ser. No. 497,006

Int. Cl.⁶ F26C 27/06

U.S. Cl. 384—536

22 Claims



1. An adaptor for use with an inner bearing ring, the inner bearing ring having an axis, a non-cylindrical bore and first and second end surfaces, the adaptor comprising:

- a tubular portion having a non-cylindrical outer surface to be received within the inner bearing ring non-cylindrical bore and a non-cylindrical inner surface to receive a non-cylindrical shaft, and providing first and second adaptor ends; and
 - flanges directed substantially radially outwardly from the tubular portion at the first and second adaptor ends to engage the first and second end surfaces of the inner bearing ring;
- the adaptor having slots distributed along the perimeter of at least one of the first and second adaptor ends and extending longitudinally through at least one flange and part of the tubular portion such that a plurality of retention fingers are formed;

the adaptor being formed integrally of a resilient material such that the retention fingers may bend radially inwardly and outwardly to permit insertion into the inner bearing ring and to accommodate dimensional variation of the non-cylindrical bore and the non-cylindrical shaft.

5,511,888 APPARATUS FOR RE-INKING THE RIBBON OF A PRINTER RIBBON CARTRIDGE

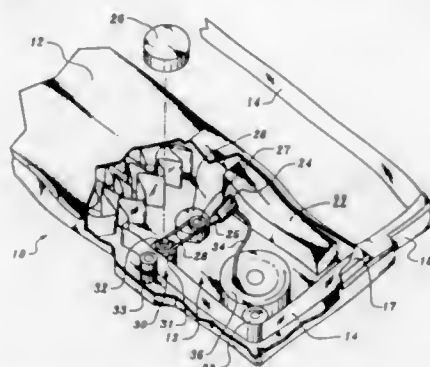
Grant W. Beach, Burien, Wash., assignor to Mannesmann Tally Corporation, Kent, Wash.

Filed Sep. 20, 1994, Ser. No. 309,256

Int. Cl.⁶ B41J 31/16

U.S. Cl. 400—197

16 Claims



1. In a printer ribbon cartridge housing a ribbon, wherein the printer ribbon cartridge includes a body having a first ribbon arm, a second ribbon arm and a drive assembly for moving the ribbon through the body, the improvement comprising an internal re-inking mechanism encased within the body for re-inking the ribbon, the internal re-inking mechanism having:

- (a) a pump having an inlet and an outlet, the pump mounted within the body of the printer cartridge and driven by the drive assembly of the printer cartridge which moves the ribbon through the body;
- (b) an ink reservoir coupled to the inlet of the pump so that the pump draws ink from the ink supply;
- (c) an ink feeding conduit coupled to the outlet of the pump;
- (d) a re-inking ring rotatably mounted in the body for receiving ink from said ink feeding conduit; and
- (e) a transfer roller rotatably mounted to the body in frictional engagement with both the re-inking ring and the ribbon for transferring ink from the re-inking ring to the ribbon.

5,511,889

RIBBON INKING DEVICE

Gladys J. Tinkar, Saskatchewan, Canada, assignor to T-3 Enterprises Inc., Regina, Canada

PCT No. PCT/CA92/00277, § 371 Date Jan. 6, 1995, § 102(e) Date Jan. 6, 1995, PCT Pub. No. WO94/01287, PCT Pub. Date Jan. 20, 1994

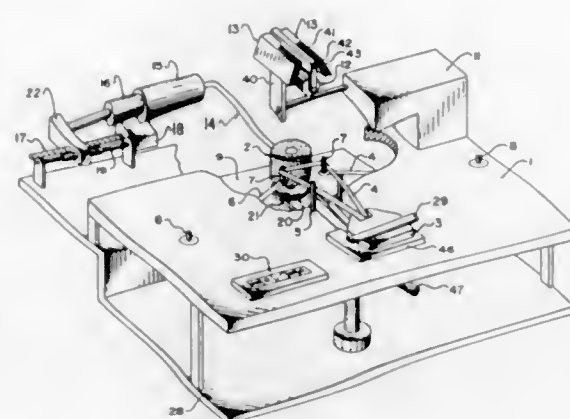
Continuation-in-part of Ser. No. 633,683, Dec. 26, 1990, abandoned. This PCT application Jul. 6, 1992, Ser. No. 367,169

Int. Cl.⁶ B41J 31/14

U.S. Cl. 400—197

10 Claims

1. A ribbon inking device for inking an endless ribbon movably mounted in a ribbon cartridge with a loop of the ribbon exposed from the cartridge and a drive member on the cartridge for feeding the ribbon from the loop back into the cartridge, the device comprising a base, main drive means mounted on the base, ink applying means mounted on the base and including an ink supply, ribbon driving means for driving said ribbon from said loop over said inking means, said ribbon driving means being driven from said main drive means, ribbon positioning means for grasping said



ribbon at said loop and for moving the ribbon into position for driving by said ribbon driving means, cartridge drive means for driving said drive member on the cartridge, cartridge support means including a support table mounted on said base and means for moving the cartridge drive means to a required location for engagement with said drive member of said cartridge on said cartridge support means.

5,511,890

METHOD AND APPARATUS FOR CONTROLLING THE MOVEMENT OF A PRINTING HEAD IN A PRINTER

Hiroaki Momose, Nagano, Japan, assignor to Seiko Epson Corporation, Tokyo, Japan

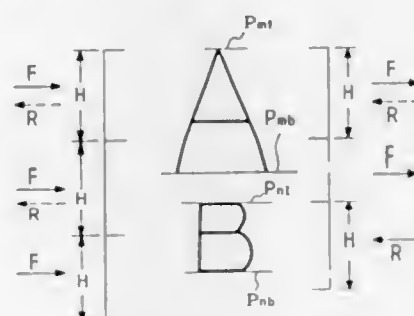
Filed Aug. 30, 1994, Ser. No. 298,340

Claims priority, application Japan, Aug. 30, 1993, 5-214102; Jul. 4, 1994, 6-152303

Int. Cl.⁶ B41J 19/30

U.S. Cl. 400—323

8 Claims



1. A method of controlling the movement of a printing head in a printer for printing characters along a print pass while selectively reversing a moving direction of the printing head, comprising the steps of:

- setting at least two passes of the printing head by dividing print data of a plurality of lines into passes, each corresponding to the height of the printing head;
- searching the passes for a first lowest pass containing a bottom of characters of a first line in the print data;
- checking whether or not a top of characters of a second line in the print data is present in the passes from an uppermost pass containing a top of the characters of the first line in the print data to the first lowest pass;
- continuing to print the characters of the second line in a first direction which is the same as the characters of the first line are printed if the top of the characters of the second line is present in the passes from the uppermost pass to the first lowest pass as determined in the checking step; and
- reversing the moving direction of the printing head for continuing to print the characters of the second line in a second direction opposite to the first direction if the top of the

characters of the second line is not present in the passes from the uppermost pass to the first lowest pass as determined in the checking step.

5,511,891

TAPE PRINTING MACHINE WITH IR SENSING

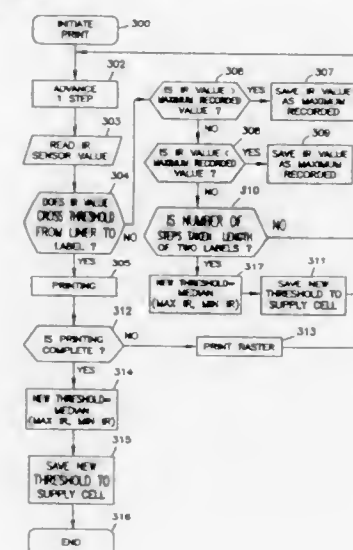
Kelly R. Nehowig; David T. Gale, both of Maple Grove; Scott W. Kullman, Plymouth, and Bryn D. Rogers, Brooklyn Center, all of Minn., assignors to Varitronic Systems, Inc., Minneapolis, Minn.

Filed Jun. 14, 1994, Ser. No. 259,668

Int. Cl.⁶ B41J 11/42

U.S. Cl. 400—583

5 Claims



1. A method of controlling positioning of a tape in a printing machine having a printer for printing an image on said tape and means for advancing said tape past said printer, said tape including a plurality of print fields separated by non-print areas; said print fields and said non-print areas characterized by measurably different transmittances, said print machine including a light source and a light detector separated by a light pathway at a predetermined distance from said printer, said tape positioned to pass through said light pathway as said tape is advanced past said printer, said method comprising:

- advancing a length of said tape through said light pathway;
- measuring a transmittance of said tape as said length passes through said light pathway and storing values associated with measured first and second transmittances of said tape;
- further advancing said tape to a start position with a measured transmittance of said tape at said start position corresponding with a stored value of said first measured transmittance;
- metering advancement of said tape from said start position and activating said printer to print an image on at least one of said print fields.

5,511,892

THERMAL PRINTER PLATEN WITH RELIEVED ENDS

James E. Pickering, Holcomb, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

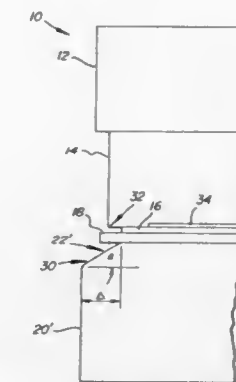
Filed Jun. 22, 1994, Ser. No. 263,637

Int. Cl.⁶ B41J 11/57

U.S. Cl. 400—662

8 Claims

1. In a resistive thermal printer having a printhead and a platen with an elastomeric surface, said printer being adapted to receive a dye donor medium and a dye receiver medium in a nip between the printhead and the platen, one of the media is wider than the printhead and the other media is narrower than the printhead,



whereby pressure between the printhead and the platen, with the dye donor medium and the dye receiver medium there between, tends to compress the platen in a region of the platen aligned with the received other media; the improvement comprising end portions of the platen extending beyond the region of the platen aligned with the received other media, said end portions being relieved so as to allow room for bulging when the platen in the region of the received other media is compressed by pressure between the printhead and the platen.

5,511,893

CONNECTION OF A SHAFT WITH AN ELEMENT ON PARTICULAR THE SHAFT OF A ROTARY SETTING MEMBER WITH A SETTING WHEEL

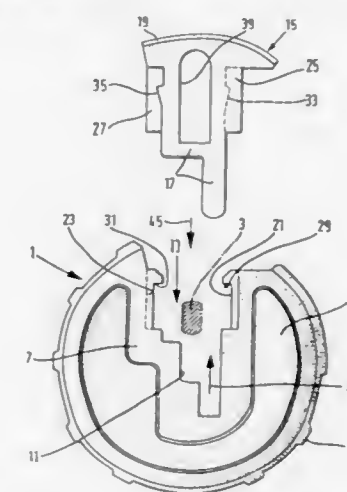
Albert Kilgus, Stuttgart, and Rainer Debler, Ostfildern, both of, Germany, assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 30, 1993, Ser. No. 1,992

Int. Cl.⁶ G05G 5/00; H01C 10/00; F16B 17/00

U.S. Cl. 403—294

7 Claims



1. Connection of a shaft with an element, in particular, the shaft of a rotary setting member with a disk-shaped setting wheel, said setting wheel having a recess adapted to receive said shaft of said rotary setting member, said recess being part of an opening by which said recess is connected with the outer edge of the shaft of the rotary setting member and through which the connection can be affected by relative movement of the shaft and the rotary setting member transversely to the axis of said shaft, characterized in that a wedge member is inserted into the opening in a direction transversely to the axis of the shaft, interlocking means are provided on the setting wheel and on the wedge member for fixing the wedge member in the opening of the setting wheel, wherein the interlocking means comprises inwardly extending projections contained within the opening and outwardly extending locking noses on the wedge member.

5,511,894

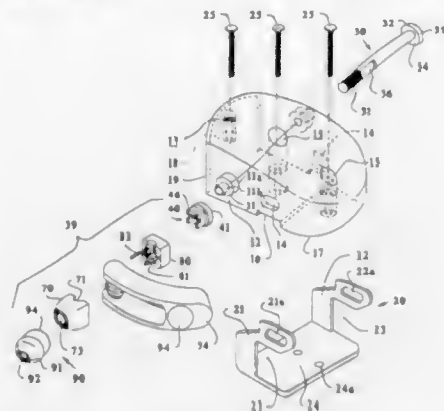
LOCKABLE QUICK RELEASE MECHANISM

Daniel Ng, Somers, N.Y., assignor to Industri Ar Thule, Hillerstorp, Sweden

Continuation of Ser. No. 945,907, Sep. 17, 1992, Pat. No. 5,362,173. This application Aug. 19, 1994, Ser. No. 292,182
Int. Cl.⁶ F16B 2/18

U.S. Cl. 403—320

24 Claims



1. A mechanism for retaining prongs of a bicycle for transportation of the bicycle on a carrier on a vehicle, comprising:
a skewer, a portion of the skewer being adapted to receive the prongs;
a block for receiving the skewer having a first and second bearing surfaces, the skewer extending substantially perpendicularly from the first and second bearing surfaces;
means for securing the block to a portion of the carrier;
means for engaging the prongs to clamp the prongs to the first and second bearing surfaces, the engaging means being mountable on the skewer and axially movable thereon; and
means for adjusting a range of movement of the engaging means between axial positions on the skewer, the adjusting means being mounted on the skewer and axially movable thereon;
a portion of the skewer being threaded and the adjusting means having a skewer receiving interior thread for mounting the adjusting means on the skewer; and
means for preventing the adjusting means from moving relative to the skewer.

5,511,895

TORQUE CONVERTER LOCKING ADAPTOR

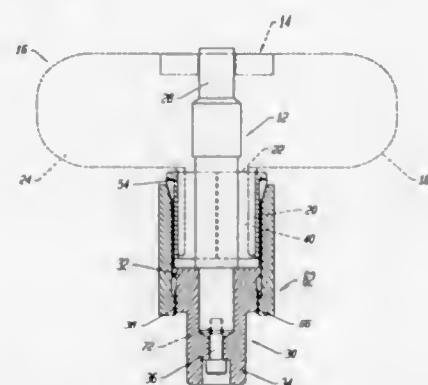
John E. Myers, Reno, Nev., assignor to Torque Converter Rebuilding, Inc., Reno, Nev.

Filed Mar. 17, 1994, Ser. No. 210,130

Int. Cl.⁶ F16B 2/14

U.S. Cl. 403—370

6 Claims



1. In combination, a torque converter and an adaptor for locking internal components of the torque converter possessing an outwardly extending collet surrounding an opening into the torque converter,

said adaptor comprising:

- a mandrel having a first end portion and a second end portion, said first end portion extending into the torque converter opening, said first end portion including a structure engaging the internal components of the torque converter, said mandrel being circumscribed by the collet of the torque converter when said mandrel extends into the torque converter;
- a support element including an open hollow end portion fitting over the collet and said second end portion of said mandrel circumscribed by the collet;
- a bushing interposed said support element and the collet;
- a fastener for holding said mandrel to said support element; and
- holding means for retaining said open hollow end portion of said support element, said bushing, and the collet in a sandwich configuration.

5,511,896

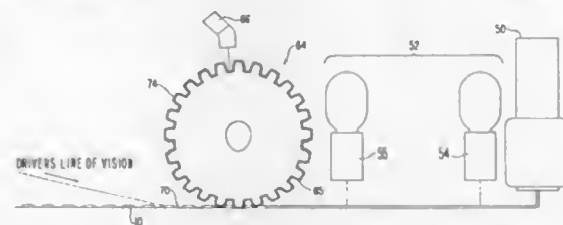
METHOD FOR APPLYING A NIGHT-VISIBLE TRAFFIC STRIPE TO A ROAD

Forrest C. Marcato, Pike Road, Ala., assignor to The Rainline Corporation, Montgomery, Ala.

Continuation-in-part of Ser. No. 5,057, Jan. 15, 1993, This application Jan. 13, 1994, Ser. No. 181,115
Int. Cl.⁶ E01F 9/08

U.S. Cl. 404—72

5 Claims



1. A method for applying a night-visible traffic stripe to a road surface, said method comprising the steps of:
applying a material capable of adhesion and forming a traffic stripe to a road surface;
applying a reflective material to the traffic stripe;
applying means for preventing adhesion between the traffic stripe material and a deformation means such that the deformation means remains substantially free of traffic stripe material during a deformation step; and
deforming the traffic stripe material with the deformation means to form spaced grooves in the traffic stripe material;
wherein said step of applying means for preventing adhesion includes applying a predetermined quantity of liquid to the deformation means prior to said deforming step to cause the reflective material to adhere to the deformation means and thus form a protective coating between the deformation means and traffic stripe.

5,511,897

METHOD OF SEALING A MANHOLE RISER AND A CATCH BASIN AND APPARATUS FOR SAME

William P. House, and William K. House, both of Forest Lake, Minn., assignors to Infi-Shield, Forest Lake, Minn.

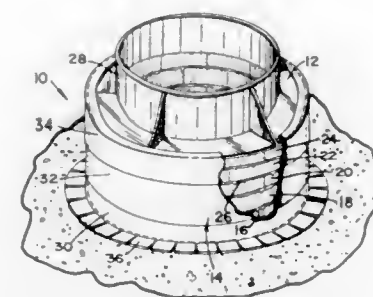
Filed Jul. 11, 1994, Ser. No. 273,503

Int. Cl.⁶ E02D 29/14

U.S. Cl. 404—25

20 Claims

7. A kit for sealing a manhole riser of the type having a top adjusting ring and a bottom adjusting ring, the manhole riser also having a height defined from a base of the bottom adjusting ring to a top edge of the top adjusting ring, said kit comprising:
a plurality of bands of elastomeric material, said plurality of bands including a top band and a bottom band, and each of said plurality of bands having a height, wherein a sum of the



- heights of said plurality of bands is at least equal to the height of the manhole riser; and
adhesive applied to interior surfaces of said top and bottom bands for bonding said top and bottom bands to the manhole riser and forming seals therebetween.

5,511,898

MOVEABLE MANHOLE COVER

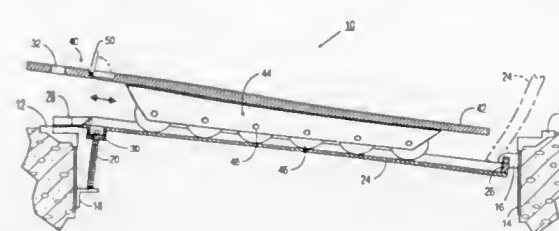
Martin C. Pettesch, Cranford; Michael P. Breheny, Maywood; Christopher M. Andrews, Denville; Thomas G. Nelson, Basking Ridge, and Joseph V. Milo, Rockaway Boro, all of N.J., assignors to Universal Valve Co., Inc., Elizabeth, N.J.

Filed Oct. 11, 1994, Ser. No. 320,295

Int. Cl.⁶ E02D 29/14

U.S. Cl. 404—25

13 Claims



1. A manhole for mounting substantially flush with and below an adjoining surface, said manhole comprising:
a first part defining a partially enclosed chamber and having a top rim for mounting substantially flush with the adjoining surface and for defining a top opening for said chamber, a cover assembly including a cover for removably covering the top opening of the chamber, and
supporting means coupled to said first part for selectively raising and lowering said cover assembly between a closed position in which the cover is supported by the top rim of said first part and a raised position in which the cover assembly is supported by said supporting means and is free to move laterally across said supporting means and said rim on to and become supported by the adjoining surface to expose the opening of the chamber in response to the application of lateral manual force on said cover assembly.

5,511,899

LIGHT DUTY ROADWAY SURFACE FROM RECYCLED WASTE ASPHALT ROOFING SHINGLE MATERIALS

Michael D. Pavelek, II, Hershey, Pa., assignor to Greater Lebanon Refuse Authority, Lebanon, Pa.

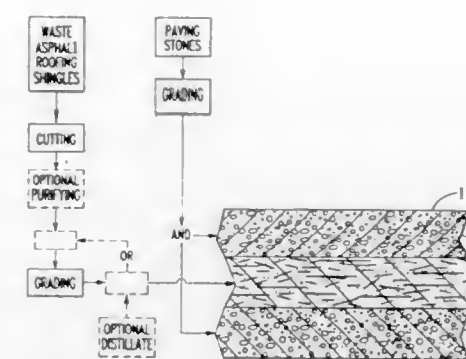
Filed Feb. 3, 1995, Ser. No. 382,913

Int. Cl.⁶ E01C 7/26

U.S. Cl. 404—31

18 Claims

1. A light duty roadway surface, which comprises:
at least two overlying layers, an internal one of the layers comprising size reduced individual pieces of asphalt roofing shingle material overlying one another to form a mat, and another of the layers comprising a loose crushed aggregate,



whereby the mat provides internal support and the two layers form a water permeable roadway surface.

5,511,900

REVERSIBLE HANDEDNESS SCREED CONTROL DEVICE

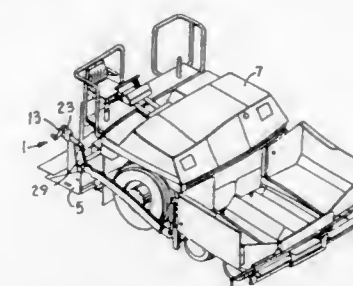
Charles G. Macku, Cedar Rapids, Iowa, assignor to Cedarapids, Inc., Cedar Rapids, Iowa

Filed Dec. 15, 1994, Ser. No. 356,701

Int. Cl.⁶ E01C 19/00

U.S. Cl. 404—84.1

7 Claims



1. A control device for a paver screed, comprising:
(a) elevating means for adjusting the angle of attack of the screed; said elevating means including two pairs of interacting cylindrical surfaces, a first pair of said two pairs of interacting surfaces threadably connected by "left-hand" threads and the second pair of said two pairs of interacting surfaces threadably connected by "right-hand" threads;
(b) cranking means for manually and rotationally operating said elevating means; and
(c) reversing means for selectively changing said cranking means to and from a right-handed rotational configuration or a left-handed rotational configuration; said reversing means including a mechanism adapted to selectively maintain one pair of said two pairs of interacting surfaces stationary relative to each other as the other pair of said two pairs of interacting surfaces are allowed to threadably move relative to each other.

5,511,901

REMOVABLE PADFOOT SHELL CONVERSION DEVICE

Steve K. Yates, Scotland, Pa., assignor to Ingersoll-Rand Company, Woodcliff Lake, N.J.

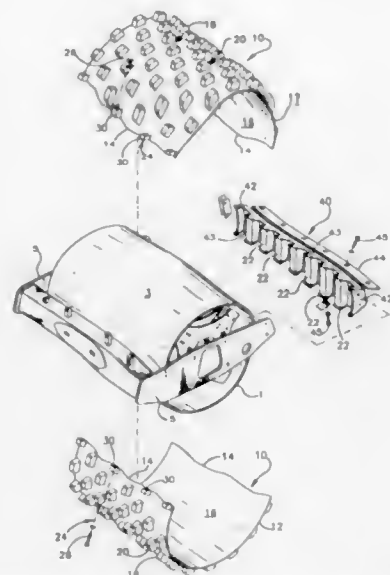
Filed Oct. 25, 1994, Ser. No. 329,013

Int. Cl.⁶ E01C 19/26

U.S. Cl. 404—124

6 Claims

1. A roller drum construction for a compacting machine comprising:
a. a cylindrical primary drum with an arcuate outer surface for contacting material to be compacted;



- b. a removable shell for changing the outer surface of the primary drum from a planar to a padfoot surface comprising:
- a plurality of flexible arcuate mounting members curved to approximate the arcuate curvature of the outer surface of the primary drum;
 - a padfoot outer surface on said mounting members; and
 - means for connecting said mounting members to each other around the outer surface of the primary drum and for flexibly deforming said mounting members into frictional engagement with the outer surface of said primary drum.

5,511,902

INSTANT LEVY BLOCK SYSTEM

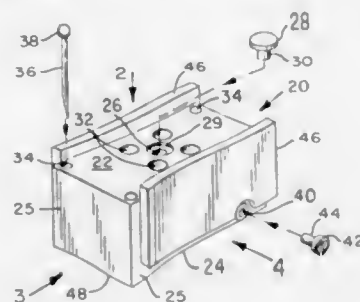
Leslie T. Center, P.O. Box FL284, Smith's Parish FL BX, Bermuda

Filed Feb. 9, 1994, Ser. No. 194,158

Int. Cl.⁶ E02B 7/04

U.S. Cl. 405—16

10 Claims



1. An instant levy block system, for creating a levy, comprising:
- a block, the block being in the general shape of a rectangular prism, the block having a top surface and a bottom surface, the top surface having at least one upper shaftway extending a distance vertically into the block, the bottom surface having at least one lower shaftway extending a distance vertically into the block; and
 - a connecting peg, the connecting peg of a length substantially the same as the sum of the distance that the upper shaftway extends into the block and the distance that the lower shaftway extends into the block, the connecting peg sized to fit in the upper shaftway and lower shaftway of the block, for connecting said block to another identical block, the block further comprising:
 - a pair of opposite sides joined by a pair of opposite connecting ends extending between top and bottom surfaces; and

- a pair of end plates, each end plate being of substantially the same size as the pair of opposite sides and mounted to each of the pair of opposite sides in parallel relation and at equal distances from one of the connecting ends and from the bottom surface so as to protrude from the other of the connecting ends and from the top surface; the upper shaftway and lower shaftway being positioned so that a pair of identical blocks, comprising a top block and a bottom block, can be stacked with the top block overlying half of the bottom block, and with the upper shaftway of the bottom block substantially concentric with the lower shaftway of the upper block so that both shaftways can receive the connecting peg and with the end plates of the bottom block in intimate sealing engagement with portions of the opposite sides of the upper block which are below respective end plates thereof.

5,511,903

LEACHING CHAMBER WITH PERFORATED WEB SIDEWALL

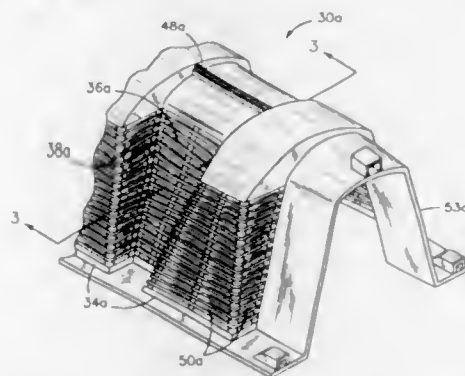
James M. Nichols, Old Saybrook; Bryan A. Coppes, Westbrook, and Bruce T. Sperry, Jr., Norwich, all of Conn., assignors to Infiltrator Systems, Inc., Old Saybrook, Conn.

Filed Oct. 3, 1994, Ser. No. 316,946

Int. Cl.⁶ E02B 11/00

U.S. Cl. 405—43

27 Claims



1. In a chamber, for dispersing or gathering liquids within soil, of the type having an arch shape cross section, wherein the top of the chamber corresponds with the top of the arch shape cross section; having a multiplicity of alternating peaks and valleys running along the arch shape in the cross sectional plane direction; having a sidewall wherein the peaks and valleys thereof have perforations to enable passage of liquids into the surrounding soil; and, wherein webs connect adjacent peaks and valleys at intersections; the improvement comprising: at least one of said webs having perforations, to enable the passage of liquid through the web sidewall and into the soil.

5,511,904

STORM WATER INFILTRATION

John Van Egmond, 174 Poplar Ave., Acton, Ontario, Canada
PCT No. PCT/CA92/00042, § 371 Date Aug. 3, 1993, § 102(c)
Date Aug. 3, 1993, PCT Pub. No. WO92/14005, PCT Pub. Date Aug. 20, 1992

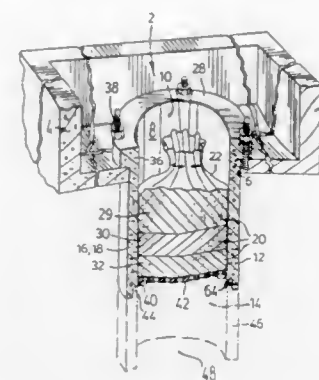
PCT Filed Feb. 5, 1992, Ser. No. 98,277

Claims priority, application Canada, Feb. 6, 1991, 2035753
Int. Cl.⁶ E02B 13/00

U.S. Cl. 405—52

21 Claims

1. A structure for filtering and discharging surface water and storm sewage into a storm sewage receptor, comprising:
- a surge basin for receiving said surface water;
 - a filter funnel mounted to the surge basin, the funnel including a top end having an intake opening for receiving said surface



water from said surge basin, a central portion having side-walls and a bottom end having a discharge opening leading directly to the storm sewage receptor;

a filter means including a porous sack of filtration material positioned within the central portion of the funnel for removing contaminants from the surface water flowing there-through, said sack of filtration material being adapted to flatten when supported from below to prevent the by-pass surface water therearound; and

the filter funnel including filter support means positioned below a portion of the filter means for supporting the filter means in the filter funnel.

5,511,905

DIRECT INJECTION OF COLD FLUIDS INTO A SUBTERRANEAN CAVERN

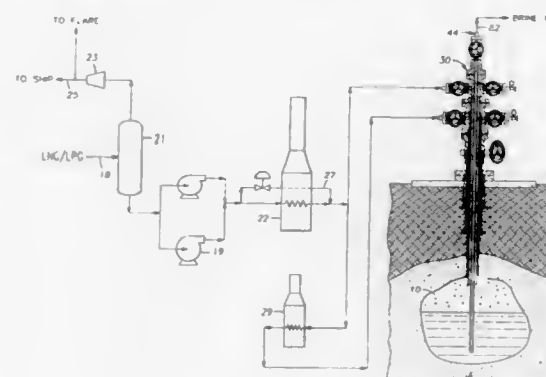
William M. Bishop, Katy, and Hugh D. Kaiser, Houston, both of Tex., assignors to PB-KBB, INC., Houston, Tex.

Filed Oct. 26, 1993, Ser. No. 143,359

Int. Cl.⁶ B65G 5/00

U.S. Cl. 405—59

25 Claims



1. A subterranean storage facility for storing cold fluids comprising:
- a subterranean cavern having walls forming a cavity;
 - a member for passing the cold fluids in heat exchange relationship with another fluid;
- the cold fluids having a first temperature at which the cold fluids are not compatible with said walls of said cavity and a second temperature at which the cold fluids are compatible with said walls of said cavity;
- said member receiving the cold fluids outside said cavity at said first temperature and passing the cold fluids in heat exchange relationship with said another fluid to raise the temperature of the cold fluids to said second temperature before disposing the cold fluids in said cavity;
- means for removing the cold fluids from said cavity; the temperature of the cold fluids being raised from said first temperature to said second temperature as the cold fluids are disposed in said cavity.

8. A method for storing cold fluids in a subterranean cavern comprising the steps of:

- disposing an immiscible displacing liquid in the cavity of the cavern;

extending inner and outer pipe strings forming a first flow bore from above ground into the cavity;

injecting the cold fluids into the first flow bore at a first temperature at which the cold fluids are not compatible with the walls of the cavity;

passing the cold fluids through the first flow bore into the cavity; displacing the immiscible displacing liquid to above ground through a second flow bore formed by the inner and outer pipe strings;

exchanging heat between the immiscible displacing liquid and the cold fluids through the wall of the inner pipe string in heat exchange relationship; and

exiting the cold fluids from the first flow bore at a second temperature at which the cold fluids are compatible with the walls of the cavity;

storing the cold fluids in the cavity at a temperature and pressure whereby the cold fluids are in a dense phase.

25. A method for heating liquified gas comprising the steps of:

- receiving the liquified gas from a tank;

passing the liquified gas through a heat exchanger in heat exchange relationship with brine drawn from a solar pond at a temperature whereby the liquified gas is heated to pipeline temperature; and

passing the heated liquified gas into a pipeline.

5,511,906

ARRANGEMENT FOR A BOOM

Per O. Öberg, Nordmaling, Sweden, assignor to Expandi Systems AB, Nordmaling, Sweden

PCT No. PCT/SE92/00555, § 371 Date Mar. 21, 1994, § 102(c)
Date Mar. 21, 1994, PCT Pub. No. WO93/06309, PCT Pub. Date Apr. 1, 1993

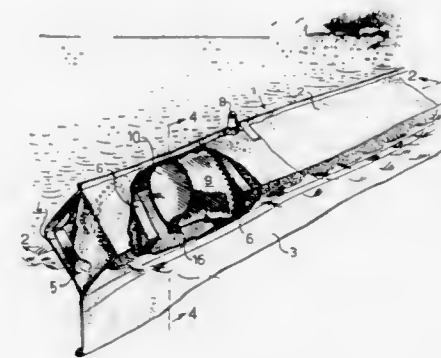
PCT Filed Aug. 18, 1992, Ser. No. 211,121

Claims priority, application Sweden, Sep. 25, 1991, 9102785

Int. Cl.⁶ E02B 15/04

U.S. Cl. 405—68

4 Claims



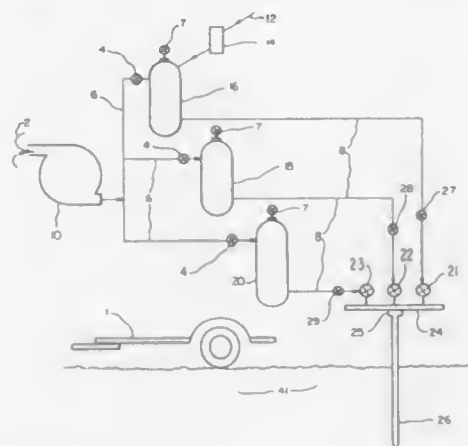
1. A buoyant boom comprising:
- an elongate tubular casing having an inside wall, the tubular casing being movable between a collapsed rest position and an expanded operational position, the tubular casing having an upper portion and a lower portion;
 - a plurality of spaced dividing walls disposed within the tubular casing, the dividing walls being made of a flexible material;
 - an elongate shield part attached to the tubular casing; expansion devices attached to the tubular casing, the expansion devices being movable between a folded position and an unfolded position;
 - biasing members attached to the expansion devices, the biasing members urging the expansion devices into the unfolded position so that the tubular casing is moved into the expanded operational position;

a valve operatively attached to the upper portion of the tubular casing so that air enters the tubular casing through the valve when the tubular casing is moved from the collapsed rest position to the expanded operational position and air exits the tubular casing through the valve when the tubular casing is collapsed by urging the biasing members into the folded position, the tubular casing being made of a flexible material so that the casing is coilable when in the collapsed rest position;

an impervious flexible sheet material disposed inside the tubular casing, the sheet material having an upper portion and open bottom end portions, the upper portion and the bottom end portions having opposite side edges, the side edges of the upper portion being sealingly attached to the inside wall of the tubular casing so that the open bottom end portions hang from the inside wall of the tubular casing when the tubular casing is in the expanded position; and

a chamber defined between the bottom end portions and the inside wall of the tubular casing, the chamber being open downwardly so that air fills the chamber between the tubular casing and the bottom end portions of the sheet material when the tubular casing is moved into the expanded position to provide buoyancy of the boom.

5,511,907
MOBILE INJECTION DEVICE AND METHOD FOR DELIVERY OF REMEDIATION MATERIALS TO UNDERGROUND CONTAMINATED SOILS AND WATER
 Joseph J. Tabasco, 308 Roberts Dr., Somerdale, N.J. 08083
 Filed May 12, 1995, Ser. No. 439,640
 Int. Cl.⁶ B09B 3/00; B09C 1/10; C12N 1/26
 U.S. Cl. 405—128 17 Claims

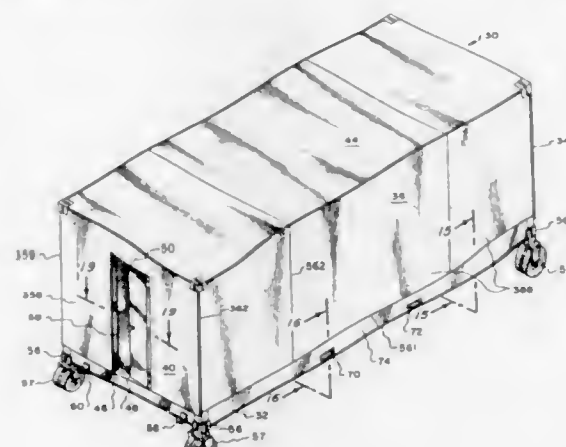


12. Apparatus for delivery of remediation materials to an underground site of contamination, comprising:
 a source of pressurized drilling fluid;
 a source of pressurized remediation materials;
 a length of pipe for insertion into the ground from the surface to the site of contamination, the pipe having a forward end;
 means for selectively connecting the source of pressurized drilling fluid to the pipe so that when connected to the pipe the drilling fluid is forced, as a pressurized stream, from the forward end of the pipe, whereby the pressurized stream will drill a hole through the ground as the forward end of the pipe is inserted into the ground; and
 means for selectively connecting the source of remediation materials flow from the forward end of the pipe.

13. A method for delivery of remediation materials to underground contaminated soils and water comprising:
 obtaining a length of hollow cylindrical pipe;
 forcing a drilling fluid as at least one high pressure stream from the forward end of the hollow cylindrical pipe into the ground

adjacent to the forward end of the hollow cylindrical pipe to drill into such adjacent ground;
 continually inserting the pipe into the drilled adjacent ground to move the pipe into the ground toward an area of underground contamination and present new ground to be drilled adjacent to the forward end of the pipe until the site of contamination is reached by the forward end of the pipe;
 with the forward end of the pipe in the site of contamination, forcing remediation materials from the forward end of the pipe into the site of contamination.

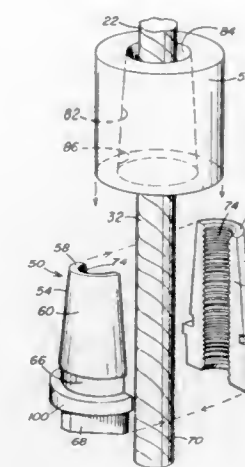
5,511,908
MOBILE SAFETY STRUCTURE FOR CONTAINMENT AND HANDLING OF HAZARDOUS MATERIALS
 Norman S. Van Valkenburgh, Oxnard; Gary L. Van Valkenburgh, Ventura, both of Calif., and Edward Payne, Fairfax, Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
 Continuation-in-part of Ser. No. 229,475, Apr. 18, 1994. This application Nov. 14, 1994, Ser. No. 342,451
 Int. Cl.⁶ B09B 3/00
 U.S. Cl. 405—128 18 Claims



1. A mobile safety structure for housing containers of hazardous materials and providing sump-type secondary containment for receiving spillage and leakage of said hazardous materials from said containers that are housed within said mobile safety structure, said mobile safety structure comprising:

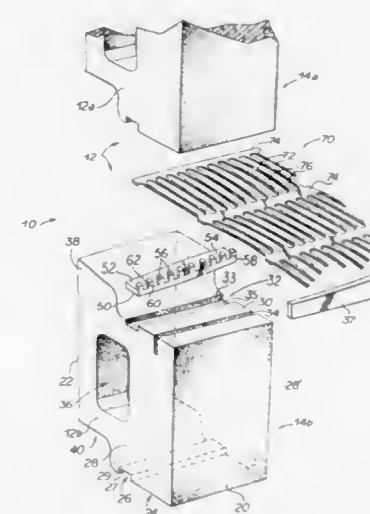
- a rectangular shaped base assembly including a framework of a welded assembly of steel components, said framework of said base assembly comprising:
 - a pair of front and rear support members and a pair of side support members that are arranged end to end to define a rectangular shaped structure, four corner fittings having first and second orthogonally disposed sides, a top portion and a bottom portion, each end of each of said side support members being attached to the first side of a separate one of said four corner fittings and each end of each of said front and rear support members being attached to the second side of a separate one of said corner fittings;
 - a pair of inverted T channel support members disposed substantially parallel to said front and rear support members, one end of each of said inverted T channel support members being attached to one of said side support members and an opposite end of each of said inverted T channel support members being attached to the other of said side support members, each of said inverted T channel support members having a base channel member and a floor support channel member mounted on a top portion of said base channel member;
 - first and second floor support members respectively attached to an inner side of said front support member and an inner side of said rear support member;

- a first generally rectangular shaped steel plate mounted on a bottom portion of said front, rear and side support members and a bottom portion of the base channel support member of said pair inverted T channel support member wherein said first generally rectangular shaped steel plate mates with said front, rear and side support members forming a substantially rectangular open secondary container that is leakproof, said open secondary container receiving spillage and leakage of said hazardous materials from said containers that are housed within said mobile safety structure;
- a removable grating type floor supported by base assembly and resting upon said first and second floor support members and the floor support channel members of said pair of inverted T channel support members, said removable grating type floor extending substantially horizontally atop said open secondary container;
- first and second side walls extending perpendicularly upward from said base assembly, a rear wall extending perpendicularly upward from said base assembly and a front wall extending perpendicularly upward from said base assembly, one end of each of said side walls being secured to a separate one of the opposed ends of said front wall and the other end of each of said side walls being secured to a separate one of the opposed ends of said rear wall to form a rectangular shaped assembly of upstanding walls;
- a rectangular shaped roof mounted atop said rectangular shaped assembly of upstanding walls and extending horizontally over an interior space that is defined between said front and rear walls and between said first and second side walls;
- each of said front, rear and side walls and said roof comprising:
 - a rectangular shaped framework of structural steel support members, at least one outer wall panel mounted to an outer surface of said rectangular shaped framework, an inner wall panel mounted to an inner surface of said rectangular shaped framework, a pair of stack sheets of gypsum type board sandwiched between said at least one outer wall panel and said inner wall panel, said pair of stack sheets of gypsum board being secured to said inner wall panel, and a fiberglass insulation material interposed between said pair of stack sheets of gypsum type board and said at least one outer wall panel;
 - said pair of stack sheets of gypsum type board within each of said front, rear and side walls and said roof providing for a fire rating of at least four hours for said mobile safety structure and said fiberglass insulation material allowing said mobile safety structure to be adapted for use under varying climatic conditions.



projecting from the housing a drive end portion of the plug member surrounding the end of the cable extending out of the bore hole, nonrotatably engaging a wrench to the drive end portion of the plug member, applying torque to the wrench to rotate the plug member and the cable in the bore hole, and applying an upward force on the drive end portion of the plug member to advance the anchor assembly in the bore hole into engagement with the rock formation to anchor the cable in the bore hole to support the rock formation.

5,511,910
CONNECTOR AND METHOD FOR ENGAGING SOIL-REINFORCING GRID AND EARTH RETAINING WALL
 John Scales, 6347 Rosecommon Dr., Norcross, Ga. 30092
 Continuation of Ser. No. 145,401, Oct. 29, 1993, which is a continuation-in-part of Ser. No. 12,031, Aug. 18, 1993, Pat. No. Des. 350,611. This application Oct. 18, 1994, Ser. No. 325,621
 Int. Cl.⁶ E02D 29/02
 U.S. Cl. 405—262 6 Claims



1. A connector bar for engaging a grid-like sheet which extends laterally of an earth-retaining wall for receiving earthen backfill, the connector bar comprising:
 an elongate member;
 a plurality of spaced-apart block-like keys extending from a first surface of said elongated member; and

5,511,909
CABLE BOLT AND METHOD OF USE IN SUPPORTING A ROCK FORMATION
 Frank Calandra, Jr., Pittsburgh; John C. Stankus, Canonsburg, and John G. Oldsen, Butler, all of Pa., assignors to Jenmar Corporation, Pittsburgh, Pa.
 Filed Jun. 7, 1994, Ser. No. 255,077
 Int. Cl.⁶ F21D 21/02
 U.S. Cl. 405—259.6 23 Claims

1. A method for supporting a rock formation comprising the steps of,
 installing an anchor assembly on one end of a multistrand cable of a preselected length,
 advancing the anchor assembly on the cable in a bore hole of the rock formation to position the anchor assembly at a preselected depth in the bore hole,
 extending an opposite end of the cable out of the bore hole, positioning a plug member on the end of the cable extending out of the bore hole,
 advancing a housing into wedging engagement with the outer surface of the plug member to compress the plug member into nonrotational gripping engagement with the cable,

the elongated member sized for being received in a channel defined in blocks stacked for an earth retaining wall, whereby the keys of the connector bar engage apertures in the grid-like sheet for transferring backfill load imposed on the grid-like sheet substantially uniformly to an inner side wall of the channel.

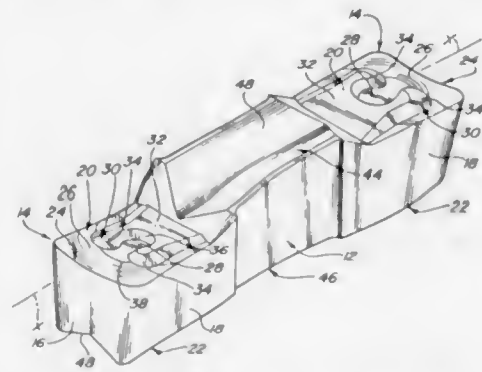
5,511,911 CUTTING INSERT

Karl Katbi, Troy; Ken Noggle, West Bloomfield; Tony Lowe, Royal Oak, and John Patterson, Hazel Park, all of Mich., assignors to Valenite Inc., Madison Heights, Mich.

Filed Jul. 5, 1994, Ser. No. 270,621
Int. Cl.⁶ B23B 27/22

U.S. Cl. 407—114

13 Claims



1. A cutting insert of a generally polygonal shape having a cutting end comprising a front end wall, sides, and top and bottom surfaces, the intersection of said top surface, end wall and sides forming a cutting edge, said top surface comprising:
 - a cutting land of a generally conical shape diverging inwardly from the front end wall and linearly sloping downwardly and inwardly from said cutting edge;
 - a chipgroove area intersecting said cutting land below the cutting edge and extending inwardly therefrom;
 - an upsloping chipbreaker portion adjoining said chipgroove area and said cutting land and leading to a plateau disposed at a higher elevation than said cutting edge and said chipgroove area, said chipbreaker portion configured generally symmetrically about the longitudinal axis bisecting the top surface and including two forwardly extending projections, one on each side of and continuous with a rearwardly recessed region bisected by said longitudinal axis.

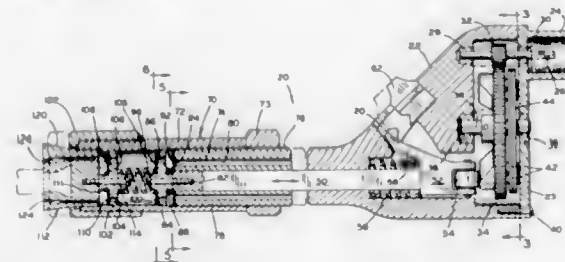
5,511,912 HAND TOOL ATTACHMENT

Brian E. Ellerbrock, 13134 State Rte. 15, Ottawa, Ohio 45875
Filed Sep. 19, 1994, Ser. No. 308,158

Int. Cl.⁶ H23B 45/00

U.S. Cl. 408—20

8 Claims



1. A hand tool attachment comprising a housing;

a tool holder mounted for reciprocating movement with respect to said housing;
spring means biasing said tool holder in a first direction;
a crown cam mounted in said housing for rotary movement to intermittently urge said tool holder in a second direction against the bias of said spring means;
rotary power input for rotating said crown cam to impart reciprocating movement to said tool holder; and
a cylinder associated with said tool holder and provided with an inlet and an outlet, a piston mounted to reciprocate with said cylinder by said cam to cause an air flow from the outlet.

5,511,913

WHEELSET PROCESSING METHOD AND APPARATUS
Hans J. Naumann, Albany, N.Y., assignor to Niles-Simmons Industrieanlagen GmbH, Chemnitz, Germany

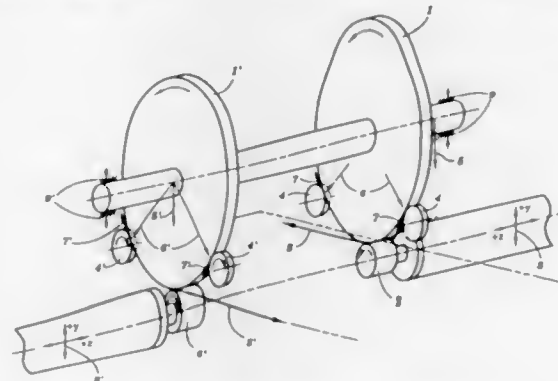
Filed Apr. 18, 1994, Ser. No. 228,659

Claims priority, application Germany, May 13, 1993, 43 16 697.0

Int. Cl.⁶ B23C 3/00

U.S. Cl. 409—131

15 Claims



1. A method for processing a wheelset, comprising: rotating the wheelset about a center of rotation thereof; and applying at least two processing forces to the wheelset at the same time in different directions, wherein moments of said processing forces about the center of rotation are substantially compensated.

5,511,914

PROPELLANT GRAIN MACHINING DEVICE AND METHOD

Paul W. Hoekstra, Ogden, Utah, assignor to Thiokol Corporation, Ogden, Utah

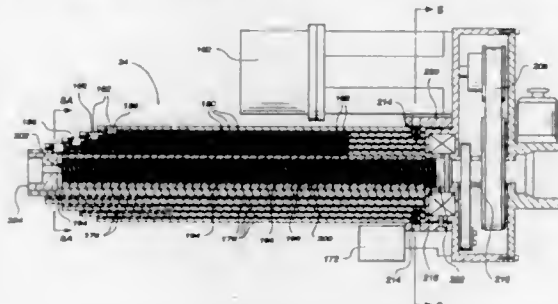
Division of Ser. No. 871,966, Apr. 21, 1992, Pat. No. 5,391,025.

This application Feb. 14, 1995, Ser. No. 388,249

Int. Cl.⁶ B23C 3/00

U.S. Cl. 409—143

11 Claims



1. An apparatus for cutting propellant grain away from a solid rocket motor, comprising:

a rotatable body;
a telescoping arm connected to said rotatable body, said telescoping arm comprising:
a plurality of interconnected extendable concentric cylinders, said concentric cylinders being configured such that the innermost unextended of said concentric cylinders extends prior to the extension of any other of said unextended concentric cylinders; and
restraining means for regulating the extension of said concentric cylinders in a manner such that the innermost unextended of said concentric cylinders extends prior to the extension of any other of said unextended concentric cylinder; and
a cutting tool attached to one end of the telescoping arm.

5,511,915

FIXTURE FOR RETROFITTING AND WIRING SECURITY ALARM DOOR JAMB SWITCHES TO SECURITY SYSTEMS

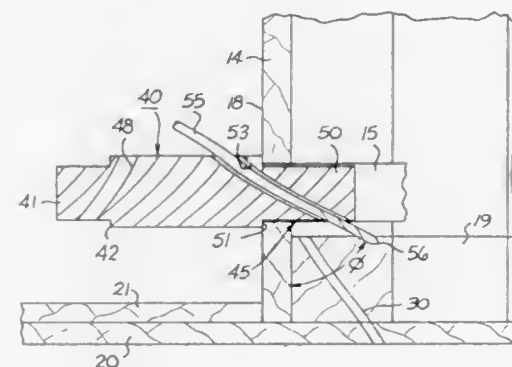
Joseph D. Krahling, 8113 Arundel Dr., Ft. Washington, Md. 20744

Filed Mar. 7, 1994, Ser. No. 206,852

Int. Cl.⁶ B23B 49/02

U.S. Cl. 409—143

1 Claim



1. A fixture for use in mounting a security switch in a door jamb mounting hole to extend a switch actuator outwardly from a door jamb surface to sense an open door, and wiring that switch into a security system, comprising in combination:

a fixture barrel with a stud extending therefrom shaped for snugly fitting into the switch mounting hole and a shoulder shaped for abutting the door jamb surface for registering the depth of penetration of the stud,
a guide hole for orienting a drill entering the fixture barrel and extending from the stud to hold a drill at a predetermined acute angle to the door jamb surface for directing the drill downwardly into a surface of the mounting hole extending into the door jamb to extend therefrom through underlying flooring, thereby to provide a wire passageway leading from the switch mounting hole and through the flooring to a security control system,
a second stud extending from said barrel to fit snugly into the switch mounting hole, and
a guide hole for orienting a drill entering the fixture barrel and extending from the stud at a predetermined angle greater than said acute angle to the door jamb surface for directing the drill downwardly at an angle into an inner surface of the mounting hole extending into the door jamb, thereby to provide means for routing a wire passageway channel leading from the switch mounting hole and axially toward the rear of the switch mounting hole so that system connecting wires extending through the wire passageway will pass adjacent to a switch body inserted into the switch mounting hole.

5,511,916

SHIPPING CONTAINER FOR DUNNAGE

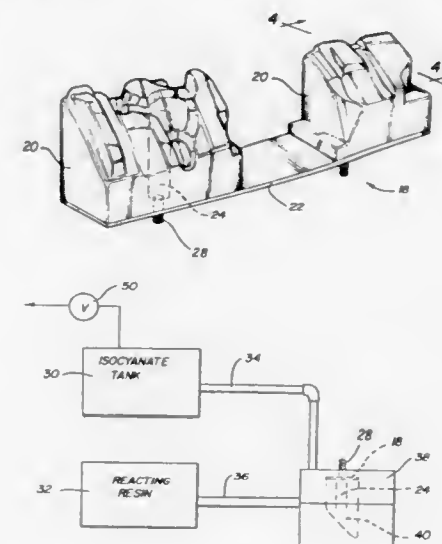
Charles Farley, Ortonville, and Lawrence E. Plawewski, Davisburg, both of Mich., assignors to Aldon Pattern, Inc., Auburn Hills, Mich.

Filed Dec. 6, 1991, Ser. No. 804,840

Int. Cl.⁶ B60P 7/06

U.S. Cl. 410—2

5 Claims



1. A shipping container for dunnage comprising: a rigid frame, at least one dunnage support member, said dunnage support member having upwardly extending portions adapted to abut against and support selected areas of the dunnage, means for securing said dunnage support member to said frame, wherein said upwardly extending portions are constructed of an elastomeric material formed by the reaction of isocyanate and resin, said resin and isocyanate being selected such that said elastomeric material is essentially devoid of entrapped gas bubbles.

5,511,917 FASTENER WITH GRAPHIC INDICATOR OF DIMENSIONS AND METHOD FOR GRAPHICALLY INDICATING FASTENER DIMENSIONS

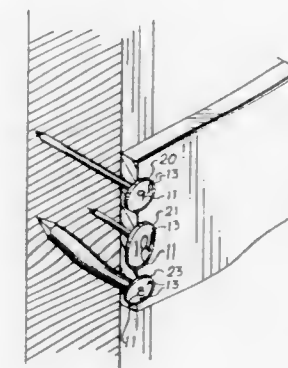
Charles F. Dickson, Chicago, Ill., assignor to Dickson Weatherproof Nail Co., Evanston, Ill.

Filed May 11, 1995, Ser. No. 438,700

Int. Cl.⁶ F16B 15/00

U.S. Cl. 411—439

17 Claims



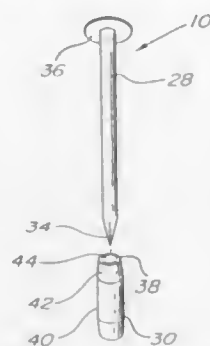
1. A fastener comprising: a shaft having a length and first and second ends;

- a head having a face, the head coupled to the first end of the shaft;
- a first graphic indicator, the first graphic indicator disposed on the face of the fastener head and providing information corresponding to the length of the fastener; and
- a second graphic indicator, the second graphic indicator also disposed on the face of the fastener head and providing information corresponding to the gauge of the fastener.

5,511,918
NAIL

Martin J. Rotter, 115 Lismore Ave., Glenside, Pa. 19038
Filed Apr. 26, 1994, Ser. No. 233,564
Int. Cl.⁶ E04B 1/38; F16B 15/00
U.S. Cl. 411—441

5 Claims



1. A nail comprising:
a shaft having a preselected length;
a head extending radially around the shaft at one end; and
a sleeve carried by the shaft and surrounding the shaft in proximity to the head, the sleeve having a pair of opposite ends, a cylindrical center portion and a pair of frusto-conical tapered portions extending from the center portion to one of the ends, the sleeve having a length less than the length of the shaft.

5,511,919

LOCKING FASTENER

Dane C. Seallie, 223 South St., Apt. 2, Jamaica Plain, Mass. 02130

Continuation-in-part of Ser. No. 970,773, Nov. 3, 1992, Pat. No. 5,362,187. This application Aug. 3, 1994, Ser. No. 285,644
Int. Cl.⁶ F16B 19/00; 21/00

U.S. Cl. 411—555

15 Claims

1. A fastening element comprising:
a fastener body having a first side and a second side; and
a plurality of resilient locking prongs extending from said first side of said fastener body, each of said locking prongs including a surface having a slope;
said fastener body defining a cavity open to one of said first side and said second side of said fastener body;
said fastener body further including a cam surface on one of said first side and said second side of said fastener body.

5,511,920

SYSTEM AND METHOD FOR USE WHEN FORMING
LIFT-TAB CAN END ASSEMBLIES

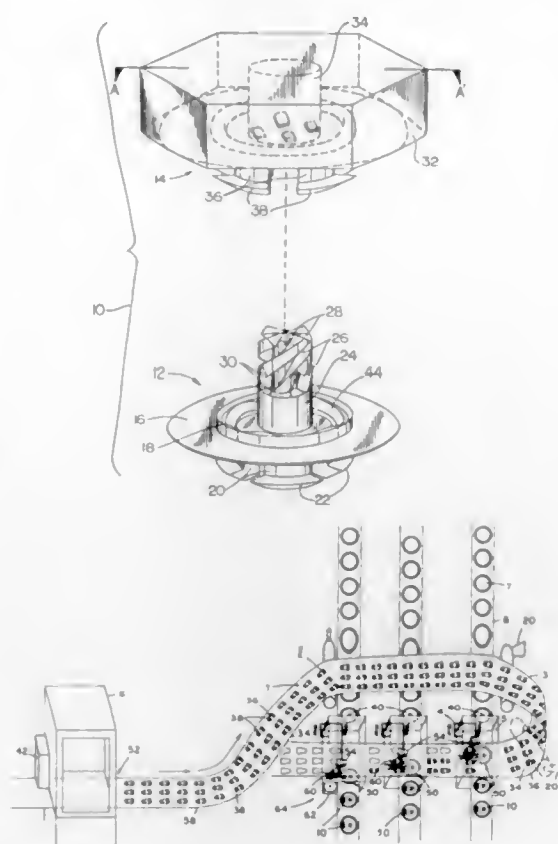
Donald Artrip, 164 Kaluna Ave., Bluff City, Tenn. 37618
Filed Oct. 14, 1993, Ser. No. 136,803

Int. Cl.⁶ B21D 43/00; 51/38

U.S. Cl. 413—25

8 Claims

1. A process for attaching lift tabs to can ends wherein the lift tabs are formed within a strip of flexible metal stock by a tab press



so that said lift tabs are formed but remain loosely attached to said strip of metal stock and wherein the lift tabs are formed with a smooth side and an opposite roughened side, the process comprising the steps of:

- conveying the flexible metal stock from the tab press so that the lift tabs exit the tab press smooth-side-down and are moved toward a conversion press with an integral punch;
inverting, during the conveying step, the metal stock through about 180 vertical degrees as it is moved toward the conversion press so that upon reaching the conversion press, the lift tabs are oriented smooth-side-up;
punching the lift tabs from the remainder of the strip;
directing the lift tabs into operative registry with the can ends; and
attaching the lift tabs to the can ends; and
wherein the step of directing includes a step of accumulating the punched tabs in a stacked relationship as the lift tabs are punched from the remainder of the strip and permitting the stacked tabs to be gravitationally directed toward a position adjacent the station at which the lift tabs are attached to the can ends.

5,511,921

BALE COLLECTOR WITH ROLLERS

Thomas H. D. Meijer, Stadsweg 123, 9792 RE Ten Post, Netherlands

Filed Apr. 25, 1994, Ser. No. 232,728

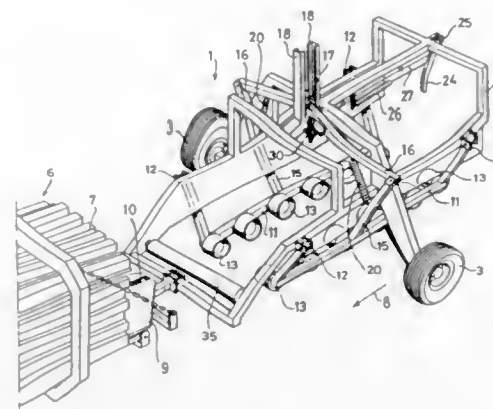
Claims priority, application Netherlands, Apr. 26, 1993, 9300712

Int. Cl.⁶ A01D 85/00

U.S. Cl. 414—24.5

10 Claims

1. Bale collector, comprising a frame provided with wheels, bale carrying means, coupling means which are suitable for coupling the frame to a mobile baler in order to receive bales onto the carrying means from a bale outlet of the baler via a front end, viewed in the direction of travel of the carrying means, and also control means for taking the carrying means into a collecting state



or into an unloading state, for collecting bales on the carrying means or unloading bales from the carrying means and depositing them on the ground, the carrying means comprising rollers with parallel horizontal axes, and the rollers being suitable for collecting a row of two or more bales thereon between the front end and a rear end of the carrying means, wherein the rollers form a two-part bottom which can be moved from beneath bales collected thereon, each bottom part being fixed to a corresponding sub-frame which is coupled by way of corresponding rotary means to the frame, while the axes of rotation of the rotary means extend horizontally and parallel to the direction of travel at a distance from each other which is greater than a dimension of the row of bales in a direction at right angles to the direction of travel, and for reaching the unloading state from the collecting state the control means control the rotary means for tuning the bottom parts in order to allow the row of bales to go through between the bottom parts and to be deposited on the ground.

5,511,922

SHIP WEIGHT CARGO LOADING AND UNLOADING
SYSTEM

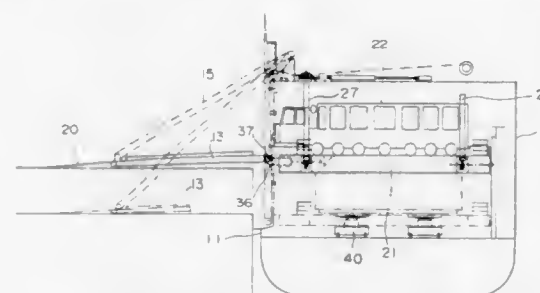
Goichi Sekiguchi, Tsu, and Hisatomo Morito, Tokyo, both of Japan, assignors to Kayaba Macgregor Navire Kabushiki Kaisha, and NKK Corporation, both of Tokyo, Japan
Continuation of Ser. No. 930,109, Aug. 13, 1992, abandoned.
This application Jun. 13, 1994, Ser. No. 258,899

Claims priority, application Japan, Aug. 23, 1991, 3-212459

Int. Cl.⁶ B63B 27/14

U.S. Cl. 414—139.6

10 Claims



1. A loading and unloading system which loads and unloads cargo between a wharf and a ship provided with an opening and a deck by means of a transport car which enters and leaves the ship via said opening, said system comprising:

a rectangular lift table inside the ship to allow said transport car carrying cargo to board through said opening,
means for raising and lowering said lift table disposed at least at the four corners of said table,
a ramp which extends between said lift table and said wharf, said ramp having a base,
supporting means for supporting the base of said ramp on said lift table.

first detecting means for detecting the tilt angle of said ramp, said first detecting means having an output,
second detecting means for detecting the horizontality of said lift table, said second detecting means having an output, and
control means receiving said output from said first and second detecting means for controlling the action of said raising and lowering means so as to respectively maintain the tilt angle of said ramp and the horizontality of said lift table within set predetermined limits as the relative position between the ship and the wharf changes.

5,511,923

CONTAINER TERMINAL APPARATUS AND METHOD

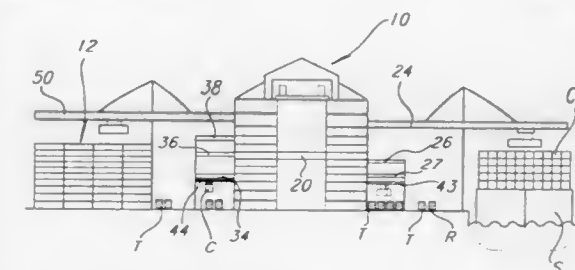
Paul D. Dunstan, Bellevue, Wash., assignor to The Robotic Container Handling Co., Bellevue, Wash.

Filed Apr. 9, 1993, Ser. No. 45,827

Int. Cl.⁶ B65G 63/00

U.S. Cl. 414—139.9

15 Claims



14. A method of moving containers in a storage facility having two banks of container storage spaces, said storage spaces arranged in a plurality of vertically spaced horizontal rows, each space having ends with container access openings, fast transport balconies provided along the banks, a bridge crane space formed between opposing first sides of said banks, and at least two bridge cranes in said bridge crane space, each said bridge crane working in a distinct zone of container spaces, the banks each having a horizontal length and a vertical height, each fast transport balcony extending across a horizontal row of container access openings, the method comprising the steps of:

placing a container on one of said fast transport balconies,
moving the container on said fast transport balcony externally of said bank of spaces past said outwardly facing container access openings of said container storage spaces along a second side of the bank opposite said first side, whereby the container is moved past the zone of operation of at least one of said bridge cranes to a space in another zone, hence bypassing at least one of the bridge cranes.

5,511,924

TWO-STORY PARKING APPARATUS WITH
ADJUSTABLE RAMP ANGLE

Houng-Mou Liang, c/o Hung Hsing Patent Service Center P.O. Box 55-1670, Taipei (104), Taiwan

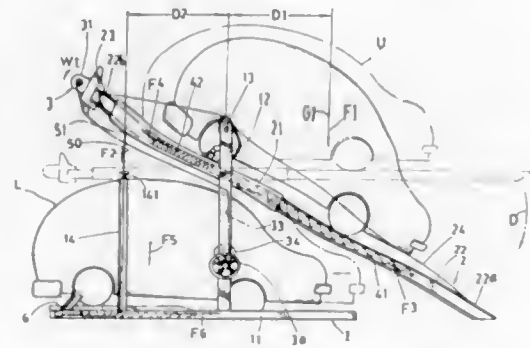
Filed Jan. 7, 1994, Ser. No. 178,833

Int. Cl.⁶ E04H 6/06

U.S. Cl. 414—229

8 Claims

1. A two-story parking apparatus comprising: a supporting frame (1), an upper platform (2) slidably held in an upper parking means (11) and pivotally mounted by a shaft (13) on an upper portion of the supporting frame (1) with said upper platform (2) normally horizontally held on said frame (1), a tilting means (3) mounted on said upper parking means (2) and said frame (1) and operatively forwarding the upper platform (22) to forwardly move a gravity center of the upper parking means (2) loaded with an upper car thereon to be positioned in front of the shaft (13) to bias the upper platform (22) about the shaft (13) for downwardly tilting the upper platform (22) for providing an inclined ramp adapted for a down-



wardly driving of an upper car from the upper platform (22) towards a ground floor or for an upward parking of the upper car through the inclined ramp from the floor to be loaded on the upper platform (22), a restoring means (4) for retracting the upper platform (22) to be horizontally held on the supporting frame (1) when stopping operation of said tilting means (3), and a drag means (5) secured to a rear portion of the upper platform (22) and to a lower platform (6) positioned below said upper parking means (2) for simultaneously rearwardly pulling the lower platform (6) as the upper platform (22) is downwardly tilted to prevent damage to a car parked on the lower platform (6) by the upper platform (22).

5,511,925

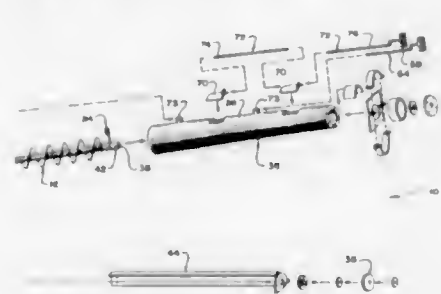
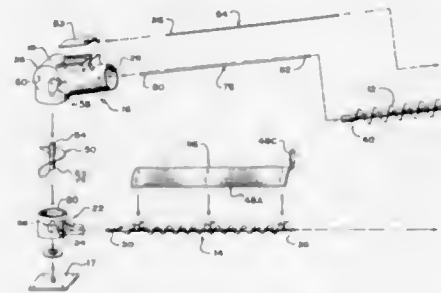
BIN UNLOADING APPARATUS

Gordon E. Muth, R.R. #1, Sylvan Lake, Alberta, Canada
Continuation-in-part of Ser. No. 164,571, Dec. 10, 1993, abandoned. This application Nov. 7, 1994, Ser. No. 336,735
Claims priority, application Canada, Jan. 7, 1993, 2086902

Int. Cl.⁶ B65G 65/46

U.S. Cl. 414—310

10 Claims



I. A bin unloading apparatus comprising:
a bin having a bin floor and a peripheral bin wall;
a housing attached to the bin floor, the housing defining an interior cavity and having a lower portion rotatable about a vertical axis of the housing with an intake opening and a stationary upper portion with an output opening;
a sweep auger secured to the rotatable lower portion of the housing, the sweep auger having a sweep auger flight with a first end extending through the intake opening and a second end, the rotatable portion rotating as the sweep auger rotates about the axis;

a shroud covering the sweep auger flight, the shroud having an elongate intake aperture facing a direction of travel of the sweep auger, such that as the sweep auger moves radially material passes through the elongate intake aperture and is moved by the sweep auger along a passage defined by the shroud through the intake opening into the interior cavity of the housing;

a discharge auger having a hollow tubular discharge auger tube connected to the housing and a discharge auger flight, the discharge auger having a first end extending through the output opening and a second end;

a vertical lift auger flight disposed in the interior cavity of the housing having a lower end and an upper end, the lower end being connected through a first gear box with the first end of the sweep auger flight;

a closure on the top of the upper portion of the housing movable between a closed position and an open position such that when the closure is in the open position material falls from above onto the first end of the discharge auger flight;

an activation rod having a first end secured to the closure and a second end disposed outside of the bin whereby the closure is movable between the closed and open positions from outside of the bin;

drive means disposed exteriorly of the bin for driving the second end of the discharge auger flight and the upper end of the vertical lift auger;

the upper portion of the housing including a first cylindrical part closely coaxially surrounding the vertical lift auger flight, a second cylindrical part closely coaxially surrounding the discharge auger flight and a third part intermediate the first and second parts which, in a vertical cross-section containing the axes of the vertical lift auger and the discharge auger, defines a surface interconnecting the first and second parts which is smoothly curved and extends to a height above the second cylindrical part.

5,511,926

MOVEMENT OF AIRCRAFT

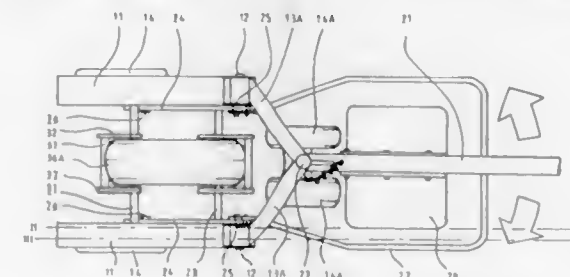
Frank Hes, Loscombe Farm, Loscombe Lane, Four Lanes, Redruth, Cornwall, Great Britain
PCT No. PCT/GB92/00195, § 371 Date Aug. 2, 1994, § 102(e) Date Aug. 2, 1994, PCT Pub. No. WO93/14972, PCT Pub. Date Aug. 5, 1993

PCT Filed Feb. 3, 1992, Ser. No. 284,418

Int. Cl.⁶ B64F 1/22

U.S. Cl. 414—428

8 Claims



I. A self-propelled dolly for the movement of aircraft, the dolly comprising

a chassis supported by wheel means carried on two longitudinally-spaced axles, the chassis including aircraft wheel support means between the axles, the wheel support means being movable between a lowered position for engagement and disengagement of an aircraft wheel and a raised position for supporting the aircraft wheel above the ground surface, at least one wheel means being motor-drivable, said wheel support means comprising

a split first axle,
a bifurcated chassis portion having two pairs of spaced apart parallel members defining therebetween a space to receive an aircraft wheel,

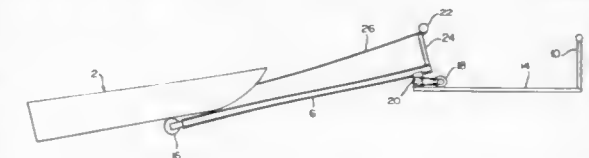
5,511,928

BOAT LOADING DEVICE

Robert S. Ellis, 609 E. Kelly Rd., Bellingham, Wash. 98226
Filed Nov. 4, 1994, Ser. No. 334,861
Int. Cl.⁶ B60R 9/00

U.S. Cl. 414—462

2 Claims



a pair of laterally spaced apart first ground-engaging wheels each mounted about a portion of said split first axle in a respective pair of said parallel members,
one or more second ground-engaging wheels mounted on a second chassis portion pivotally connected to the bifurcated chassis portion about a substantially vertical axis to provide steering ability to the dolly, the second chassis portion including handle means extending therefrom for control of the dolly by an operator,

and a motor and drive means operatively connected to at least one of said ground-engaging wheels,

the bifurcated chassis portion being formed in two sections pivotally connected together about a lateral pivot axis at an intermediate location between said first and second wheels, whereby said sections are lowerable and raisable at their mutually connected ends with respect to the ground, means to support an aircraft wheel being mounted on one of said sections and including releasable locking means to maintain said sections in the raised position, in which an aircraft with a wheel thereof supported above ground level by the dolly may be manoeuvred.

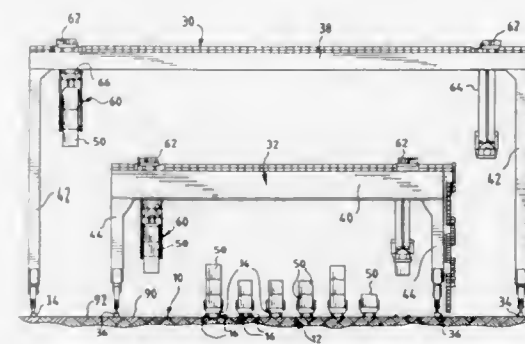
5,511,927

LOAD TRANSFERRING SYSTEM

John J. Lanigan, Sr., Orland Park; John J. Lanigan, Jr., Lynwood; William P. Lanigan, Orland Park, and Michael T. Lanigan, Lockport, all of Ill., assignors to Mi-Jack Products, Inc., Hazel Crest, Ill.
Division of Ser. No. 270,329, Jul. 5, 1994, Pat. No. 5,415,517, which is a continuation of Ser. No. 869,433, Apr. 16, 1992, abandoned. This application Feb. 6, 1995, Ser. No. 384,420
Int. Cl.⁶ B65G 67/02

U.S. Cl. 414—460

7 Claims



6. A system for transferring loads between railroad cars on a series of parallel, adjacent rail car tracks for carrying separate strings of connected rail cars in side by side relation, which comprises:

a first ground supported lifting frame extending over said parallel tracks and movable parallel to said parallel tracks;
a first grapple on said lifting frame which is movable transversely with respect to said tracks;
a second grapple on said lifting frame which is movable transversely with respect to said tracks;
a second lifting frame that is ground supported at generally the same elevational level as the first lifting frame, the second lifting frame overlapping the
first lifting frame and movable parallel to said parallel tracks and parallel to the movement of said first lifting frame;
a third grapple on said second lifting frame which is movable transversely with respect to said tracks;
a fourth grapple on said second lifting frame which is movable transversely with respect to said tracks; and
means for moving said grapples and lifting frames.

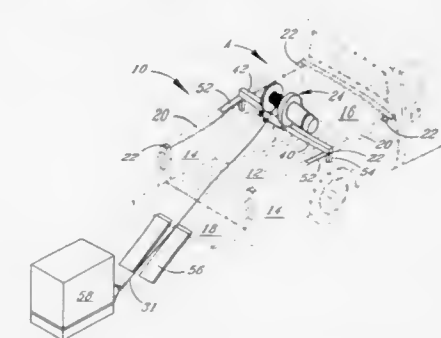
5,511,929

PORTABLE WINCH SYSTEM

Steven R. Loftus, 6070 Ansley Way, Swane, Ga. 30174
Filed Feb. 3, 1995, Ser. No. 383,309
Int. Cl.⁶ B60P 1/54

U.S. Cl. 414—542

14 Claims



I. A portable winch system for use with a cargo bed having side walls, said system comprising:
a winch including a drive motor, a transmission, a cable spool and a mounting bracket having a multi-sided channel there-through;
a multi-sided support bar passing through said multi-sided channel to mount said winch for selective movement longitudinally along said support bar;

said support bar comprising first and second portions telescopically engaged providing increased strength and allowing longitudinal adjustment of said support bar;
securing elements arranged adjacent opposed ends of said support bar, said securing elements being operative to engage said support bar such that it lies atop and perpendicularly of said sidewalls at selected longitudinal positions along said cargo bed;
said securing elements mounting said support bar on with said cargo bed in a fixed condition against horizontal thrust longitudinally of said cargo bed while mounting said support bar in a non-fixed removable condition against vertical thrust; whereby,
said portable winch system may be stationarily mounted with said cargo bed when in use while being removably mounted for longitudinal adjustment along said cargo bed when not in use.

5,511,930

PRECISION POSITIONING APPARATUS

Miklo Sato, Kawasaki; Katsumi Asada, Yokohama, and Shinji Wakui, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

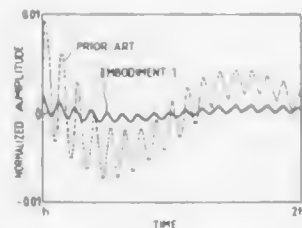
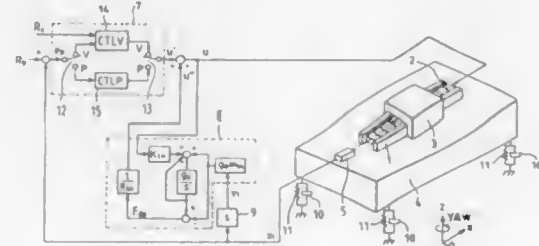
Filed Mar. 1, 1993, Ser. No. 24,473

Claims priority, application Japan, Mar. 2, 1992, 4-078756; Jan. 22, 1993, 5-025980

Int. Cl.⁶ G01M 7/00

U.S. Cl. 414—676

6 Claims



1. A positioning apparatus comprising:
a table;
supporting means for dampingly supporting said table;
a movable member movable on said table;
guiding means provided on said table for guiding motion of, without touching, said movable member on said table;
driving means, comprising a linear motor provided on said table, for causing said movable member to move on said table according to a drive signal;
measuring means, comprising a laser interferometer provided on said table, for measuring a displacement of said movable member on said table and for producing a measurement signal;
signal outputting means for outputting a target signal corresponding to a target position for positioning said movable member on said table;
first controlling means for outputting a first command signal for positioning said movable member at the target position, based on the measurement signal and the target signal; and
second controlling means for estimating a disturbance disturbing said movable member being moved on said table by said driving means, based on the drive signal and the measurement

signal and for outputting a second command signal for cancelling an affect of the estimated disturbance, wherein the second command signal is added to the first command signal when the first command signal is output as the drive signal.

5,511,931

MICROMOTION STAGE

Tatsuo Arai, Tsukuba, and Naotaka Komatsu, Yokohama, both of Japan, assignors to Agency of Industrial Science & Technology, and Ministry of International Trade & Industry, Tokyo, Japan

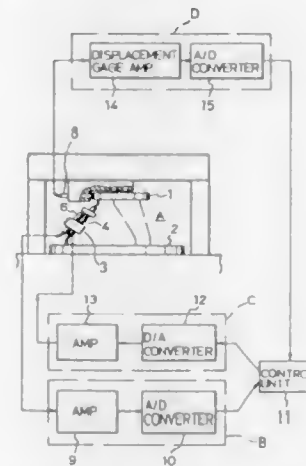
Division of Ser. No. 219,306, Mar. 28, 1994, Pat. No. 5,425,616. This application Feb. 16, 1995, Ser. No. 389,502

Claims priority, application Japan, Jul. 15, 1993, 5-175414

Int. Cl.⁶ B25T 11/00

U.S. Cl. 414—680

1 Claim



1. A micromotion stage having links whose strokes are controlled by actuators constituted as stacked piezoelectric elements, the micromotion stage comprising:
a stationary plate provided along its edge with three substantially equally spaced pairs of connection points;
a moving plate disposed above the stationary plate and provided along its edge with three substantially equally spaced pairs of connection points offset about 60 degrees from the connection points of the stationary plate, six links each having its opposite ends connected to connection points of the stationary plate and the moving plate, six actuators provided one on each of the six links for extending and contracting the links, each actuator comprising a stacked piezoelectric element, six holders each fixed at one end of one of said stacked piezoelectric elements, six capacitance type displacement gages each retained in parallel with one of said stacked piezoelectric elements by its holder, and six target members each fixed at the other end of one of said stacked piezoelectric elements to have a part thereof face a tip portion of a capacitance type displacement gage across a small gap.

5,511,932

SKID STEER LOADER BOOM CONTROL SYSTEM

Robert R. Todd, Leola, and Dale A. Ashcroft, New Holland, both of Pa., assignors to New Holland North America, Inc., New Holland, Pa.

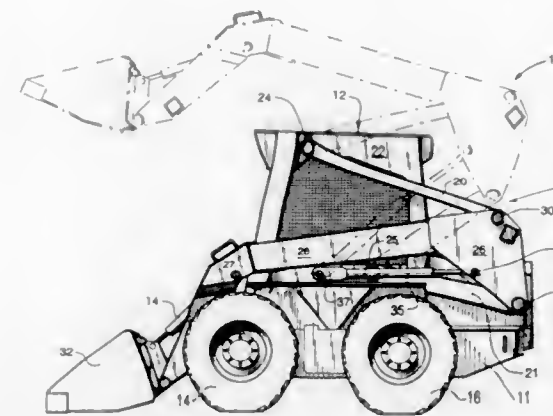
Filed Nov. 22, 1994, Ser. No. 344,303

Int. Cl.⁶ B66C 23/00

U.S. Cl. 414—685

8 Claims

1. A skid steer loader comprising
a main frame including a compartment in which an engine and transmission components are contained,
ground support wheels extending from said main frame,



a cab mounted in its operative position above said compartment on said main frame, said cab including load bearing side walls extending upwardly from said main frame to define an operators control area therebetween,
a boom assembly comprising a pair of arms and linkage structure for operatively attaching said pair of arms to said load bearing side walls,
each of said arms including a front portion having a front end, for supporting material handling means, extending beyond said cab, a rear portion extending behind said cab, and an integral intermediate portion between said front and rear portions,
said linkage structure including a pair of upper links, means for pivotally coupling one end of each of said upper links to said rear portion of each of said arms, means for pivotally attaching the other end of each of said upper links to said cab at a location above said wheels, a pair of lower links, means for pivotally coupling one end of each of said lower links to said rear portion of each of said arms, and means for pivotally attaching the other end of each of said lower links to said cab at a location above said wheels, and
power means operatively associated with said boom assembly for raising and lowering in concert each of said pair of arms through a generally vertical path adjacent its corresponding load bearing side wall to which it is attached, whereby said front end of said boom arms travel along generally vertical side-by-side paths.

5,511,933

SHUTTLE TRANSFER WITH LINEAR TRANSDUCER FEEDBACK

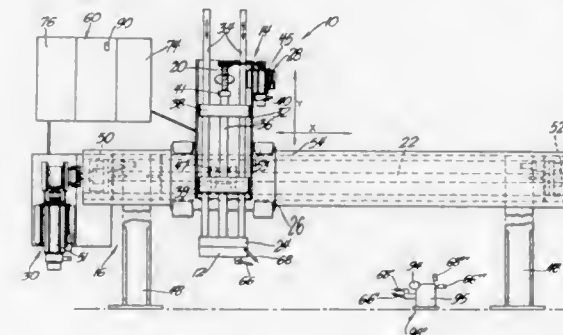
Jack F. Herklotz, Traverse City, Mich., assignor to Trantek, Incorporated, Traverse City, Mich.

Continuation of Ser. No. 2,166, Jan. 8, 1993, abandoned. This application May 19, 1995, Ser. No. 444,857

Int. Cl.⁶ B25J 9/16

U.S. Cl. 414—749

17 Claims



1. A positioning transfer assembly for positioning a workarm (12), said assembly comprising:

a workarm (12);
first transfer means (14) supporting said workarm for moving the workarm along a first axis (Y);
second transfer means (16) connected to and supporting said first transfer means (14) for effectively positioning said workarm along a second axis (X);
coarse sensor means (68, 68) connected to said first transfer means and said second transfer means and having a coarse resolution for sensing the position of said first and second transfer means (14, 16) and thus said workarm (12),
fine sensor means (66, 68) attached to said workarm (12) having a fine resolution of resolution higher than said coarse resolution for sensing the variable position of said workarm (12) along said first axis (Y) and said second axis (X) to any one of several positions, said fine sensor means (66, 68) including at least two linear sensors (66, 68),
control means (60) connected to said first and second transfer means (14, 16) and said fine and coarse sensor means (62—68) for controlling independently said first and second transfer means (14, 16) to a first coordinate position at a predetermined high speed based on feedback from said coarse sensor means (66, 68) and for controlling said first and second transfer means (14, 16) to a second coordinate position at predetermined low speeds based on feedback from said fine sensor means (66, 68), said control means controlling said first transfer means (14) based on one of said linear sensors (66, 68) and controlling said second transfer means (16) based on the other of said linear sensors (66, 68).

5,511,934

NONCENTERING SPECIMEN PREALIGNER HAVING IMPROVED SPECIMEN EDGE DETECTION AND TRACKING

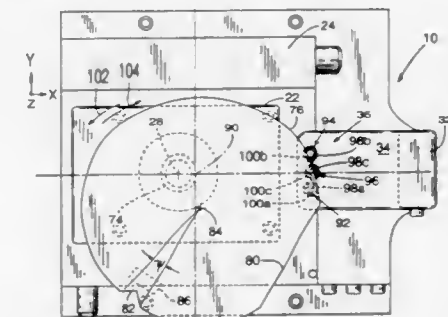
Paul E. Bacchi, Novato, and Paul S. Filipowski, Greenbrae, both of Calif., assignors to Kensington Laboratories, Inc., Richmond, Calif.

Continuation-in-part of Ser. No. 701,915, May 17, 1991, Pat. No. 5,308,222. This application May 2, 1994, Ser. No. 236,207

Int. Cl.⁶ B65G 47/24

U.S. Cl. 414—783

18 Claims



1. A specimen prealigner for positioning in a preselected alignment a specimen having a peripheral edge with plural contours having contour transitions between them, the preselected alignment including a selected position and a selected orientation, comprising:
holding means for releasably holding the specimen at a first specimen location;
edge detecting means for detecting the peripheral edge of the specimen and forming a map of the specimen, the edge detecting means including a light source that directs light toward the peripheral edge of the specimen and an array of light detectors that receive the light after it strikes the specimen, a first subset of the array of light detectors cooperating with the light source to detect the peripheral edge of the specimen and a second subset of the array of light detectors cooperating with the light source to detect the contour transitions before they are detected by the first subset of the array of

light detectors, thereby to allow the contours and contour transitions to be scanned at respective first and second scan rates; and

positioning means coupled to the specimen holding means and responsive to the map formed by the edge detecting means for positioning the specimen in the preselected alignment without changing the first specimen location at which the holding means releasably holds the specimen.

5,511,935

PAPER STACK CONVEYOR

Joachim Seefeldt, Neuffen, Germany, assignor to bielomatik Leuze GmbH & Co., Germany

Continuation of Ser. No. 729,043, Jul. 12, 1991, abandoned.

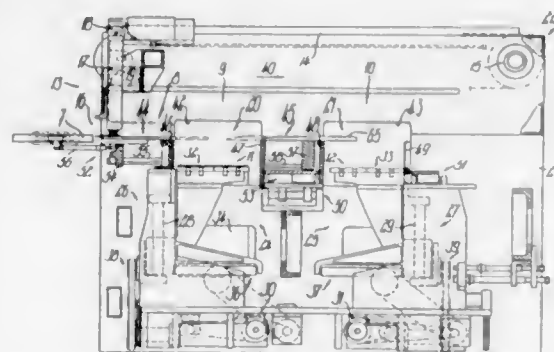
This application Aug. 24, 1994, Ser. No. 295,156

Claims priority, application Germany, Jul. 13, 1990, 40 22 350.7

Int. Cl.⁶ B65G 57/09

U.S. Cl. 414—791.1

41 Claims



19. A conveyor for transporting paper layer units collectable to form paper layer stacks, said conveyor comprising:

means (8) for delivering the layer units in a delivering direction (40), said delivering means including grippers for pulling the layer units in the delivering direction and delivering the layer units in a row juxtaposed transverse to the delivering direction;

first and second deposit stations (9, 10) each having at least one layer support (32, 33) for receiving the layer units from said delivering means (8), said deposit stations (9, 10) defining at least one boundary side (46 to 49) oriented transverse to said delivering direction (40);

a discharge means (11, 12) for discharging the layer units received by said deposit station (9, 10); and

a separating means (44, 45) for conveying and supporting at least one of the layer units substantially contact-free from at least one further layer unit deposited in said deposit stations (9, 10), said separating means keeping the layer units separate until the layer units are substantially congruently aligned and superimposing the layer units by retracting.

5,511,936

SEPARATION METHOD AND DEVICE

Gerhard Goldkühle, Konstanz, Germany, assignor to Licentia Patent-Verwaltungs-GmbH, Frankfurt am Main, Germany

Filed Apr. 7, 1994, Ser. No. 224,745

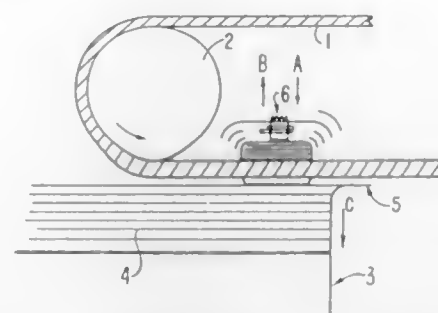
Claims priority, application Germany, Apr. 7, 1993, 43 11 390.7; Apr. 22, 1993, 43 13 150.6

Int. Cl.⁶ B65H 1/02

U.S. Cl. 414—797

10 Claims

5. A device for separating flat parcels from a stack, comprising: a drawing element that travels in a conveying direction in a start-and-stop fashion, said drawing element having a surface acting by means of friction on a parcel to be drawn off;



a guide wall for the stacked parcels, the guide wall forming a gap with the drawing element for a drawn off parcel to pass through;

a support element for the stack, the support element generating a stack pressure in a direction of the drawing element;

an aspiration element for generating a vacuum to increase a pressing force between a first parcel in the stack and the drawing element so as to increase the frictional contact between the surface of said drawing element and the first parcel, the aspiration element being disposed on a side of the drawing element and having a surface facing the parcels;

means for pressing the surface of said aspiration element against the stacked parcels for moving the stacked parcels away from the surface of said drawing element when said drawing element is not in motion; and

means for retracting the aspiration element when said drawing element is in motion so that the surface of said aspiration element is essentially in a plane of the surface of said drawing element.

5,511,937

GAS TURBINE AIRFOIL WITH A COOLING AIR REGULATING SEAL

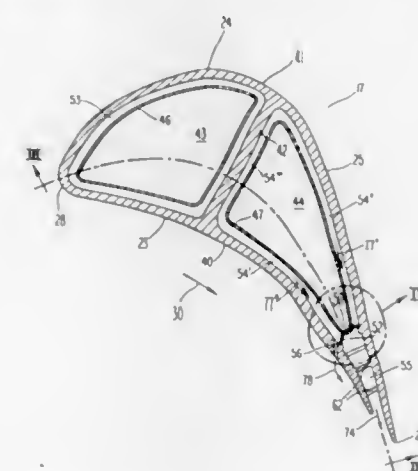
Theodore Papageorgiou, Winter Park, Fla., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Sep. 30, 1994, Ser. No. 315,420

Int. Cl.⁶ F01D 9/02; 5/18

U.S. Cl. 415—115

13 Claims



1. A gas turbine comprising:

a) a compressor for producing compressed air;

b) a combustor for heating at least a portion of said compressed air, thereby producing a hot compressed gas; and

c) a turbine for expanding said hot compressed gas so as to produce shaft power, said turbine having an airfoil disposed therein that is exposed to said hot compressed gas, said airfoil having:

(i) a plurality of walls defining a cavity enclosed thereby.

5,511,939

MULTI-BLADES FAN DEVICE

Takahiro Tokunaga, Kosai, Yukio Uemura, Kariya, Hideo Asano, Gifu; Hikaru Sugi, Nagoya; Teruhiko Kameoka, Okazaki, and Yasushi Kondo, Chiryu, all of, Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Division of Ser. No. 20,085, Feb. 19, 1993, Pat. No. 5,352,089.

This application Jul. 27, 1994, Ser. No. 280,998

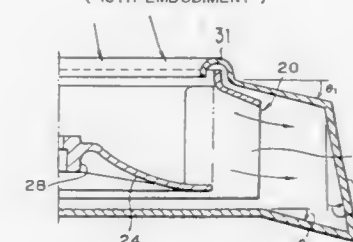
Claims priority, application Japan, Feb. 19, 1992, 4-032156; Feb. 28, 1992, 4-043289; Apr. 28, 1992, 4-110145; Dec. 25, 1992, 4-345818; Dec. 25, 1992, 4-345819

Int. Cl.⁶ F04D 17/08

U.S. Cl. 415—206

4 Claims

(16TH EMBODIMENT)



5,511,938 SUCTION DEVICE FOR PUMPING EQUIPMENT IN DEEP WATER WELLS

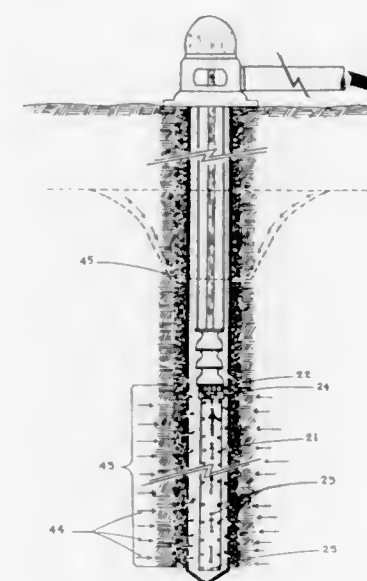
Enrique Courtade Pedrero, Narciso Mendoza 106, Fracc Bahia Ensenada, Mexico, assignor to Enrique Courtade Pedrero, San Ysidro, Calif.

Continuation-in-part of Ser. No. 134,598, Oct. 12, 1993, abandoned. This application May 26, 1994, Ser. No. 250,515

Int. Cl.⁶ F01D 25/00

U.S. Cl. 415—121.2

4 Claims



1. A fan device comprising:

a casing of scroll shape having a tubular body portion having axially spaced first and second end walls and a tubular side wall connecting the first and second end walls to each other, and a discharge duct connected to the body portion; the first wall having an opening that is coaxial with respect to the axis of the casing;

a fan assembly arranged in the casing so that a passageway is created in the casing around the fan assembly so that the width of the passageway is gradually increased in a circumferential direction until the passageway is connected to the duct;

said fan assembly being constructed of a base plate rotatably supported by the casing at the second wall, a plurality of blades fixedly connected to the outer periphery of the base plate so that the blades are circumferentially spaced;

at least a portion of each of said first wall and said second wall being inclined downwardly in a radially outward direction; and

said tubular side wall being inclined with respect to an axis of rotation of the fan assembly so that a bottom portion of the side wall is spaced further from said axis of the fan assembly than a top portion of the side wall.

5,511,940

CERAMIC TURBINE NOZZLE

Gary L. Boyd, Alpine, Calif., assignor to Solar Turbines Incorporated, San Diego, Calif.

Filed Jan. 6, 1995, Ser. No. 369,238

Int. Cl.⁶ F04D 29/60

U.S. Cl. 415—209.2

10 Claims

1. A turbine nozzle vane assembly comprising:

an outer shroud defining an inner surface;

an inner shroud positioned radially within said outer shroud and defining a first end, a second end, an inner surface and an outer surface;

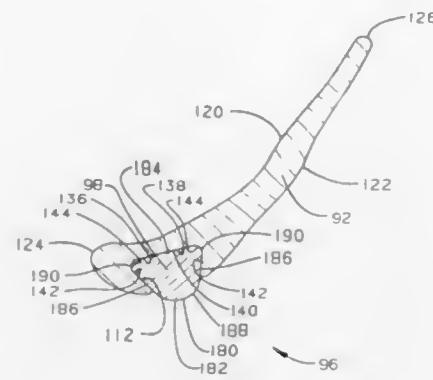
a plurality of segmented vanes being interposed the inner surface of the outer shroud and the outer surface of the inner shroud, each of said plurality of segmented vanes including a hole having a preestablished contour;

said preestablished contour includes a generally flat surface and a pair of side wall portion extending from the flat surface at an included angle of about 60 degrees; and

an apparatus for positioning including a connecting member positioning said segmented vanes.

1. In a deep water well pumping device for extracting water from an aquifer geological formation, said pump having a conduit connected to an intake port and extending into a hole, said conduit having a plurality of apertures, the improvement comprising:

A plurality of admitters mounted on apertures of said conduit; each of said admitters having a first portion and a second portion, the diameter of said first portion is larger than the diameter of the second portion of said admittor; The openings of said first portion and second portion being beveled outwardly with a conical shape about a center of said opening.

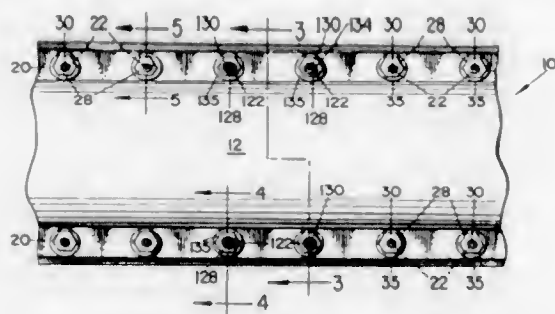


5,511,941

STEAM TURBINE SHELL DISASSEMBLY METHOD
 Ronald E. Brandon, 652 Jubilee St., Melbourne, Fla. 32940
 Filed Jan. 30, 1995, Ser. No. 380,120
 Int. Cl.⁶ F01D 25/24

U.S. Cl. 415-214.1

5 Claims



1. In a steam turbine shell having arcuate upper and lower half-parts each with integral flanges which meet at a horizontal joint and are held in tight face-to-face contact at the horizontal joint during turbine operation by operating or running studs, nuts and washers, a method which comprises initial removal of certain of the operating or running studs, nuts and washers and replacement thereof with special disassembly studs, nuts and washers selected from materials having a high thermal coefficient of expansion, great resistance to galling and great short term strength, the threads of the special disassembly studs and the washers being provided with a coating to decrease friction, thereby preventing distortion of the shell and facilitating subsequent removal of the remaining operating or running studs, nuts and washers during shell disassembly.

5,511,942

AXIAL MINI VENTILATOR WITH PARABOLIC GUIDE VANES

Peter Meier, Lindau, Switzerland, assignor to Micronel AG, Switzerland

Filed Nov. 1, 1994, Ser. No. 332,941

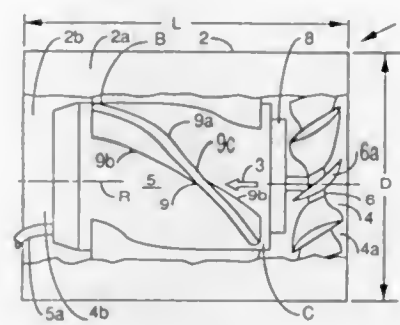
Claims priority, application Switzerland, Nov. 4, 1993, 3321/93

Int. Cl.⁶ F04D 29/52

U.S. Cl. 415-220

20 Claims

1. An axial mini ventilator comprising an air conduction housing with a ring-shaped flow channel having a suction-side end and a pressure-side end, an impeller wheel located on the suction-side end of the flow channel completely within the air conduction housing, a plurality of baffles extending radially in the flow channel in the air conduction housing and having curved tip and root lines, the tip and root lines of the baffles being both essentially segments of a parabola such that the baffles are radially twisted,



whereby the point of origin of the coordinates of the parabola is located on the pressure-side end of the flow channel and the plane of symmetry of the parabola extends transversely to the direction of flow in the flow channel of the air conduction housing.

5,511,943

SINGLE-THROW SWITCH CIRCUIT CONTROLLING A CEILING FAN AND LIGHT ASSEMBLY

Chin-Hsiung Chang, No. 192, Shu Jen Rd., Ban Tan Chun, Wu

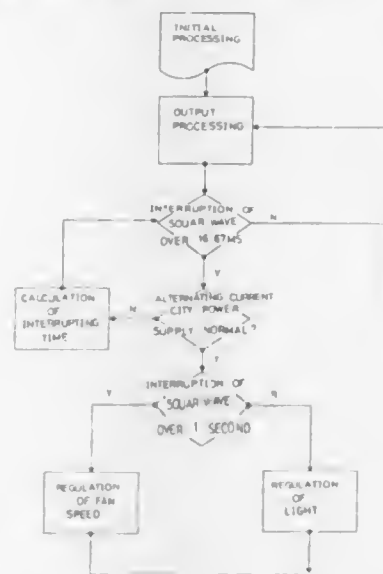
Fong Hsiang, Taichung Hsien, Taiwan

Filed Nov. 9, 1994, Ser. No. 338,201

Int. Cl.⁶ F04D 27/00

U.S. Cl. 416-5

4 Claims



1. A method of using a single-throw switch circuit for controlling a ceiling fan and light assembly, which comprises controlling a revolving speed and a light intensity of said ceiling fan and light assembly by switching said single-throw switch through switching cycles from an on position to an off position, calculating a switching time equal to a time for completing one said switching cycle, changing said revolving speed if said switching time is greater than a predetermined length of time, and changing said light intensity if said switching time is less than said predetermined length of time.

3. A ceiling fan and light assembly control circuit comprising a single-throw switch, a direct current power supply circuit, shunt resistors, a microprocessor and a fan speed control circuit and light intensity control circuit of a ceiling fan and light assembly for controlling revolving speed and light intensity; said direct current power supply circuit receiving alternating current power through said single-throw switch, converting said alternating current into low voltage direct current power and supplying said low voltage direct current power to said microprocessor when said single-throw switch is on and off; said shunt resistors arranged between said

single-throw switch and said microprocessor and providing a square wave signal of a frequency equal to said alternating current power; said microprocessor receiving said square wave signal and having an output terminal connected to said fan speed control circuit and light intensity control circuit of a ceiling fan and light assembly, and a clock; said microprocessor monitoring said square wave signal and, when said square wave signal is interrupted by turning said single-throw switch off and on, calculating switching time equal to a time period of interruption of said square wave signal, changing said revolving speed if said switching time is greater than a predetermined period of time, and changing said light intensity if said switching time is less than said predetermined length of time

5,511,944

PITCH LINK FOR ROTARY WING AIRCRAFT AND AUTOMATIC ADJUSTER THEREOF

Hideaki Ide, Gifu; Shunichi Bandoh, and Hiroshi Yasuhara, both of Kakamigahara, all of Japan, assignors to Kawasaki Jukogyo Kabushiki Kaisha, Kobe, Japan

PCT No. PCT/JP93/01720, § 371 Date Jul. 22, 1994, § 102(e) Date Jul. 22, 1994

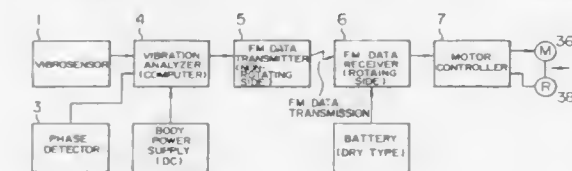
PCT Filed Nov. 24, 1993, Ser. No. 256,723

Claims priority, application Japan, Nov. 25, 1992, 4-315389

Int. Cl.⁶ B64C 27/59

U.S. Cl. 416-31

20 Claims



1. A pitch link length automatic adjuster for adjusting a pitch angle of a blade of a rotary wing aircraft comprising: a vibrosensor for detecting vibrations of a body of the aircraft; a phase detector for detecting a rotational position of a rotor of the aircraft with respect to a reference position; a vibration analyzer for calculating a pitch link adjusting amount based on the vibrations and rotor rotational position detected by the vibrosensor and the phase detector, respectively; an FM data transmitter/receiver converting the calculated pitch link adjusting amount into an electrical signal; and pitch link length adjusting means for automatically adjusting a pitch link length based on the electrical signal from the FM data transmitter/receiver.

5,511,945

TURBINE MOTOR AND BLADE INTERFACE COOLING SYSTEM

Boris Glezer, Del Mar; Aaron R. Fierstein, and Russell B. Jones, both of San Diego, all of Calif., assignors to Solar Turbines Incorporated, San Diego, Calif.

Filed Oct. 31, 1994, Ser. No. 331,403

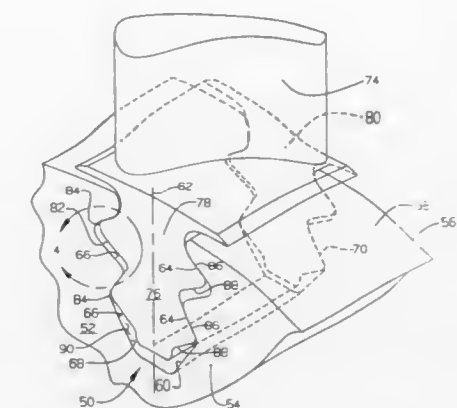
Int. Cl.⁶ F01D 5/30

U.S. Cl. 416-96 R

10 Claims

1. A cooling air delivery system for cooling components of a gas turbine engine having a turbine assembly, a compressor section and a compressor discharge plenum fluidly connecting the air delivery system to the compressor section comprising:

means for providing a fluid flow path between the compressor section and the turbine assembly, said fluid flow path interconnecting the compressor discharge plenum with the engine components to be cooled and having a cooling fluid flowing therethrough when the compressor section is in operation; said turbine assembly including a disc having a first side, a second side, an outer periphery having a plurality of slots therein extending axially between the first side and the second



side, and a plurality of blades having a root portion positioned in corresponding ones of the plurality of slots; and said relationship of the slot to the root portion forming a cavity having a generally decreasing cross-section from the first side of the disc to the second side of the disc.

5,511,946

COOLED AIRFOIL TIP CORNER

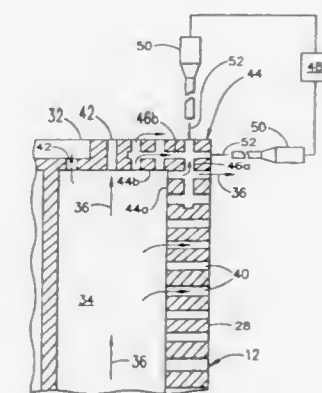
Ching-Pang Lee, Cincinnati, Ohio; Gary E. Wheat, Madisonville; Barry T. Malone, Dawson Springs, both of Ky.; Nicholas C. Palmer, Loveland, and Robert C. Simmons, Cincinnati, both of Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed Dec. 8, 1994, Ser. No. 361,242

Int. Cl.⁶ F01D 5/18

U.S. Cl. 416-97 R

8 Claims



1. A gas turbine engine airfoil comprising:

first and second opposite sides joined together at spaced apart leading and trailing edges and extending from a root to a tip; an internal cooling passage for channeling cooling air there-through; and

a tip corner disposed at a juncture of said airfoil tip and said airfoil trailing edge, and having a plurality of cooling holes extending therethrough in direct flow communication with said cooling passage for discharging said cooling air from said airfoil, and further having a cross-hole extending perpendicularly into said corner and into at least one of said cooling holes for discharging from said airfoil a portion of said cooling air channeled into said at least one cooling hole.

5,511,947
CYCLIC PITCH CONTROL HAVING TORSION SPRING SYSTEM

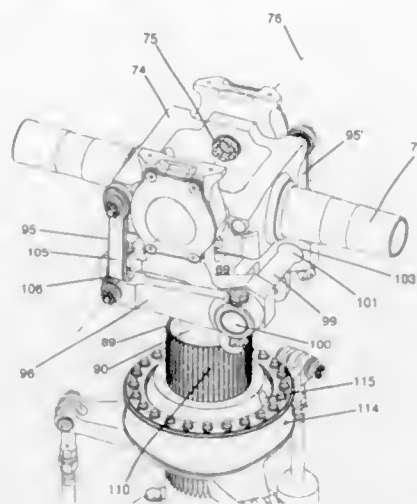
Terry L. Schmuck, Lake Bluff, Ill., assignor to The Boeing Company, Seattle, Wash.

Filed Feb. 17, 1995, Ser. No. 390,837

Int. Cl.⁶ B64C 27/54

U.S. Cl. 416—131

3 Claims



1. An aircraft cyclic pitch control including a rotor hub and drive yoke, the rotor hub being pivotably connected through a teetering hinge to said drive yoke for limited relative rotation about a teetering axis directed substantially perpendicular to the axis of said drive yoke, and having a torsion spring system, for generating the hub moment which is used to control aircraft flight by biasing the rotor hub, said torsion spring system further comprising:

- a lever arm having first and second ends, pivotably connected on said first end to said rotor hub at a point laterally spaced from said teetering axis; and
 - a torsion bar having fixed and rotating ends, rigidly connected on said rotating end to the second end of said lever arm and rigidly connected on the fixed end to said drive yoke, said torsion bar having a torsion bar axis aligned substantially parallel with said teetering axis;
- wherein the rotor hub pivoting with respect to the drive yoke causes the lever arm to rotate about the torsion bar axis, twisting the torsion bar and causing the torsion bar to apply a resisting force to the rotor hub through the lever arm, biasing the rotor hub back toward its normal position.

5,511,948
ROTOR BLADE DAMPING STRUCTURE FOR AXIAL-FLOW TURBINE

Atsuhide Suzuki, Yokohama; Hirotugu Kodama, Arakawa, and Toshio Suzuki, Yokosuka, all of Japan, assignors to Kabushiki Kaisha Toshiha, Kawasaki, Japan

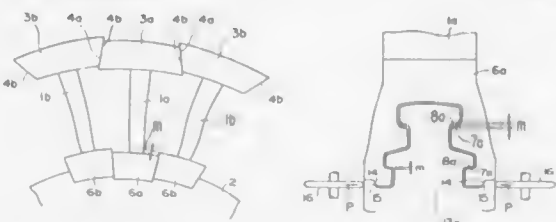
Filed Oct. 11, 1994, Ser. No. 320,545

Claims priority, application Japan, Feb. 18, 1994, 6-020948

Int. Cl.⁶ F01D 5/22

U.S. Cl. 416—191

13 Claims



1. A rotor blade damping structure for an axial-flow turbine having blades arranged around a rotor in a turbine circumferential

direction, said blades each having a shroud formed integrally therewith at a radially outer end thereof, each of said shrouds having opposite front and rear contact surfaces with respect to a turbine rotational direction, said shrouds being arranged in such a way that shrouds of two adjacent blades are brought into contact with each other at said contact surfaces during rotation, wherein:

- at least one of said front contact surface and said rear contact surface of each of the shrouds is formed so as to define an angle with respect to a radial line connecting a rotor center and said one of the contact surfaces;
- a cross-section taken in a plane perpendicular to the turbine rotational axis of the shroud of a blade of a first kind is formed in a trapezoidal shape converging radially outward;
- a cross-section taken in a plane perpendicular to the turbine rotational axis of the shroud of another blade of a second kind, circumferentially adjacent to said blade of the first kind, is formed in an inverted trapezoidal shape converging radially inward; and
- half of an angle formed between the front contact surface and the rear contact surface of each of the shrouds is smaller than a static friction angle of the contact surfaces.

5,511,949

METHOD FOR PRODUCING A MONOBLOC ROTOR WITH HOLLOW BLADES AND MONOBLOC ROTOR WITH HOLLOW BLADES OBTAINED BY SAID METHOD

Monique A. Thore, Crosne, France, assignor to Societe Nationale D'Etude Et De Construction De Moteurs D'Aviation "Sneema", Paris, France

Continuation of Ser. No. 174,399, Dec. 28, 1993, abandoned.

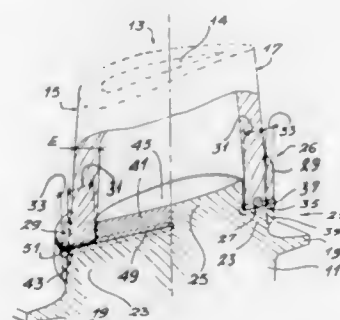
This application Aug. 21, 1995, Ser. No. 517,194

Claims priority, application France, Jan. 6, 1993, 93.00043

Int. Cl.⁶ F04D 29/34

U.S. Cl. 416—213 R

4 Claims



1. A monobloc rotor comprising:

- a disk and hollow blades secured to said disk;

wherein:

- the disk comprises a protuberance and a projection on a periphery of the disk and at the right of each blade;
- the projection forms a block having a shape which approximately corresponds to a shape of an inside of a radially internal extremity of the blade;
- the projection has smaller dimensions than dimensions of the protuberance so as to define with respect to said protuberance a shoulder which forms a flat joining surface around the projection which is substantially parallel to a top surface of the projection; and
- the blade is nested on the projection with a welding bead extending between a surface defined by a thickness of the blade and the flat joining surface, the thickness of the blade being substantially equal to length of the flat joining surface, the projection preventing the welding bead from protruding toward an interior of the hollow blade.

5,511,950
VACUUM PUMPS FOR RECOVERING CONDENSATES FROM STEAM-USING APPARATUS

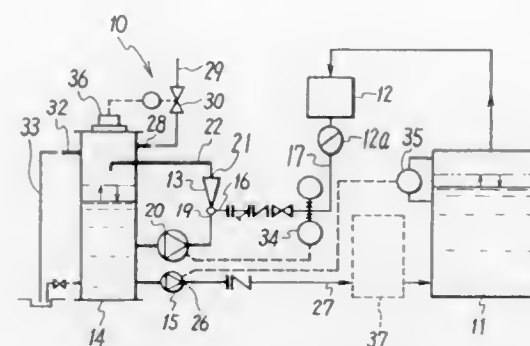
Akihiko Agata, Isahaya, Japan, assignor to Shin-Ei Kabushiki Kaisha, Isahaya, Japan

Filed Aug. 5, 1994, Ser. No. 285,450

Int. Cl.⁶ F04F 5/54

U.S. Cl. 417—36

5 Claims



1. A condensate recovering vacuum pump comprising a condensate tank for temporarily holding condensate, a circulating pump for supplying collected condensate from the condensate tank to a feedwater nozzle of a jet pump as feedwater, and the jet pump creates a negative pressure at a condensate inlet port through which the condensate is taken in by injecting the feedwater, sucks the condensate through the condensate inlet port connected to a steam trap of a steam-using apparatus, and delivers the condensate together with the feedwater through a discharge port into the condensate tank, the condensate recovering vacuum pump further comprises:

- a water-level gauge having a penstock which is connected through a throttle orifice to a point of the condensate tank that is lower than a minimum allowable water-level therein, said penstock upwardly extending on an outside of the condensate tank;
- an upper part of the penstock being connected through an equalizing pipe to a point of the condensate tank that is higher than a maximum allowable water-level therein; and electrode-type water-level sensors are provided in the water-level gauge to detect water-levels, said water-level sensors detect electricity conducted when an electrode of the sensors comes into contact with water.

5,511,951
IV FLUID DELIVERY SYSTEM

Stephen H. O'Leary, 317 Village Run West, Encinitas, Calif. 92024-3059

Filed Aug. 8, 1994, Ser. No. 287,853

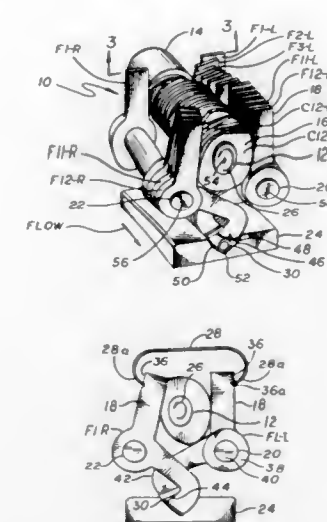
Int. Cl.⁶ F04B 43/12

U.S. Cl. 417—53

18 Claims

1. A method of delivering fluid through a resilient, deformable tube by using a pump mechanism having a pressure pad for supporting said tube, a plurality of finger moving in mutually orthogonal directions, and drive means for actuating said fingers, said method comprising the steps of:

- placing said tube between said pressure pad and said fingers;
- deforming and occluding said tube against said pressure pad under the force of said fingers directed in a first direction; and
- restoring the cross-sectional area of said tube under force of said fingers against said pressure pad directed in an orthogonal direction relative to said first direction.



5,511,952
REFRIGERANT DISPLACEMENT APPARATUS WITH AN IMPROVED THERMAL SENSING DEVICE

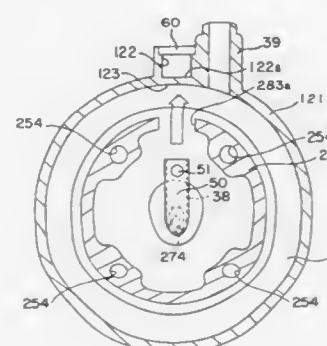
Tadashi Sato, Maebashi, Japan, assignor to Sanden Corporation, Isesaki, Japan

Filed May 20, 1994, Ser. No. 246,517

Int. Cl.⁶ F04B 21/00; F01C 1/04

U.S. Cl. 417—63

10 Claims



1. A fluid displacement apparatus comprising:

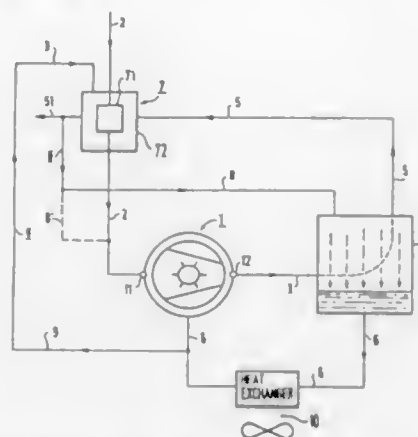
- a housing;
- a first chamber formed in said housing and in fluid communication with a fluid inlet port;
- a second chamber formed in said housing and in fluid communication with a fluid outlet port;
- a discharge port for providing fluid communication between said first and second chambers;
- a recessed portion formed adjacent said fluid outlet port, said recessed portion having a thermal sensitive area corresponding to a bottom surface of the recess;
- a thermal sensor positioned in said recessed portion;
- a partition wall formed in said second chamber for partitioning said second chamber into two sections, said partition wall at least partially surrounding said discharge port; and
- means, associated with said partition wall, for aiming substantially all of the fluid discharged through said discharge port directly against said thermal sensitive area.

5,511,953

MECHANICAL COMPRESSOR SYSTEM

Günter Holzheimer, Baisersdorf; Hans R. Neubauer, Weisen-
dorf, and Manfred Stretz, Erlangen, all of, Germany, assign-
ors to Siemens Aktiengesellschaft, Munich, Germany
Filed Aug. 8, 1994, Ser. No. 287,024

Claims priority, application Germany, Aug. 11, 1993, 43 27
003.4; Mar. 16, 1994, 9404463 U
Int. Cl.⁶ F04C 19/00; F28B 3/04; 9/08
U.S. Cl. 417—68 19 Claims



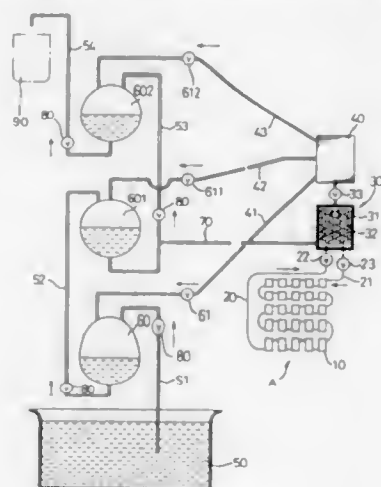
1. A compressor system, comprising:
 - a mechanical compressor with a first connecting port and a second connecting port;
 - a suction line connected to said first connecting port;
 - an exhaust line connected to said second connecting port;
 - an after-cooler unit, including:
 - a first chamber, said suction line passing through said first chamber;
 - a second chamber, said exhaust line passing through said second chamber;
 - at least one separating wall separating said first chamber and said second chamber; and
 - at least one injection line injecting fluid into said suction line upstream from said after-cooler unit.

5,511,954

WATER PUMPING SYSTEM USING SOLAR ENERGY

Tai-kang Han, 2nd Fl., No. 18, Lane 787, Sec. 2, Kuo Kwang
Rd., Tai Li Hsiang, Taichung Hsien, Taiwan
Filed Jun. 26, 1995, Ser. No. 494,415

U.S. Cl. 417—121 5 Claims
1. A water pumping system for delivering water from a water



source (50) to a container (90) at a higher level than that of said water source (50) and comprising:

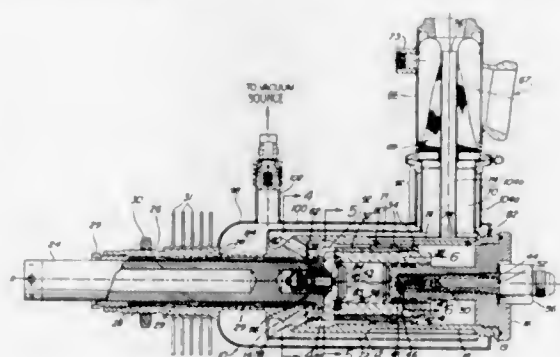
- a solar collector assembly (A) including at least one solar collector (10) containing therein a heat transfer medium with a predetermined temperature;
- a heating module (30) including an insulated housing (31) having water received therein, a circulating means (32) mounted in said insulated housing (31) and communicating with said at least one solar collector (10) for conveying said heat transfer medium in said at least one solar collector (10) to circulate through said circulating means (32) such that the water received in said insulated housing (31) is evaporated to vapor with a predetermined pressure by means of said heat transfer medium;
- a receiver (40) communicating with said insulated housing (31) for receiving the vapor created in said insulated housing (31) therein; and
- at least one pressure chamber located at a level between said container (90) and said water source (50) and communicating with said water source (50) by means of a water pipe (51) for conveying water contained in said water source (50) into said at least one pressure chamber, a conveying tube having a first end mounted on an underside of said at least one pressure chamber and a second end connected to said container (90), a conduit communicating between said at least one pressure chamber and said receiver (40) for conveying the vapor received in said receiver (40) into said pressure chamber so as to force water contained in said at least one pressure chamber into said container (90) via said conveying tube, and a one-way valve mounted on said conduit between said at least one pressure chamber and said receiver (40).

5,511,955

CRYOGENIC PUMP

Bruce G. Brown, Corona, Calif.; Robert E. Crowl, Corpus
Christi, Tex., and Phillip J. Westermann, El Toro, Calif.,
assignors to Cryogenic Group, Inc., Murrieta, Calif.
Filed Feb. 7, 1995, Ser. No. 384,970

U.S. Cl. 417—259 25 Claims
Int. Cl.⁶ F04B 15/08

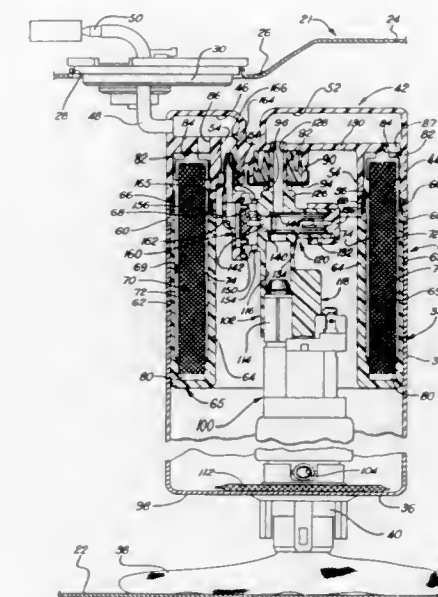


1. A cryogenic pump for liquified gases comprising:
 - a cylindrical housing having a longitudinal axis and an inlet section at one end and discharge section at the other end;
 - a moveable piston positioned in the cylindrical housing for reciprocating movement therein from the end of its forward stroke adjacent the outlet end of the housing to the end of the return stroke, adjacent the inlet end of the housing, the moveable piston dividing the interior of the cylindrical housing into a supercharger chamber and an evacuation chamber on opposite sides of the piston, the piston having a skirt extending into the evacuation chamber;
 - a liquified gas inlet;
 - at least one supercharger inlet port extending through the cylindrical housing in the inlet section thereof for channeling liquified gas from the liquified gas inlet into the supercharger chamber, the port being positioned behind the moveable piston;

5,511,957
HIGH CAPACITY FUEL PUMP AND FILTER COMBINATION

Charles H. Tuckey, Cass City, Mich.; John F. Combost, Find-
lay, Ohio, and Kirk D. Fournier, Essexville, Mich., assignors
to Walbro Corporation, Cass City, Mich.

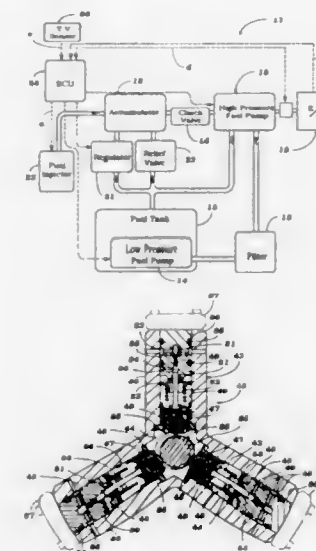
Filed Sep. 27, 1994, Ser. No. 313,742
Int. Cl.⁶ F04B 35/04
U.S. Cl. 417—313 14 Claims



5,511,956
HIGH PRESSURE FUEL PUMP FOR INTERNAL COMBUSTION ENGINE

Hiroshi Hasegawa, and Takeo Yoshida, both of Iwata, Japan,
assignors to Yamaha Hatsudoki Kabushiki Kaisha, Iwata,
Japan

Filed Jun. 20, 1994, Ser. No. 262,629
Claims priority, application Japan, Jun. 18, 1993, 5-147747
Int. Cl.⁶ F04B 1/00
U.S. Cl. 417—271 31 Claims



1. A pump for a fuel injection system, comprising a plurality of positive displacement pumping devices for pumping fuel to a fuel delivery system supplying at least one fuel injector, each movable in a cycle through a suction phase during which fuel is drawn into said pumping device and a delivery phase during which fuel is pumped by said pumping device, drive means for driving said pumping devices, said drive means and said pumping devices being interrelated so that the pumping strokes of said pumping devices overlap each other, at least two of said pumping devices are always in a delivery phase, and the sum of the instantaneous speed of the pumping devices during the pumping strokes is constant.

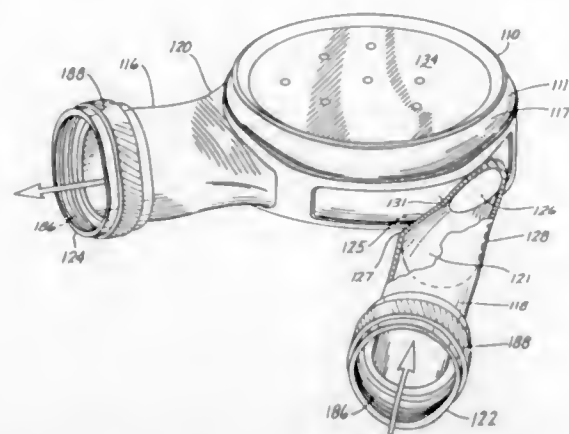
5,511,958

BLOOD PUMP SYSTEM

Herbert Chen, Kensington; Ronald A. Ness, Castro Valley, and
John C. Woodard, Walnut Creek, all of Calif., assignors to
Baxter International, Inc., Deerfield, Ill.

Filed Feb. 10, 1994, Ser. No. 194,481
Int. Cl.⁶ F04B 43/00; F01B 19/00; A61M 1/10
U.S. Cl. 417—412 10 Claims

1. A blood pump system for internal use in humans, comprising:
 - a deformable sac, said sac having in the non-deformed configuration a pair of opposite substantially parallel and planar walls of substantially circular shape joined by an annular wall of substantially semi-circular cross-section, said sac being formed in a seamless piece of flexible resilient material, said sac including inlet and outlet means extending from said annular wall of said sac substantially tangentially with respect to the annulus defined by said annular wall;
 - said sac inlet means having an outer wall and an asymmetric frustoconical tapered section positioned to direct inlet flow toward said annular wall of said sac whereby a smooth flow within said sac is achieved;
 - a pair of plates disposed on opposite sides of said sac, each of said plates being engageable with a respective one of said planar walls of said sac for displacing at least one of said planar walls toward the other to deform said sac;



inlet conduit means removably connected to said inlet means including valve means for directing said inlet flow towards said sac;
 first connecting means for operatively connecting said inlet conduit means to said inlet means, said first connecting means including first sealing means for sealing said inlet conduit means and said inlet means connection;
 outlet conduit means removably connected to said outlet means including valve means for directing outlet flow away from said sac; and
 second connecting means for operatively connecting said outlet conduit means to said outlet means, said second connecting means including second sealing means for sealing said outlet conduit means and said outlet means connection.

5,511,959

SCROLL TYPE FLUID MACHINE WITH PARTS OF SINTERED CERAMICS

Kenji Tojo, Ibaraki, and Masahisa Sofue, Mito, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

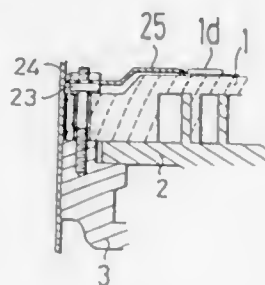
Continuation-in-part of Ser. No. 925,123, Aug. 6, 1992, abandoned. This application May 10, 1994, Ser. No. 240,359

Claims priority, application Japan, Aug. 6, 1991, 3-196619

Int. Cl.⁶ F01C 1/04; C04B 35/56; 35/58

U.S. Cl. 418—55.1

13 Claims



1. A scroll fluid machine comprising a fixed scroll having a first end plate, a first spiral wrap upstanding from said first end plate, a frame supporting an outside periphery of said fixed scroll, an orbiting scroll having a second end plate and a second spiral wrap upstanding from said second end plate, said fixed scroll and said orbiting scroll being arranged so that the first and second spiral wraps are directed inwardly and are engageable with each other, a driving shaft rotatably supported by bearings and having an eccentric portion at its end which engages with the second end plate, and an Oldham ring interposed between the orbiting scroll and a stationary member to prevent the orbiting scroll from rotating around its own axis.

wherein the fixed scroll is made of precise sintered ceramics and is connected to said frame through a supporting member interposed therebetween for defining an angular position of the fixed scroll relative to the frame at a position from a

central axis thereof and for elastically pressing the fixed scroll to the frame in an axial direction while allowing small axial and radial movements of the peripheral portion of the fixed scroll.

5,511,960

SPINNERET DEVICE FOR CONJUGATE MELT-BLOW SPINNING

Taiju Terakawa, and Sadaaki Nakajima, both of Shiga, Japan, assignors to Chisso Corp., Osaka, Japan

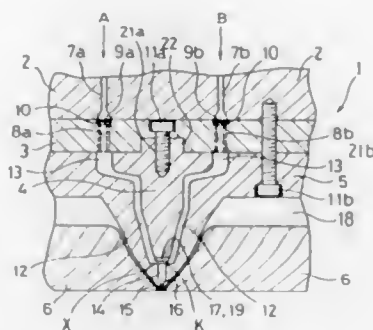
Filed Mar. 17, 1993, Ser. No. 32,325

Claims priority, application Japan, Mar. 17, 1992, 4-060512

Int. Cl.⁶ D01D 04/06; 05/12; 05/32

U.S. Cl. 425—7

3 Claims



1. A spinneret device for side-by-side conjugate melt-blow spinning, comprising:

a spinning resin-feeding plate having respective resin-introducing grooves for introducing two kinds of spinning resins;

a distributing plate attached to the spinning resin-feeding plate and having first and second major surfaces, wherein said first major surface abuts a major surface of the spinning resin-feeding plate, said distributing plate having distributing grooves for receiving the spinning resins fed from the resin-introducing grooves of the spinning-resin-feeding plate and having distributing through holes communicating with said distributing grooves, said distributing holes extending between the distributing grooves and the second major surface of the distributing plate;

a nozzle plate fixed to the distributing plate having a plurality of spinning nozzles and having a first surface abutting the second major surface of the distributing plate, said nozzle plate having a cavity that receives a separating plate therein with clearances formed between the separating plate and nozzle plate providing pressure controlling grooves that receive the spinning resins from the distributing through holes, and said nozzle plate further having a plurality of conjugate holes formed in an interior surface of a portion of the nozzle plate extending toward said spinning nozzles, said conjugate holes opening towards confluent grooves wherein each of said conjugate holes respectively communicates with a corresponding one of said plurality of said spinning nozzles formed in a downwardly-extending portion of the nozzle plate, and wherein said spinning nozzles open away from the cavity;

said separating plate being attached to the second major surface of the distributing plate and having said confluent grooves at a bottom portion thereof facing the plurality of conjugate holes of the nozzle plate, for combining the different spinning resins before introduction thereof into the plurality of conjugate holes, wherein each of the confluent grooves extends in a direction that intersects with a central axis defined by one of the spinning nozzles;

a clearance-defining plate having a V-shaped groove receiving the downwardly-extending portion of the nozzle plate therein, said clearance-defining plate being arranged to provide a gas-introducing clearance between the nozzle plate and the clearance-defining plate for stretching the combined resins

using a gas introduced in said clearance as the combined resins emerge from the spinning nozzles;
 wherein the confluent grooves of the separating plate are respectively located such that the separating plate forms partitioning walls between adjacent confluent grooves; and
 wherein the partitioning walls have bottom surfaces that are separated from the interior surface of the nozzle plate by a distance D_1 that is smaller than a width W_3 of said respective pressure-controlling grooves extending between the second major surface of the distributing plate and the confluent grooves of the separating plate, said pressure-controlling grooves being defined by a separation between the separating plate and the nozzle plate.

5,511,961

MACHINE FOR MANUFACTURING COTTON CANDY BALLS

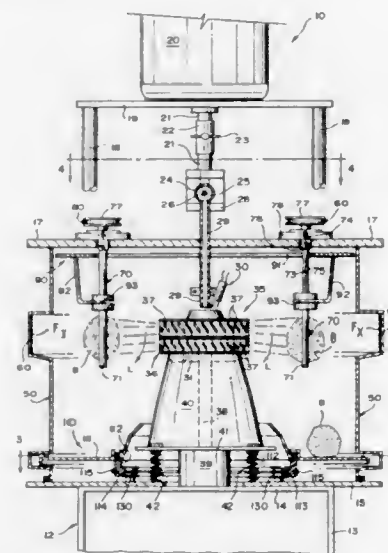
John T. Sullivan, 3910 Madison St., Hyattsville, Md. 20781

Filed Jun. 30, 1994, Ser. No. 269,220

Int. Cl.⁶ B29C 67/02

U.S. Cl. 425—9

53 Claims



1. A machine for manufacturing a cotton candy ball comprising a spindle, means for rotating said spindle, means for impinging a stream of heated liquid sugar upon said spindle during the rotation of said spindle by said spindle rotating means thereby forming a cotton candy ball upon said spindle, and means for ejecting a cotton candy ball from said spindle at the position at which the stream impinges upon the spindle to form the cotton candy ball.

5,511,962

EXTRUSION DIE

Harry G. Lippert, Chippewa, Wis., assignor to Extrusion Dies, Inc., Chippewa Falls, Wis.

Continuation of Ser. No. 12,242, Feb. 1, 1993, abandoned.

This application Jun. 17, 1994, Ser. No. 261,669

Int. Cl.⁶ B29C 47/92

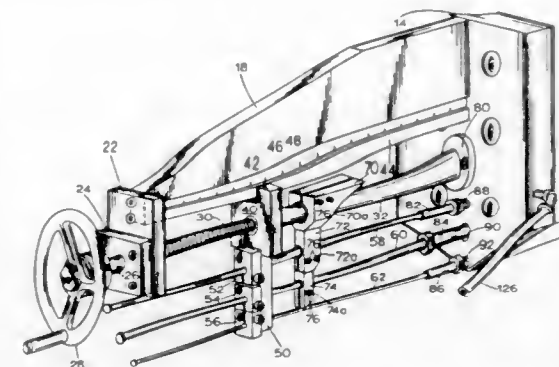
U.S. Cl. 425—141

30 Claims

1. An extrusion die, comprising:

a die body defining a manifold therein terminating at an outlet; first and second relatively movable plugs positioned in the manifold away from said outlet each having a plug edge wherein the plug edges together define a substantially continuous axial edge profile;

means extending through the die body for moving the first and second plugs to first and second axial plug positions, respec-



tively, in the manifold, said moving means comprising first and second rods which carry the first and second plugs, respectively; and

means positioned on the moving means outside of the die body for indicating the first and second axial plug positions and the substantially continuous edge profile, wherein the indicating means comprises first and second members mounted on the first and second rods, respectively, having first and second indicating edges substantially identical in shape to the plug edges of the first and second plugs, respectively.

20. An extrusion die, comprising:

a die body including a pair of opposing walls defining a manifold therein terminating at an outlet of an adjustable size, and wherein the die body includes an outlet member which is movable about a hinge to adjust the outlet size;

a moveable flow restriction member positioned in the manifold in contact with the pair of opposing walls and away from the outlet and having a restriction edge which is shaped to substantially conform to the pair of walls of the die body along said manifold and extending toward said outlet to prevent the flow of material between said restriction member and both said manifold and said die body walls;

means extending through and outside the die body for moving the flow restriction member; and

means coupled to the outlet member for controllably adjusting the outlet size by moving said outlet member about said hinge.

5,511,963

MOLD CLOSING UNIT FOR USE IN AN INJECTION MOLDING MACHINE FOR PROCESSING SYNTHETIC MATERIALS

Karl Hehl, Arthur-Hehl-Strasse 32, D-72290 Lossburg, Germany

Filed Apr. 25, 1994, Ser. No. 231,668

Claims priority, application Germany, Apr. 24, 1993, 43 13 472.6

Int. Cl.⁶ B29C 45/66

U.S. Cl. 425—190

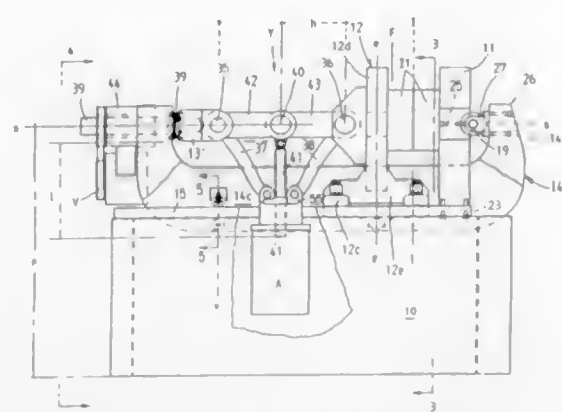
9 Claims

1. A mold closing unit for use in an injection molding machine for processing synthetic materials, comprising:

a stationary mold carrier;
 a movable mold carrier forming with said stationary mold carrier a mold clamping space therebetween;

a toggle mechanism having two levers connected together, one end of said toggle mechanism being jointly connected to said movable mold carrier for moving said movable mold carrier along a closing direction and into and out of a closing position with said stationary mold carrier;

a supporting element for supporting said toggle mechanism and being connected to another end thereof; and
 an electro-mechanical driving unit arranged transverse to the closing direction, and comprising a quill motor, and a driving element for driving said toggle mechanism, said driving element comprising a ball rolling spindle at least partially receivable within said quill motor; said toggle mechanism jointly



connecting said electro-mechanical driving unit with said movable mold carrier and said supporting element, and freely movably holding said electro-mechanical driving unit.

5,511,964

APPARATUS FOR THE PRODUCTION OF PLASTIC PIPES

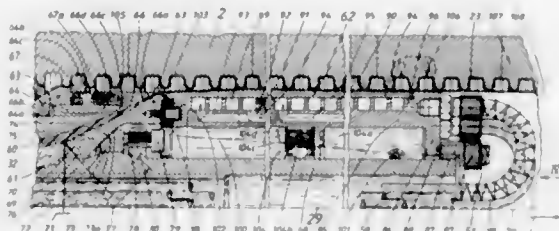
Ralph-Peter Hegler, and Wilhelm Hegler, both of Bad Kissling, Germany, assignors to Wilhelm Hegler, Germany
Filed Mar. 6, 1992, Ser. No. 847,637

Claims priority, application Germany, Apr. 8, 1991, 41 11 229.6

Int. Cl.⁶ B29C 47/90

U.S. Cl. 425—326.1

7 Claims



1. An apparatus for the production of plastic pipes (23) comprising:

a plurality of half shells (2, 2') of which each is provided with a mold recess (105) and of which two at a time combine as a pair on a molding path (9) to form a mold surrounding a mold space (103) with a central longitudinal axis (29) which molding path (9) has an upstream end and a downstream end, and which half shells are arranged on a machine bed (1) to form said mold when guided in a direction (4) of production from said upstream end to said downstream end;

means for moving said half-shells (2, 2') on said machine bed (1) along said molding path (9) and from said downstream end of said molding path (9) back to said upstream end of said molding path (9);

an injection head (25) of an extruder being arranged at said upstream end of said molding path (9), the injection head (25) being provided with a line conduit (43) extending concentrically of said central longitudinal axis (29) and being surrounded by an internal mandrel (32);

a temperature-regulating bell (62) which is connected with a downstream end of the injection head (25) seen in the direction (4) of production and which temperature-regulating bell (62) is provided with a cooling channel (90) and with a line conduit (43) which is in alignment with the line conduit (43) of the injection head (25);

two supply lines connected to the cooling channel (90) and arranged in the line conduit (43) of the injection head (25) and the line conduit (43) of the temperature regulating bell (62); and

wherein the supply lines are formed as flexible supply hoses (49, 50) of temperature-resistant plastic material,

wherein the line conduit (43) of the injection head (25) is provided with a protecting robe (45), which accommodates the supply hoses (49, 50) and which is provided with a heat insulation towards the internal mandrel (32), and

wherein the injection head (25) has a nozzle body (28) with a central chamber (44) open to said line conduit (43) of the injection head (25) to which nozzle body (28) are connected said internal mandrel (32) and an external mandrel (34) surrounding said internal mandrel (32) and an external nozzle jacket (35) surrounding the external mandrel (34); said nozzle body (28) being arranged in the direction of production upstream of said internal mandrel (32), said external mandrel (34) and said external nozzle jacket (35), wherein an internal channel (37) is provided which is defined by a channel between the internal mandrel (32) and the external mandrel (34) and by a first channel within the nozzle body (28), wherein an external channel (38) is defined by a channel between the external mandrel (34) and the external nozzle jacket (35) and by a second channel within the nozzle body (28), wherein said nozzle body (28) is provided with internal webs (41) which intersperse said first channel within said nozzle body (28), and with external webs (42) interspersing said second channel within said nozzle body (28) and which internal webs (41) and external webs (42) extend radially of the central longitudinal axis (29), and wherein at least two bores are formed in the nozzle body (28), which extend about radially of the central longitudinal axis (29) and which intersperse at least one of the internal webs (41) and at least one of the external webs (42) being in radial alignment with said at least one of the internal webs (41) and which bores open into said central chamber (44) and through two of which bores the supply hoses are piloted,

and wherein within the temperature-regulating bell (62) and at least partially surrounding the line conduit (43) of the temperature-regulating bell (62) there is provided a compensation chamber (100), which is, by way of a pressure compensation channel (101), connected to another supply hose (51) in the line conduit (43) of the injection head (25) and the line conduit (43) of the temperature-regulating bell (62), and which compensation chamber (100) opens, by way of a compensation gap (102), from an outer circumference of the temperature-regulating bell (62) into the mold space (103) adjacent the injection head which injection head (25) is arranged at the upstream end of the molding path (9) and upstream of said compensation gap (102) and which another supply hose (51) is connected with the atmosphere and with said pressure compensation channel (101).

5,511,965

APPARATUS FOR EXTRUDING TUBING HAVING A VARIABLE OUTER DIAMETER

David B. Batdorf, Paso Robles, Calif.; Gregory N. Nordgren, Wilsonville, Oreg., and Charles A. Schryver, Atascadero, Calif., assignors to Specialty Silicone Fabricators, Inc., Paso Robles, Calif.

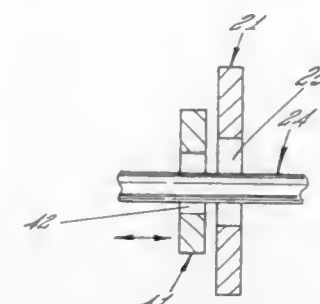
Continuation of Ser. No. 161,500, Dec. 1, 1993, abandoned, which is a continuation of Ser. No. 925,303, Aug. 3, 1992, abandoned, which is a division of Ser. No. 750,905, Oct. 11, 1991, abandoned. This application Apr. 14, 1995, Ser. No. 421,479

Int. Cl.⁶ B29C 47/22

U.S. Cl. 425—381

1 Claim

1. A die for an extrusion apparatus operable for making an extruded tubular article from an extrudable material by forcing the extrudable material through the die thereafter to exit the die in a direction defining a flowstream and wherein the tubular extruded article has an outer surface and an inner lumen, the die comprising a chamber having an entry port through which entry port extrudable material enters said chamber, the die further comprising:



(a) a circular die aperture having a diameter and lying in a plane perpendicular to the direction of the flowstream, said circular die aperture being operable for permitting extrudable material to exit said chamber by passing therethrough;

(b) a mandrel deployed within said chamber having a lumen-shaping portion projecting into said circular die aperture and wherein said lumen-shaping portion of said mandrel has an outer diameter and is operable for shaping the inner lumen of the tubular extruded article;

(c) a moveable ring comprising an annular member having an outer diameter greater than the diameter of said circular die aperture, and a circular ring aperture therewithin, and said circular ring aperture having a diameter less than the diameter of said circular die aperture and greater than the diameter of said lumen-shaping portion of said mandrel wherein said moveable ring is slideably mounted within said chamber upstream with respect to said circular die aperture and encircling said lumen-shaping portion of said mandrel so that at least a portion of said lumen-shaping portion of said mandrel is disposed within said circular ring aperture;

(d) sliding means operable for reciprocally moving said moveable ring along a line parallel to the direction of the flowstream, the reciprocal motion of the moveable ring being operable for increasing and decreasing the outer diameter of the tubular extruded article, and said moveable ring dimensioned and positioned within the chamber so that extrudable material must pass both around said outer diameter of said moveable ring and through said circular ring aperture before entering said circular die aperture.

5,511,966

BIAXIALLY STRETCH BLOW-MOLDED ARTICLE AND BOTTOM MOLD THEREFOR

Tsuyoshi Matsui, Ueda, Japan, assignor to Nissei ASB Machine Co., Ltd., Nagano, Japan

Filed Nov. 28, 1994, Ser. No. 348,809

Claims priority, application Japan, Nov. 29, 1993, 5-323147

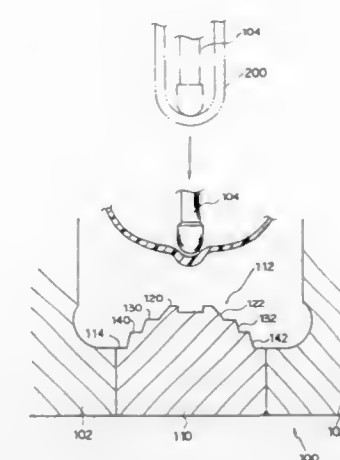
Int. Cl.⁶ B29C 49/48

U.S. Cl. 425—522

9 Claims

1. A bottom mold for molding a biaxially stretch blow-molded article having a bottom which includes a grounding bottom portion and a central inwardly concave dome being formed inside of said grounding bottom portion comprising:

a central convex dome having a cavity surface which defines an outer surface of said central inwardly concave dome of said article, said cavity surface having annular flat walls formed at different levels from a surface corresponding to an outer surface of said grounding bottom portion, said annular flat walls being defined by concentric polygons, wherein an angle of one of said polygons and an angle of an adjacent upper or lower polygon are arranged at different positions in a circumferential direction around center of said bottom mold.



5,511,967

SELF-CONTAINED GAS INJECTOR

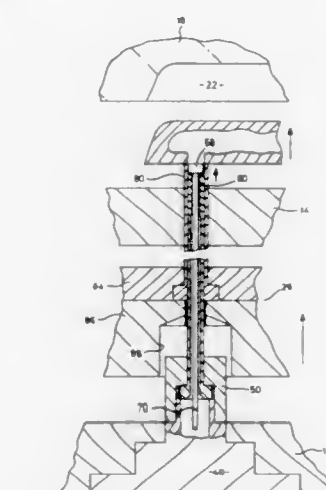
Karl Berdan, Midland, Canada, assignor to PEBRA GmbH
Paul Braun, Altrach, Germany

Filed Feb. 14, 1994, Ser. No. 195,508

Int. Cl.⁶ B29C 44/00; 45/40

U.S. Cl. 425—533

10 Claims



1. A gas assisted injection molding machine comprising a clamping plate, a core supported on said clamping plate in spaced relation thereto, a cavity plate juxtaposed on said core and movable relative thereto between a closed position in which a mold cavity is defined between said core and said cavity plate and an open position to allow removal of a molded component from said cavity, an ejector mechanism movable relative to said core to eject molded components from said cavity and including a sleeve slidably supported in said core and movable with said ejector mechanism relative to said core, and at least one gas injector valve assembly to inject gas into said mold cavity, said valve assembly comprising a manifold including a body mounted on said clamping plate on an opposite side thereof to said core and having an internal passageway connected to a source of pressurized gas, a supply duct secured to said manifold and extending from said passageway through said sleeve and into said cavity to provide a conduit extending from said passageway and into said cavity and a valve member slidably mounted in said conduit and having biasing means to bias said valve member to a closed position in which flow through said conduit is inhibited.

5,511,968

INJECTION NOZZLE FOR A MOULD

Vinico Guzzini; Igno Guzzini; Cherubino Guzzini, and Alberto Guzzini, all of Recanat, Italy, assignors to Acrilux S.p.A., Italy

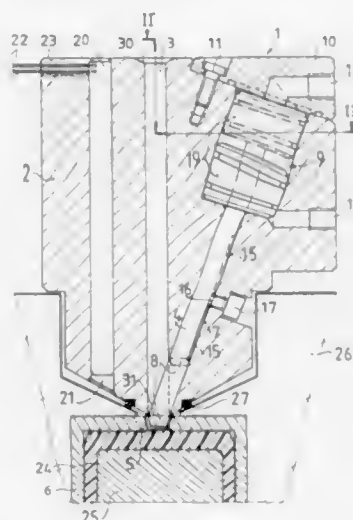
Continuation of Ser. No. 899,545, Jun. 16, 1992, abandoned.

This application Jun. 21, 1994, Ser. No. 263,268

Claims priority, application Italy, Jun. 28, 1991, MI91A1779
Int. Cl.⁶ B29C 45/23

U.S. Cl. 425—564

7 Claims



1. An injection molding arrangement, comprising:
- a mold having a frusto-conical mold hole symmetrical about a longitudinal axis;
 - an injection nozzle including a body, a sprue extending along the longitudinal axis through the body for conveying a moldable, flowable material from a feedpoint on the body to a sprue gate, said sprue gate being positioned upstream of the mold and the mold hole, and an elongated passage extending through the body along an inclined axis that forms an acute angle of inclination with the longitudinal axis; and
 - valve means including a rod mounted in the passage for movement along the inclined axis, a valve head at a leading end of the rod and having a frusto-conical shape of complementary contour to the mold hole and being symmetrical about a head axis, and drive means for moving the head between an open position remote from the mold hole to permit the material to flow from the sprue gate into the mold hole, and a closed position in which the head projects downstream along the longitudinal axis away from the sprue gate and is seated in, and fully closes, the mold hole to resist material flow into the mold hole, said head axis being generally parallel to the longitudinal axis in the open position and being co-linear with the longitudinal axis in the closed position.

5,511,969

HYDRO-ONLY EMULSION BURNING PROCESS

Homero V. d. M. Lopes, and Douglas F. Monteiro, both of São Paulo, Brazil, assignors to Homero Lopes & Associados, and Engenharia E Comercio Ltda., both of São Paulo, Brazil
PCT No. PCT/BR93/00013, § 371 Date Dec. 13, 1994, § 102(e)
Date Dec. 13, 1994, PCT Pub. No. WO93/21480, PCT Pub. Date Oct. 28, 1993

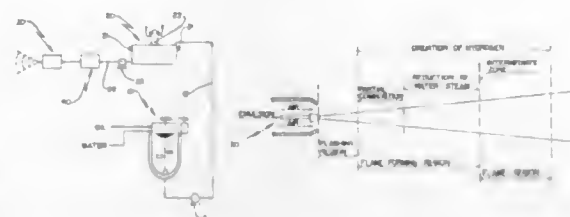
PCT Filed Apr. 15, 1993, Ser. No. 318,796

Claims priority, application Brazil, Apr. 16, 1992, PI 9201543
Int. Cl.⁶ F23D 11/16

U.S. Cl. 431—4

12 Claims

1. Hydro-oily emulsion burning process characterized in that it comprises the steps of:



emulsifying and aerating the water and the fuel oil, by means of agitation in a mixing tank, the water being maintained at a minimum temperature of $20^{\circ}\text{C} \pm 2^{\circ}\text{C}$ and the fuel oil at a maximum temperature lower than that of vaporization of water and at an adequate working pressure to facilitate the desired emulsification, the concentration of water in the emulsion being calculated to react stoichiometrically during combustion, producing hydrogen and carbon dioxide, said emulsion being maintained at a temperature sufficient to permit an interfacial tension between fuel oil and water and air at compatible levels to stabilize the emulsion and at a pressure corresponding to a temperature of saturated water steam substantially higher than the temperature of the emulsion, so that the saturated water steam presents all the water maintained in the form of droplets of around 1 to 10 microns uniformly dispersed, together with micro bubbles of air, in the fuel oil, the speed and time of agitation being determined in order that the aerated emulsion obtained presents a specific gravity around $20\% \pm 5\%$ lower than the deaerated hydro-oily emulsion;

stabilizing the aerated emulsion in a rest tank, maintained under temperature and pressure condition that ensure the required ratio of interfacial tension between water and oil and maintenance of the water concentration, for a period of time required and sufficient to practically fully deaerate said emulsion;

conducting the deaerated and stabilized emulsion to a burner nozzle, maintaining the emulsion conduction temperature between a maximum value corresponding to that a saturated steam pressure mandatorily lower than the emulsion conduction pressure and a minimum value corresponding to the minimum sensible heat stored capable of vaporizing a minimum quantity of water under an abrupt pressure drop condition, the pressure of conduction of the emulsion being maintained within the operating values required by the burner; pulverizing the emulsion through the burner, in uniform particles of around 20 to 150 microns, each particle comprising a plurality of said water droplets in the emulsion, surrounded by a film of oil, said pulverization being effected so as to provoke an abrupt depressurization of the emulsion, sufficient to cause the instantaneous vaporization of part of the water from the droplets and the consequent disintegration of the particles of the pulverized emulsion, said pulverization being effected in an environment sufficiently poor of air in order to avoid direct formation of carbon dioxide and to convey the following reactions:

- partial combustion of the fuel oil with part of an amount of oxygen introduced in the pulverization environment, forming carbon monoxide and releasing heat;
- reduction of water vaporized during the abrupt depressurization of the emulsion, by means of a stoichiometric amount of part of the referred carbon monoxide, forming carbon dioxide and hydrogen and releasing heat;
- oxidation of hydrogen, from reaction b, with the remaining oxygen available in the pulverization environment, forming hyperheated water steam at burner flame temperature;
- vaporization of water, remaining in the droplets, by the heat produced in reactions a and b;
- reduction of water vaporized in reaction d by the carbon monoxide remaining from step a, through chain reactions identical to reactions b and c, in order to provoke total combustion of the oil.

5,511,970

COMBINATION BURNER WITH PRIMARY AND SECONDARY FUEL INJECTION

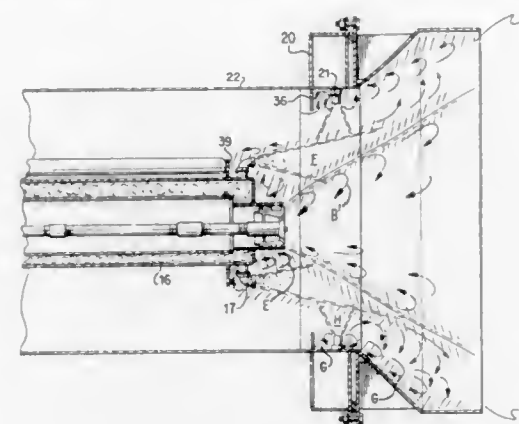
Bruce C. Irwin, Palmyra; Edward E. Moore, Hummelstown, and Raymond F. Baum, Lebanon, all of Pa., assignors to Hauck Manufacturing Company, Lebanon, Pa.

Filed Jan. 24, 1994, Ser. No. 188,406

Int. Cl.⁶ F23D 17/00

U.S. Cl. 431—9

13 Claims



1. A method for promoting rapid mixing of primary fuel and air and for obtaining a stable combustion flame at an exit of a burner, comprising the steps of:
- swirling combustion air to a desired degree;
 - introducing at least one of a primary gaseous fuel axially into the combustion air and atomized primary liquid fuel into the burner;
 - providing recirculation of at least the combustion air in a recirculation region at the burner exit; and
 - supplying a predetermined amount of substantially radially injected secondary gas into the recirculation region, when the primary gaseous fuel has been introduced downstream of a flame recirculation zone and a primary fuel supply exit near the burner exit.

5,511,971

LOW NOX BURNER PROCESS FOR BOILERS

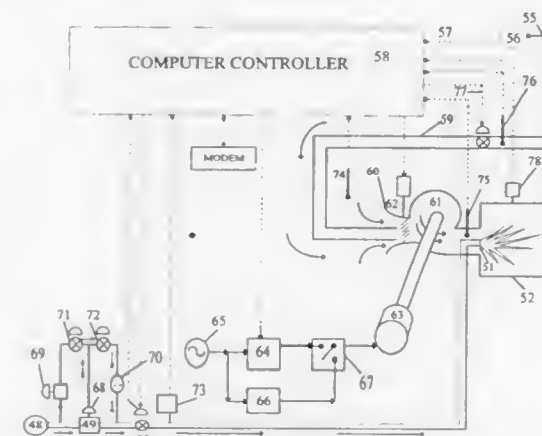
Robert P. Benz, 117 Sierra St., El Segundo, Calif. 90245, and William G. Brown, II, 2901 Manhattan Ave., Hermosa Beach, Calif. 90254

Continuation-in-part of Ser. No. 110,002, Aug. 23, 1993, abandoned. This application Apr. 25, 1994, Ser. No. 231,745

Int. Cl.⁶ F23M 3/00

U.S. Cl. 431—9

8 Claims



1. A process for controlling carbon monoxide and nitrogen oxides emissions from a boiler comprising:

passing a mixture of recirculated flue gas and combustion air through a fan and a damper into a burner; increasing the speed of the fan at increasing firing level while varying the opening of the damper to prevent pulsations of said burner while allowing the boiler to operate with reduced fan speeds and reduced power consumption.

5,511,972

CATALYST STRUCTURE FOR USE IN A PARTIAL COMBUSTION PROCESS

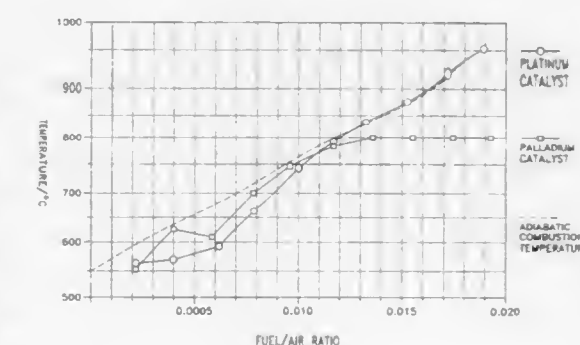
Ralph A. Dalla Betta, Mountain View; Toru Shoji, Sunnyvale, both of Calif.; Kazunori Tsurumi, Fujisawa, and Nobuyasu Ezawa, Koto, both of Japan, assignors to Catalytica, Inc., Mountain View, Calif., and Tanaka Kikinzoku Kogyo K.K., Japan

Continuation of Ser. No. 148,199, Nov. 3, 1993, abandoned, which is a continuation of Ser. No. 617,975, Nov. 26, 1990, Pat. No. 5,326,253. This application Jan. 11, 1995, Ser. No. 371,561

Int. Cl.⁶ F23D 21/00

U.S. Cl. 431—170

24 Claims



1. A catalyst structure comprised of:
- a metallic catalyst support having longitudinal passageways adapted for the passage of combustible gas and having surfaces in those passageways for the placement of a catalytic material;
 - a catalyst material active for the partial combustion of a combustible fuel, the catalyst material comprising palladium on at least a portion of the metallic support longitudinal passageways; and
 - means for maintaining the temperature of the catalyst structure below the TGA transition temperature of palladium, wherein the means comprises a diffusion layer of a catalytically inactive oxide upon the palladium catalytic material.

5,511,973

IGNITION COVER AND VENTURI MOUNTING CLIP

Keith Ray, Delaware County, Ohio, assignor to Whirlpool Corporation, Benton Harbor, Mich.

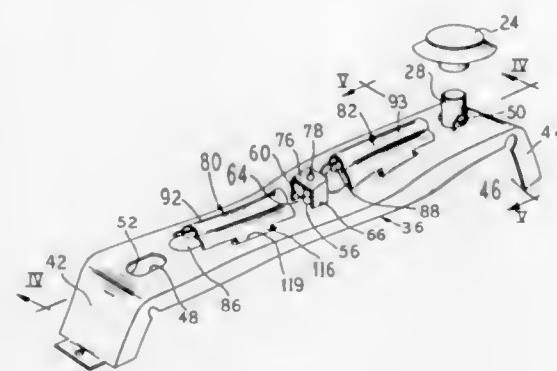
Filed Dec. 22, 1994, Ser. No. 362,119

Int. Cl.⁶ F24C 3/10

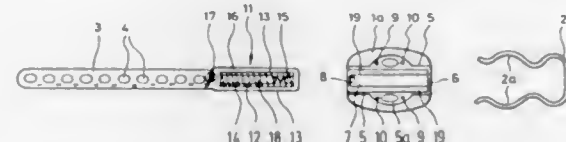
U.S. Cl. 431—191

21 Claims

1. A support for a gas fired appliance, said support arranged between an igniter and a burner, comprising:
- a platform extending between said igniter and said burner;
 - an overlying cover having a concave portion, engageable to said platform to hold said concave portion contiguous to said platform to form an igniter tube between said igniter and said burner; and
 - wherein said platform comprises a raised rail formed thereon having an upwardly facing concave trough, and said cover located having said concave portion overlying said trough.

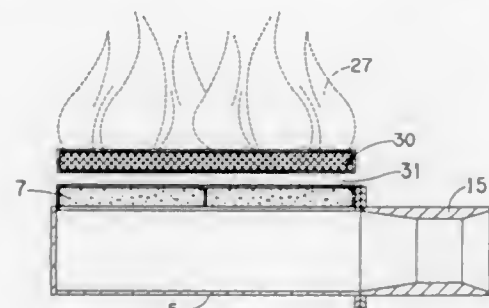


5,511,975
CONNECTING MODULE FOR AN ORTHODONTIC TREATMENT MEANS
 Claus Schendell, Gutenbergstrasse 9, D-82205 Gilching, Germany
 Filed May 10, 1994, Ser. No. 241,051
 Claims priority, application Germany, Nov. 28, 1993, 9318121 U
 Int. Cl.⁶ A61C 7/00
 U.S. Cl. 433—5 17 Claims



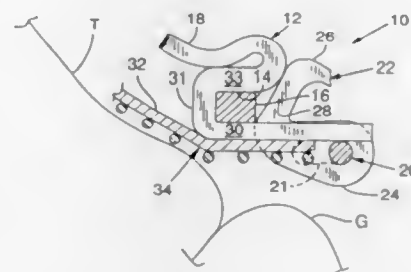
1. Connecting module for an orthodontic treatment means, consisting of a flat housing with a bow resiliently latched thereto for the attachment to a head harness and a flat fastening band for the attachment to a face bow, said fastening band comprising a flat slide bar section at one end, projecting through an opening in the housing into same, and being held there by means of a helical pressure spring which is located between the free end of the slide bar section and an abutment in the housing, said helical pressure spring having an outer diameter which is larger than a thickness of the slide bar section, which may be partially pulled out of the housing against a bias of the helical pressure spring, said slide bar section having an opening extending in a longitudinal direction of said slide bar section and having axial ends, with the helical pressure spring being disposed between said axial ends.

5,511,974
CERAMIC FOAM LOW EMISSIONS BURNER FOR NATURAL GAS-FIRED RESIDENTIAL APPLIANCES
 Michael W. Gordon, Manheim; Mikhail Zlatkin, Lancaster; Kurt A. Bauer, Exton, and Kurt D. Oswald, Hellam, all of Pa., assignors to Burnham Properties Corporation, Wilmington, Del.
 Filed Oct. 21, 1994, Ser. No. 326,915
 Int. Cl.⁶ F23D 14/14; 14/16
 U.S. Cl. 431—329 12 Claims



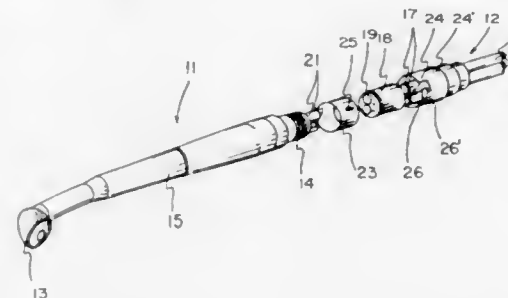
1. A burner for retrofitting residential appliances having reduced NO_x and CO emissions, said burner including a manifold having an inlet area and an outlet area, a venturi leading into said inlet area, means for supplying gas under low pressure, of about 3½ inches water column, and air at atmospheric pressure to said venturi, whereby said gas and said air are combined in said venturi to form an air-gas mixture, ceramic foam tile covering said outlet area, said ceramic foam tile having an external surface, whereby said air-gas mixture passes through said ceramic foam tile for further mixing and out through said external surface, and mixing means for positively increasing mixing of said air-gas mixture after said mixture has passed through said ceramic foam tile and out through said external surface, and prior to burning said air-gas mixture, said mixing means being a screen positioned proximate to, but spaced from, said external surface such that secondary air is added to said air-gas mixture.

5,511,976
LINGUAL BRACKET WITH HINGED CAMMING CLOSURE
 Alexander J. Wildman, 2440 Willamette St., Eugene, Oreg. 97405
 Continuation-in-part of Ser. No. 121,180, Sep. 14, 1993. This application Jun. 5, 1995, Ser. No. 473,117
 Int. Cl.⁶ A61C 7/00
 U.S. Cl. 433—10 15 Claims



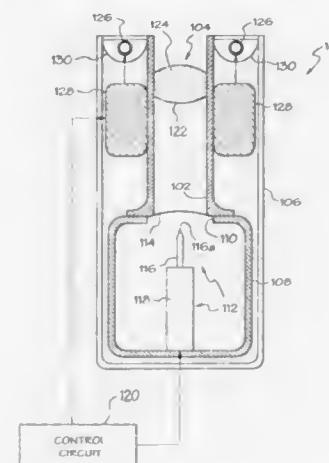
1. An improved lingual orthodontic bracket comprises: a bracket body having a three-sided archwire slot for receiving an archwire, a first tie wing extending in a first direction away from the archwire slot on a first side thereof, and a hinge formed on a second side of the archwire slot; and a closure member pivotally connected to the hinge to rotate across the archwire slot; the closure member having a generally J-shape including a first distal end connected pivotally by the hinge to the bracket body, a second distal end forming a second tie wing oppositely directed from the first tie wing, and a central portion shaped to extend across the archwire slot to retain the archwire seated in shear in the archwire slot.

5,511,977
METHOD FOR CONVERTING DENTAL HANDPIECES TO QUICK DISCONNECT
 Walter B. Futch, Jr., 9322 Sue Cir., Leland, N.C. 28451
 Filed Oct. 24, 1994, Ser. No. 328,014
 Int. Cl.⁶ A61C 9/00
 U.S. Cl. 433—126 3 Claims



1. A method of converting a pre-existing dental handpiece to a quick connect and disconnect dental handpiece by the installation of quick connect and disconnect means, said pre-existing dental handpiece having a threaded end portion adapted to receive a threaded nut sleeve, said sleeve engaging a connector attached to the end of a supply line, said method comprising: removing said base nut sleeve from said threaded portion of said handpiece and separating said connector therefrom; screwing a connector sleeve having at least one outwardly projecting locking pin on the exterior thereof onto said threaded end portion of said handpiece; removing said base nut sleeve from said supply line and said connector and replacing the same with a base locking sleeve having at least one j-shaped slot in the end thereof; sliding said base locking sleeve over said connector sleeve; and twisting said base locking sleeve to engage said at least one locking pin in said at least one j-shaped slot whereby said pre-existing dental handpiece that is threadably connected to said supply line is converted to a quick connect and disconnect handpiece.

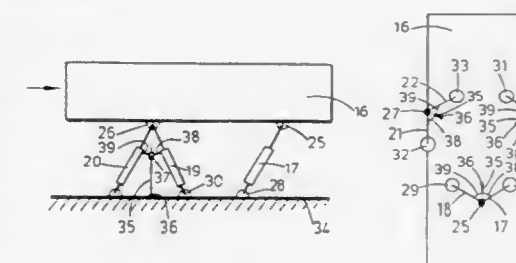
5,511,978
EXPLOSION SIMULATOR AND SYSTEM FOR GENERATING AUDIO AND VISUAL EFFECTS
 John W. Sellers, Jr., Spring Valley, and Stanley E. Tate, Kettering, both of Ohio, assignors to Spectra Research, Inc., Dayton, Ohio
 Filed Mar. 21, 1994, Ser. No. 210,475
 Int. Cl.⁶ F41A 33/04
 U.S. Cl. 434—11 21 Claims



1. An explosion simulator comprising: a shock tube;

a gas pressure assembly coupled to said shock tube and comprising a gas reservoir for storing pressurized gas and a gas release mechanism for releasing said pressurized gas into said shock tube to generate a bang cue, said gas release mechanism comprising a diaphragm for sealing a gas outlet of said gas reservoir and a puncture mechanism mounted adjacent to said diaphragm for puncturing said diaphragm to release said pressurized gas from said gas reservoir; and a control circuit connected to said gas pressure assembly for activating said gas puncture mechanism such that said pressurized gas is released into said shock tube to generate said bang cue.

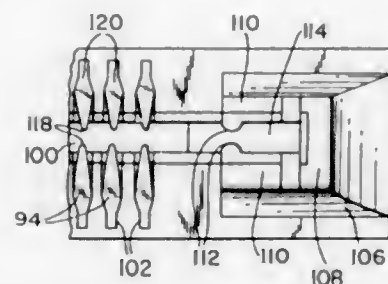
5,511,979
MOTION SYSTEM INCLUDING ACTUATOR ASSEMBLY
 Lawrence J. Perfect, and Peter Waller, both of Sussex, United Kingdom, assignors to Hughes Rediffusion Simulation Limited, Sussex, United Kingdom
 PCT No. PCT/GB92/00984, § 371 Date Jan. 19, 1994, § 102(e) Date Jan. 19, 1994, PCT Pub. No. WO93/00666, PCT Pub. Date Jan. 7, 1993
 PCT Filed Jun. 1, 1992, Ser. No. 170,207
 Claims priority, application United Kingdom, Jun. 29, 1991, 9114124
 Int. Cl.⁶ G09B 9/14
 U.S. Cl. 434—58 24 Claims



1. An actuator assembly comprising: a pair of interconnected extensible actuators, the actuators being driven in unison and defining two sides of a triangle, a linkage constrained to move with the actuators such that differences in extension of the actuators cause a change in position of the linkage, the linkage comprising an elongate rod mounted between the actuators, a sleeve being slidably mounted on the rod and connected to a pair of arms; each of the arms being connected to a respective one of the pair of actuators, and means for detecting changes in position of the linkage.

5,511,980
TALKING PHONICS INTERACTIVE LEARNING DEVICE
 Michael C. Wood, Moraga, Calif., assignor to Leapfrog RBT, L.L.C., Berkeley, Calif.
 Filed Feb. 23, 1994, Ser. No. 200,609
 Int. Cl.⁶ G09B 5/00
 U.S. Cl. 434—169 38 Claims

1. An interactive learning device comprising: a plurality of indicia bearing units, each unit having a three-dimensional configuration; an indicia bearing housing for housing said plurality of indicia bearing units, and a plurality of switches; a sound synthesizer processor housed in said indicia bearing housing and electrically coupled to said plurality of switches, said processor having a memory for storing a plurality of sounds each associated with a different one of said plurality of indicia bearing units; a sound transducer driven by said processor; and



ing area and two rows of contact receiving channels, one of the rows on each side of the receiving area, and two guiding projections located at opposite ends of the middle section, the second member comprising a keeper section with at least four rows of contact passages, the housing being suitably sized and shaped to be connected to a mother printed circuit board and have a daughter printed circuit board connected to the housing in the card edge receiving area at an angle of between about 20° and about 60° relative to a plane of the keeper section; and

electrical contacts located in the contact receiving channels and extending through the contact passages of the keeper section.

5,511,986

IC PACK CONNECTOR WITH DETECT SWITCH

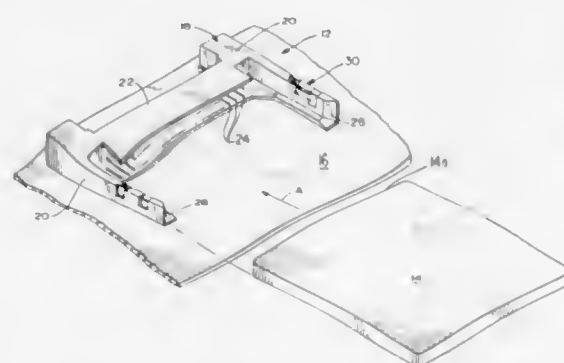
Patrick G. Casey, Rathmore, Ireland; Tom Cruise, Hattavia, Ill., and Matthew Wilhite, Dooradoyle, Ireland, assignors to Molex Incorporated, Lisle, Ill.

Filed Feb. 23, 1994, Ser. No. 200,722

Int. Cl.⁶ H01R 29/00

U.S. Cl. 439—188

6 Claims



I. In a connector for providing an interconnection between an IC pack and a printed circuit board, including
a header connector for mounting on the printed circuit board including guide grooves defining a pathway into which the IC pack is inserted, and
a plurality of terminals on the header connector located at the rear of the pathway and adapted for interconnection of the IC pack to electrical traces on the printed circuit board, wherein the improvement comprises:

an electrical switch positioned within the guide grooves of the header connector and adapted to be electrically interconnected to electrical traces on the printed circuit board, wherein the switch is adapted to be directly actuated by the IC pack in direct response to insertion thereof.

5,511,987

WATERPROOF ELECTRICAL CONNECTOR

Akira Shinchi, Shizuoka, Japan, assignor to Yazaki Corporation, Tokyo, Japan

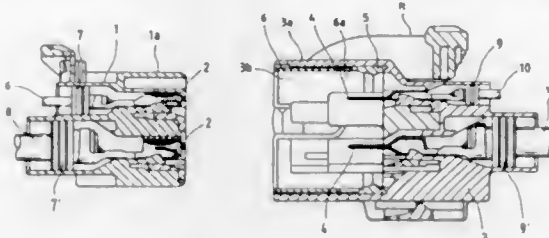
Filed Jul. 11, 1994, Ser. No. 272,610

Claims priority, application Japan, Jul. 14, 1993, 5-174050

Int. Cl.⁶ H01R 4/00

U.S. Cl. 439—205

4 Claims



1. A waterproof electrical connector comprising:

a male connector housing;

a female connector housing for connection with the male connector housing;

a hood portion provided on one of the male connector housing and the female connector housing;

a packing within the hood portion to provide a waterproof seal for the connector;

a packing press ring pressing against and retaining the packing within the hood portion; and

vent hole portions provided on a portion of the packing press ring that is abutted against the packing, wherein during connection of the male connector housing with the female connector housing, compressed air exits via the vent hole portions.

5,511,988

BULB SOCKET AND TERMINAL INSTALLED THEREON

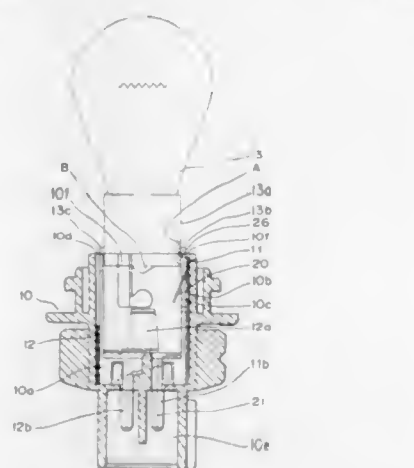
Shinji Ogawa, Suzuka, and Masayoshi Matsumoto, Atsugi, both of Japan, assignors to Sumitomo Wiring Systems, Ltd., Mie, and Ichikoh Industries, Ltd., Tokyo, both of Japan Division of Ser. No. 206,946, Mar. 7, 1994, Pat. No. 5,411,412, which is a division of Ser. No. 896,661, Jun. 10, 1992, Pat. No. 5,320,553. This application Feb. 14, 1995, Ser. No. 388,486

Claims priority, application Japan, Jun. 11, 1991, 3-43541; Jun. 11, 1991, 3-43542; Jun. 12, 1991, 3-43922

Int. Cl.⁶ H01R 4/48

U.S. Cl. 439—336

5 Claims



1. A cathode terminal, which is mounted on a bulb socket, said bulb socket including a bulb insertion opening operative to receive a bulb having a bulb mouth piece and bulb pins on a circumferential wall of said bulb mouth piece, and a terminal inserting groove

for receiving said cathode terminal, said cathode terminal comprising a bent strip made of conductive material and including one end portion having a connection strip which is bent inwardly and resiliently contacts the bulb mouth piece and an other end portion having a connecting portion connected to a harness connector, said one end portion further including covering means (26), located at the extreme end of said one end portion and which is bent substantially perpendicularly inwardly toward an inside of the bulb socket, for covering the terminal inserting groove when said cathode terminal is fully inserted into the terminal inserting groove thereby to prevent erroneous insertion of at least one of the bulb pins into the terminal inserting groove.

5,511,989

STRUCTURE OF LAMP SOCKET

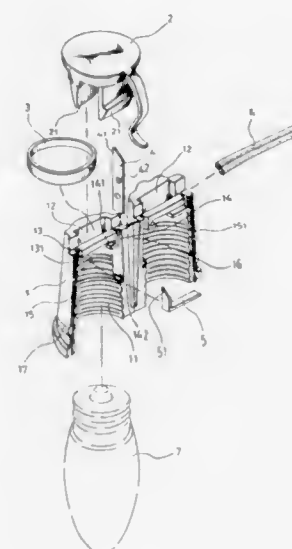
You-Jen Cheng, and Tzu-ling Cheng, both of 2nd Fl., 18-9, Tienmu W. Road, Taipei City, Taiwan

Filed Nov. 21, 1994, Ser. No. 342,624

Int. Cl.⁶ H01R 4/24

U.S. Cl. 439—419

1 Claim



1. A lamp socket comprising a socket body, a socket cap fastened to said socket body to hold down an electric wire, a positive contact metal plate and a negative contact metal plate installed in said socket body and respectively connected to the positive and negative poles of said electric wire, and a lamp bulb threaded into said socket body to contact the positive and negative contact metal plates; wherein said socket body is comprised of two symmetrical halves each having one side hinged to each other by a hinge and an opposite side detachably connected together by a tongue-and-groove joint and then retained in shape by a hoop, each half of said socket body comprising a retaining hole to which said socket cap is fastened, a positive contact metal plate chamber and a negative contact metal plate chamber bilaterally longitudinally disposed at a top, a first inside flange corresponding to said positive contact metal plate chamber, a second inside flange opposite to said first inside flange, and a receptacle at a bottom end of said negative contact metal plate; said positive contact metal plate is made of substantially L-shaped configuration and inserted into said positive contact metal plate chamber and supported between said first inside flange and said second inside flange, having a raised contact portion at a bottom for connection to the tip contact of the lamp bulb; said negative contact metal plate is a flat plate inserted into said negative contact metal plate chamber, having a bottom end stopped at said receptacle of said socket body and a plurality of raised portions for connection to the ring contact of the lamp bulb.

5,511,990

ELECTRICAL INTERFACE CONNECTOR ASSEMBLY

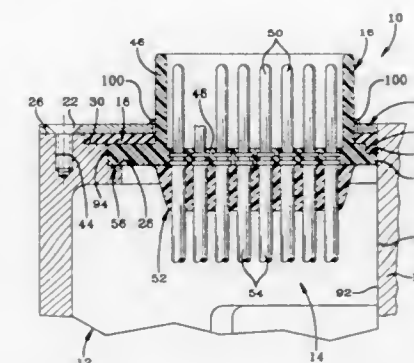
Donald Klemen, Carmel, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 14, 1994, Ser. No. 339,031

Int. Cl.⁶ H01R 13/74

U.S. Cl. 439—559

13 Claims



1. An electrical interface connector assembly for a vehicle, said connector assembly comprising:

a housing;

said housing having first and second portions separable along

opposed and mating parting faces and a closure face;

a generally U-shaped receptacle incorporated in one of said housing portions;

said receptacle extending outwardly from said parting face on said first housing portion;

a supporting ledge extending along said generally U-shaped receptacle;

an electrical interface connector block;

a mounting flange extending outwardly of said electrical interface connector block to be received on said supporting ledge;

a seal-engaging ledge also extending along said generally U-shaped receptacle in stepped relation relative to said supporting ledge;

a sealing gasket overlying said mounting flange and said seal-engaging ledge; and,

a retainer plate demountably secured to said receptacle to compress said sealing gasket against said mounting flange and said seal-engaging ledge to preclude admission of foreign materials between said mounting flange and said receptacle.

5,511,991

CONNECTOR HAVING A SYMMETRICAL RETAINER FOR ALLOWING INSERTION IN AN INVERTED ORIENTATION

Yoshinobu Seki, Shizuoka, Japan, assignor to Yazaki Corporation, Tokyo, Japan

Filed Jul. 22, 1994, Ser. No. 278,814

Claims priority, application Japan, Jul. 22, 1993, 5-201313

Int. Cl.⁶ H01R 13/40

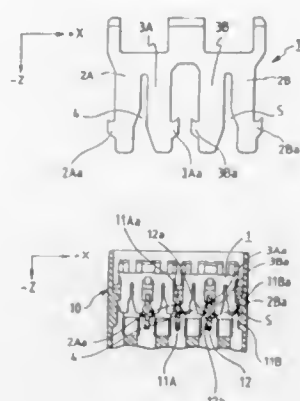
U.S. Cl. 439—595

9 Claims

1. A connector, comprising:

a connector housing having a plurality of terminal receiving chambers and a plurality of elastic retaining lances respectively protruding into said chambers, adjacent pairs of said terminal receiving chambers being defined by a pair of first support walls and a second support wall interposed therebetween, said pair of first support walls each including first locking projections and said second support wall having second locking projections; and

a retainer including a pair of first and second lock arms extending forwardly from a base portion thereof, each said first lock arm having a first retaining projection and each said second lock arm having a second retaining projection, wherein said retainer is moveable from a provisional position at which



terminals are insertable into said terminal receiving chambers and respectively engaged by said retaining lances to a complete position at which said elastic retaining lances are prevented from being disengaged from said terminals by said retainer, wherein in one of said provisional and complete positions each said first retaining projection engages an associated one of said first locking projections and in another of said provisional and complete positions each said second retaining projection engages an associated one of said second locking projections and wherein said retainer is substantially symmetrical about a center line dividing said pairs of first and second lock arms so that said retainer can be inserted in an inverted orientation.

5,511,992

DEVICE FOR MOLDING A SHIELDED CABLE PLUG
Erich Thalhammer, München, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

PCT No. PCT/EP93/02759, § 371 Date Apr. 27, 1995, § 102(e)
Date Apr. 27, 1995, PCT Pub. No. WO94/10724, PCT Pub.
Date May 11, 1994

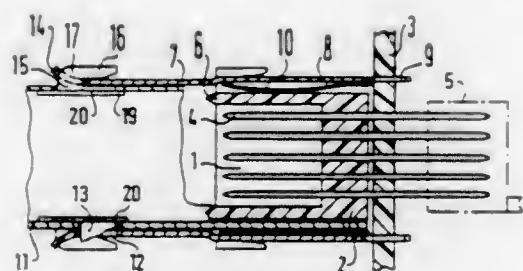
PCT Filed Oct. 8, 1993, Ser. No. 428,156

Claims priority, application Germany, Oct. 29, 1992, 92 11 853.3

Int. Cl.⁶ H01R 13/648

U.S. Cl. 439—609

9 Claims



1. In a device for holding a shielded cable plug on a plug connector on a backplane wiring of a mounting rack, the device having shielding metal sheets along side walls of a plug housing of the plug connector with spring tongues, which can make contact with a shielding housing enclosing the cable plug, and the shielding metal sheets being extended beyond the contact-making region to form guiding sections which bear against the shielding housing of the cable plug, the improvement comprising guiding slots, which are open toward the outside and extend in the insertion direction, being cut into the guiding sections, the shielding housing of the cable plug having protruding guiding webs which engage with little play into the guiding slots, and the shielding housing being provided with hook-like projections which engage around the shielding metal sheets.

5,511,993

CONNECTOR SHIELD WIRE CONNECTION STRUCTURE

Satoshi Yamada, and Mitsuhiro Matsumoto, both of Shizuoka, Japan, assignors to Yazaki Corporation, Tokyo, Japan
Filed Aug. 25, 1994, Ser. No. 296,189

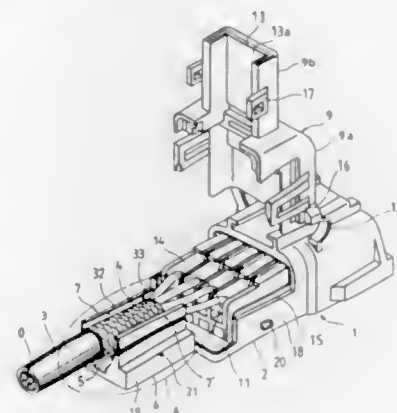
Claims priority, application Japan, Aug. 25, 1993, 5-046253

U

Int. Cl.⁶ H01R 13/658

U.S. Cl. 439—610

19 Claims



1. A connector shield wire connection structure comprising:
a connector housing including a shield wire accommodating portion and a shield cover for covering said shield wire accommodating portion;
a conductive contact element including a slide portion and a retaining portion for retaining a shield portion of a shield wire, wherein said shield wire accommodating portion has a pair of mutually opposing inclined groove walls and the conductive contact element includes an inclined slide portion corresponding to the inclined groove walls, a shield wire hold portion angled inwardly from the inclined slide portions and capable of pressing a distal end thereof against the shield cover opposed to the shield wire accommodating portion, and a shield wire placement portion angled inwardly from a base of the inclined slide portion for supporting the shield wire.

5,511,994

ELECTRICAL CONNECTOR HAVING A DEVICE RETAINING MEANS AND A METHOD OF ASSEMBLY THEREOF

Steven E. Minich, Carlisle, Pa., assignor to The Whitaker Corporation, Wilmington, Del.

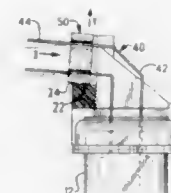
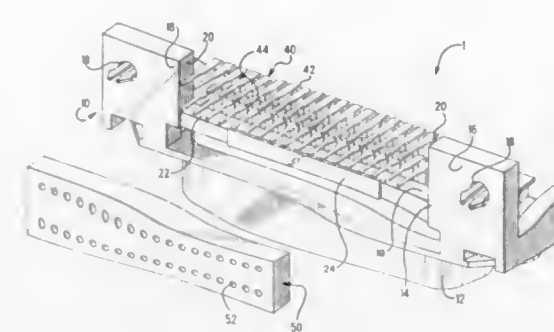
Filed Jul. 21, 1994, Ser. No. 278,489

Int. Cl.⁶ H01R 9/09; H05K 1/00

U.S. Cl. 439—620

12 Claims

1. An electrical connector comprising:
a housing having a mating section for connecting to a cable connector, and having a mounting surface for mounting to a circuit board, the mounting surface having a device receiving recess with a retaining lip;
contacts formed of resilient material and being disposed in the housing having contact terminating sections disposed in the device receiving recess; and
a device disposed within the device receiving recess, the device having apertures therethrough, the contact terminating sections extending through the apertures, the device being assembled to the housing by movement along the contact terminating sections until the device snaps behind the retaining lip, and the device being secured in the device receiving recess by a combination of cumulative spring forces of the contacts and the retaining lip, the cumulative spring forces being perpendicular to the contact termination sections.



5,511,995

DIRECT CURRENT CONNECTOR

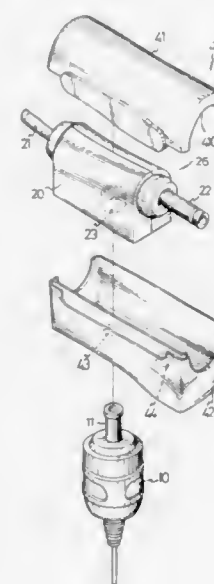
Yu F. Cheng, No. 7, Fu Hsing St., Tu Cheng Hsiang, Taipei Hsien, Taiwan

Filed Oct. 31, 1994, Ser. No. 331,967

Int. Cl.⁶ H01R 25/00

U.S. Cl. 439—638

3 Claims



a first J-shaped metal strip including a first end portion connected with the second electrode of the first plug and a second end portion engageable with the second electrode of the plug of the joint;
a second J-shaped metal strip including a first end portion connected with the second electrode of the second plug and a second end portion engageable with the second electrode of the plug of the joint; and
a second housing defining a first hole, a second hole, a third hole and a fourth hole wherein the first housing is slidably receivable in the second housing so that one of the first and second plugs is selectively insertable through one of the first and second holes defined in the second housing and that the hole defined in the first housing is selectively in communication with one of the third and fourth holes defined in the second housing.

5,511,996

CONNECTOR CONTACT AND METHOD

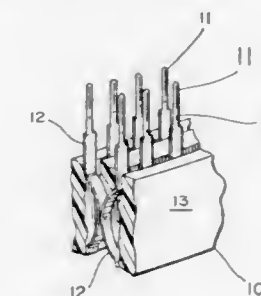
Yuri Levin, Ft. Lauderdale, Fla., assignor to A.W. Industries, Inc., Fort Lauderdale, Fla.

Filed Nov. 14, 1994, Ser. No. 339,021

Int. Cl.⁶ H01R 4/48

U.S. Cl. 439—862

4 Claims



1. A contact for use in a connector, which contact has a tail having an end, a central body portion, and a contact curvilinear portion at the opposite end of the tail formed from beryllium copper characterized in that:
said body portion and said tail has been annealed by heat shock in an area of probable undesirable bending for a dwell time and temperature sufficient to render the beryllium copper flexible and yet not to cause observable oxidation,
said characteristic being measurable by repeated bending at a 90° angle with a first two bends not inducing fracture as contrasted with an identical contact which has not been annealed by heat shock.

5,511,997

MOUNTING ARRANGEMENT FOR OUTBOARD MOTOR
Sadato Yoshida, Hamamatsu, Japan, assignor to Sanshin Kogyo Kabushiki Kaisha, Hamamatsu, Japan

Filed Sep. 7, 1994, Ser. No. 302,122

Claims priority, application Japan, Sep. 7, 1993, 5-221840

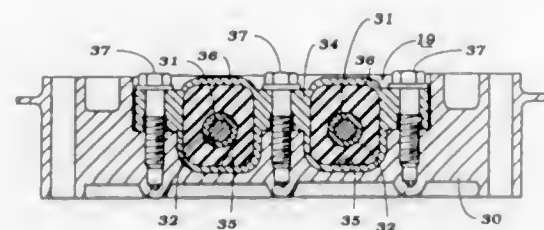
Int. Cl.⁶ B63H 20/02

U.S. Cl. 440—52

6 Claims

1. A direct current connector comprising:
a joint including a hollow plug with a first electrode formed on an internal surface and a second electrode formed on an external surface, wherein the joint is connected with a transformer;
a first housing defining a first hole, a second hole and a third hole for receiving the hollow plug of the joint;
a first plug including a first electrode and a second electrode, wherein the first plug is insertable through the first hole defined in the first housing;
a second plug including a first electrode and a second electrode, wherein a second plug is insertable through the second hole defined in the first housing;
a metal pin connected with the first electrodes of the first and second plugs;

1. An outboard motor mounting arrangement for mounting of an outboard motor drive shaft housing element elastically to an associated watercraft through a steering shaft, said mounting arrangement being comprised of a pair of spaced apart rigid inner tubes each having an opening receiving first fastening means for providing a direct connection to said steering shaft on opposite sides thereof and a rigid integral outer member defining a pair of outer tubes each telescopically receiving a respective one of said inner tubes and having an opening receiving second fastening means for providing a direct connection to said drive shaft housing element, and a pair of non-circular elastic members each bonded to said



inner and said outer tubes for forming an integral assembly comprised of said outer member, said pair of inner tubes and said pair of non-circular elastic members.

5,511,998

SWIMMER TRAINING PADDLE

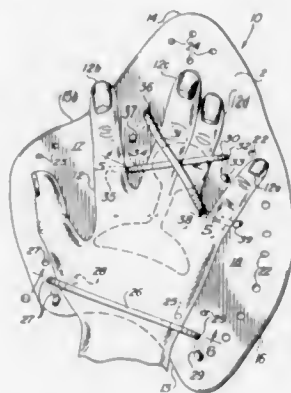
Ronald L. Johnson, 2538 N. 65th St., Scottsdale, Ariz. 85251

Filed Jul. 14, 1995, Ser. No. 502,630

Int. Cl.⁶ A63B 31/10

U.S. Cl. 441—56

14 Claims



1. A paddle for use by a swimmer in a body of water, comprising:

- a planar member having a mitten-shaped surface area wider than a human hand having a proximal wrist edge and first and second lateral edges respectively defining, by the orientation of a user's hand palm side down on said surface area, a thumb side of said area and a little finger side of said area, said planar member having an irregularly-shaped aperture positioned substantially centrally of said surface area, a first portion of the area of said aperture being crescent-shaped and having a width approaching the width of the user's hand and being interconnected with a second area portion of circular shape located to be positioned under a finger of a user's hand attached to said planar member; and
- means for attaching the user's hand to said planar member palm side down and for positioning the most sensitive area of the palm over said first portion of the area of said aperture whereby the user's palm feels the flow of water through said aperture.

5,511,999
FLIPPER

Andrew A. Cochran, 810 Oneawa St., Kailua, Hi. 96734, and Scott B. Dillon, 3 Gaudrons Road, Coffs Harbour, New South Wales, Australia

Filed May 15, 1995, Ser. No. 441,344

Int. Cl.⁶ A63B 31/12

U.S. Cl. 441—64

5 Claims

1. An improved flipper comprising;

- a) a curved body having a foot pocket to receive a foot of a person therein;

- b) a shallow blade extending from a front end of said body;
- c) a heel strap at a back end of said body to retain a heel of the foot of the person thereto; and
- d) a dorsal fin having a base, said dorsal fin extending outwardly from said body, said base limited to the length of said foot pocket, whereby propulsion, direction and diversion of water past said dorsal fin, will give directional guidance and stability to the person swimming in water.

5,512,000

SHOCK ABSORBING BINDING

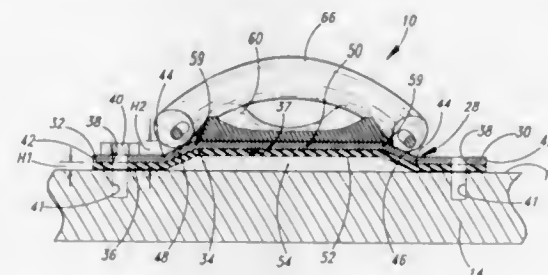
Carlos Robles, Olympia, Wash., assignor to H.O. Sports, Inc., Redmond, Wash.

Filed Aug. 23, 1994, Ser. No. 294,631

Int. Cl.⁶ A63C 9/00

U.S. Cl. 441—70

28 Claims



1. A binding assembly for use with a recreation sport board to retain a foot of a user thereon and reduce transmitted impact loads from the board to the user's foot, the recreation sport board having a top board surface, comprising:

- a binding having a mounting portion and a foot support, said mounting portion being adapted to securely mount to the top board surface with said mounting portion at a first height relative to the top board surface, said foot support having an elevated support portion with toe and heel portions and having a substantially rigid sidewall extending between said toe and heel portions, said substantially rigid sidewall extending between said elevated support portion and said mounting portion, said elevated support portion being securely supported by said substantially rigid sidewall and said mounting portion at a second height relative to the top board surface, said second height being greater than said first height to define a space between said elevated support portion and the top board surface, said elevated support portion being shaped and sized to support at least a portion of the user's foot, said foot support being adapted to allow said elevated support portion to move toward the top board surface to dissipate impact loads exerted on the user's foot by said elevated support portion; and
- a foot retainer to retain the user's foot atop said elevated support portion.

5,512,001

TOY VEHICLE

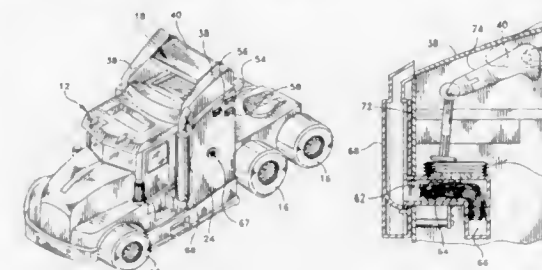
Michael Kent, Barrington; Thomas P. Hamilton, Cranston; Stephen Schwartz, Providence; Henry Sharpe, III, Saunderson; Ralph Beckman, Providence, and Bryan Thurston, Johnston, all of R.I., assignors to Stephen Schwartz Design, and Design Lab, both of Providence, R.I.

Filed Feb. 3, 1995, Ser. No. 383,117

Int. Cl.⁶ A63H 17/34;33/28

U.S. Cl. 446—25

6 Claims



1. A toy vehicle comprising:

- a miniature tractor trailer truck body and chassis including a cab portion and an exhaust pipe extending upwardly along said cab portion;
- means for movably supporting said body and chassis on a supporting surface;
- a vehicle related accessory movably mounted on the exterior of said body and chassis for movement between first and second positions thereon, the movement of said accessory being independent of the movement of said body and chassis on said supporting surface;
- sound generating means on said body and chassis responsive to movement of said accessory for generating engine sounds related to said vehicle; and
- smoke producing means for discharging an induced puff of simulated smoke through said exhaust pipe in response to movement of said accessory on said body and chassis, said smoke producing means including a bellows for inducing the discharge of simulated smoke through said exhaust pipe.

5,512,002

INFLATABLE RACING CAR

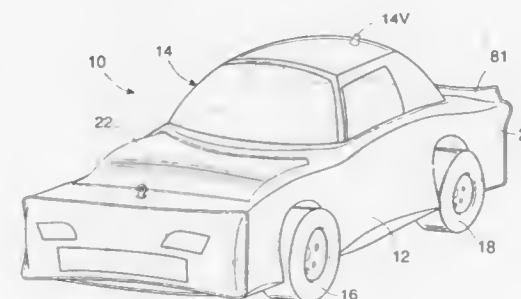
Marvin S. Lieberman, New York, N.Y., assignor to Alvimar Manufacturing Company, Inc., Long Island City, N.Y.

Filed Jul. 14, 1994, Ser. No. 275,152

Int. Cl.⁶ A63H 3/06;17/26

U.S. Cl. 446—221

20 Claims



1. An inflatable model car made of flexible air-impervious sheet material, the car comprising first, second, third and fourth separate air chambers forming respectively a front wheel-set, a rear wheel-set, a simulated passenger compartment and a body, each of said wheel-sets formed as an elongated central chamber having opposite ends formed generally as tires, said wheel-sets disposed generally parallel to and spaced apart from each other, said simulated

passenger compartment comprising a roof and an opposite bottom, the body having top and bottom parts, said body generally at least partially enclosing and secured to said wheel-sets and said simulated passenger compartment situated atop and secured to said body top, said car further comprising valve means for inflating each of said chambers.

5,512,003

SIMULATED VOLCANO TOY MOLD

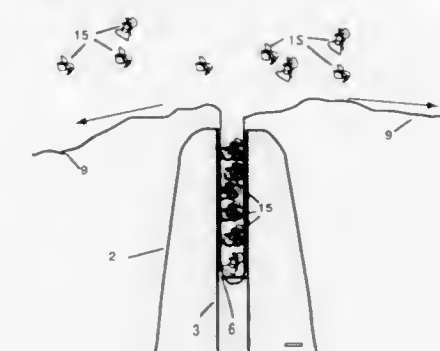
Robin L. Parker, P.O. Box 110024, Anchorage, Ak. 99511-0024

Filed Dec. 28, 1994, Ser. No. 364,960

Int. Cl.⁶ A63H 33/30;29/00;13/16

U.S. Cl. 446—475

10 Claims



1. A simulated toy volcano comprising:

- a) an outer shell having a top and a bottom, having a hollow, cylindrical center formed therein;
- b) an eruption disk, having a perimeter, placed in the bottom of said hollow, cylindrical center such that said eruption disk is not connected to said cylindrical center in any way;
- c) means for causing said eruption disk to be upwardly propelled through said hollow, cylindrical center and completely out of said hollow cylinder, said means for causing comprising a length of ribbon material attached to said eruption disk, being of sufficient length that said ribbon material extends along said cylindrical center and outside said shell to act as handles to enable disk movement; and
- d) a plurality of eruption objects, removably placed with said hollow, cylindrical center above said eruption disk such that as said eruption disk is upwardly propelled and completely ejected from said cylinder, said plurality of eruption objects is upwardly and outwardly propelled from the top of said hollow, cylindrical center.

5,512,004

LENS EDGING MACHINE BEVEL CONTROL PROCESS

Todd R. Strobe, Tulsa, Okla., assignor to Coburn Optical Industries, Inc., Tulsa, Okla.

Filed Jun. 8, 1993, Ser. No. 73,538

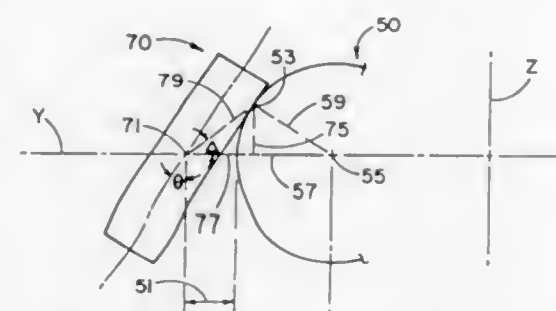
Int. Cl.⁶ B24B 9/14

U.S. Cl. 451—5

8 Claims

4. A process for positioning a bevel along the edge of an ophthalmic lens defined by a selected face curve function by use of an edging wheel in a servo-controlled edging machine comprising the steps of:

- computing point-to-wheel data definitive of a planar relationship between said lens and said wheel;
- storing said point-to-wheel data;
- iteratively calculating straight-line intershaft distances between said lens and said wheel for sequential radius vectors defining a final shape of said lens until a contact point between said lens and said wheel for each said vector is determined;
- storing vector lengths and angles of said contact points as corrected horizontal data;



computing corrected horizontal displacement data as sequential sagittal values for said vector length of each of said contact point vectors using said face curve function; and controlling the relative positions of said edging wheel and said lens in response to said point-to-wheel data and said corrected horizontal displacement data.

5,512,005

PROCESS AND APPARATUS FOR AUTOMATICALLY ENGRAVING STONE MEMORIAL MARKERS

Robert L. Gulling, Bucyrus, Ohio, assignor to Michael P. Short, Bucyrus, Ohio

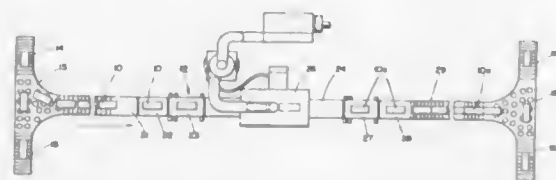
Continuation of Ser. No. 936,622, Aug. 28, 1992, abandoned.

This application Aug. 9, 1993, Ser. No. 103,581

Int. Cl.⁶ B24C 1/00

U.S. Cl. 451—29

31 Claims



1. The process of automatically engraving a plurality of stone memorial markers in series, each said stone memorial marker having a smooth planar facing surface, said process comprising the steps of:

- obtaining an enclosed sand-blast chamber containing a sand-blast zone and containing an array of linearly aligned, direct-air-operated sand blast nozzles directed toward said sand-blast zone, said array of nozzles aligned so as to produce overlapping spray patterns;
- advancing said stone memorial markers in series through said sand-blast zone, each of said stone markers having a flexible plastic stencil in adhered relation on its respective said planar facing surface, said stencil being formed of sand-blast-resistant material and having cutout portions in a prescribed pattern of indicia to be engraved on said respective marker; and
- oscillating said array of nozzles transversely to said path of said markers, while simultaneously continuously controlling and coordinating advancement of said stone markers through said sand-blast zone and the oscillation of said array of nozzles back and forth over said markers, whereby said indicia are engraved on said facing surfaces of said markers to a prescribed uniform depth of penetration.

METHOD FOR ENHANCING THE RUST RESISTANCE AND THE SURFACE FINISH OF A NON-FERROUS WORKPIECE

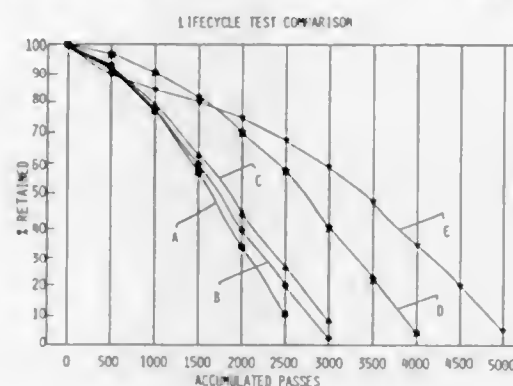
W. Gary Wood, Bloomfield Hills, and Gary J. Stevers, Livonia, both of Mich., assignors to Ultra Blast Partners, Canton, Mich.

Filed Oct. 29, 1993, Ser. No. 144,690

Int. Cl.⁶ B24C 11/00

U.S. Cl. 451—39

36 Claims



1. A method for enhancing the rust resistance and the surface finish of a non-ferrous metallic workpiece having a surface, the method comprising the step of:

- impinging the workpiece surface for a predetermined amount of time with a high velocity stream of ferrous particles, the ferrous particles having a hardness less than approximately 40 Rockwell C, and at least a majority of the ferrous particles having a generally spherical, bead shape having substantially no protuberances on the outer surfaces thereof, which shape wears during the impinging in a substantially concentric manner.

5,512,007

SYSTEM AND PROCESS FOR MANUFACTURING A FLEXIBLE CONNECTION IN A HOLLOW METAL DEVICE

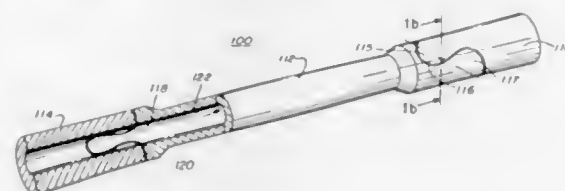
Frank V. De Lucia, Spring; Tuong T. Le, Houston, and Robert W. Jones, Lindale, all of Tex., assignors to Astro Machine Works, Inc., Tyler, Tex.

Filed Sep. 30, 1993, Ser. No. 129,765

Int. Cl.⁶ B24C 3/00

U.S. Cl. 451—75

23 Claims



1. A method for cutting a pattern in opposing walls of a hollow device, such as a hollow cylinder having an outside circumference, comprising the steps of:

- mounting the hollow device axially in a holder to impart at least two selected ones of rotational, axial, and transverse movements to the hollow device in a predetermined pattern;
- positioning an abrasive waterjet head adjacent one wall of the hollow device in cutting relationship to cut said pattern; and
- cutting said predetermined pattern through the adjacent one wall of the hollow device around the entire circumference by operating the abrasive waterjet device while simultaneously moving the holder with the hollow device in said predetermined pattern.

5,512,008

VIBRATORY TUMBLING APPARATUS

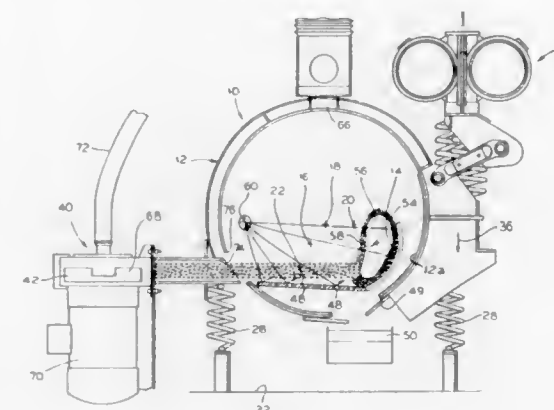
Albert Musschoot, Barrington, Ill., assignor to General Kinematics Corporation, Barrington, Ill.

Filed Jul. 27, 1993, Ser. No. 97,976

Int. Cl.⁶ B24B 31/06

U.S. Cl. 451—85

32 Claims



1. A vibratory apparatus, comprising:

- a container having a material supporting surface disposed along a generally longitudinal axis and extending from a first position to a second, higher position within said container;
- said container having a material input end and a material discharge end, said material input end being axially spaced from said material discharge end, and including means for resiliently mounting said container relative to a mounting surface;
- vibration generating means for producing a force to cause material within said container to be directed in a path of tumbling movement generally in a direction from said material input end toward said material discharge end of said container; and
- tumbling assist means for applying an additional force to said material in addition to said force produced by said vibration generating means said tumbling assist means applying said additional force to said material predominantly at a location below the center of gravity of the material to facilitate tumbling of said material as it moves along said path of tumbling movement.

5,512,009

METHOD AND APPARATUS FOR ATTENUATING OPTICAL CHATTER MARKS ON A FINISHED SURFACE

Douglas E. Earl, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed Mar. 1, 1994, Ser. No. 204,006

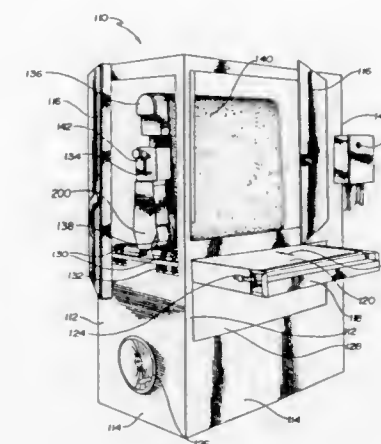
Int. Cl.⁶ B24B 21/00

U.S. Cl. 451—300

16 Claims

1. An optical chatter reducing apparatus for use with a machine adapted to finish a surface of a workpiece by applying an abrasive media to the surface with a roller as the workpiece is advanced past the roller, the roller having a central axis and being powered to rotate about said axis, the apparatus comprising:

- an oscillation inducing apparatus operably coupled to said roller for inducing axial oscillations in the roller relative to the surface of the workpiece, wherein the frequency of the induced oscillations is greater than the frequency of rotation of the roller, and wherein the axial oscillations induced in the roller have an amplitude of between 0.025 and 0.127 millimeters and a spring to bias said roller along the central longitudinal axis of said roller to urge a cam driver means into contact with a cam race.



WET SANDING BLOCK

Georges Labad, Jr., 9095, rue Chauvet, Quebec, Quebec, Canada

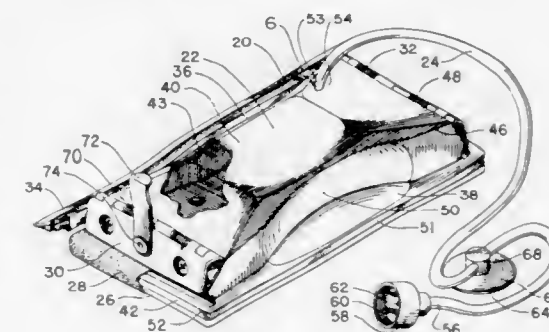
Filed Jan. 17, 1995, Ser. No. 373,098

Claims priority, application United Kingdom, Apr. 26, 1994, 9408215

Int. Cl.⁶ B24B 23/00; 27/08

U.S. Cl. 451—344

15 Claims



1. A wet sanding block, adapted for the finishing sanding of car and truck bodies, comprising in combination:

- a rigid base comprising a flat bottom and a means for manipulating parallel to said flat bottom, said flat bottom having a generally rectangular shape and having perforations, two long inferior sides, two short inferior sides and a longitudinal axis;
- a means for sanding adapted to be placed under said flat bottom and comprising a means for fixing to maintain said means for sanding under said flat bottom;
- a buffer reservoir supported by said rigid base and adapted to distribute a liquid under said flat bottom by said perforations for spilling said liquid over said bodies in an area to be finishing sanded;
- a means for wipe drying located parallel to said two long inferior sides of said flat bottom and adapted to wipe dry a newly sanded surface in order to immediately verify the appearance of said surface;
- said means for manipulating adapted to turn from a first sanding position towards a second wipe drying position according to a rotative movement about said longitudinal axis of said flat bottom; in said first sanding position, said flat bottom being parallel to said body and adapted to enter into contact with said body; in said second wipe drying position, said flat bottom being at a certain angle in reference to said body and in reference to said means for wipe drying while in contact with said body.

5,512,011
COVER PLATE HEADER TONGUE AND GROOVE
GRINDING/POLISHING MACHINE

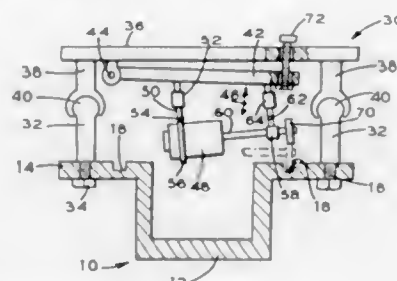
George S. Millas, Houston, Tex., assignor to Hudson Products Corporation, Houston, Tex.

Filed Oct. 28, 1994, Ser. No. 330,771

Int. Cl.⁶ B24B 19/00

U.S. Cl. 451—439

8 Claims



1. An apparatus for removing machine lines from a gasket groove in a header box having a flange containing the groove, the apparatus comprising:

- (a) a rail connected to the flange and extending at least partly along the header box;
- (b) a support comprising a top plate mounted for sliding along said rail and a bottom plate pivotally mounted with respect to said top plate;
- (c) a tool driver connected to said support for driving a tool, said tool connected to said driver and positioned for movement along the groove to remove machine lines from the groove as said support moves along said rail; and,
- (d) adjustment means for adjusting said tool driver with respect to said support and for moving said tool into and removing said tool from engagement with the groove, said tool driver being connected to said bottom plate and said adjustment means comprising means for pivoting said bottom plate to a selected position with respect to said top plate for moving said tool into and out of engagement with the groove.

5,512,012
SAUSAGE CASING HOLDING DEVICE

Erich Lendle, Adelsried; Klaus Markwardt, Laatzen, and Bernd Nicolaisen, Verden, all of Germany, assignors to Vemag Maschinenbau GmbH, Verden, Germany

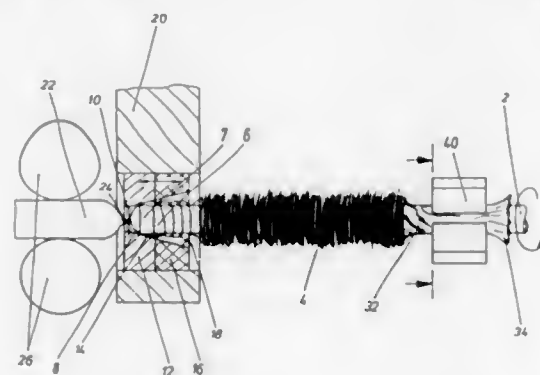
Filed Sep. 2, 1993, Ser. No. 116,123

Claims priority, application Germany, Sep. 5, 1992, 9211979

Int. Cl.⁶ A22C 11/10

U.S. Cl. 452—35

21 Claims



1. A casing holding device used in a machine for filling and twisting off sausages, the casing holding device comprising:
a filling tube rotatable along an longitudinal axis, the filling tube having a free end;

a slug being pulled onto the filling tube;
an output opening, being disposed at the free end of the filling tube, for an output of a filled sausage slug;
a casing brake having a braking ring, the braking ring surrounding the free end of the filling tube, and the braking ring being disposed against the filling tube under a contact pressure; wherein the braking ring is non-rotationally situated; wherein the free end of the filling tube, at least on an exterior surface contacted by the braking ring, is made of a material which has a higher friction coefficient than that of an interior surface of the braking ring.

5,512,013
DEVICE FOR DETACHING AND/OR REMOVING MEAT
AND THE LIKE FROM ANIMAL HEADS

Bob Passchier, Birch Grove House, Cloonach East, Tullamore, Ireland

PCT No. PCT/NL93/06087, § 371 Date Dec. 19, 1994, § 102(e) Date Dec. 19, 1994, PCT Pub. No. WO93/20703, PCT Pub. Date Oct. 28, 1993

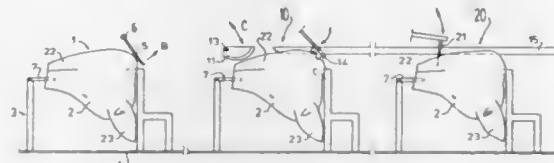
PCT Filed Apr. 22, 1993, Ser. No. 325,256

Claims priority, application Netherlands, Apr. 22, 1992, 9200733

Int. Cl.⁶ A22C 17/04

U.S. Cl. 452—136

12 Claims



1. In a device for detaching and/or removing meat and the like from animal heads (2), comprising a conveyor line (4) with a series of holders (3) for heads, placed one after the other, spaced apart, in the direction of conveyance, on which holders essentially identically shaped animal heads (2) with essentially the same dimensions can be placed, and processing stations disposed along the conveyor line at a distance from each other, past which stations the animal heads are moved in succession by means of the conveyor line, and where the animal heads are treated, at least one first station situated downstream of at least one preliminary processing station, viewed in the direction of conveyance, having scraper means for scraping meat from an animal head processed in preceding station; the improvement wherein at least one station situated upstream (10; 20; 30) and/or downstream (50; 55; 65; 70) of said first station comprise mechanically driven separating means (14; 21; 36; 27; 28; 51; 54; 66; 72; 74; 75) essentially adapting to the shape of the animal head being processed, for preliminary processing or further processing an animal head, the separating means comprising pin-shaped means (21; 36; 27; 51; 66) movable towards and away from said conveyor line (4) and fixed in such a way that they are resiliently movable, the device having a station (70) with means for separating the lower jaw (22) from the animal head, said means for separating the lower jaw (22) from the head comprising means for acting on the free end (72) of the lower jaw for moving said free end a distance from the animal head.

5,512,014
TENDERIZING POULTRY MEAT THROUGH
ELECTRICAL STIMULATION

Bertram B. Burnett, Box 1280, R.R. 4, Nacogdoches, Tex. 75961

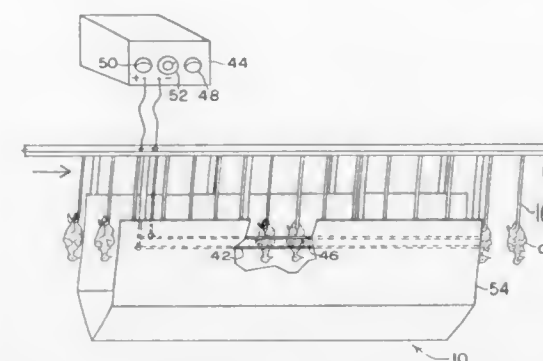
Filed Mar. 14, 1994, Ser. No. 212,231

Int. Cl.⁶ A22C 9/00; A22B 3/06

U.S. Cl. 452—141

15 Claims

1. A method of electrically stimulating a poultry carcass to tenderize the poultry meat, comprising:



applying an intermediate-level voltage across the breast of a poultry carcass for a predetermined time period, wherein the applied voltage supplies a substantially constant source of electrical energy to the carcass over said predetermined time period; wherein said substantially constant source of electrical energy has a duty cycle of about 100%.

5,512,015
MEAT TENDERIZATION PROCESS FOR A
MICROWAVABLE MEAT PRODUCT

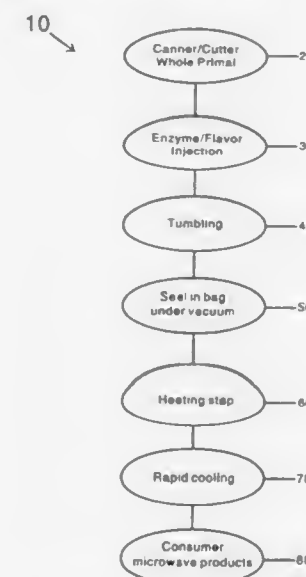
James Teran, 932 E. Thames St., Highlands Ranch, Colo. 80126

Filed Jun. 6, 1995, Ser. No. 471,167

Int. Cl.⁶ A22C 9/00

U.S. Cl. 452—141

13 Claims



1. A new and improved meat tenderization process for tenderizing a meat product at the processing plant and finally in a microwave oven comprising the steps of:

- a) providing a whole primal,
- b) introducing a mixture of papain, bromelain and ficin enzymes and flavoring to the whole primal,
- c) tumbling the whole primal in a tumbler, said tumbling step to take place under a first pressure,
- d) placing and sealing the whole primal in a polymer bag,
- e) heating the whole primal at a first temperature, for a first time period, which activates the bromelain and ficin, causing tenderization to take place,
- f) rapidly cooling the primal at a second temperature, for a second time period, which deactivates the bromelain and ficin,
- g) packaging and transporting the product to a consumer,

f) microwaving the product, whereby the papain is activated by the microwave heating, causing the product to be of good flavor, texture and appearance.

5,512,016
COIN DELIVERING APPARATUS

Kiyoshi Tani, Saitama, Japan, assignor to Asahi Seiko Kabushiki Kaisha, Tokyo, Japan

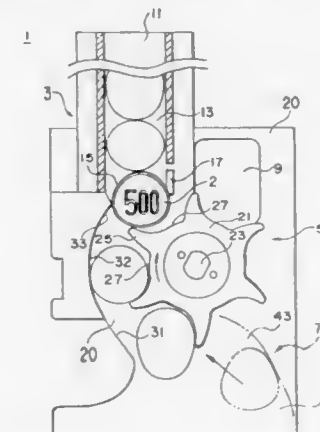
Filed Jun. 27, 1995, Ser. No. 494,999

Claims priority, application Japan, Jun. 27, 1994, 6-165762

Int. Cl.⁶ G07D 1/00

U.S. Cl. 453—32

18 Claims



1. A coin delivering apparatus comprising:
a coin escalator having therein a coin passage where coins arranged in a row can pass, said coin passage having an inlet and an outlet which is arranged at a position higher than said inlet;
coin delivering means for delivering coins to the inlet of said coin passage to push upward a coin row in said coin passage so as to force out a foremost coin in the coin row via the outlet of the coin passage;
coin feeding means for feeding coins to said coin delivering means;
a gate provided at a side wall of said coin passage for opening and closing said side wall such that, when the gate is opened, a coin passes said side wall so as to be taken outside of the coin passage; and
a coin collecting opening provided outside said gate,
wherein said coin escalator, said coin delivering means and said gate are arranged in a positional relationship such that, when said coin delivering means is operated with said gate being opened while feeding of coins from said coin feeding means stops, coins remaining in the coin escalator fall by their own weight in the coin escalator to reach said coin delivering means, and then are discharged one by one, by said coin delivering means, to said coin collecting opening via said gate.

5,512,017
PAINT SPRAY BOOTH AND SUPPLY PLENUM
ARRANGEMENT

Anthony R. Gore, Farmington Hills; Phillip C. Cameron, and David J. Cole, both of Canton, all of Mich., assignors to Durr Industries, Inc., Plymouth, Mich.

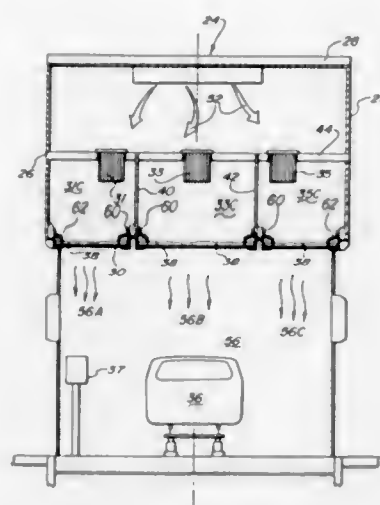
Filed Nov. 23, 1994, Ser. No. 344,069

Int. Cl.⁶ B05B 15/12

U.S. Cl. 454—52

26 Claims

1. A paint spray booth and supply plenum arrangement comprising:
a) an air supply means for supplying air flow to a supply plenum;



- b) a plenum housing extending along a longitudinal direction and having opposed side walls spaced by a lateral direction, an upper panel and a support panel defining the bottom of said plenum;
- c) spaced opposed separating walls positioned within said housing extending parallel to said side walls and at locations between said upper panel and said support panel such that said separating walls divide the air flow which travels through the plenum into at least three distinct flows:
- (1) a first flow between a first of said side walls and a first of said separating walls;
 - (2) a second flow between a second of said side walls and a second of said separating walls; and
 - (3) a third flow between said first separating wall and said second separating wall;
- said flows extending into a paint spray booth defined beneath said support panel, and an air supply system and flow control such that said first and second flows are of a velocity that is substantially greater than the velocity of the third flow;
- d) a conveyor received in said paint spray booth for transporting a vehicle through the longitudinal length of said paint spray booth, said conveyor being received at a lateral position aligned with said third flow, below and between the separating walls; and
- e) means for applying paint to a vehicle, said means for applying paint positioned at a lateral position substantially aligned with one of said first and second flows in said paint spray booth.

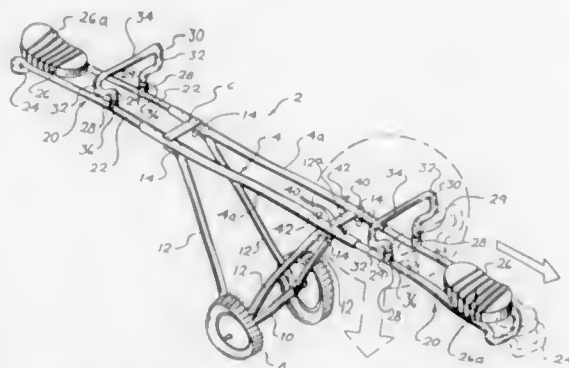
5,512,018

WHEELED SEESAW DEVICE

Tighe Zimmers, 5736 N. East Cir., Chicago, Ill. 60631
Continuation of Ser. No. 160,776, Dec. 3, 1993, abandoned.
This application Mar. 31, 1995, Ser. No. 414,307
Int. Cl.⁶ A63G 11/00

U.S. Cl. 472—106

9 Claims



1. A wheeled seesaw amusement apparatus comprising

a frame having a plurality of tubular members having opposite free ends, said tubular members being interconnected to form a unitary structure,
said frame being carried by a pair of wheels, said pair of wheels being rotatably mounted on an axle extending transverse of said frame at its approximate midpoint between said free ends,
strut means being pivotally attached to said axle and having upper end portions rigidly affixed against movement to the underside of said tubular members,
a pair of seats being respectively carried by said plurality of tubular members adjacent said opposite ends of said tubular members, and
said frame being capable of being raised and lowered about said axle at said free ends and being propelled along a support surface by riders on said seats.

5,512,019

OIL TENSIONER WITH SCREW GROOVE ON A SLIDING SURFACE

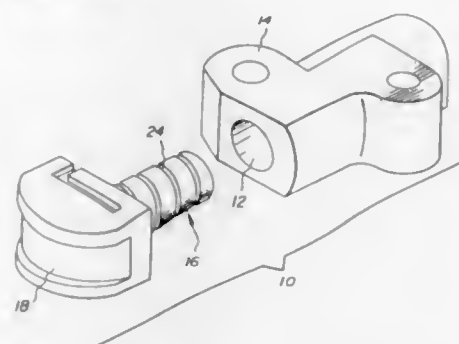
Kazuhiko Shimaya, Hidaka, and Yuichi Futami, Iruma, both of Japan, assignors to Tsubakimoto Chain Co., Osaka, Japan

Filed Apr. 3, 1995, Ser. No. 415,506

Claims priority, application Japan, Apr. 12, 1994, 6-097003
Int. Cl.⁶ F16H 7/12

U.S. Cl. 474—110

3 Claims



1. An oil tensioner comprising:
a housing with a cylindrical bottomed bore having a side wall surface and a bottom surface;
an approximately cylindrical plunger means having an outer peripheral smooth surface into which a helical groove has been formed, said plunger means for sliding reciprocation with respect to the cylindrical bottomed bore of the housing; and
an oil chamber means within the cylindrical plunger defined between the housing and the plunger means for supplying oil to the helical groove and to an area between the outer peripheral surface of the plunger means and the sidewalls of the cylindrical bottomed bore in order to form a lubricating oil surface between the housing and the plunger means, said helical groove preventing a seizure phenomenon.

5,512,020

BELT MEANDERING PREVENTING SYSTEM IN SINGLE FACER

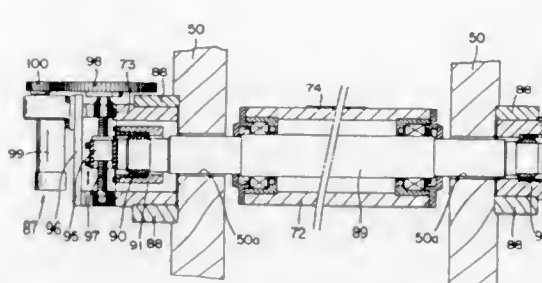
Toshihiko Yasui, Owariasahi, and Kazuhiro Hatasa, Ena, both of Japan, assignors to Kabushiki Kaisha Isowa, Atchi, Japan
Filed May 5, 1995, Ser. No. 435,217

Claims priority, application Japan, May 16, 1994, 6-126764
Int. Cl.⁶ F16H 55/12; B31F 1/00

U.S. Cl. 474—151

4 Claims

1. A belt meandering preventing system in a single facer consisting of an upper fluted roll having flutes formed on the circum-



ference thereof; a lower fluted roll, also having on the circumference thereof flutes which are engaged with those of said upper fluted roll to form a predetermined corrugation on a corrugating medium passed between said upper fluted roll and said lower fluted roll; a gluing mechanism for gluing the crests of corrugation in said corrugating medium; and an application mechanism which is disposed adjacent to said lower fluted roll and equipped with an endless belt extended over a plurality of rolls so as to be able to run freely thereby; in which a liner is pressed against the glued crests of corrugation of said corrugating medium fed along the circumference of said lower fluted roll to be pasted with said corrugating medium and form a single-faced corrugated board; characterized in that a support shaft on which one of said plurality of rolls is rotatably fitted is designed to be swung on one end portion thereof as a fulcrum by operating a drive means.

5,512,021

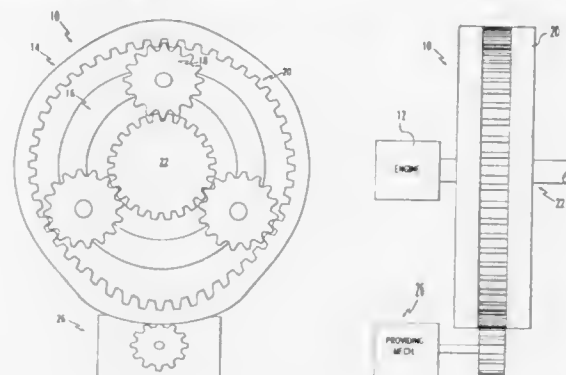
VARIABLE RATIO TRANSMISSION

Joseph L. Shash, P.O. Box 189, Bunola, Pa. 15020
Filed Feb. 10, 1994, Ser. No. 194,393

Int. Cl.⁶ F16H 47/08; 15/50; 3/72

U.S. Cl. 475—1

4 Claims



5,512,024

APPARATUS FOR DAMPING SHUNT

Anthony Burton; Andrew J. S. Williams, both of West Midlands; Andrew J. Kirk, Birmingham, and Russell W. Jones, Stratford-upon-Avon, all of, England, assignors to Lucas Industries, West Midlands, England

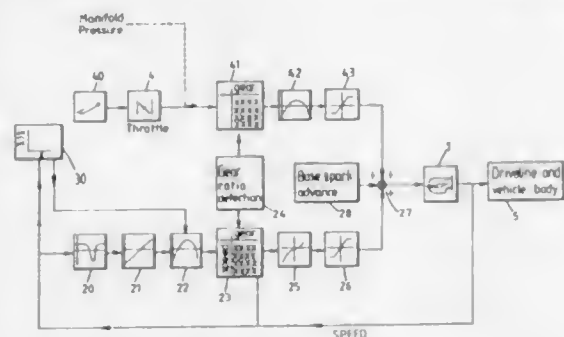
Filed Oct. 18, 1993, Ser. No. 138,337

Claims priority, application United Kingdom, Oct. 27, 1992, 9222515

Int. Cl.⁶ B60K 41/04

U.S. Cl. 477-102

24 Claims



1. An apparatus for damping shunt of a vehicle powered by an engine, comprising a differentiator and a band pass filter arranged in a feedback loop for controlling engine power output, said band pass filter having a high frequency cut-off characteristic greater than first order.

5,512,025

USER-PROGRAMMABLE COMPUTERIZED CONSOLE FOR EXERCISE MACHINES

William T. Dalebout; Donald J. Standing, both of Logan; Scott R. Watterson, River Heights; Dane P. Brewer, Salt Lake City; Lee Robertson, Sandy, and David R. Rowley, Kearns, all of Utah, assignors to ICON Health & Fitness, Inc., Logan, Utah

Continuation-in-part of Ser. No. 455,631, Dec. 22, 1989, Pat. No. 5,062,632, Ser. No. 667,034, Mar. 11, 1991, abandoned, and Ser. No. 415,160, Sep. 29, 1989, Pat. No. 5,067,710, which is a continuation-in-part of Ser. No. 306,872, Feb. 3, 1989, Pat. No. 4,998,725, said Ser. No. 667,034 is a continuation of Ser. No. 306,872, Feb. 3, 0. This application Jul. 2, 1991, Ser. No. 724,732

The portion of the term of this patent subsequent to Nov. 26, 2008, has been disclaimed.

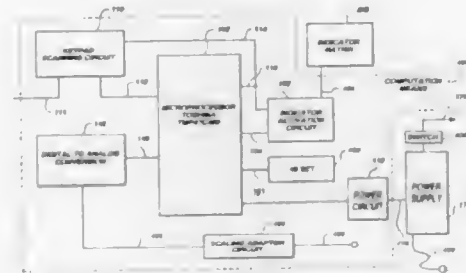
Int. Cl.⁶ A63B 21/005

U.S. Cl. 482-6

25 Claims

1. An exercise machine having a frame; at least one movable element mechanically associated with the frame and configured to enable a user to perform exercises; difficulty adjustment means operably adapted to the movable element for adjusting the difficulty of the exercises; and a control console comprising: a chassis mounted to said frame; control means disposed within said chassis, communicatively connected to said difficulty adjustment means, and configured for controlling said difficulty adjustment means in accordance with a user-designed program comprising a sequence of time segments each having a corresponding difficulty level specified by a user; and input display means disposed for viewing on said chassis, and including

a plurality of arrays of electrical indicators, each said array representing one of said time segments, and said indicators being arranged within each said array to visually represent a series of difficulty levels ranging between a low and a high difficulty, and



bi-directional selector means operably connected to said control means and said indicators for operation by a user to select and display said user-selected difficulty level for each of said time segments, said input display means further being operable to display said specified difficulty level in approximate simultaneous response to operation of said selector means by the user.

5,512,026

METHOD OF USING A MODULAR STEP EXERCISE UNIT

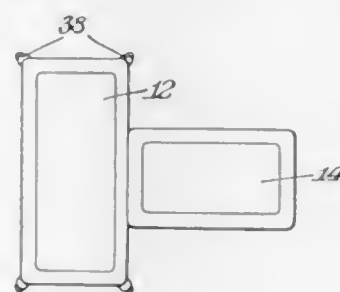
William T. Wilkinson, P.O. Box 572, Crownsville, Md. 21032-0572

Division of Ser. No. 96,408, Jul. 26, 1993, Pat. No. 5,345,247, which is a continuation-in-part of Ser. No. 82,099, Jun. 28, 1993, which is a continuation-in-part of Ser. No. 967,711, Oct. 28, 1992, Pat. No. 5,275,579, and a continuation-in-part of Ser. No. 69,740, Jun. 1, 1993, Pat. No. 5,352,168, which is a continuation-in-part of Ser. No. 891,178, May 29, 1992, Pat. No. 5,248,286, which is a division of Ser. No. 718,754, Jun. 21, 1991, Pat. No. 5,118,096, which is a division of Ser. No. 588,449, Sep. 26, 1990, abandoned, said Ser. No. 69,740 is a continuation-in-part of Ser. No. 967,711, Sep. 26, 0, which is a continuation-in-part of Ser. No. 754,075, Sep. 3, 1991, Pat. No. 5,162,028, and a continuation-in-part of Ser. No. 698,382, May 10, 1991, Pat. No. 5,184,987. This application May 25, 1994, Ser. No. 248,717

Int. Cl.⁶ A63B 5/00

U.S. Cl. 482-52

2 Claims



1. In a method of performing a step aerobic exercise routine comprising: providing a modular step aerobic kit including at least: a first stepping unit having a length, a horizontal upper surface and a lower section configured to be supported on a support surface such as a floor,

a second stepping unit have a length, a horizontal upper surface and a lower surface configured to be supported on a support surface such as a floor, the length of said second stepping unit being less than the length of said first stepping unit,

said first stepping unit having engagement means thereon to allow mateable engagement with said second stepping unit, and said second stepping unit having complimentary engagement means for mateable engagement with said engagement means of said first stepping unit, to thereby allowing said second stepping unit to be detachably mounted on said upper surface of first stepping unit wherein a portion of said upper surface of first stepping unit is exposed, said exposed portion being of a size of sufficient area to support the entire foot of a user,

said method of use further including the steps of selecting at least the first and second stepping units from said kit and orienting said stepping units in a desired orientation relative to each other,

wherein said orientation is selectable from either said steps being placed adjacent each other, on a supporting surface or in an orientation wherein said second stepping unit is mountably stacked on top of said first stepping unit, and;

repeatedly stepping from said first stepping unit to said second stepping unit.

5,512,027

ROWING-TYPE EXERCISE DEVICE

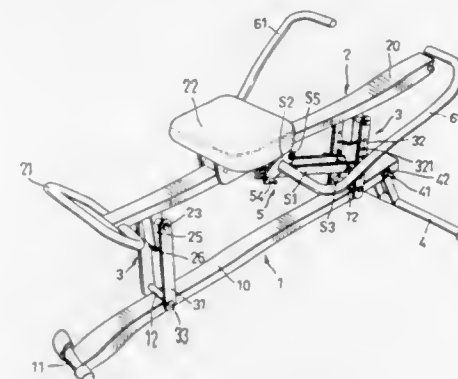
Tsung-Yu Chen, No. 23-4, Ting-Liao, Sun-Ho Tsuen, Shiu-Shang Hsiang, Chiayi Hsien, Taiwan

Filed Jun. 9, 1995, Ser. No. 488,891

Int. Cl.⁶ A63B 69/06; 21/00

U.S. Cl. 482-72

7 Claims



1. A rowing-type exercise device, comprising:

a base frame unit having opposed front and rear end portions; a link unit including front and rear link members, each of said link members having opposed first and second end portions, said first end portions of said link members being connected pivotally and respectively to said front and rear end portions of said base frame unit;

a seat frame unit including an elongated frame body which is disposed above said base frame unit and which has opposed front and rear end portions to which said second end portions of said link members are connected pivotally and respectively to permit forward and rearward movement of said frame body relative to said base frame unit, said seat frame unit further including a foot support member mounted on said front end portion of said frame body and a seat member mounted slidably on an intermediate portion of said frame body;

a connecting unit including a first connecting member which has a first end portion connected pivotally to an intermediate portion of said rear link member between said first and second end portions of said rear link member and a second end portion, and a second connecting member which has a first end portion connected pivotally to said second end portion of

said first connecting member and a second end portion connected to an intermediate portion of said frame body of said seat frame unit; and

an operating lever unit including a pair of operating levers located respectively on two sides of said frame body, each of said operating levers having a first end portion secured to an intermediate portion of said second connecting member and a second end portion which serves as a hand-gripping portion.

5,512,028

FITNESS IMPLEMENT

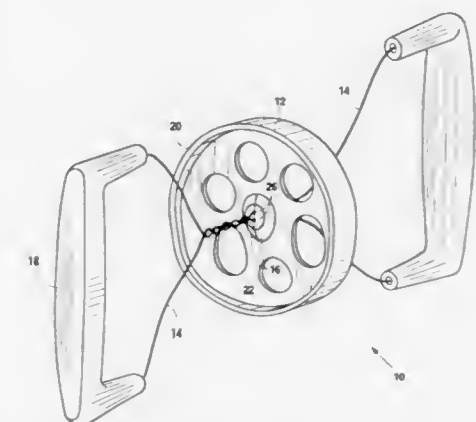
Robert W. Sparks, III, Rte. 1, Box 252B, Hutto, Tex. 78634

Filed Mar. 7, 1994, Ser. No. 206,800

Int. Cl.⁶ A63N 1/32

U.S. Cl. 482-92

1 Claim



1. An improved flywheel exerciser comprising:

a flywheel having an axially oriented grommet hole; first and second grommet halves, said grommet halves jointly defining a circular grommet structure sized for press fit into said grommet hole of said flywheel, each said grommet half having first and second axially directed furrows positioned whereby, when said first and second grommet halves are juxtaposed to form said grommet structure, first and second cord holes are defined substantially symmetrically on either side of the rotational axis of said flywheel respectively by each of said first and second grommet half's first and second furrows;

first and second handles, each comprising:

a horizontal section having a first end, a second end, an upper part, and a lower part, said horizontal section defining a cord terminus trough having a first wall, a second wall, and a bottom, said trough extending substantially from said first end to said second end of said horizontal section;

first and second vertical sections having an upper end and a lower end, said upper ends of said first and second vertical sections respectively positioned at said lower parts of said first and second end of said horizontal section, the vertical sections extending substantially perpendicularly from said lower part of said horizontal section such that a C-shaped member is formed, each vertical section defining a conduit adapted to loosely receive a cord, said conduits communicating with said trough of said horizontal section; and first and second cord restraint structures, each said structure located within said cord terminus trough proximal to said first and second vertical section conduits respectively, each said restraint structure comprising a partition extending from said first wall of said trough to said second wall of said trough, said partition oriented perpendicular to an axis line drawn from said first end of said trough to said second end, said partition defining a vertically oriented gap extending substantially from said bottom of said trough to the top of said partition, said gap being narrowest at the point

closest in proximity to said trough bottom and continuously and gradually widening therefrom;

a first cord extending from said cord terminus trough of said first handle, through said first cord restraint structure, into said first conduit, passing through said first cord hole of said grommet structure into said second handle first conduit through said second handle first cord restraint structure and terminating in said cord terminus trough of said second handle; and

a second cord extending from said cord terminus trough of said first handle, through said second cord restraint structure, into said second conduit, passing through said second cord hole of said grommet structure into said second handle second conduit through said second handle second cord restraint structure and terminating in said cord terminus trough of said second handle whereby said first handle and said second handle are physically connected to said fly wheel such that when said handles are pulled in opposite directions, said cords tend to turn said flywheel.

5,512,029

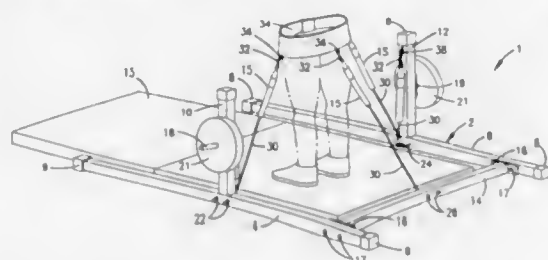
EXERCISE AND TRAINING DEVICE

Charles Barnard, 2405 Grand Ave., #1050, Kansas City, Mo. 64141, and Earl Bell, 7214 Woodsprings, Jonesboro, Ark. 72401

Filed Jun. 29, 1984, Ser. No. 267,483
Int. Cl.⁶ A63B 21/04

U.S. Cl. 482—129

9 Claims



1. An exercising apparatus for improving a user's athletic ability, said apparatus comprising:

a base;

fastening means adapted to be securely fastened about the user's waist;

elastic means secured between said base and said fastening means for resisting upward movement of, and exerting downward force, upon said fastening means while the user exercises; and

an adjustable anchor, attached to the base, to provide an adjustable downward anchoring force to counteract upward forces experienced during exercise.

5,512,030

CENTRIFUGE ROTOR

David A. Barkus, Oakville, Conn., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 1, 1994, Ser. No. 352,695

Int. Cl.⁶ B04B 5/02

U.S. Cl. 494—16

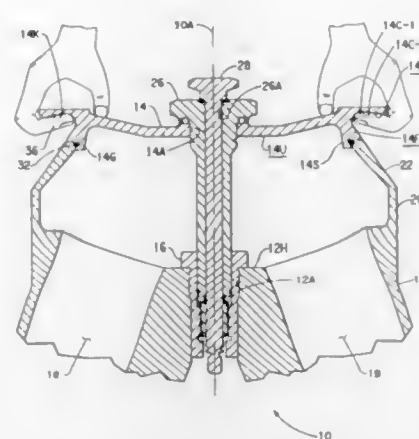
11 Claims

1. A centrifuge rotor comprising:

a rotor body having an axis of rotation extending therethrough, the rotor body having a radially outer peripheral portion having a generally upstanding rim thereon, an upper portion of the upstanding rim being inclined inwardly toward the axis of rotation at a predetermined angle; and

a rotor lid, the lid having an undersurface thereon, the lid comprising:

a skirt depending from the undersurface of the lid, the skirt having a radially outwardly facing surface thereon,



the radially outwardly facing surface of the skirt having a contoured cut-out formed therein, the contoured cut-out being accessible from the exterior of the rotor for facilitating the grasping and handling of the rotor.

5,512,031

METHOD OF CENTRIFUGAL SEPARATION WITH LOAD SENSING CIRCUIT FOR OPTIMIZING CLEANING CYCLE FREQUENCY

Tom S. Ziemis, Perrysburg, and Mark H. Opfer, Pemberville, both of Ohio, assignors to Glassline Corporation, Perrysburg, Ohio

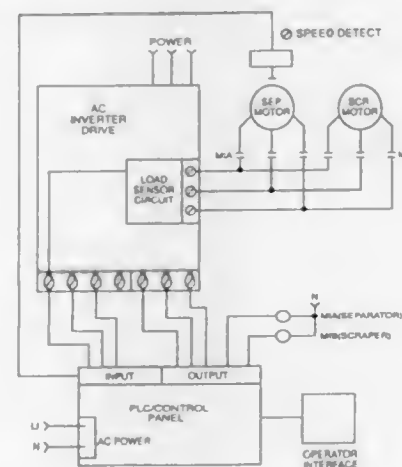
Division of Ser. No. 321,819, Oct. 5, 1994, Pat. No. 5,454,777.

This application May 12, 1995, Ser. No. 440,530

Int. Cl.⁶ B01D 43/00

U.S. Cl. 494—37

4 Claims



1. A method for removing entrained solids from a contaminated effluent comprising the steps of:

- rotating a centrifuge bowl with a drive motor at a speed designed to produce high gravitational centrifugal forces within the bowl;
- introducing a flow of fluid entrained with solid particulate to the interior of the bowl;
- monitoring the load on the drive motor and producing signals relative to the drive motor load as the bowl rotates to accumulate the solid particulate;
- controlling the operation of the drive motor in response to the signals so as to discontinue rotation of the bowl when the drive motor load exceeds a predetermined level; and
- removing the accumulated solid particulate from the interior of the centrifuge bowl.

5,512,032
NONSURGICAL INTRAURETHRAL BLADDER CONTROL DEVICE

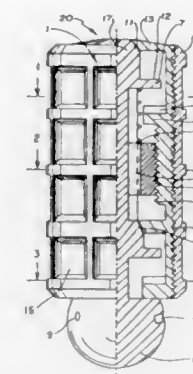
Andre A. Kulisz, and Valery Migachyov, both of St. Paul, Minn., assignors to HK Medical Technologies, Inc., San Antonio, Tex.

Filed Dec. 23, 1993, Ser. No. 173,636

Int. Cl.⁶ A61M 27/00

U.S. Cl. 600—29

23 Claims



1. In an intraurethral bladder control apparatus including a valve assembly for controlling the flow of urine and a valve assembly mount for holding the valve assembly within a urethra, the improved valve assembly mount comprising:

means including a textured outer wall on the mount for interacting with urethral tissue to hold said bladder control apparatus within the urethra and provide nonsurgical implantation and removal of the mount in the urethra the valve assembly including means for creating a holding force according to Bernoulli's principle responsive to a flow of fluid, and means responsive to the holding force to hold the valve assembly open.

5,512,033

MALLEABLE PENILE PROSTHESIS

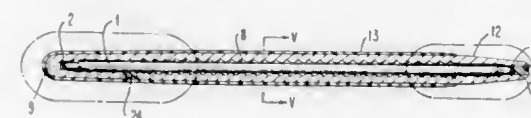
John W. Westrum, Jr., Prior Lake; Mark S. Chace, St. Anthony, and Charles C. Kuyava, Eden Prairie, all of Minn., assignors to American Medical Systems, Inc., Minnetonka, Minn.

Filed Aug. 8, 1994, Ser. No. 287,439

Int. Cl.⁶ A61F 2/26

U.S. Cl. 600—40

6 Claims



1. A malleable penile prosthesis adapted to be implanted in a corpus cavernosum of a penis comprising an elongated core having an unbent straight configuration about a longitudinal axis, a distal end and a proximal end, which core is bendable about said axis with the capability of holding a configuration to which it is bent and is substantially rigid when in the unbent straight configuration, a sleeve of braided biocompatible material having an inner surface and an outer surface enveloping said core with the inner surface of the sleeve in contact with the core and an outer tube of elastomeric material containing the sleeve and core, said tube having a wall with an outer surface and an inner surface, a distal end and a proximal end, each of said ends having a substantially rounded smooth outer surface, said outer surface of the wall being substantially smooth and said inner surface having a profile formed of alternate grooves and ribs in a substantially helical arrangement.

5,512,034
SURGICAL INSTRUMENT INCLUDING VIEWING OPTICS AND A BALL PROBE

Miles A. Finn, 138 W. 49th St., Minneapolis, Minn. 55409; John C. Vanden Hoek, 11473 199th Ave., Elk River, Minn. 55330; Richard L. Shockey, 3003 121st La., NW, Coon Rapids, Minn. 55433, and Thomas C. Barthel, 18251 62nd St., Becker, Minn. 55308

Continuation-in-part of Ser. No. 981,641, Nov. 25, 1992, abandoned. This application Apr. 25, 1994, Ser. No. 233,013

Int. Cl.⁶ A61B 8/00

U.S. Cl. 600—138

27 Claims



26. A tactile surgical instrument for palpating and viewing tissue comprising:

- an elongated rigid shaft having a proximal end, a distal end and a lumen extending between the ends;
- a handle connected to the proximal end of the shaft, the handle including a longitudinal bore communicating with the lumen;
- a rigid bulbous atraumatic tip joined to the distal end of the shaft for providing enhanced tactile response, the tip defining a surface opening leading to a chamber in the tip that communicates with the lumen; and
- a fiber-optic viewing assembly including a plurality of optical image fibers having a planar face at the distal end thereof, the assembly extending through the shaft and including an objective lens mounted within the chamber for creating an optical image of tissue proximal to the surface opening onto the face of the image fibers, the assembly terminating within the chamber such that the tissue can be palpated and viewed simultaneously, the lumen being in fluid communication with the surface opening to allow a fluid to be sent through the lumen, about the objective lens and out the opening.

5,512,035

CABLE COMPENSATING MECHANISM FOR AN ENDOSCOPE

Gregory S. Konstor, Stamford, Conn., and Frank D. D'Amelio, Solvang, Calif., assignors to Cicon Corporation, a Delaware corporation, Santa Barbara, Calif.

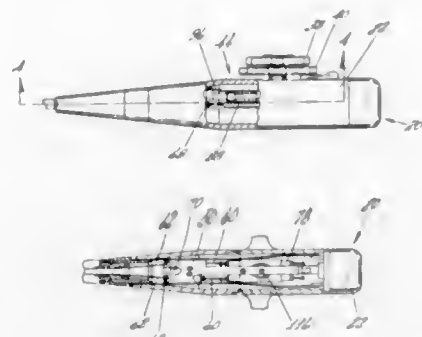
Filed Oct. 27, 1994, Ser. No. 330,388

Int. Cl.⁶ A61B 1/005; 1/01

U.S. Cl. 600—146

13 Claims

1. A cable compensating mechanism comprising: an endoscope having a generally elongated flexible shaft extending between a control head at a proximal end thereof and an objective assembly



at the distal end thereof, wherein said cable compensating mechanism further comprises:

- an operative cable and sheath assembly extending between the control head located at said proximal end and the objective assembly located at said distal end, said operating cable being operatively connected to the objective assembly and to said control head for moving the operative cable within the sheath and deflecting the objective assembly in a selected direction;
- a control mechanism operatively connected to said operating cable and sheath assembly for controlling the magnitude of tensile force developed in said operating cable in the event that deflection of the objective assembly is restrained, said control mechanism having a guide block and carriage member moveable therein wherein said moveable carriage member is operatively connected to said operating cable and sheath assembly for actuating movement of said operating cable within said sheath, said guide block including a first resilient member positioned between said moveable carriage member and said guide block wherein said first resilient member is capable of being compressed therebetween when the tensile force on the operating cable reaches a first predetermined value, said guide member including a second resilient member operatively connected between said operating cable and sheath assembly and said moveable carriage member adjacent said first resilient member to restrain movement of the carriage member when the tensile force is below said predetermined value and when said tensile force reaches at least said predetermined value, said second resilient member is responsive to absorb the tensile force in excess of said predetermined value and release the carriage member which moves the operating cable and sheath assembly within said guide block to prevent the tensile force from being applied to and impairing said operating cable and sheath assembly.

5,512,036

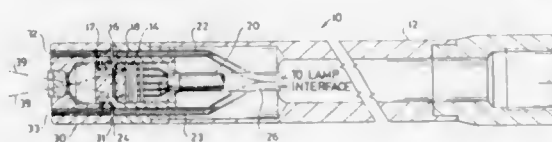
DENTAL IMAGING SYSTEM

Richard A. Tamburrino, Auburn, and Roger W. Leseberg, Liverpool, both of N.Y., assignors to Welch Allyn, Inc., Skaneateles Falls, N.Y.

Filed Mar. 15, 1994, Ser. No. 213,677
Int. Cl.⁶ A61B 1/05; 1/06

U.S. Cl. 600—172

10 Claims



1. An imaging system of the type having a removable optical assembly, comprising: an elongated housing for insertion into a narrow orifice,

said housing having a longitudinal axis, a distal face of said housing having an inner area centered on said longitudinal axis;

an imager disposed in said housing;

- a connector disposed on said inner area and having a radially outermost surface;
- a removable optical assembly adapted to mate with said connector for projecting an image of a target onto said imager;
- at least one means for illuminating said target, each said means for illuminating being farther from said axis than said outermost surface of said connector.

5,512,037

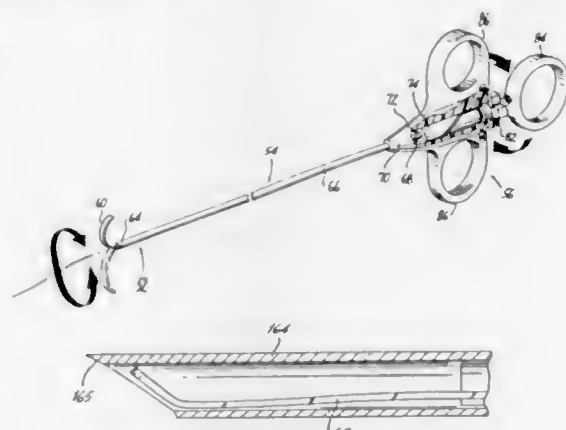
PERCUTANEOUS SURGICAL RETRACTOR

Brian G. Russell, Wilsonville, Oreg., and H. Jonathan Tvey, Milford, Conn., assignors to United States Surgical Corporation, Norwalk, Conn.

Filed May 12, 1994, Ser. No. 241,927
Int. Cl.⁶ A61B 17/02

U.S. Cl. 600—206

18 Claims



1. A percutaneous surgical retractor comprising:
- an outer sleeve defining a longitudinal axis and having a proximal end and a distal end, said distal end having an open beveled configuration defining a leading edge forming an angle with respect to the longitudinal axis of the outer sleeve to facilitate percutaneous insertion of the retractor;
 - a blade slidable within said outer sleeve between at least a deployed position extending beyond the distal end of the outer sleeve and a retracted position disposed within the outer sleeve, the blade having a memory curved distal end which, in the retracted position, assumes an orientation which approximates the angle of the leading edge of the open beveled end of the outer sleeve such that the distal end of said blade substantially closes said open beveled distal end of the outer sleeve when said blade is in said retracted position to inhibit coring of tissue by said outer sleeve during percutaneous insertion of said retractor; and
 - means for deploying said blade relative to said outer sleeve.

5,512,038

SPINAL RETRACTOR APPARATUS HAVING A CURVED BLADE

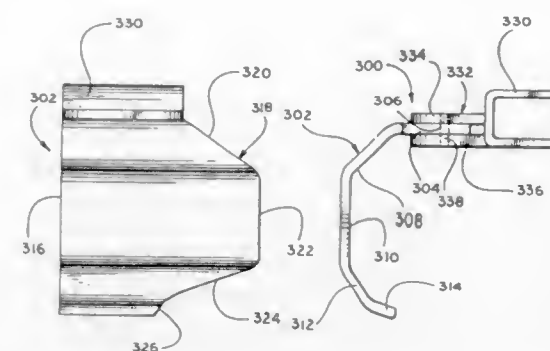
Darrell D. O'Neal, 500 Northside Cir., Suite R-3, Atlanta, Ga. 30309, and Robert J. Schiess, III, 5580 Benton Woods Dr., Atlanta, Ga. 30342

Continuation-in-part of Ser. No. 9,100, Jun. 4, 1993, Pat. No. Des. 353,887. This application Nov. 15, 1993, Ser. No. 152,588
Int. Cl.⁶ A61B 17/02

U.S. Cl. 600—210

1 Claim

1. A pivotable surgical retractor blade assembly, comprising:
- an enclosed bushing having a bore defined therein;
 - upper and lower plates extending transversely from said bushing;
 - a pin extending between said upper and lower plates;
 - a retractor blade comprising



- a first section having distal and proximal portions and containing an aperture therein and pivotably mounted between said upper and lower plates such that said blade can pivot only in a horizontal plane,
 - a second section having distal and proximal portions and extending from the distal portion of said first section such that said second section is angled downward from said first section at an angle of less than 90° from the horizontal,
 - a third section having distal and proximal portions and extending from the distal portion of said second section such that said third section is angled downward from said second section at an angle of less than 90° from the horizontal,
 - a fourth section having distal and proximal portions and extending from the distal portion of said third section such that said fourth section is angled downward from said third section at an angle of less than 90° from the horizontal,
 - a fifth section having distal and proximal portions and extending from the distal portion of said fourth section such that said fifth section is angled downward from said fourth section at an angle of less than 90° from the horizontal,
- each of said first, second, third, fourth and fifth sections having a left and a right edge
- whereby said left edges are co-linear and whereby said first section right edge is substantially parallel with said first section left edge and has a first predetermined width, said second section right edge is angled outward to said third section right edge which is substantially parallel with said third section left edge and has a second predetermined width larger than said first predetermined width, and said fourth section right edge is angled inward from said third section right edge to a third predetermined width smaller than said second predetermined width.

5,512,039

MULTI-ANGLE KNEE SUPPORT

Patrick J. White, 6912 Ammons St., Arvada, Colo. 80004

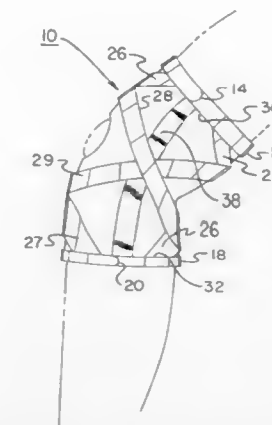
Filed Jan. 5, 1995, Ser. No. 368,973

Int. Cl.⁶ A61F 5/00

U.S. Cl. 602—26

3 Claims

1. A new and improved multi-angle knee support comprising, in combination:
- an upper adjustment sleeve fabricated of a flexible elastic plastic material, the upper sleeve comprising a posterior side and an anterior side and being fabricated in a loop configuration with free ends, pile fasteners secured to the free ends of the upper sleeve;
 - a lower adjustment sleeve fabricated of a flexible elastic plastic material, the lower sleeve comprising a posterior side and an anterior side and being fabricated in a loop configuration with free ends, pile fasteners secured to the free ends of the lower sleeve;
 - two pair of primary ligament imitation strips, each such strip having an upper end and a lower end, each strip being fabricated of a plastic elastic material, each of the strips including therein a plurality of strands of flexible metallic material, to render the strips of limited elasticity, the strips including a first pair of strips having a first end coupled to the



- anterior side of the upper sleeve and a second end coupled to the posterior side of the lower sleeve and a second pair of strips having a first end coupled to the posterior side of the upper sleeve and a second end coupled to the anterior side of the lower sleeve, wherein the strips are adapted to be wrapped between about 270 and 360 degrees in opposite directions between the upper and lower sleeves to thereby encompass the joint of a wearer; and
- a pair of secondary vertical ligament imitation strips, each such strip having an upper end and a lower end, each strip being fabricated of a plastic elastic material, each of such strips including therein a plurality of strands of flexible metallic material, to render the strips of limited elasticity, such strips being coupled between the upper and lower sleeves spaced from the points of coupling of the primary ligament imitation strips.

5,512,040

SPINAL TRACTION DEVICE

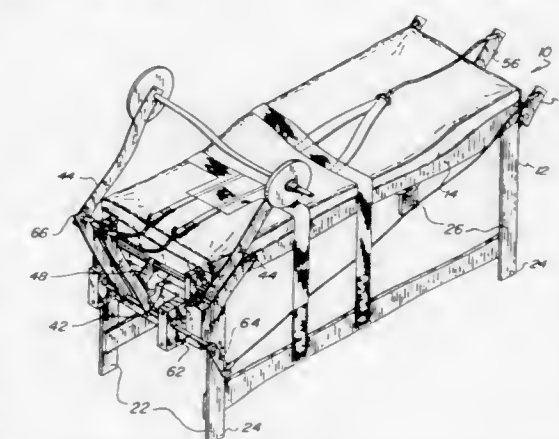
Paul K. Mathews, 3730 Price Rd. NE, Newark, Ohio 43055

Filed Sep. 1, 1994, Ser. No. 299,265

Int. Cl.⁶ A61H 1/02

U.S. Cl. 602—36

5 Claims



1. A spinal traction device for allowing a user to stretch his spine using controlled tension for alleviating pain in pinched spinal nerves comprising, in combination:
- a rigid bench adapted for supporting a user laying thereupon, the bench having a rectangular planar horizontal top with a periphery formed of a short front edge, a short rear edge, and two opposed long side edges, a front pair of legs with each leg coupled to a separate corner of the top near the front edge and extended downwards therefrom to terminate at a free end, a rear pair of legs with each leg coupled to a separate corner of the top near the rear edge and extended downwards therefrom to terminate at a free end, two opposed elongated horizontally

aligned cross legs each coupled between a separate front leg and a separate rear leg at a location offset upwards from the free ends thereof, and a rectangular mattress pad secured upon the top;

a first tensioning arm having a horizontal elongated rigid first shaft pivotally coupled to the bench between the front pair of legs, a pair of rigid exterior tongues with each exterior tongue having a base end coupled to a separate end of the first shaft and a tip end extended angularly upwards toward the bench to a location above the mattress pad, a horizontal elongated rigid weight bar coupled to the tip ends of the exterior tongues and extended outwards therefrom, and a rigid interior tongue having a base end coupled to the midpoint of the first shaft and a tip end extended angularly downwards away from the bench;

a second tensioning arm having a horizontal elongated rigid second shaft pivotally coupled to the bench between the rear pair of legs, a pair of rigid exterior tongues each having a base end coupled to a separate end of the second shaft and a tip end extended angularly upwards away from the bench, a rigid interior upper tongue having a base end coupled to the midpoint of the second shaft and a tip end extended angularly upwards away from the bench, and a rigid interior lower tongue having a base end coupled to the midpoint of the second shaft and a tip end extended angularly downwards below the bench;

a third tensioning arm having a horizontal elongated rigid third shaft pivotally coupled to the bench between the front pair of legs at a location offset below the first tensioning arm, a pair of rigid exterior tongues each having a base end coupled to a separate end of the third shaft and a tip end extended angularly downwards towards the bench, and a pair of interior tongues each having a base end coupled to the third shaft at a location such that they are positioned on either side of the interior tongue of the first tensioning arm and each interior tongue having a tip end extended upwards from the base end away from the bench;

a first rod, a second rod, and a third rod with the first rod interconnected between the tip end of the interior tongue of the first tensioning arm and the tip end of the interior lower tongue of the second tensioning arm, the second rod interconnected between the tip end of an exterior tongue of the second tensioning arm and the tip end of an exterior tongue of the third tensioning arm, and the third rod interconnected between the tip end of the other exterior tongue of the second tensioning arm and the tip end of the other exterior tongue of the third tensioning arm;

a plurality of rigid annular weights, having means for each weight slidably positioning upon a separate end of the weight bar of the first tensioning arm;

a pair of rigid collars, each collar having means for sliding about and securing to a separate end of the weight bar of the first tensioning arm for holding weights securely thereupon;

a flexible upper belt having a central harness portion secured to the tip ends of the interior tongues of the first tensioning arm with a pair of chains and opposed straps extended outwards therefrom and securable with a hook and loop fastener in a closed loop configuration about a torso of a user laying upon the bench; and

a flexible lower belt having a central harness portion secured to the tip end of the interior upper tongue of the second tensioning arm with a chain and opposed straps extended therefrom and securable with a hook and loop fastener in a closed loop configuration about a waist of a user laying upon the bench;

whereby when a user lays upon the bench and secures the upper belt about his torso and the lower belt about his waist and then pulls downward on the weight bar of the first tensioning arm, the second tensioning arm and the third tensioning arm are actuated to thereby pull the upper belt towards the front edge of the bench and lower belt towards the rear edge of the bench, thus creating controlled tension for extending the user's spine.

5,512,041 WOUND DRESSING FOR PROMOTING MOIST WOUND HEALING

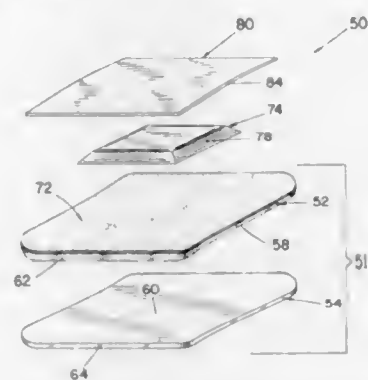
Larry Bogart, Penn Valley, Pa., assignor to Scott Health Care, Philadelphia, Pa.

Filed Oct. 7, 1994, Ser. No. 319,785

Int. Cl.⁶ A61F 13/00

U.S. Cl. 602—58

17 Claims



1. A wound dressing for promoting moist wound healing comprising:

a backing sheet formed of multiple, permanently attached layers and containing on one side a medical grade adhesive, one of said layers comprising a stretchable strip of vapor permeable, non-woven fabric, and another of said layers comprising a semi-occlusive film, said strip and said film having coextensive outer perimeters, said film disposed externally of said strip and defining an external face of the dressing, said external face exhibiting a coefficient of static friction less than 1.0 and a coefficient of kinetic friction less than 0.7; and

an absorbent pad permanently mounted on said backing sheet by being affixed to said adhesive, with an outer perimeter of said pad being spaced inwardly from the entire outer perimeter of said backing sheet and from an outer perimeter of said adhesive which forms a skin-attachment portion of the dressing.

5,512,042 VENOUS BLOOD RESERVOIR WITH INCREASED LEVEL AND VOLUME SENSITIVITY

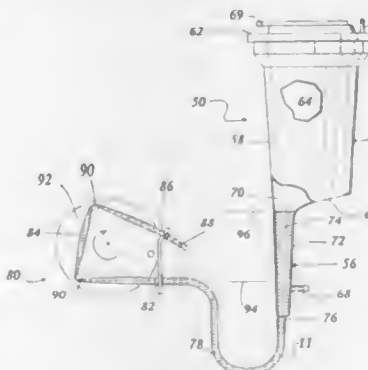
Jean P. Montoya, and Scott L. Merz, both of Ann Arbor, Mich., assignors to Michigan Critical Care Consultants, Inc., Ann Arbor, Mich.

Filed May 20, 1994, Ser. No. 246,999

Int. Cl.⁶ A61M 1/00; 1/10

U.S. Cl. 604—4

16 Claims



1. An apparatus for preventing the emptying of blood from a blood reservoir, said apparatus comprising:
a blood pump having a predetermined stroke volume;
a housing adapted to receive blood, said housing including side walls defining a primary reservoir which smoothly transitions

into an outlet reservoir, said housing further including portions defining an inlet port permitting the inflow of blood into said reservoir and an outlet port permitting the outflow of blood out of said reservoir, said outlet port defined in said outlet reservoir;

said primary reservoir further defining an upper cavity adapted to receive and contain a first volume of blood therein, said upper cavity having a first average cross sectional flow area; and

said outlet reservoir exhibiting an increased sensitivity over said primary reservoir to blood level changes therein, said outlet reservoir defining a lower cavity having an upper level and a lower level adapted to receive and contain a second volume of blood therebetween, said second volume of blood being less than said first volume of blood, said lower cavity having a second average cross sectional flow area which is less than said first average cross sectional flow area, said second volume of blood constituting a working volume usable by the blood pump when said primary reservoir is empty and being equal to at least one stroke volume of the blood pump, said lower level defining a minimum level of blood for use with the blood pump and said outlet reservoir including prevention means for preventing the outflow of blood from said reservoir when the level of blood in said outlet reservoir is at or below said safety level.

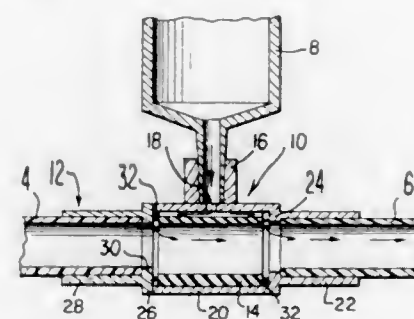
5,512,043 NEEDLELESS INJECTION SITE

Wesley H. Verkaart, Duxbury, Mass., assignor to Level 1 Technologies, Rockland, Mass.

Filed Mar. 3, 1994, Ser. No. 205,259

Int. Cl.⁶ A61M 37/00

U.S. Cl. 604—83



1. Apparatus for mixing a first fluid with a second fluid comprising:

a housing having a first inlet for receiving said first fluid, a second inlet for receiving said second fluid, and an outlet for dispensing said first and second fluids,

sealing means for sealing said second inlet when the fluid pressure of said first fluid is equal to or exceeds the fluid pressure of said second fluid, and

means for maintaining the axial position of said sealing means within said housing,

wherein said sealing means comprising an elastic element capable of deforming radially inwardly along its entire length and is separate from and not attached to said housing, whereby said second fluid can pass over opposed ends of said sealing means during mixing.

5,512,044 EMBOLIC CUTTING CATHETER

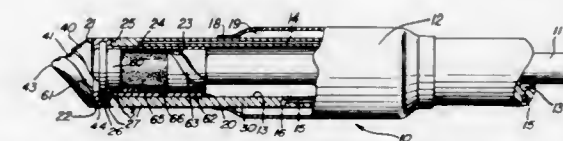
Edward Y. Duer, No. 31-2 Megamiyama-cho, Koyoen, Nishinomiya 662, Japan

Filed Oct. 11, 1994, Ser. No. 320,206

Int. Cl.⁶ A61B 17/22

U.S. Cl. 604—22

12 Claims



1. An embolic cutting catheter for use in the removal of arterial plaque, said catheter comprising:

a catheter body defining an interior passage and a forward end; and a rotatable cutter head assembly having:

a generally conical member defining a base, a rounded apex and a first spiral groove therebetween,

a cylindrical member secured to said base and defining a second spiral groove therein,

an abrasive cylinder secured to said cylindrical member having an abrasive outer surface,

a cylindrical guide secured to said abrasive cylinder and defining a third spiral groove therein; and

a guide wire extending through said interior passage of said catheter body and having a forward end secured to said cylindrical guide,

said cylindrical member, said abrasive cylinder, said cylindrical guide and said guide wire being rotatably supported within said catheter body interior passage such that said generally conical member is supported at said base proximate said forward end of said catheter body.

5,512,045 SURGICAL DECOMPRESSION AND IRRIGATION APPARATUS AND METHOD

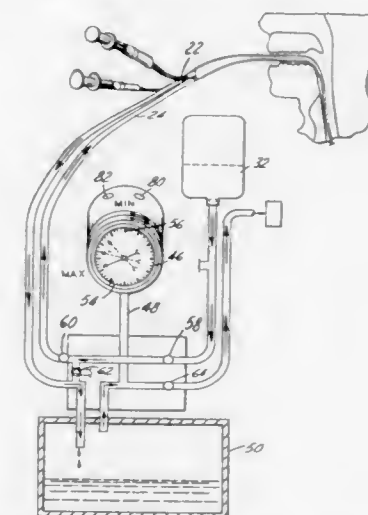
Teimuraz P. Guruchmelidze, 138 S. Johnson, Pontiac, Mich. 48341

Filed Dec. 22, 1993, Ser. No. 173,695

Int. Cl.⁶ A61M 1/00

U.S. Cl. 604—31

29 Claims



1. An apparatus for surgical decompression and irrigation of a patient comprising:

a tube having a distal end which is inserted into a body cavity, the tube having a proximal end which is located outside the patient, the tube having a wall which surrounds a plurality of longitudinally extending lumens;

a suction lumen connected to a suction means located exteriorly in relation to the patient;

one or more pores extending laterally through the wall of the tube capable of delivering irrigation fluid, for syphoning the contents of the patient's cavity;

an irrigation lumen connected to irrigation means located exteriorly in relation to the patient;

one or more openings extending from the suction lumen to the irrigation lumen for ducting irrigation fluid or the contents of the cavity to be drained, and for avoiding plugging of the apparatus by particulate matter or by a cavity lining when the cavity is being aspirated; and

a manometric device in communication with the suction means, the manometric device having a pressure indicator and first and second pre-set stops for maintaining intermittent vacuum build-up and relief, the manometric device being in fluid communication with a suction system and a container, the indicator moving in response to vacuum sensed within an inflow channel which is in fluid communication with the bowel or other organ.

5,512,046

DOSING DEVICE FOR THE VOLUMETRIC DOSING OF A LIQUID ADDITIVE

Thomas Pusinelli, Altenstadt, and Dieter Mushoff, Lich, both of Germany, assignors to Fresenius AG, Bad Homburg, Germany

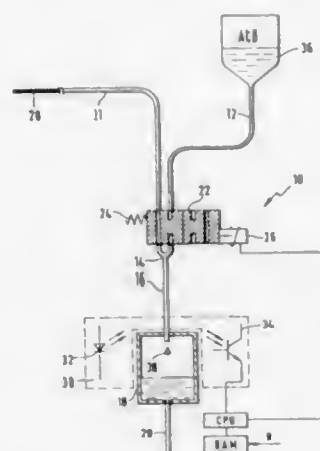
Filed Nov. 17, 1994, Ser. No. 343,861

Claims priority, application Germany, Nov. 23, 1993, 43 39 811.1

Int. Cl.⁶ A61M 31/00

U.S. Cl. 604—465

11 Claims

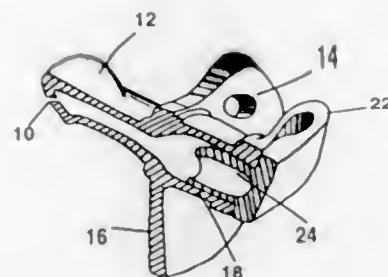


1. A dosing device for volumetric dosing of a liquid additive which is added in a certain volume ratio to a fluid flowing in two hose lines comprising a first hose line and a second hose line which feeds directly or indirectly into the first hose line, said dosing device comprising two electrically triggerable valve means which are each inserted into one of two hose lines and coupled so that only one of the two valve means is switched in a switching cycle to an open position; a counting and control unit (CPU, RAM); a drip tube which extends downstream from the drip tube; a drip chamber connecting downstream from the drip tube; and a light barrier, the direction of action of which is arranged transversely to a fall path of drops of additive, whereby drops falling in the drip chamber are counted and the valve means is alternately triggered by the counting and control unit after a certain number of drops have been counted.

5,512,047
MEDICINE DISPENSING PACIFIER
Michael Dvorak, 8485 W. 91st. Ave., Westminster, Colo. 80021
Filed Dec. 28, 1994, Ser. No. 365,361
Int. Cl.⁶ A61J 7/00; 17/00

U.S. Cl. 604—77

4 Claims



1. A pacifier for the administration of liquid medication, said pacifier comprising:

a pierced, hollow nipple having a nipple reservoir bounded in part by pierced distal and open proximal extremities,

a reservoir, fixedly attached to said open proximal extremity of said nipple, said reservoir having an outer wall member defining a reservoir chamber, a first end opening in to said nipple chamber, and a closeable second end opening

a rigid planar mouth guard having a hollow interior, said mouth guard fixedly attached to said outer wall member defining a reservoir chamber disposed orthogonally to said nipple and said closeable second end opening,

closing means operable to seal said closeable second end opening of said reservoir, said closing means comprise a plug having an axial inner end, an axial outer end and a side wall sized to be telescoped in to said closeable second end opening of said reservoir in a fluid tight relationship,

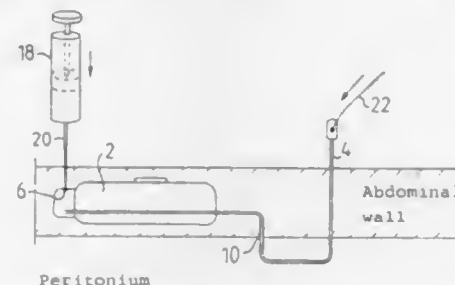
flexible retaining means to fixedly attach said closing means to said outer wall member defining a reservoir chamber, said flexible retaining means fixedly attached to said axial outer end of said plug,

whereby medicine can be dispensed using a pacifier with a closeable end opening sealed by a plug which can be fixedly attached to the pacifier body to eliminate loss and potential choking hazard.

5,512,048
METHOD FOR CLEANING THE CATHETER OF AN IMPLANTED MEDICATION INFUSION SYSTEM
Bruno Slettenmark, Jaerfaella, Sweden, assignor to Siemens Elema AB, Solna, Sweden
Filed Mar. 6, 1995, Ser. No. 398,806
Claims priority, application Sweden, Mar. 10, 1994, 9400823
Int. Cl.⁶ A61M 5/142

U.S. Cl. 604—93

24 Claims



1. A method for cleaning the catheter of an implanted medication infusion system having a medication container and a pump for pumping medication from the medication container into a patient via said catheter, and a flushing port disposed downstream of said pump and upstream of said catheter through which a cleaning fluid

can be flushed through said flushing port into said catheter, said catheter having an orifice and terminating in a catheter tip, said method comprising the steps of:

placing said orifice of said catheter in fluid communication with an exterior of said patient; and

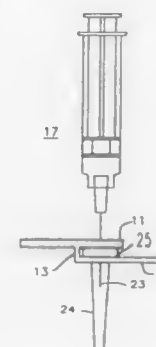
flushing cleaning fluid through said flushing port and through said catheter while said orifice is in fluid communication with the exterior of the patient and discharging said cleaning fluid from said catheter tip to the exterior of said patient.

5,512,049

SYRINGE NEEDLE COVER HOLDER/GRASPER
Daryl C. Fallas, 77 Parker Ave., Deal, N.J. 07723
Continuation of Ser. No. 832,417, Feb. 7, 1992, Pat. No. 5,292,313. This application Jan. 14, 1994, Ser. No. 181,454
Int. Cl.⁶ A61M 5/32

U.S. Cl. 604—192

9 Claims



1. A device for removing the cover from and replacing the cover on a syringe and needle assembly by engaging a lip on the cover, comprising:

a) a holder;

b) a first member connected to said holder;

c) said first member having a pair of spaced-apart first arms connected to said holder and a pair of spaced-apart extension arms connected to said first arms, wherein said spaced-apart first arms and said spaced-apart extension arms cooperate to form a guide for guiding the lateral movement of the cover into the space between said first arms;

d) a second member connected to said holder and spaced apart from said first member, said second member having a pair of spaced-apart second arms, wherein said first arms and said second arms are spaced apart to form a receiving area therebetween for receiving and gripping the lip of the cover as the lip is moved laterally along said guide; and

e) said first arms including first surface means for engaging one side of the lip and said second arms including second surface means parallel to said first surface means for engaging another side of the lip when the lip is moved into said receiving area, so that the lip is gripped in said receiving area between said first and second arms and the syringe and needle assembly may be moved relative to said holder, with the cover being held by said holder, so that the cover may be removed from or replaced on the syringe and needle assembly.

5,512,050

NEEDLE ASSEMBLY WITH COLLAPSIBLE AND RETRACTABLE SHEATH
Richard J. Caizza, Barry Lakes, and Jon S. Bell, Midland Park, both of N.J., assignors to Becton, Dickinson and Company, Franklin Lakes, N.J.

Filed Sep. 20, 1994, Ser. No. 309,278

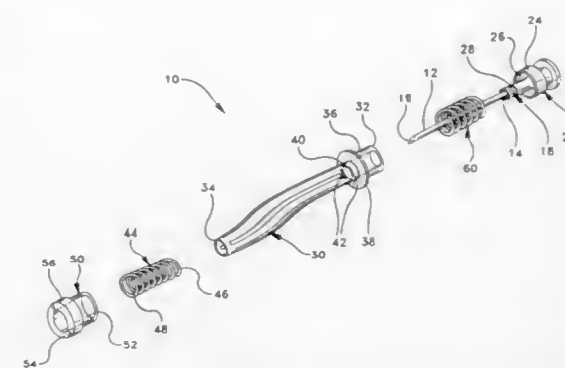
Int. Cl.⁶ A61M 5/32

U.S. Cl. 604—263

12 Claims

1. A needle assembly comprising:

a needle cannula having a proximal end and a distal end; and



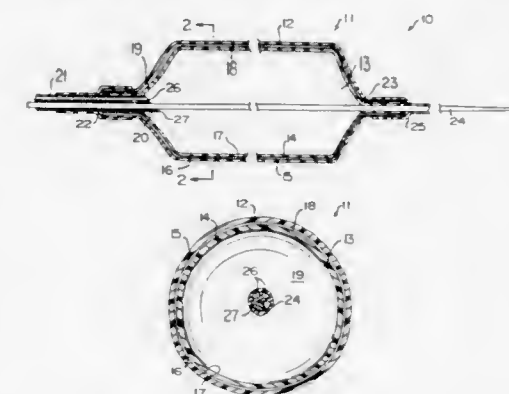
a sheath having opposed proximal and distal ends and disposed in surrounding relationship to said needle cannula, said sheath being selectively movable between a distal position where said distal end of said needle cannula is at least partially surrounded by said sheath and a proximal position where said distal end of said needle cannula is exposed, whereby said distal position of said sheath facilitates a user's observation of said distal end of said needle cannula prior to penetration in an injection site or withdrawal site and whereby said penetration urges said sheath into a collapsed condition; and a safety spring surrounding portions of said sheath and being selectively expandable and contractible in an axial direction, wherein portions of said safety spring are engageable with portions of said sheath such that said expansion of said safety spring urges said sheath toward an extended covering condition respective of the distal end of the needle cannula.

5,512,051

SLIP-LAYERED CATHETER BALLOON
James C. Wang, Norton, and Yem Chin, Burlington, both of Mass., assignors to Boston Scientific Corporation, Natick, Mass.
Continuation of Ser. No. 174,680, Dec. 28, 1993, abandoned, which is a continuation-in-part of Ser. No. 17,763, Feb. 16, 1993, abandoned, and Ser. No. 82,594, Jun. 25, 1993, abandoned. This application Jun. 21, 1995, Ser. No. 493,088
Int. Cl.⁶ A61M 29/00

U.S. Cl. 604—96

15 Claims



11. A catheter for insertion into a bodily conduit, said catheter comprising:

a shaft comprising a lumen for delivery of fluid inflation media,

a soft, pliable, inflatable and refoldable balloon having a wall concentric with said shaft and defining a chamber, said chamber being in fluid communication with said lumen for inflation of said balloon, wherein said wall comprises at least two impermeate coextensive non-adhering layers of a non-compliant polymeric medical balloon material, said layers having therebetween a low-friction substance imparting a low

coefficient of friction between facing surfaces of said layers, such that said layers become slip-layers which readily slide with respect to one another as said balloon is inflated and deflated.

5,512,052

CATHETERIZATION SET

Franz Jesch, Krallring, Germany, assignor to B. Braun Mel-sungen AG, Melsungen, Germany
PCT No. PCT/EP93/02813, § 371 Date Jul. 1, 1994, § 102(e)
Date Jul. 1, 1994, PCT Pub. No. WO94/12233, PCT Pub.
Date Jun. 9, 1994

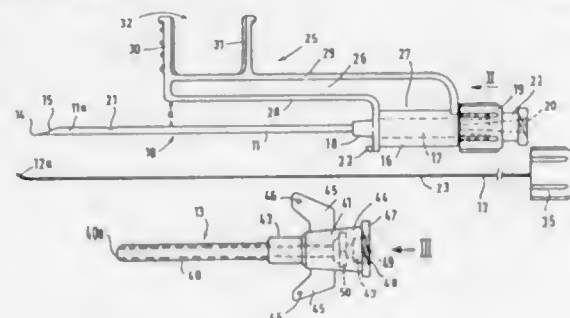
PCT Filed Oct. 13, 1993, Ser. No. 256,433

Claims priority, application Germany, Nov. 24, 1992,
9215927 U

Int. Cl.⁶ A61M 25/06; A61B 17/34

U.S. Cl. 604-158

3 Claims



1. A catheterization set for placing a catheter in a blood vessel, comprising:

- a puncture needle comprising a lumen and a needle hub carrying a grip device,
- a catheter comprising a capillary tube and a catheter hub and being configured to surround the puncture needle,
- an arm extending in a direction substantially parallel to the puncture needle from the needle hub to a location beyond the catheter hub,
- grip means arranged on the arm at a location beyond the catheter hub and in spaced relationship with the puncture needle, whereby the grip means overlays the capillary tube.

5,512,053

SURGICAL SLEEVE AND TROCAR

Ronald W. Pearson, Denton; Steven S. Golden, Richardson; Kurt B. Spoonmore, Mansfield; Donald E. Exline, Carroll-ton, and Carroll Hewitt, Dallas, all of Tex., assignors to Dexide, Inc., Fort Worth, Tex.

Filed Dec. 16, 1993, Ser. No. 168,818

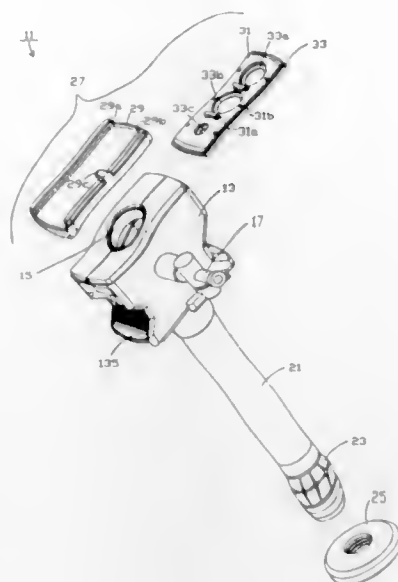
Int. Cl.⁶ A61M 5/00

U.S. Cl. 604-167

10 Claims

1. A surgical sleeve for the introduction of surgical instruments into a body cavity, the surgical sleeve comprising:

- a housing having an opening through which surgical instruments are introduced into the sleeve;
- a sleeve portion extending from the housing; and
- a reducer assembly including:
 - a rigid slider plate slidably and removeably coupled to the housing;
 - a resilient, laminar seal layer generally coextensive with the slider plate and disposed between the slider plate and the housing and sealingly engaging a portion of the housing; and
 - a plurality of apertures formed in the slider plate and the seal layer, the apertures having varying diameters and defining seals that are selectively movable over the opening in the housing to seal against exteriors of instruments disposed in the sleeve.



5,512,054

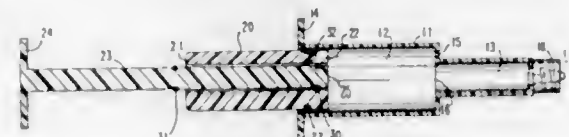
DUAL ACTION SYRINGE

Randy L. Morningstar, Brooklyn Park, Minn., assignor to American Medical Systems, Inc., Minnetonka, Minn.
Filed May 16, 1995, Ser. No. 442,070

Int. Cl.⁶ A61M 5/00

U.S. Cl. 604-191

6 Claims



1. A dual action syringe which comprises a hollow body having a rear portion and an integrally connected front portion, said portions defining a rear chamber having a circular cross-section, a proximal end and a distal end and a front chamber having a circular cross-section, a proximal end and a distal end, respectively, wherein the rear chamber has a greater internal cross-sectional area than the front chamber, a double action plunger mechanism comprising a primary plunger having a proximal end, a distal end, a circumferential fluid-tight seal adjacent the distal end and a circular cross-section which matches the internal cross-section of the rear chamber and a secondary plunger telescopically mounted within the primary plunger and having a proximal end, a distal end, a first circumferential fluid-tight seal adjacent the distal end, a second circumferential fluid-tight seal located proximal to the first seal, the distance between the first and second seals being approximately equal to the length of the primary plunger and a circular cross-section which matches the internal cross-section of the front chamber, the proximal end of the secondary plunger extending beyond the proximal end of the primary plunger and terminating in a handle which enables the plunger mechanism to be slidably moved relative to the hollow body, (1) forwardly from a fully retracted position wherein the distal end of the secondary plunger is flush with the distal end of the primary plunger and the two plunger distal ends are adjacent the proximal end of the rear chamber, through a first discharge position where the two plunger distal ends are level with the distal end of the rear chamber, to a fully extended second discharge position where the secondary plunger is slidably extended forward from the distal end of the primary plunger until the distal end of the secondary plunger is level with the distal end of the front chamber, and (2) backwardly from said fully extended position to said fully retracted position.

5,512,055
ANTI-INFECTIVE AND ANTI-INFLAMMATORY
RELEASING SYSTEMS FOR MEDICAL DEVICES

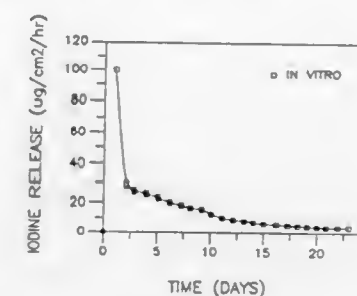
Abraham J. Domb; Alain Shikani; Andrew S. T. Haffer, and Manoj Maniar, all of Baltimore, Md., assignors to Leonard Bloom, Towson, Md.

Continuation of Ser. No. 998,773, Dec. 22, 1992, abandoned, which is a continuation of Ser. No. 661,699, Feb. 27, 1991, abandoned. This application Sep. 30, 1994, Ser. No. 316,067

Int. Cl.⁶ A61M 5/32

U.S. Cl. 604-265

9 Claims



1. A medical device for implantation into tissue comprising, in combination, the device having exterior surfaces, a biocompatible, nonbioerodible polymer dissolved in a solvent to form a solution, the solution being disposed on the exterior surface of the device and the solvent removed to form a uniform coating on the medical device, the polymer coating having a biologically active agent sorbed therein to be released over a period of at least twenty-four hours by diffusion when implanted in the tissue, wherein said biologically active agent is iodine.

5,512,056

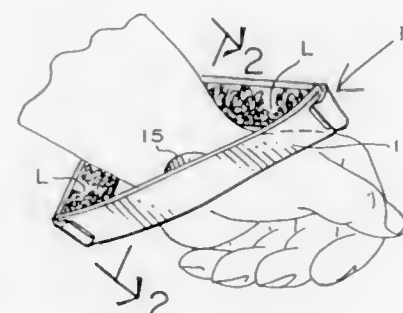
COMPRESS AND METHOD

Robert R. Stevens, 13500 SW. 63rd Ave., Miami, Fla. 33156, and Rene Guerra, 2732 W. 54th St., Hialeah, Fla. 33016
Filed Sep. 13, 1994, Ser. No. 305,133

Int. Cl.⁶ A61B 17/12

U.S. Cl. 606-203

8 Claims



1. A compress comprising, in combination a single spreader beam having two ends, said single beam being formed from flexible material a single pressure pad, having a longitudinal dimension measured along the length of the beam, secured at an intermediate point between the ends of the single spreader beam and extending downwardly, said beam ends being positioned substantially twice the longitudinal dimension of the pressure pad from the pressured pad.

and a strap secured to both ends of the subject spreader beam which adjustably surrounds a body portion of a patient and causes the spreader beam to hold the pressure pad in compressed relationship to a puncture of the skin while at the same time limiting the pressure of the strap to less than total encirclement of the body portion.

5,512,057

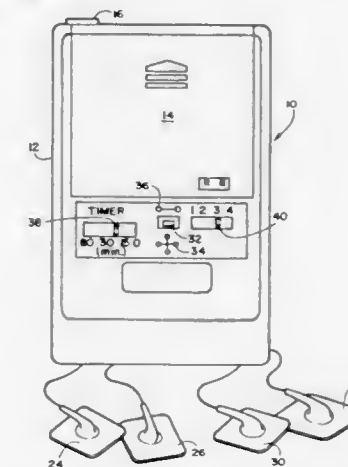
INTERFERENTIAL STIMULATOR FOR APPLYING
LOCALIZED STIMULATION

Hans W. Reiss, Encinitas, and Bernard Lafreniere, Carlsbad, both of Calif., assignors to Medserv Group, Inc., Vista, Calif.
Filed Nov. 14, 1994, Ser. No. 337,773

Int. Cl.⁶ A61N 1/36; 1/00

U.S. Cl. 607-67

4 Claims



1. In an interferential stimulator for delivering localized electrical stimulation to a living body which comprises fixed frequency signal generation means for generating a fixed frequency signal of up to about 10,000 Hz; at least one first electrode means for receiving said fixed frequency signal and imposing said fixed frequency signal on a skin surface of a living body; interference frequency signal generation means for generating a selected interference frequency signal up to about 1000 Hz different from said fixed frequency; at least one second electrode means for receiving said interference frequency signal and imposing said interference frequency signal on said skin surface at a location spaced a selected distance from said first electrode means to generate a selected interference pulse rate at a location below said skin surface; the improvement comprising:

- microcontroller means for generating all circuit signals and timing;
- means for selecting between a first output current range of from about 7 to 70 milliamps and a second output current-range of from about 7 to 70 microamps;
- mode control means for controlling an operating mode of the stimulator including means for selectively providing any one of the following operating modes:
 - (a) continuous application of a selected interference beat frequency of up to about 200 beats/sec;
 - (b) operating at a continuously, substantially uniformly, varying beat frequency from one end to the other end of an entire range of frequency differences over a period of from about 1 to 20 seconds and repeating;
 - (c) substantially uniformly varying the beat frequency over a ramp range from about 50 to 200 beats/sec over a period of from about 1 to 20 seconds and repeating;
 - (d) substantially uniformly varying the beat frequency over a range from about 1 to 100 beats/sec over a period of from about 1 to 20 seconds and repeating.

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CHEMICAL

5,512,058

PROCESS FOR THE TREATMENT OF SKINS, HIDES OR SHEET MATERIALS CONTAINING COLLAGEN BY A DENSE, PRESSURIZED FLUID

Gérard Gavend; Bernard Vulliermet, both of Lyon, France; Christian Perre, and Maurice Carles, both of Pierrelatte, all of, France, assignors to Commissariat l'Energie Atomique, Paris, France, and Centre Technique Cuir-Chaussure-Marroquinerie, Lyon, France

PCT No. PCT/FR93/00960, § 371 Date Jun. 2, 1994, § 102(e) Date Jun. 2, 1994, PCT Pub. No. WO94/08054, PCT Pub. Date Apr. 14, 1994

PCT Filed Oct. 1, 1993, Ser. No. 244,206

Claims priority, application France, Oct. 2, 1992, 92 11703

Int. Cl.⁶ C14C 1/08; 03/00; 9/00

U.S. Cl. 8—94.18

26 Claims

I. Process for the degreasing of skins with a view to their transformation into leather, characterized in that it comprises the following stages:

- contacting the skins with a dense fluid able to dissolve grease, under a pressure P_i and a temperature T_i , the pressure P_i being at least equal to the critical pressure P_c of the fluid and the temperature T_i being such that the fluid has an adequate density for ensuring the partial solubilization of the grease and
- returning the skins to atmospheric pressure in order to eliminate the dense fluid in gaseous form.

5,512,059

DYED UNION KNIT FABRIC AND METHOD FOR ITS MANUFACTURE

Yoshinori Ido; Shuji Chiba; Yoshikazu Arimatsu; Hajime Suzuki, all of Otsu, and Takehiko Shimizu, Osaka, all of, Japan, assignors to Toyo Boseki Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 990,687, Dec. 15, 1992, abandoned, which is a division of Ser. No. 801,064, Dec. 3, 1991, abandoned. This application Oct. 14, 1994, Ser. No. 324,601

Claims priority, application Japan, Dec. 5, 1990, 2-406307

Int. Cl.⁶ D06M 11/00; 11/08

U.S. Cl. 8—115.7

7 Claims

1. A method for manufacturing a dyed union knit fabric which comprises contacting a union knit fabric with a dye bath, wherein the pH of the dye bath is maintained at not less than 4.5 throughout the dyeing process from the beginning to the end thereof when dyeing the union knit fabric, the union knit fabric comprised of a plurality of yarns, at least one of the yarns comprising at least a polyurethane elastic fiber and an undyed second fiber selected from the group consisting of a polyamide fiber, a cation dyeable polyester fiber, and combinations thereof, the polyurethane elastic fiber containing one or more chlorine-induced degradation inhibitors of the group consisting of magnesium oxide, zinc oxide, aluminum oxide, magnesium hydroxide, zinc hydroxide, aluminum hydroxide and hydrotalcite compounds in a proportion of 0.5–5.0 weight % based on the elastic fibers, with at least one member dye of the group consisting of acid dyes, metal-complex dyes, fluorescent dyes, disperse dyes, reactive dyes, direct dyes, and cation dyes.

5,512,060

PROCESS FOR TREATING TEXTILE MATERIALS WITH ENZYME CONTAINING COMPOSITIONS AND HIGH FREQUENCY FIELDS

Saverio Forcellini, Basel, Switzerland, and Illa Sourel, Vaals, Netherlands, assignors to Sandoz Ltd., Basel, Switzerland Continuation of Ser. No. 179,464, Jan. 10, 1994, abandoned, which is a continuation of Ser. No. 935,510, Aug. 26, 1992, abandoned. This application May 12, 1995, Ser. No. 439,804

Claims priority, application Germany, Aug. 27, 1991, 41 28 256.6

Int. Cl.⁶ C12S 11/00; D06B 5/00

U.S. Cl. 8—115.52

16 Claims

13. A process for the treatment of textile material comprising the process steps of:

- applying a liquor to impregnate a textile material in an amount such that the dry weight uptake of the solution is no more than 200%;
- subsequently passing the impregnated textile material into a high frequency field of 10–50 MHz for 1 to 120 seconds, and
- optionally maintaining the impregnated textile material at the temperature that the textile material reaches in the high frequency field for up to 15 minutes wherein the liquor is an enzyme containing textile treatment composition.

5,512,061

PRINTING AND DYEING OF TEXTILES (INVERSE RESIST PRINTING)

Andreas von der Eltz; Andreas Schrell, both of Frankfurt am Main, and Werner H. Russ, Flörsheim, all of, Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed Mar. 2, 1994, Ser. No. 204,773

Claims priority, application Germany, Mar. 2, 1993, 43 06 432.9

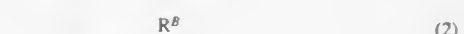
Int. Cl.⁶ D06P 5/12; 3/62; 3/66

U.S. Cl. 8—480

12 Claims

1. A process for the production of colored patterns on areas of cellulose fiber sheet material, which comprises the steps of:

printing onto the areas of said material an aqueous solution containing a fixing alkali and a compound of the general formulae (1), (2), (3), or (4)

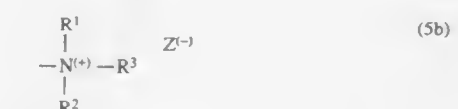
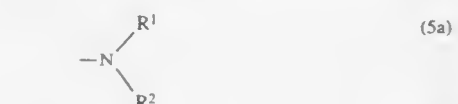


where

M is a hydrogen atom or an alkali metal

k is 1 or 2

R^A is hydrogen or alkyl of 1 to 3 carbon atoms which is unsubstituted or substituted by hydroxyl or a group of the formula (5a) or (5b)



where

R^1 is hydrogen, methyl, or ethyl,

R^2 is hydrogen, methyl, or ethyl, and

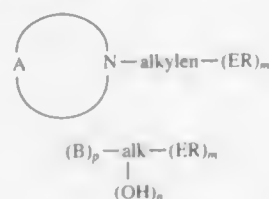
R^3 is hydrogen, methyl, or ethyl, or

R¹ and R², together with the nitrogen atom, are a saturated heterocyclic radical formed from one alkyl radical of 5 to 8 carbon atoms or two alkylene radicals of from 1 to 4 carbon atoms and an oxygen atom or an amino group of the formula -NH-, and

Z is an anion,

R³ has one of the meanings of R⁴,

X is a group -O- or -NH-, and, if X is -O-, at least one of R⁴ and R⁵ is not hydrogen,

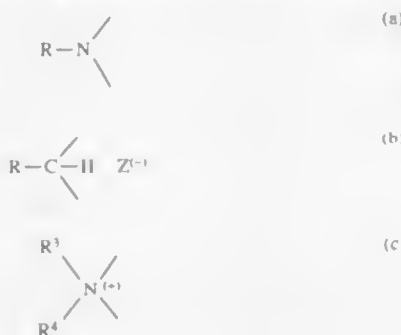


where

ER is an ester selected from the group consisting of sulfato, phosphato and C₂-C₄-alkanoyloxy,

A and N together with one or two alkylene groups of 1 to 4 carbon atoms form the bivalent radical of a heterocyclic ring, wherein

A is an oxygen atom or a group with the formula (a), (b), or (c)



where

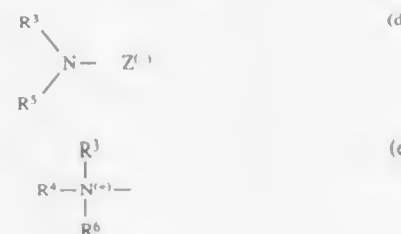
R is a hydrogen atom or an amino group or is an alkyl group of 1 to 6 carbon atoms, which is unsubstituted or substituted by 1 or 2 substituents selected from the group consisting of amino, sulfo, hydroxy, sulfato, phosphato, and carboxyl, or is an alkyl group of 3 to 8 carbon atoms, which is interrupted by 1 or 2 hetero groups selected from -O- and -NH- and is unsubstituted or substituted by an amino, sulfo, hydroxy, sulfato, or carboxyl group,

R¹ is hydrogen, methyl, or ethyl,

R⁴ is hydrogen, methyl, or ethyl, and

Z is an anion,

B is the amino group of the formula H₂N- or an amino or ammonia group of the formula (d) or (e)



where

R³, R⁴, and Z⁽⁻⁾ are as defined above,

R⁵ is methyl, or ethyl,

R⁶ is hydrogen, methyl, or ethyl, and

Z is an anion,

p is 1 or 2

alkylene is a straight-chain or branched alkylene radical of from 2 to 6 carbon atoms, which is interrupted by 1 or 2 hetero groups selected from -O- and -NH-.

alk straight-chain or branched alkylene radical of 2 to 6 carbon atoms, or is a straight-chain or branched alkylene radical of 3 to 8 carbon atoms, which is interrupted by 1 or 2 hetero groups selected from -O- and -NH-.

m is 1 or 2,

n is from 1 to 4, and

the amino, hydroxyl, and ester groups may be bonded to a primary, secondary, or tertiary carbon atom of the alkylene radical, by using a printing process,

(3) subjecting the fiber sheet material to a fixing treatment, and dyeing the fiber sheet material in the absence of alkali by an exhaust or padding method.

5,512,062

LOW TEMPERATURE TEXTILE DYEING METHOD USING HIGH TEMPERATURE DYE COMPOSITIONS

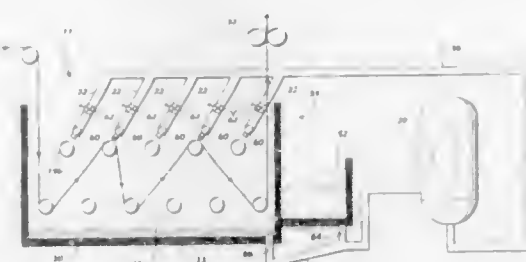
B. Franklin Fuller, Ottewah, and Franklin G. Fuller, Chattanooga, both of Tenn., assignors to Ful-Dye, Inc., Dalton, Ga. Continuation of Ser. No. 219,114, Mar. 29, 1994, abandoned.

This application Jul. 13, 1995, Ser. No. 502,184

Int. Cl.⁶ D06P 5/00; D06B 3/10; C09B 67/00

U.S. Cl. 8-499

25 Claims



1. A continuous unidirectional method for dyeing textile at atmospheric pressure using a polyhydric alcohol based dye composition in which steam fixation of the dye composition on the textile is unnecessary, comprising the steps of:

- dyeing the textile in a dye tank for containing or receiving said dye composition, said dye tank comprising a plurality of thread rollers and a plurality of spray jet applicators which apply said dye composition;
- heating said dye composition to a temperature between approximately 70° C. and 120° C.;
- maintaining a selected dye temperature between about 70° C. and about 120° C. throughout said dyeing steps; and
- subjecting the textile to a selected amount of said heated dye composition for a selected time by variable threading of the textile through the dye tank about said plurality of thread rollers;

said dye composition comprising from 20-60% by volume of a polyhydric alcohol selected from the group consisting of trihydric alcohols, from 80-40% by volume water, from 0.25 to 12.00 g/l of an acid selected from the group consisting of Group IVA, VA and VIA acids or an alkali selected from the group consisting of Group IA and IIA hydroxides, from 0.50 to 6.00 g/l of a wetting agent selected from the group consisting of alcohols, soap and surfactants, and from 0.50 to 6.00 g/l of a dyestuff selected from the group consisting of acid, disperse, vat direct, basic, pigment, and fiber reactive dyestuffs.

5,512,063

USE OF NOVOLAK DERIVATIVES IN THE DYEING OF POLYESTER-CELLULOSE BLEND FABRICS AND PROCESSES FOR THE CONTINUOUS DYEING OF SUCH BLEND FABRICS

Hubert Kruse, Königstein, Germany, assignor to Hoechst Mitsubishi Kasei Co., Germany

Filed Sep. 16, 1994, Ser. No. 307,161

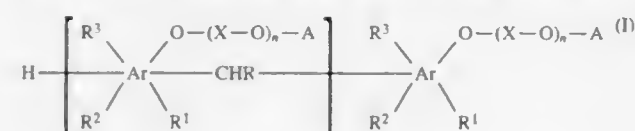
Claims priority, application Germany, Sep. 25, 1993, 43 32 756.7

Int. Cl.⁶ D06P 1/613; 3/85; 3/87; 3/54

U.S. Cl. 8-532

19 Claims

1. A process for preventing soiling of the cellulose portion of polyester-cellulose blend fabrics in the dyeing and printing of said fabrics, comprising applying to said fabrics in the dyeing and printing process compounds of the general formula I,



in which

Ar represents radicals derived from benzene or naphthalene, or a mixture thereof;

the radicals X, which are independent from one another, can be identical or different and represent ethylene groups or methylene groups, or a mixture thereof;

the radicals A, which are independent of one another, in part represent benzoyl or naphthoyl, or a mixture thereof, in another part represent -CO-CH=CH-CO₂M or -CO-CH₂-CH(SO₃M)-CO₂M, or a mixture thereof, and in any remaining part represent hydrogen, the radicals M, independently of one another, representing hydrogen or metal equivalents or substituted or unsubstituted ammonium groups, or any mixture thereof;

R¹, R² and R³, independently of one another, represent hydrogen or alkyl having 1 to 14 C atoms, or a mixture thereof;

the radicals R represent hydrogen or alkyl having 1 to 9 C atoms, or a mixture thereof;

m is a number from about 2 to about 12; and

each n, which can be identical or different from the others, represents a number from 1 to about 150;

the compounds of the general formula I being present in padding liquors or baths or printing pastes which are used anyway in the dyeing and printing process, or being applied to the fabric by means of a separate liquor or in a separate bath.

5,512,064

PROCESS FOR MODIFYING AND DYEING MODIFIED FIBER MATERIALS

Andreas von der Eltz, Joachim Clauss, and Andreas Schrell, all of Frankfurt am Main, Germany, assignors to Hoechst AG, Germany

Filed Jul. 28, 1994, Ser. No. 281,840

Claims priority, application Germany, Jul. 31, 1993, 43 25 783.6

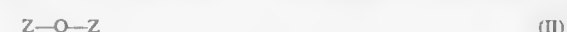
Int. Cl.⁶ D06M 15/61; 15/53; D06P 1/38

U.S. Cl. 8-541

17 Claims

1. A process for modifying fiber materials, which comprises the steps of:

mixing a polymer selected from the group consisting of polyethyleneimine having a molecular weight from 500 to 2000 and a polypropyleneimine having a molecular weight from 500 to 1000 with a bifunctional crosslinking agent of the formula (II)



where

Z is a group of the formula -CHO or -CH(OR¹)₂, wherein R¹ is in each case identically or differently hydrogen or C₁-C₄-alkyl, and

Q is a phenylene group or a group of the formula (-CH₂-)_a, wherein a is from 0 to 4, in an aqueous solution to form an aqueous mixture, and bringing said aqueous mixture into contact with said fiber material.

5,512,065

METHODS FOR ASSEMBLING LEAD-ACID BATTERIES

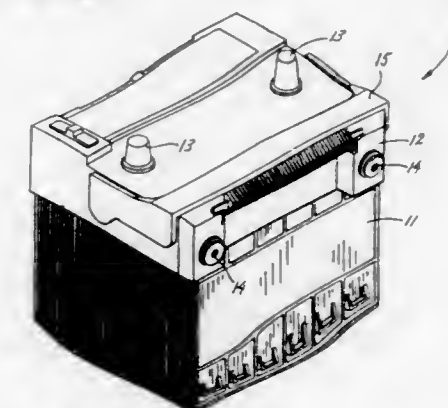
William H. Kump, St. Paul; James K. Klang, Rosemount; David L. Lund, Minneapolis, and Jeffrey M. Henning, Eagan, all of Minn., assignors to GNB Battery Technologies Inc., Mendota Heights, Minn.

Filed Oct. 12, 1993, Ser. No. 135,053

Int. Cl.⁶ H01M 10/14

U.S. Cl. 29-623.1

23 Claims



1. A method of fabricating a modular, recombinant lead-acid battery, the method comprising:

providing a plurality of thermoplastic frames, including at least two frames which support electrochemically active plates, the frames being adapted to be stacked and welded together such that the plates are spaced apart from each other a predetermined distance;

providing one or more separators, the separators having an uncompressed state, in which uncompressed state the separators have a thickness equal to or greater than the predetermined distance between plates, and a compressed state, the separators being provided in their compressed state;

successively stacking the frames and separators such that a separator is disposed between adjacent plates in its compressed state; and

successively vibration welding the frames together while the separator is in its compressed state; the separator having a predetermined thickness in its compressed state effective to reduce abrasion of the separators by the plates during vibration welding and tending to assume its uncompressed state in the presence of electrolyte such that the separator contacts the plates.

5,512,066

TAGGING MATERIALS FOR GASOLINE

Jeffrey J. Toman, Oakland, and Wilton R. Biggs, Vacaville, both of Calif., assignors to Chevron Chemical Company, San Ramon, Calif.

Continuation-in-part of Ser. No. 377,541, Jan. 23, 1995, abandoned. This application Jun. 6, 1995, Ser. No. 468,495

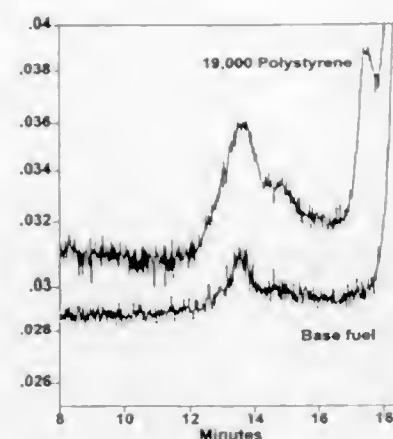
Int. Cl.⁶ C10L 1/16

U.S. Cl. 44-300

4 Claims

1. A gasoline containing a detectable amount of at least one tagging material therein serving as identification means for the gasoline, wherein the amount of each tagging material present in the gasoline is less than 1.0 ppm of the gasoline, wherein each tagging material has the following properties:

(a) a number average molecular weight of at least 15,000;



- (b) soluble in the composition to be tagged;
 (c) does not vaporize or thermally degrade at temperatures below about 120° C.;
 (d) does not contribute to degradation of hydrocarbon filterability; and
 (e) does not contribute to engine harm.

5,512,067

ASYMMETRICAL MANNICH BASE DERIVATIVES AND THE PRODUCTION AND USES THEREOF
 John T. Loper, Richmond, Va., assignor to Ethyl Corporation, Richmond, Va.

Filed May 22, 1995, Ser. No. 447,145
 Int. Cl. C10L 1/18; 1/22

U.S. Cl. 44—415 43 Claims

1. A compound in which a polyamine moiety is linked to a phenolic moiety by a Mannich base linkage involving one of the amino groups of the polyamine moiety, and in which an aminoalkylene-poly(oxyalkylene) moiety is linked to said phenolic moiety by a Mannich base linkage involving an amino group of the alkylene-poly(oxyalkylene) moiety.

5,512,068

REDUCING DEPOSIT FORMATION IN DIESEL ENGINES
 Anthony J. Rollin, Midlothian; William J. Colucci, Glen Allen, and Isaac L. Smith, Richmond, all of Va., assignors to Ethyl Corporation, Richmond, Va.

Continuation-in-part of Ser. No. 204,596, Mar. 2, 1994, Pat. No. 5,454,843. This application Sep. 12, 1995, Ser. No. 527,279
 Int. Cl. C10L 1/12; 1/18

U.S. Cl. 44—449 20 Claims

1. A fuel composition which comprises a diesel fuel oil containing a trace amount of alkali metal salt and a minor amount of at least one fuel-soluble complexing agent capable of forming in the fuel a fuel-soluble complex with said inorganic alkali metal salt and/or the alkali metal cation thereof, said complexing agent being selected from the group consisting of crown ethers, aza-crown ethers, polycrown ethers, lariat-crown ethers, cryptands, spherands and bridged spherands.

5,512,069

SEEDS, COATED OR IMPREGNATED WITH A PPFM
 Mark A. Holland, Salisbury, Md., and Joseph C. Polacco, Columbia, Mo., assignors to Salisbury State University, College Park, Md., and The Curators of the University of Missouri, Columbia, Mo.

Filed Mar. 31, 1995, Ser. No. 414,385
 Int. Cl. A01N 63/00

U.S. Cl. 47—57.6 6 Claims

1. A coated seed having improved germinability, comprising:
 (a) a seed; and
 (b) a coating, comprising: a cytokinin producing, germinability improving effective amount of at least one pink pigmented facultative methylotroph (PPFM), of natural genetic origin wherein said coating is disposed on the outer surface of said seed.

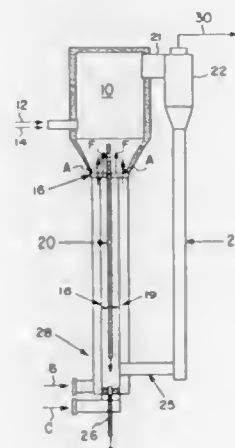
5,512,070

TWO STAGE CARBONIZER

David A. Stats, Richfield, Ohio, assignor to The Babcock & Wilcox Company, New Orleans, La.

Continuation of Ser. No. 127,858, Sep. 28, 1993, abandoned.
 This application Feb. 16, 1995, Ser. No. 390,905
 Int. Cl. C10J 3/56

U.S. Cl. 48—76 8 Claims



1. An apparatus for thermochemical reaction, comprising:
 a carbonizer for containing a bed of fluidizable material, said carbonizer having a grid plate located at a bottom of said carbonizer;
 means for introducing fuel and sorbent into said carbonizer for partial combustion therein, said sorbent absorbing pollutant emissions from the combustion products;
 a combustor connected to said bottom of said carbonizer, said combustor generating flue gas which acts as one of at least two fluidizing mediums for fluidizing said bed of said carbonizer;
 an outer tube connected to said bottom of said carbonizer, said combustor being situated concentrically inside and entirely within said outer tube for defining an annulus between said combustor and said outer tube for supplying a second fluidizing medium to said carbonizer through said grid plate, said combustor preheating said second fluidizing medium supplied through the annulus to said carbonizer; and
 means for removing partially combusted material from said carbonizer, said partially combusted material removing means being connected to said combustor for supplying the combusted material thereto.

5,512,071

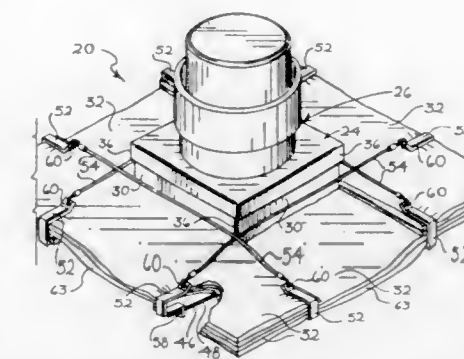
WATER SOLUBLE BLAST MEDIA CONTAINING SURFACTANT

Benny S. Yam, Holmdel; Amy L. Joseph, Hopewell; Anthony E. Winston, East Brunswick, all of N.J., and Keith A. Jones, Yardley, Pa., assignors to Church & Dwight Co., Inc., Princeton, N.J.

Division of Ser. No. 6,658, Jan. 21, 1993, Pat. No. 5,316,587.
 This application Feb. 25, 1994, Ser. No. 202,066
 Int. Cl. C09C 1/68

U.S. Cl. 51—307 22 Claims

1. A particulate blast media for stripping contaminants from a solid surface consisting essentially of water soluble abrasive particles having an average size of from about 50 to 1000 microns in diameter and 0.05 to 3 wt. % relative to the amount of said abrasive particles of a surfactant, wherein the amount of abrasive particles above 1,000 microns does not exceed about 1% of the abrasive particles.



four mounting brackets each mountable to a respective corner of the duct and each having a pair of flanges for extending generally perpendicularly from adjacent walls of the duct on either side of the corner, with each of the flanges having an aperture for receipt of a respective support rod, the mounting brackets providing a pair of flanges extending generally perpendicularly from each of the walls of the duct when the mounting brackets are each mounted to respective corners of the duct, and the support rods each being supported adjacent a respective side of the duct by receipt of the support rods through the apertures of each of the pairs of flanges extending from respective sides of the duct;

the support rods each being longer than the width of their respective duct sides, with the portions of the rods extending beyond adjacent duct sides crossing one another at each of the duct corners;

four grease absorbing pads each supportable adjacent a respective side of the duct on respective pairs of end portions of the rods extending outwardly from the respective duct sides;

eight retaining clips each engageable with a respective end portion of the support rods and each having a channel for receiving respective support pads; and

four tension cords each engageable with the respective pair of retaining clips engaged at either end of the support rods to pull the pairs of retaining clips toward one another to bias the pads into abutment with respective sides of the duct and prevent the retaining clips from falling off their respective support rods.

5,512,074

AIR FILTER ASSEMBLY

Robert S. Hanni, Lomita; Robert R. Raber, Los Alamitos, and Henry H. S. Yu, Rancho Palos Verdes, all of Calif., assignors to Farr Company, El Segundo, Calif.

Filed Sep. 19, 1994, Ser. No. 308,695
 Int. Cl. B01D 46/12

U.S. Cl. 55—484 30 Claims

1. An air filter assembly having multiple panels arranged in a plurality of Vees and defining an air inlet end and an air outlet end, said assembly comprising:

a filter support frame;
 a plurality of pairs of replaceable filter panels, said panels defining extended end portions and being disposed within said frame so as to define a corresponding plurality of adjacent Vees wherein the apexes of said Vees are disposed adjacent the air outlet end of said filter assembly;
 a plurality of panel end caps, one of said end caps being secured to the extended end portion of each of said filter panels and each of said end caps defining a pair of cam surfaces thereon, one of said cam surfaces on each of said end caps being disposed between each of said pairs of filter panels at the apex of the Vee defined thereby for urging portions of said panels proximate said apexes into sealing engagement with said frame, the other of said cam surfaces on each of said end caps being disposed adjacent the air inlet end of said assembly;
 locking means carried by said frame adjacent the air inlet end of said assembly for engaging said other cam surfaces on said

5,512,073

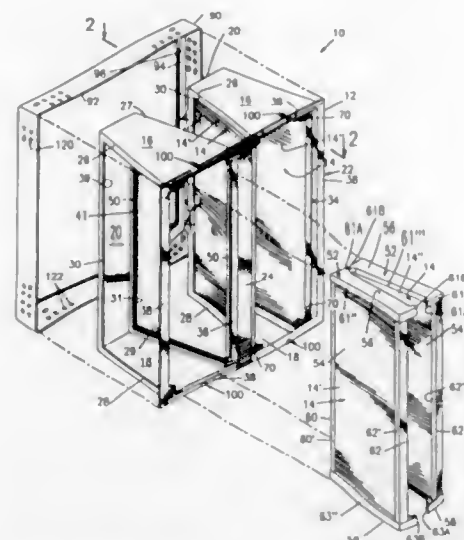
GREASE FILTER ASSEMBLY

Daryl Mirza, Zion, and Robert A. Barasa, Lake Forest, both of Ill., assignors to DGA Industries, Inc., Zion, Ill.

Filed Aug. 19, 1994, Ser. No. 293,154
 Int. Cl. B01D 35/00

U.S. Cl. 55—323 17 Claims

13. A grease filter assembly for absorbing grease discharged from a grease discharge vent having a rectangular duct extending upwardly from a roof to prevent grease accumulation on the roof, the assembly comprising:
 four support rods, each for being positioned adjacent a respective side of the duct;



end caps and releasably holding portions of said panels in sealing engagement with said frame whereby a perimeter face seal about and between each of said panels and said frame is formed and maintained and, upon releasing the engagement of said locking means with said other cam surfaces, said panels can be removed from said frame for disposal and replacement; and

wherein all of said end caps are of substantially identical configuration and the cam surfaces defined by each of said end caps are oppositely inclined and symmetrical about a central axis extending transversely through the end cap whereby all of the filter panels are interchangeable throughout said filter assembly to facilitate installation and replacement thereof.

5,512,075

FOLDED FILTER ELEMENT FOR FILTERING FLUID
Hiroshi Ninomiya, Kariya; Kenichi Katoh, and Toshiaki Fukuta, both of Nagoya, all of Japan, assignors to Nippon-denso Co., Ltd., Kariya, Japan

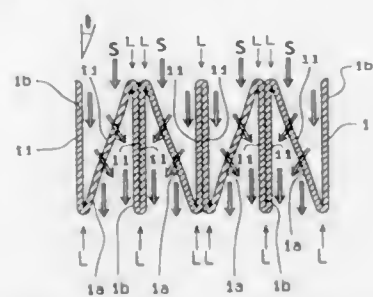
Filed Apr. 5, 1994, Ser. No. 222,818

Claims priority, application Japan, Apr. 5, 1993, 5-078002; Mar. 8, 1994, 6-036798

Int. Cl.⁶ B01D 46/52

U.S. Cl. 55—497

15 Claims



1. A folded filter element for filtering fluid formed from a single filtering sheet into a wave shape by folding with an equal pitch so that a plurality of equal pitch portions having a same width are formed in a longitudinal direction, said folded filter element being disposed in a direction diagonal to a fluid flow which is led thereinto, wherein said folded filter element is provided with small pitch portions between said equal pitch portions, said small pitch portions being formed by folding with a small pitch which is smaller than said equal pitch in width, and an entire surface of said small pitch portion at one side being in contact with the next pitch portion.

5,512,076

FILTER APPARATUS

Glenville Gibson, 88 Derwent Avenue, Allestree, Derby DE22 2DO, England

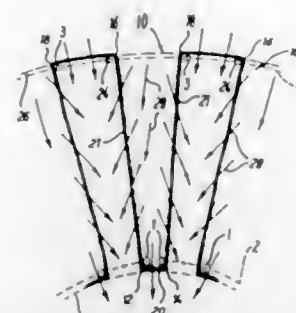
Continuation-in-part of Ser. No. 961,933, Jan. 13, 1993, abandoned. This application Sep. 16, 1994, Ser. No. 307,189

Claims priority, application United Kingdom, Jul. 14, 1990, 9015532

Int. Cl.⁶ B01D 46/00

U.S. Cl. 55—498

5 Claims



1. A circular filter for use in an industrial, polluted air control system, said filter having a predetermined axial length and including a filter material having a plurality of pleats, each of said pleats comprising first and second opposing side sections extending substantially radially and retained circularly spaced apart, a base section connected between first ends of the side sections and having a predetermined circular dimension defined by turning of the filter material about a pair of spaced support members on a circle location whereby to form a first pair of spaced fold lines, the filter material of the base section being unobstructed in the space between the pair of support members, and an outer section radially spaced outwardly of the base section and connected between a second end of one of said side sections and a second end of a side section of an adjacent pleat, said outer section having a predetermined circular dimension defined by a second pair of spaced fold lines, an open-ended space defined in each pleat between said side sections and the base section, whereby a pulse of air directed through the filter in the opposite direction to the passage of polluted air can vibrate the filter material to enable pollutants collected on said side sections, the base sections and the outer sections to be released and fall through the axial length of the filter.

5,512,077

TEST APPARATUS AND TESTING METHOD FOR A POSITION SENSOR IN A GLASSWARE FORMING MACHINE

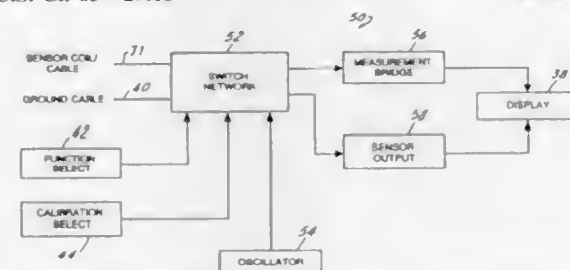
Mathias P. Welker, Toledo, Ohio, assignor to Owens-Brockway Glass Container Inc., Toledo, Ohio

Filed May 27, 1994, Ser. No. 250,227

Int. Cl.⁶ C03B 11/06

U.S. Cl. 65—29.18

20 Claims



1. The combination of a test apparatus coupled to a position sensor for measuring operating characteristics of said position sensor coupled to a parison mold plunger in a press-and-blow individual section glassware manufacturing machine, said apparatus comprising:
means for connection to said sensor to provide a signal as a function of electrical characteristics thereof,

means operatively coupled to said connection means for selecting among a plurality of differing electrical characteristics to be measured, and

means responsive to said signal for displaying measured electrical characteristics of said sensor to an operator,

said means for selecting among said characteristics comprising first circuit means for measuring resistance characteristics of said sensor, second circuit means for measuring sensor output as a function of position of said plunger, and switch means responsive to the operator for selectively connecting said connection means and the sensor connected to said connection means to said first and second circuit means.

19. A method of measuring operating characteristics of a parison mold plunger position sensor in a press-and-blow individual section glassware manufacturing machine, comprising the steps of:

- connecting said sensor to a test apparatus having multiple modes of operation,
- operating said test apparatus in a first mode to measure and display electrical resistance of said sensor,
- operating said test apparatus in a second mode to measure and display output of said sensor as a function of plunger position, and
- operating said test apparatus in a third mode to measure and display resistance between said sensor and electrical ground.

5,512,078

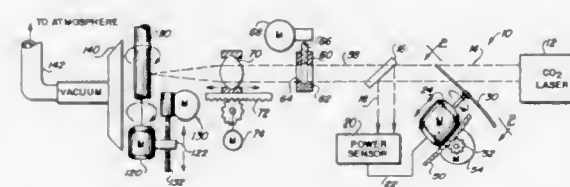
APPARATUS FOR MAKING LINEARLY TAPERED BORES IN QUARTZ TUBING WITH A CONTROLLED LASER

Stephen E. Griffin, 2108 E. Solano Dr., Phoenix, Ariz. 85016
Filed Mar. 24, 1994, Ser. No. 217,696

Int. Cl.⁶ C03B 15/14

U.S. Cl. 65—484

7 Claims



- Apparatus for making linearly tapered bores in tubing comprising in combination:
laser means for providing a light beam for producing a heat output for the tubing;
means for focusing the light beam on the tubing;
means for moving the tubing in the light beam;
means for modulating the heat output of the light beam on the tubing as the tubing is moved in the light beam, including sensing the power output of a portion of the light beam; and
chopper means movable into and away from the light beam in response to the sensed power output and predetermined parameters.

5,512,079

WATER-IN-OIL EMULSIFIERS FOR SLOW RELEASE FERTILIZERS USING TERTIARY ALKANOL AMINES
Richard W. Jahnke; John W. Forsberg, both of Mentor, and Nils O. Pearson, Lyndhurst, all of Ohio, assignors to The Lubrizol Corporation, Wickliffe, Ohio

Filed Nov. 14, 1994, Ser. No. 337,800

Int. Cl.⁶ C05G 5/00

U.S. Cl. 71—64.08

18 Claims

1. A non-explosive water-in-oil emulsion fertilizer composition comprising:

- a discontinuous aqueous phase comprising at least one fertilizer component;
- a continuous oil phase;

an emulsifier comprising the ester salt reaction product of at least one hydrocarbyl substituted succinic anhydride acylating agent and at least one tertiary alkanol amine.

5,512,080

FE-BASED ALLOY POWDER ADAPTED FOR SINTERING, FE-BASED SINTERED ALLOY HAVING WEAR RESISTANCE, AND PROCESS FOR PRODUCING THE SAME

Yositaka Takahashi, Toyota; Akira Manabe, Atchi; Tadataka Kaneko, Nagoya; Hiroshi Okajima, Toyota; Yoshihiko Ito, Toyota, and Setsuo Daiza, Toyota, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Nov. 29, 1993, Ser. No. 158,313

Claims priority, application Japan, Nov. 27, 1992, 4-318428; Dec. 4, 1992, 4-325713; Dec. 4, 1992, 4-325714; Mar. 19, 1993, 5-060095; Sep. 24, 1993, 5-238449; Sep. 24, 1993, 5-238454; Oct. 15, 1993, 5-258709

Int. Cl.⁶ C22C 33/02; B22F 3/12

U.S. Cl. 75—231

48 Claims

1. An Fe-based sintered alloy having superb wear resistance consisting, percent by weight, essentially of, as a whole:

- Co in an amount of 1.3 to 15%;
- Mo in an amount of 1.3 to 16%;
- Cr in an amount of 0.40 to 18%;
- W in an amount of 0.050 to 6.0%;
- C in an amount of 0.20 to 3.2%;
- Ni in an amount of 0.20 to 17%; and

the balance of Fe and inevitable impurities; and

said Fe-based sintered alloy including a matrix and hard particles dispersed in the matrix in an amount of 2.0 to 30% by weight;

said matrix consisting, percent by weight, essentially of:

- Co in an amount of 2.0 to 15%;
- Mo in an amount of 2.0 to 10%;
- C in an amount of 0.20 to 2.0%;
- Ni in an amount of 10% or less; and
- the balance of Fe and inevitable impurities; and

said hard particles consisting, percent by weight, essentially of:

- Cr in an amount of 20 to 75%;
- W in an amount of 3.0 to 20%;
- C in an amount of 0.50 to 5.0%; and
- the balance of Ni and inevitable impurities.

5,512,081

HYBRID BRAZE ALLOY

Eugene J. DelGrosso, Wallingford, Conn., and Michael R. Coles, Corpus Christi, Tex., assignors to United Technologies Corporation, Hartford, Conn.

Filed Feb. 17, 1995, Ser. No. 390,013

Int. Cl.⁶ C22C 21/12

U.S. Cl. 75—255

8 Claims

1. A hybrid braze alloy for fluxless brazing of metals comprising:

- an aluminum alloy that consists essentially of, by weight:

9.3%	to	13%	Silicon
0.3%	to	4.7%	Copper
0.0%	to	0.8%	Iron
0.2%	to	10.5%	Zinc
0.1%	to	1.5%	Magnesium, and Aluminum,
The Balance			

- a magnesium alloy that consists essentially of, by weight:

5.3%	to	9.7%	Aluminum
0.35%	to	3.5%	Zinc

-continued-

0.13%	to	0.35%	Manganese
0.3%	to	0.5%	Silicon
0.0%	to	0.1%	Copper
0.01%	to	0.03%	Nickel, and
The Balance			Magnesium,

wherein the aluminum alloy and the magnesium alloy are mixed to form a mixture so that relative proportions of the aluminum alloy by weight and magnesium alloy by weight are within a working braze ratio range that includes from forty nine parts of the aluminum alloy to one part of the magnesium alloy (49/1) to four point eight parts of the aluminum alloy to one part of the magnesium alloy (4.8/1).

5,512,082

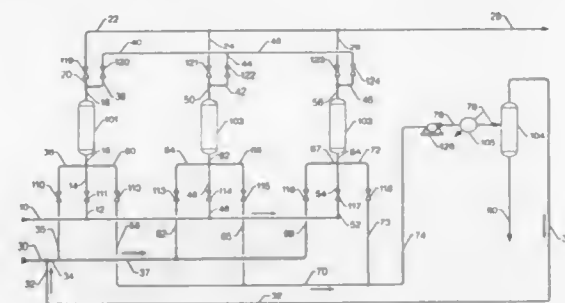
PROCESS FOR THE REMOVAL OF VOLATILE ORGANIC COMPOUNDS FROM A FLUID STREAM

Andrew S. Zarchy, Amawalk, and Kirti M. Patel, Hopewell Junction, both of N.Y., assignors to UOP, Des Plaines, Ill.
Continuation-in-part of Ser. No. 151,244, Nov. 12, 1993, Pat. No. 5,415,682. This application Dec. 19, 1994, Ser. No. 358,286

Int. Cl. B01D 53/047

U.S. Cl. 95—101

25 Claims



1. A vacuum swing adsorption (VSA) process for the separation and recovery of VOCs from a feedstream comprising VOCs and mixtures thereof with air, said process comprising the following steps:

- passing an adsorbable inactive gas stream to a first adsorption bed of a VSA zone comprising at least two adsorption beds each of said adsorption beds containing an adsorbent selective for the adsorption of said VOCs to preload said first adsorption bed with said adsorbable inactive gas and withdrawing a first adsorption effluent stream;
- countercurrently evacuating said first adsorption bed to a desorption pressure to provide a first residual gas stream comprising said adsorbable inactive gas;
- passing said feedstream to said first adsorption bed at adsorption conditions including an adsorption pressure and an adsorption temperature and recovering a second adsorption effluent stream;
- countercurrently passing a portion of the first or a second residual gas stream in a copurge step to said first adsorption bed and producing a third adsorption effluent stream;
- admixing said third adsorption effluent stream and said second adsorption effluent stream to provide a treated adsorption effluent stream depleted in VOCs relative to the feedstream;
- countercurrently evacuating said first adsorption bed to said desorption pressure to provide a tail gas stream comprising said VOCs and separating said tail gas stream into a VOC-containing stream and the second residual stream; and
- repeating steps (c) through (f) with each of said adsorption beds such that a continuous operation of the process is performed.

5,512,083

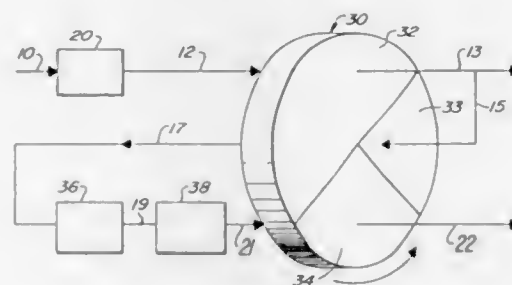
PROCESS AND APPARATUS FOR DEHUMIDIFICATION AND VOC ODOR REMEDIATION

Stephen R. Dunne, Bethel, Conn., assignor to UOP, Des Plaines, Ill.
Continuation-in-part of Ser. No. 140,920, Oct. 25, 1993, abandoned. This application Jan. 17, 1995, Ser. No. 373,840

Int. Cl. B01D 53/06

U.S. Cl. 95—113

23 Claims



1. A process for dehumidification and VOC odor remediation of a cabin air stream withdrawn from a passenger compartment of a transportation vehicle comprising the following steps:

- continuously passing the cabin air stream to a first portion of a face area of an adsorbent wheel, said wheel supporting a solid adsorbent selected from the group consisting of zeolite Y-74, zeolite Y-84, zeolite Y-85, a low cerium rare earth exchanged zeolite Y-84, a rare earth exchanged zeolite LZ-210, and mixtures thereof said solid adsorbent being selective for the adsorption of water and VOCs to adsorb water and VOCs at an adsorption temperature and permitting the passage of said cabin air stream therethrough to provide a conditioned air stream;
- passing at least a portion of said conditioned air stream to a second portion of said adsorbent wheel in a direction counter-current to the passing of said cabin air stream in step (a) to cool said second portion of said adsorbent wheel and provide an intermediate air stream;
- heating said intermediate air stream to a regeneration temperature to provide a heated intermediate air stream;
- passing said heated intermediate stream in a direction cocurrent to said air stream in step (a) to a third portion of said adsorbent wheel to desorb said water and VOCs, forming an exhaust stream, and exhausting said stream; and
- returning at least a portion of said conditioned air stream to the passenger compartment.

5,512,084

METHOD OF REMOVING ORGANIC CONTAMINANTS

David Mauterer, Atlanta, Ga., assignor to Contaminant Separations, Inc., New Oxford, Pa.
Continuation-in-part of Ser. No. 40,881, Mar. 31, 1993, Pat. No. 5,452,758. This application Sep. 9, 1994, Ser. No. 303,317

Int. Cl. B01D 53/14

U.S. Cl. 95—199

11 Claims

1. A method of removing organic contaminants from a process gas for purification thereof, comprising the steps of:

- collecting a process gas having organic contaminants for removal;
- injecting an absorption liquid into the process gas to form a two-state mixture of the absorption liquid and the process gas;
- communicating the two-state absorption liquid and gas mixture concurrently through a heat exchange module for absorption of said organic contaminants in the process gas by the absorption liquid resulting in a cleaned process gas; and
- separating the absorption liquid from the cleaned process gas, whereby the cleaned process gas, having said organic contaminants removed, is purified.

5,512,086

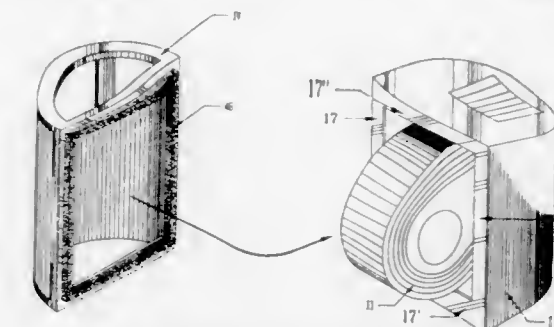
HIGH-EFFICIENCY AIR FILTERING APPARATUS

Dov Z. Glucksmann, Wenham, Mass., assignor to Appliance Development Corporation, Danvers, Mass.
Filed Jun. 14, 1994, Ser. No. 259,465

Int. Cl. B01D 46/52; B03C 3/00

U.S. Cl. 96—68

24 Claims



1. A room air treatment system, comprising:

- a housing having a top wall, a bottom wall and at least one sidewall, said housing defining a first interior chamber;
- a filter assembly defining a second interior chamber, said filter assembly being positionable in sealing engagement with said housing such that said interior chambers are in fluid communication to thereby define an interior compartment, said filter assembly including a filter support frame for retaining a filter media in an arcuately bent configuration; and
- a centrifugal blower having an inlet and an outlet, said blower being disposed within said interior compartment such that a portion of said blower is disposed in said first interior chamber and a portion of said blower is partially disposed within said second interior chamber.

5,512,085

VENTURI SCRUBBER AND METHOD WITH OPTIMIZED REMOTE SPRAY

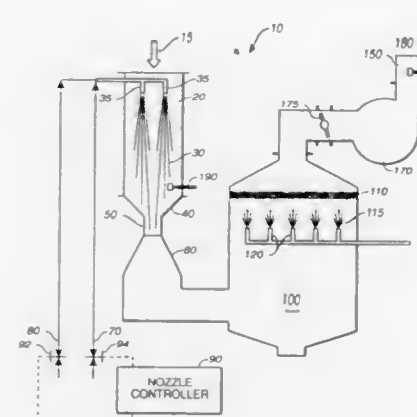
James J. Schwab, Napa, Calif., assignor to EnviroCare International, Inc., Novato, Calif.

Continuation-in-part of Ser. No. 182,639, Jan. 14, 1994, which is a continuation-in-part of Ser. No. 904,208, Jun. 25, 1992, Pat. No. 5,279,646. This application Nov. 4, 1994, Ser. No. 334,280

Int. Cl. B01F 3/04

U.S. Cl. 95—200

16 Claims



1. A method of cleansing a flow of contaminated gas using a venturi scrubber, said gas being at an initial temperature which is substantially greater than the moisture saturation temperature of said gas, comprising the steps of:

- introducing a spray of water droplets having a predetermined diameter into the gas flow a predetermined distance upstream of the throat of said venturi scrubber such that said gas flow becomes substantially saturated by the time said gas flow reaches the throat of said venturi and such that a substantial number of water droplets remain within the gas flow, the remaining droplets entering the throat of said venturi having a diameter which is in the range of between about 10 to 200 microns, and
- causing the mixture of the gas flow and the remaining water droplets to pass through the throat of said venturi scrubber, such that the gas flow is scrubbed by said droplets.

5,512,087

PETROLEUM VAPOR CONTROL APPARATUS

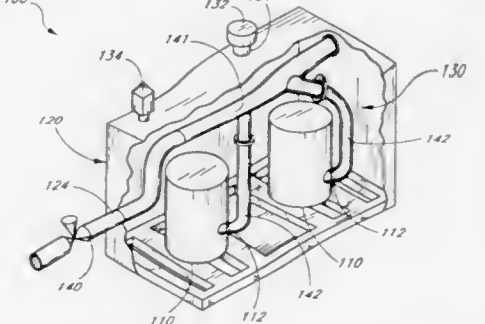
Richard Varner, Corona del Mar, and Joseph M. Irwin, Lakewood, both of Calif., assignors to Newport Petroleum, Seal Beach, Calif.

Continuation-in-part of Ser. No. 278,996, Jul. 22, 1994, which is a continuation of Ser. No. 881,621, May 12, 1992, abandoned. This application Aug. 26, 1994, Ser. No. 296,846

Int. Cl. B01D 53/04

U.S. Cl. 96—133

21 Claims



1. An improved petroleum vapor control apparatus which reduces backpressure generated during scrubbing of petroleum vapors, comprising:

- a substantially air-tight housing, said housing comprising a compartment for holding conduits and at least one adsorber bed, wherein said compartment further comprises a floor, and wherein said at least one adsorber bed is located on said floor, said at least one adsorber bed comprising an adsorbent material, an inlet end, and an outlet end, said housing further comprising an opening;
- a first conduit passing through said opening for conducting petroleum vapors into said housing, said conduit having a first end and a second end, said first end being for connection to a

- source of petroleum vapors, said second end being connected to said inlet end of said at least one adsorber bed;
- c) a zone of controlled pressure in said housing outside of said at least one adsorber bed, said controlled pressure being in the range of about 0.5 psi to about 1.5 psi, wherein said controlled pressure assures that said petroleum vapors contact said adsorbent material for a sufficient length of time to effect the scrubbing of said vapors;
- d) a valve in said housing for maintaining said controlled pressure in said housing; and
- e) an outlet vent in said housing for venting scrubbed gases to the atmosphere.

5,512,088 SEPARATOR

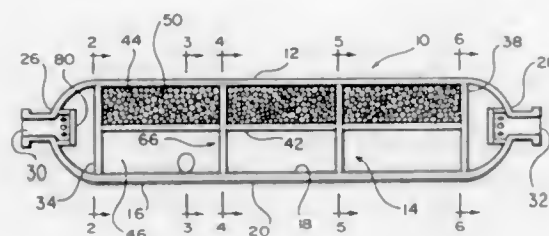
Robert J. McKenzie, Alrdrie, Canada, assignor to Interglobe Gas Technology, Inc., Calgary, Canada

Filed Jun. 23, 1994, Ser. No. 264,658

Int. Cl.⁶ B01D 46/30; 53/04

U.S. Cl. 96—152

15 Claims



1. Apparatus comprising
- a. a tubular vessel formed by an sidewall having a longitudinal axis, an inside surface, an outside surface, a top side, and a bottom side, a first end and a second end with an inlet at the first end and an outlet at the second end;
- b. a first perforated baffle forming a partition across the inside surface of the vessel positioned adjacent to the first end;
- c. a second perforated baffle forming a partition across the inside surface of the vessel positioned adjacent to the second end, a filter chamber being defined by the first perforated baffle, the second perforated baffle and the inside surface of the sidewall of the tubular vessel;
- d. a bed of particulate filter material filling the filter chamber; and
- e. means for defining at least one liquid reservoir connected to the outside surface of the sidewall on the bottom side of the tubular vessel, said vessel having at least one drain extending through the sidewall forming a liquid flow path between the filter chamber and each said at least one liquid reservoir; said apparatus further comprising
- a means for forming a low path extending from the at least one means for defining the at least one liquid reservoir;
- a valve operably associated with the means for forming a flow path;
- a level control switch operably associated with the at least one means for defining the liquid reservoir and the valve so as to open and close the valve responsively to predetermined upper and lower liquid levels in the at least one liquid reservoir; wherein
- the means for defining the at least one liquid reservoir comprises a first tubular member extending generally radially away from the longitudinal axis of the tubular vessel, said first tubular member having a first end and a second end, the first end being connected to the sidewall of the tubular vessel;
- a first end closure positioned on the second end of the first tubular member;
- a second tubular member extending generally radially away from the longitudinal axis of the tubular vessel in a direction generally parallel to the first tubular member, said second tubular member having a first end and a second end, the first

end being connected to the sidewall of the tubular vessel, said second tubular member being spaced apart from the first tubular member; and

a second end closure positioned on the second end of the second tubular member;

wherein the means for forming a flow path comprises a first conduit forming a flow path between the second end of the first tubular member and the second end of the second tubular member; and

a second conduit forming a flow path between the first conduit and the valve;

wherein the first tubular member and the first end closure form a first boot, the second tubular member and the second end closure form a second boot, and the liquid level control switch is operably associated with the first boot so as to control the liquid level therein.

5,512,089

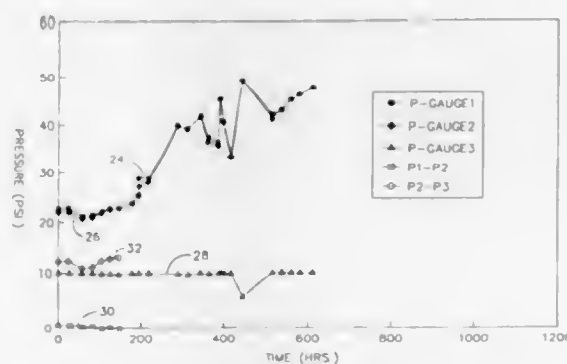
PROCESS OF MAKING AQUEOUS PIGMENTED INK-JET INK WITH IMPROVED MACHINE RUNNABILITY
Sharad R. Thakkar, Dayton, Ohio, assignor to Scltex Digital Printing, Inc., Dayton, Ohio

Filed Aug. 23, 1994, Ser. No. 294,889

Int. Cl.⁶ C09D 11/02

U.S. Cl. 106—20 R

17 Claims



1. An ink jet ink composition for use in a continuous ink jet printing system comprising a liquid vehicle, a pigment, and a base for raising pH to redispersed dried ink film.

5,512,090

COMPOSITIONS FOR RESILIENT BIODEGRADABLE PACKAGING MATERIAL PRODUCTS
Hans G. Franke, Tiburon, Calif., and Donald R. Bittner, Irving, Tex., assignors to Free-Flow Packaging Corporation, Redwood City, Calif.

Continuation-in-part of Ser. No. 82,273, Jun. 24, 1993, abandoned. This application Sep. 12, 1994, Ser. No. 304,365

Int. Cl.⁶ C08L 3/02; C09D 103/02

U.S. Cl. 106—154.1

8 Claims

1. A base mixture for use in producing a resilient, biodegradable packaging material product, said mixture comprising the following first six ingredients plus added water expressed in % by weight of the first six ingredients:
- (a) vegetable oil: about 0.5% to about 5%;
- (b) polyvinyl alcohol: about 5% to about 25%;
- (c) glycerine: about 0.5% to about 10%;
- (d) proteinaceous grain meal: about 3% to about 10%;
- (e) glycerol monostearate: about 0.1% to about 0.8%;
- (f) non-modified starch: about 45% to about 90%; and
- (g) added water: about 0% to about 30%.

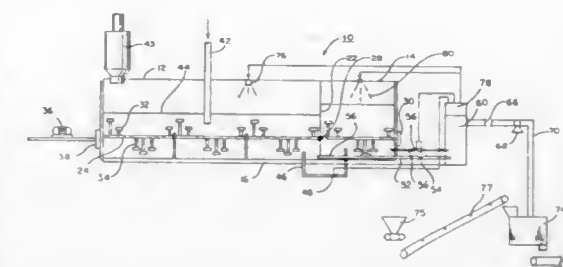
5,512,091

ASSOCIATIVE POLYMER HYDROGELS
Carol A. Steiner, 1166 Hope St., #6, Stamford, Conn. 06907
Continuation of Ser. No. 565,704, Aug. 13, 1990. This application May 4, 1995, Ser. No. 435,016
Int. Cl.⁶ C09D 101/28; C08L 1/28

U.S. Cl. 106—197.1

11 Claims

1. A clear and flexible hydrogel comprising a water-insoluble hydrophobically modified hydroxyethylcellulose polymer with a molecular weight of at least 50,000 having a degree of hydrophobic substitution of at least 0.8% by weight with hydrophobic moieties having at least 8 carbon atoms, where the hydrogel is formed in a surfactant aqueous solution below the critical micelle concentration of the surfactant or in an ethanol aqueous solution and is characterized by a two phase structure of a swollen aqueous gel phase with stable hydrophobic microdomains dispersed throughout the gel phase which microdomains are composed only of hydrophobic moieties from the polymer and surfactant or ethanol.
7. A process for producing a swollen gel of a hydrophobically modified cellulose ether in water, characterized in that the process produces clear and flexible hydrogels by the steps of
- (a) preparing solutions of sodium dodecyl sulfate (SDS) and 50,000 to 1,000,000 molecular weight hydrophobically modified hydroxyethylcellulose (HMHEC) with 0.8 to 1.5 weight percent hydrophobic substitution by 8 to 20 carbon atom moieties,
- (b) mixing solutions of SDS and HMHEC to prepare a mixture in the concentration range $1 \times 10^{-3} \text{M}$ to $8 \times 10^{-3} \text{M}$ SDS to produce a clear and flexible hydrogel, and
- (c) separating the hydrogel in an amorphous form such that the hydrogel comprises hydrophobic microdomains.



improvement comprising a method of treating the mineral aggregate material to promote adhesion between the mineral aggregate material and the asphalt binder, the method comprising the steps of:

- mixing together in a slurry mixing tank unslaked quicklime and an aqueous slaking medium to form a hot quicklime slurry by exothermic reaction, the resulting quicklime slurry having a lime solids content greater than about 30% by weight, based upon the total weight of the quicklime slurry; and
- treating the mineral aggregate material with the hot quicklime slurry while the slurry is at a temperature above ambient.

5,512,092

METHOD FOR PREPARING AQUEOUS EMULSION FOR COATING SOLID PHARMACEUTICAL PREPARATIONS
Naosuke Maruyama, Hiroyasu Kokubo, and Shin-Ichiro Nakamura, all of Niigata, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Apr. 12, 1995, Ser. No. 420,569

Claims priority, application Japan, Apr. 15, 1994, 6-076913; Nov. 15, 1994, 6-280158

Int. Cl.⁶ C09D 7/14

U.S. Cl. 106—198

10 Claims

1. A method for preparing an aqueous emulsion for coating solid pharmaceutical preparations comprising the following steps (a) to (c):
- (a) dissolving a water-insoluble cellulosic polymer in an organic solvent capable of being admixed with water in any rate or a mixed solvent of the organic solvent and water to give a polymer solution having a polymer concentration of not more than 10% by weight;
- (b) self-emulsifying the polymer solution by addition of water in an amount of not less than 80% by weight of the polymer solution to give an emulsified stock solution; and
- (c) removing a part of the solvents present in the emulsified stock solution to concentrate it.

5,512,093

HOT MIX ASPHALT AND METHOD OF PREPARATION THEREOF

Fred R. Huege, Colleyville, Tex.; Robin E. Graves, Henderson, Nev.; Timothy L. Salter, Fort Worth, Tex.; Patrick Shields, Scottsdale, Ariz., and Norman L. Hains, Arlington, Tex., assignors to Chemical Lime Company, Fort Worth, Tex.

Filed Oct. 26, 1994, Ser. No. 329,436

Int. Cl.⁶ C09D 4/00

U.S. Cl. 106—284.03

15 Claims

1. In a method of preparing a hot mix asphalt paving material containing sand, mineral aggregate material and asphalt binder, the

5,512,094

METAL OXIDE COATED SILICA SHELLS

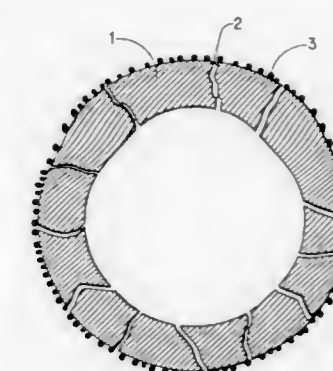
Howard R. Linton, Nokomis, Fla., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 20, 1992, Ser. No. 979,705

Int. Cl.⁶ C08K 7/22

U.S. Cl. 106—409

20 Claims



1. A powder composition in which the powder particles comprise a hollow silica shell that has an average diameter in the range of about 0.05 to 15 microns, a shell thickness in the range of from about 5 to 50 nanometers, and surface area of about 25 to 350 m²/g, said silica shell having a surface accessible coating comprising at least one metal oxide selected from the group consisting of Fe, Zr, V, Nb, Ta, Cr, Mo, W, Co, Ni, Cu, and Zn, wherein said at least one metal oxide comprises about 10 to 75% by weight of the powder composition.

5,512,095

NAPHTHALOCYANINES

Benno Sens, Neiphen; Andres C. G. Espino; Bernhard Albert, both of Maxdorf, and Juergen Kipper, Karlsruhe, all of, Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Filed Jun. 8, 1994, Ser. No. 255,988

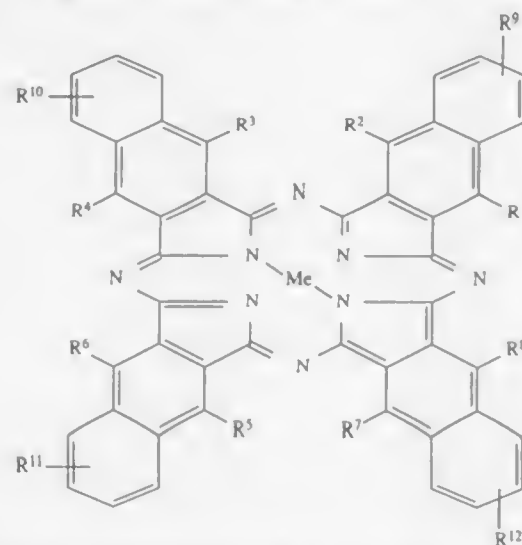
Claims priority, application Germany, Jun. 8, 1993, 43 18 983.0

Int. Cl.⁶ C09B 67/50

U.S. Cl. 106—412

1. A naphthalocyanine compound of formula I

10 Claims



where the variables have the following meanings:

R¹, R², R³, R⁴, R⁵, R⁶, R⁷ and R⁸ are each independently of the others, hydrogen, hydroxyl, C₁-C₂₀-alkyl or C₁-C₂₀-alkoxy, whose carbon chains may each be interrupted by from 1 to 4 oxygen atoms in ether function and which may be phenyl-substituted,

R⁹, R¹⁰, R¹¹ and R¹² are each independently of the others, hydrogen, halogen or C₁-C₂₀-alkyl or C₁-C₂₀-alkoxy, whose carbon chains may be interrupted by from 1 to 4 oxygen atoms in ether function, wherein at least two of R₁-R₁₂ are solubilizing groups,

Me is two hydrogen atoms, two univalent metal atoms or a bivalent metal atom with or without further substituents for valence saturation,

wherein said naphthalocyanine compound is in the form of isometric particles having a particle size distribution from 10 to 300 nm.

5,512,096

FLEXIBLE GROUTING COMPOSITION

Stewart W. Krause, Billings, Mont., assignor to Wyo-Ben, Inc., Billings, Mont.

Continuation of Ser. No. 138,441, Oct. 20, 1993, abandoned.

This application Jul. 14, 1995, Ser. No. 502,856

Int. Cl.⁶ C04B 14/10

U.S. Cl. 106—718

17 Claims

1. A grouting composition useful for effecting a seal in an earthen borehole or other subsurface cavity, wherein said grouting composition consists by weight essentially of 90.0–99.99% water swellable clay and 0.01–10.0% gelling agent, and wherein said water swellable clay is sufficiently ground so that at least about 80% passes a 200 mesh U.S. standard sieve.

5,512,097

REMOVAL OF SULFUR OXIDES FROM WASTE GASES BY SCRUBBING WITH AN AQUEOUS SLURRY OF FINELY COMMUNUTED LIMESTONE

Wayne W. Emmer, 7921 Kerrybrooke Trail, Poland, Ohio 44514

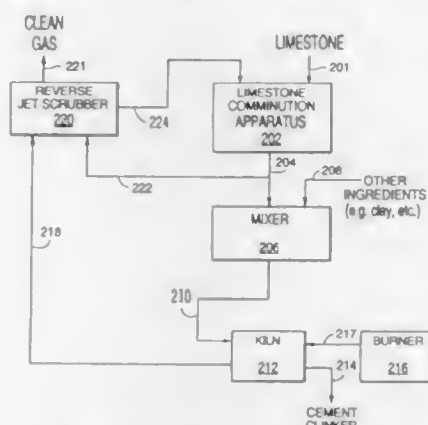
Continuation of Ser. No. 225,962, Apr. 8, 1994, abandoned.

This application Dec. 7, 1994, Ser. No. 350,535

Int. Cl.⁶ C04B 2/10; C01B 17/22

U.S. Cl. 106—745

4 Claims



1. In a process for making portland cement wherein limestone is finely comminuted in a limestone comminution step and mixed with a siliceous material to form a feed mixture, and said mixture is fed to a kiln and heated therein by contact with hot combustion gases containing sulfur oxides to form cement clinker, the improvement comprising:

forming an aqueous suspension of a portion of said finely comminuted limestone;

feeding said limestone suspension directly to a liquid disengagement chamber of a reverse jet scrubber for removing sulfur oxides from a waste gas stream;

recirculating said slurry from said chamber directly through said reverse jet scrubber, reacting sulfur dioxides in said reverse jet scrubber with said limestone to form a slurry containing calcium sulfite and calcium sulfate in said liquid disengagement chamber;

withdrawing said slurry containing calcium sulfite and calcium sulfate from said liquid disengagement chamber and feeding said slurry directly to said limestone comminution step.

5,512,098

APPARATUS FOR IMPREGNATING WOOD

Nicholas A. French, Douglas, Mich.; W. Dale Ellis, McFarland, and Roger M. Rowell, Madison, both of Wis., assignors to Haworth, Inc., Holland, Mich., and The United States of America, as represented by the Secretary of Agriculture, Washington, D.C.

Filed Aug. 2, 1994, Ser. No. 284,806

Int. Cl.⁶ C23C 14/24; 14/50; B05C 3/109; 13/02

U.S. Cl. 118—50

10 Claims

1. Apparatus for impregnating a wood veneer sheet with a liquid impregnant, comprising:

a container having an upper chamber communicated to an upper end of a vertically elongated lower impregnation chamber adapted to receive a wood veneer sheet,

a clamping mechanism for releasably engaging only a peripheral region of the veneer sheet, said clamping mechanism being adapted to be cooperably received in said upper chamber with the veneer sheet suspended downwardly therefrom into said impregnation chamber,

an elevator releasably connectable to said clamping mechanism for holding the sheet in a downwardly suspended state and for lowering the clamping mechanism into said upper chamber to suspend the veneer sheet in said impregnation chamber, said elevator mechanism being disconnected from said clamping

5,512,100

POWDER SPRAY BOOTH WITH MULTIPLE FILTER MODULES

Gratus Ingram, Parma, Ohio; Reuven I. Meyers, Minneapolis, Minn., and Timothy G. Chambers, Oswego, Ill., assignors to Nordson Corporation, Westlake, Ohio

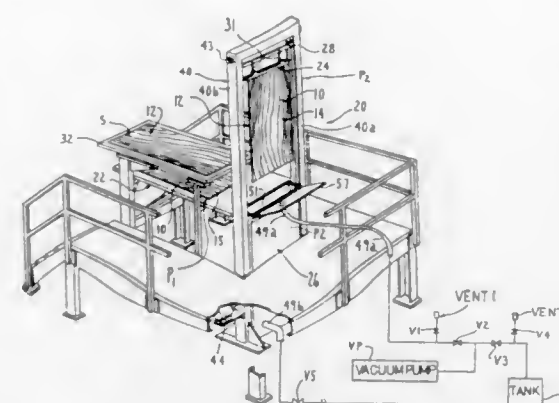
Continuation of Ser. No. 18,895, Feb. 17, 1993, abandoned.

This application Aug. 18, 1994, Ser. No. 292,537

Int. Cl.⁶ B05C 15/00

U.S. Cl. 118—309

4 Claims



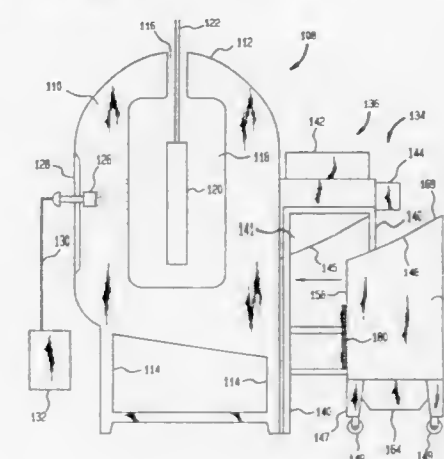
mechanism such that said clamping mechanism remains in said upper chamber during impregnation of the veneer sheet, means for evacuating said impregnation chamber after the veneer sheet is suspended therein,

means for introducing liquid impregnant into said impregnation chamber about the veneer sheet suspended therein,

means for establishing a pressure in said impregnation chamber effective to impregnate the veneer sheet suspended therein with the liquid impregnant,

said clamping mechanism being reconnectable to said elevator after the veneer sheet is impregnated so as to enable upward removal of the veneer sheet from said container;

sheet wiping means disposed above said impregnation chamber to wipe off excess liquid impregnant from the sheet as the impregnated veneer sheet is upwardly removed from said impregnation chamber.



1. Apparatus for applying powder coating material onto objects, comprising:

a powder spray booth including:

(i) a ceiling, a floor, a pair of opposed side walls and a pair of opposed end walls which collectively define a booth interior in which to powder coat objects;

(ii) said ceiling being formed with a conveyor slot to permit the transfer of objects longitudinally through said booth interior;

(iii) one of said opposed side walls having openings at which at least one powder dispensing device is mounted to apply powder coating onto objects within said booth interior; and

(iv) the other of said opposed side walls being formed with an outlet opening to permit the passage of oversprayed powder, which does not adhere to objects, out of said booth interior;

a collector tier collecting said oversprayed powder material from said booth interior including:

(i) a first filter module and a second filter module each including a number of cartridge filters, said first and second filter modules being carried within a single housing having a front wall formed with a first opening into said first filter module and a second opening into said second filter module, first and second doors mounted on said front wall, wherein said first door is movable between an open position and a closed, sealed position relative to said first opening, and wherein said second door is movable between an open position and a closed, sealed position relative to said second opening;

(ii) said first and second filter modules being movable in and out of communication with said outlet opening, wherein said front wall is positionable adjacent said other of the opposed walls of said booth such that said first and second openings are sealed to said outlet opening;

(iii) a single blower device common to said first and second filter modules, for drawing air-entrained oversprayed powder coating material from said booth interior into at least one of said first and second filter modules for the collection of said oversprayed powder coating material;

5,512,099

APPLICATOR FOR SEED TREATMENT PRODUCTS

Gary Grossweiler, and Timothy McArdle, both of Pekin, Ill., assignors to Trace Chemicals Incorporated, Pekin, Ill.

Filed Mar. 30, 1994, Ser. No. 220,239

Int. Cl.⁶ A01M 21/04

U.S. Cl. 118—267

9 Claims



1. Apparatus for applying seed treatment products to seeds in a pile while minimizing user exposure to the products, comprising:

a seed treatment product canister having walls, a closed end and an open end, the open end being closed by a cover until such time as the products are to be applied to seeds; and

an elongated relatively rigid tube having a hollow main body portion and a transfer chamber in fluid communication with the body portion, the main body portion having a lower end adapted for insertion beneath the surface of the seed pile and for stirring the seeds in the pile, with a depth reference line formed on the main body portion, the transfer chamber having an open top and being sized to receive at the open top the open end of the canister and at least a portion of the canister wall in tight-fitting relation such that the wall and canister closed end are effective to seal the open top of the transfer chamber and cause all seed treatment products to flow from the open end of the canister into and through the main body portion.

(iv) wherein said housing includes a top wall, bottom wall, opposed sidewalls, and a back wall, and wherein said first and second filter modules are separated by a divider plate extending between said front and back walls and between said top and bottom walls.

5,512,101

SEED SUPPLYING AND COATING APPARATUS

Yasushi Kohno, Susono, Japan, assignor to Yazaki Corporation, Tokyo, Japan

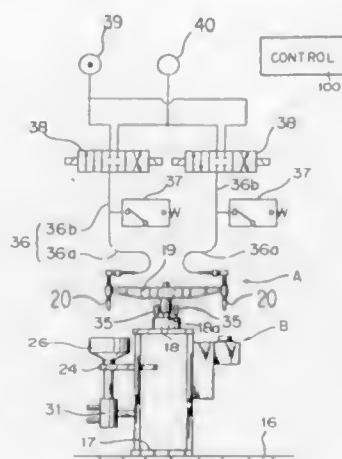
Filed Mar. 22, 1995, Ser. No. 408,308

Claims priority, application Japan, Mar. 24, 1994, 6-053595

Int. Cl.⁶ B05C 5/00

U.S. Cl. 118—668

5 Claims



1. A seed supplying and coating apparatus, comprising:

a mounting table;
a rotary drive having a rotary shaft, fixedly mounted on an upper surface of said mounting table;
a rotary arm fixed at a center thereof to said rotary shaft of the rotary drive;

suction tips provided at opposite ends of said rotary arm for sucking and dropping seeds, said suction tips each connected to a pipeway in communication by way of an electromagnetic valve to a positive pressure source and a negative pressure source;

a seed vessel provided at one side of said mounting table for containing seeds therein, said seed vessel being opened at an upper portion thereof and having a throughhole in a bottom portion thereof;

a supply rod provided with a seed carrying surface, passed through said throughhole in the bottom portion of the seed vessel and connected at a lower end thereof with an actuator for driving said supply rod upwardly to bring said seed carrying surface adjacent to one of said suction tips positioned thereabove and driving said supply rod downwardly;

a gel discharging mechanism provided at a side of said mounting table opposite to said seed vessel for providing a gel that coats seeds;

a detector sensor, disposed adjacent the rotary arm, for detecting when each of said suction tips is positioned above said seed carrying surface of the supply rod or said gel discharging mechanism; and

a control device, associated with the detector sensor, said supply rod actuator, said rotary drive and said electromagnetic valves, for driving said supply rod actuator and said rotary drive and for switching said electromagnetic valves in synchronism with operation of said gel discharging mechanism.

5,512,102

MICROWAVE ENHANCED CVD SYSTEM UNDER MAGNETIC FIELD

Shunpei Yamazaki, Tokyo, Japan, assignor to Semiconductor Energy Laboratory Co., Ltd., Kanagawa, Japan

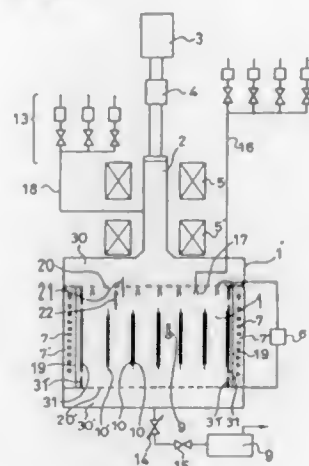
Division of Ser. No. 776,058, Sep. 25, 1991, abandoned, which is a continuation-in-part of Ser. No. 355,863, May 18, 1989, abandoned, which is a continuation of Ser. No. 918,075, Oct. 14, 1986, abandoned, which is a continuation-in-part of Ser. No. 911,088, Sep. 24, 1986, abandoned, said Ser. No. 776,058 is a continuation-in-part of Ser. No. 593,257, Oct. 1, 1990, abandoned, which is a division of Ser. No. 118,892, Nov. 10, 1987, abandoned, which is a continuation-in-part of Ser. No. 929,449, Nov. 12, 1986, abandoned. This application Mar. 28, 1994, Ser. No. 219,287

Claims priority, application Japan, Oct. 14, 1985, 60-228077; Oct. 14, 1985, 60-228078; Oct. 14, 1985, 60-228080; Oct. 14, 1985, 60-228082; Oct. 14, 1985, 60-228083

Int. Cl.⁶ C23C 16/00

U.S. Cl. 118—723 MW

16 Claims



1. A plasma processing apparatus:
a chamber;

a gas introducing means for introducing a process gas into the chamber;
a means for emitting a microwave into the chamber;
a means for inducing a magnetic field in the chamber to form an electron cyclotron resonance in order to convert said process gas to a plasma;
a substrate having a surface to be treated placed in the chamber;
exhaust means for exhausting said chamber, said exhaust means including a turbo-molecular pump interposed between the chamber and a vacuum pump; and
a control valve interposed between the chamber and the turbo-molecular pump for controlling the pressure within the chamber.

5,512,103

SILVER HALIDE COLOR PHOTOGRAPHY ELEMENT WITH IMPROVED HIGH DENSITY CONTRAST AND BRIGHT LOW DENSITY COLORS

James L. Edwards, Rochester; Eric L. Bell, Webster; Benjamin T. Chen, Penfield, and Richard L. Parton, Webster, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y. Continuation-in-part of Ser. No. 199,035, Feb. 18, 1994, Pat. No. 5,418,118. This application Jan. 19, 1995, Ser. No. 374,054

Int. Cl.⁶ G03C 7/30

U.S. Cl. 430—383

34 Claims

1. A method of forming a photographic image comprising providing a multicolor photographic element comprising at least one layer said at least one layer comprising a silver halide emulsion layer containing a cyan dye-forming coupler capable of producing cyan color or a silver halide emulsion layer containing a magenta dye-forming coupler capable of producing a magenta color

wherein said at least one layer has an exposure range of at least 0.6 log E from the point where the instantaneous contrast is 1.0 and wherein the instantaneous contrast of said layer increases as a function of increasing exposure over at least 70 percent of said exposure range, exposing said element to actinic radiation to form a latent image, and developing said latent image with a color developing agent to yield a color image.

5,512,104

METHOD TO SEPARATE AND RECOVER RESIN AND STEEL PIPE FROM RESIN-COATED STEEL PIPE

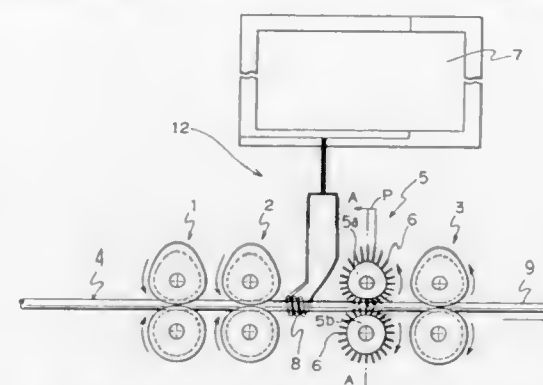
Toshitsugu Mizushiri; Mamoru Yokota; Norimichi Nakamura; Ken Ota; Shuji Yoshino, and Noboru Inoue, all of Shizuoka, Japan, assignors to Yazaki Industrial Chemical Co., Ltd., Shizuoka, Japan

Filed Mar. 11, 1994, Ser. No. 212,597

Int. Cl.⁶ B08B 1/00; 3/12; 7/02

U.S. Cl. 134—1

16 Claims



1. A method of removing thermoplastic coating resin from resin-coated steel pipe, comprising the steps of:

(a) heating the steel pipe by high-frequency induction heating to at least melting temperature of the coating resin, whereby an inner layer of the coating resin is melted and an outer layer of the coating resin is softened; and
(b) scraping the coating resin off the steel pipe in form of chips or strips while the inner layer of the coating resin is in a melted condition and the outer layer is in a softened condition.

5,512,105

METHOD OF REMOVING DRIED PAINT FROM A SURFACE

George A. O'Brien, 384 Hollow Tree Ridge Rd., Darien, Conn. 06820

Division of Ser. No. 41,701, Apr. 1, 1993, Pat. No. 5,341,535, which is a continuation-in-part of Ser. No. 768,389, Sep. 30, 1991, abandoned. This application Jun. 7, 1994, Ser. No. 255,067

Int. Cl.⁶ B08B 1/04

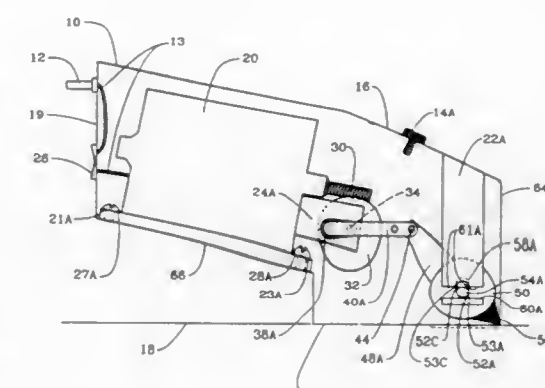
U.S. Cl. 134—6

11 Claims

1. A method of removing dried paint from a flat glass work surface comprising:

providing a brush having a brush support rotatably supported along an axis of rotation, said brush support having filaments extending from a portion of said brush support and contacting said flat glass work surface;

oscillating said brush support in a back-and-forth movement about said axis of rotation and moving said axis of rotation of said brush support away from said flat glass work surface during said back-and-forth movement of said brush support while maintaining said filaments in contact with said dried paint on said flat glass work surface without exerting an undue force on said flat glass work surface thereby removing



said dried paint from said flat glass work surface without damaging said flat glass work surface.

5,512,106

SURFACE CLEANING WITH ARGON

Tadamoto Tamai, Tokyo, and Yoichiro Ikeya, Honya, both of Japan, assignors to Sumitomo Heavy Industries, Ltd., Tokyo, Japan

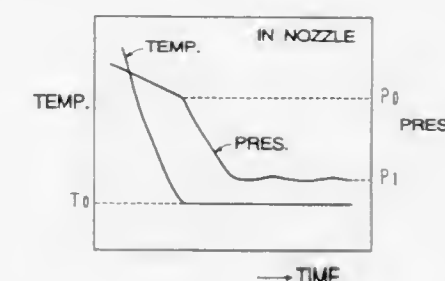
Filed Jan. 21, 1994, Ser. No. 185,184

Claims priority, application Japan, Jan. 27, 1993, 5-011519; Feb. 22, 1993, 5-031950; Mar. 30, 1993, 5-071777; Apr. 8, 1993, 5-82234; Jul. 30, 1993, 5-189541

Int. Cl.⁶ B08B 7/00

U.S. Cl. 134—7

26 Claims



1. In a surface cleaning method wherein argon is sprayed through a nozzle device onto the surface of an object to be cleaned, the improvement comprising:

an argon fine droplets forming step for forming argon liquid droplets upstream of the nozzle device comprising a cooling step to cool a gas containing an argon gas to the liquefying temperature of argon gas specific to the pressure of said argon gas, or lower, to form a fluid comprising said argon fine droplets and delivering said fluid containing the argon droplets into the nozzle device;

an argon fine particles forming step comprising jetting out the fluid containing argon liquid droplets from the nozzle device to a depressurized atmosphere and adiabatically expanding said fluid from the nozzle device in the depressurized atmosphere to solidify at least part of said argon liquid droplets into argon fine particles; and

a blowing step of blowing said fluid containing said argon fine particles to the surface of the object to be cleaned.

5,512,107

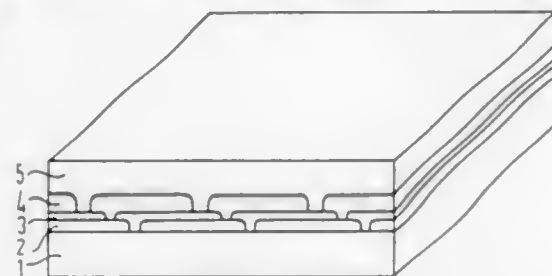
ENVIRONMENTALLY STABLE THIN-FILM SOLAR MODULE

Robert van den Berg, Munich, Germany, assignor to Siemens Solar GmbH, Munich, Germany
 PCT No. PCT/DE93/00217, § 371 Date Sep. 19, 1994, § 102(e) Date Sep. 19, 1994, PCT Pub. No. WO93/19491, PCT Pub. Date Sep. 30, 1993
 PCT Filed Mar. 9, 1993, Ser. No. 302,896
 Claims priority, application Germany, Mar. 19, 1992, 42 08 950.6

Int. Cl.⁶ H01L 31/048

U.S. Cl. 136—251

4 Claims



I. A thin-film solar module, comprising:
 a transparent substrate,
 at least one active semiconductor layer made of a I-III-VII₂ semiconductor having a diode structure, said semiconductor layer being patterned into strip-shaped individual solar cells;
 electrode patterns made of aluminum-doped zinc oxide having a hexagonal crystal structure as front and rear contacts and for integrated interconnection of the solar cells, and
 an epoxy coating layer as a rear covering on said solar module.

5,512,108

THERMOPHOTOVOLTAIC SYSTEMS

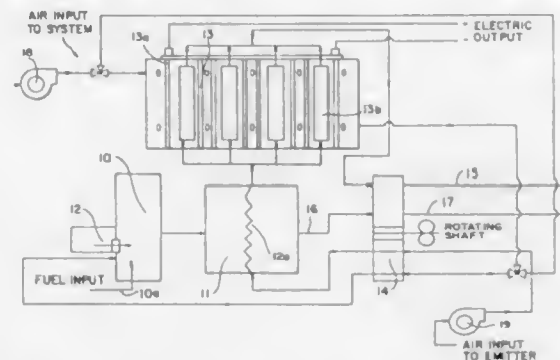
Darryl L. Noreen, Hoboken, N.J., assignor to R & D Technologies, Inc., Hoboken, N.J.

Filed Sep. 29, 1994, Ser. No. 315,062

Int. Cl.⁶ H02N 6/00

U.S. Cl. 136—253

95 Claims



I. A thermophotovoltaic (TPV) system comprising:
 a) an insulated housing containing a porous ceramic matrix and having a combustion zone for supporting combustion of a reactant mixture and for emitting radiant energy in response to said combustion;
 b) means for injecting an incoming reactant mixture into said ceramic matrix;
 c) photochemical ignition source means for emitting ignition photons and means for delivering said photons to said combustion zone in said ceramic matrix to ignite said reactants and propagate a combustion flame within said ceramic matrix;
 d) photocell means for receiving and converting said radiant energy into electricity; and
 e) heat recovery means for recovering heat of combustion and for preheating said reactant mixture.

5,512,109

GENERATOR WITH THERMOPHOTOVOLTAIC CELLS AND HYDROCARBON BURNER

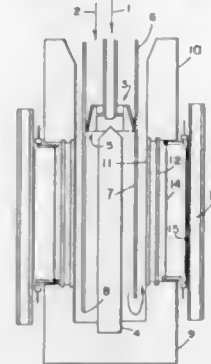
Lewis M. Fraas, Issaquah; Michael R. Seal, and Edward M. West, both of Bellingham, all of Wash., assignors to JX Crystals, Inc., Issaquah, Wash.
 Continuation-in-part of Ser. No. 260,910, Jun. 15, 1994, Pat. No. 5,439,532, which is a continuation-in-part of Ser. No. 47,477, Apr. 19, 1993, Pat. No. 5,383,976, and Ser. No. 906,452, Jun. 30, 1992, Pat. No. 5,312,521. This application

Feb. 24, 1995, Ser. No. 393,919

Int. Cl.⁶ H01L 31/058; H02N 6/00

U.S. Cl. 136—253

16 Claims



I. A generator comprising thermophotovoltaic cells in an array, an IR generator positioned within the thermophotovoltaic cells array, the IR generator having a tubular IR emitter spaced outward from a central pillar and forming therebetween a first down passage for hot combustion gases, an IR transparent window tube surrounding the IR emitter forming therebetween an up passage for the hot combustion gases which heat the IR emitter, a fuel supply tube, an air supply surrounding the fuel tube, a hydrocarbon burner assembly positioned above the pillar in the air supply tube for generating the hot combustion gases, the burner assembly further comprising air channels for directing air to a combustion zone below the burner assembly and mixing channels connected to the fuel supply and to the air supply for mixing fuel and air and supplying a fuel-air mixture to the combustion zone, and an igniter in the combustion zone for combusting the fuel-air mixture and creating the hot combustion gases for heating the IR emitter.

5,512,110

PROCESS FOR PRODUCTION OF GRAIN ORIENTED ELECTRICAL STEEL SHEET HAVING EXCELLENT MAGNETIC PROPERTIES

Yasunari Yoshitomi; Katsuro Kuroki; Yukio Matsuo; Hiroaki Masui; Yoshio Nakamura; Maremizu Ishibashi; Tsuyoshi Kawano; Tsutomu Haratani, all of Kitakyushu, and Yoshiyuki Ushigami, Futsu, all of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Continuation of Ser. No. 48,393, Apr. 14, 1993, abandoned.

This application Jun. 6, 1995, Ser. No. 466,866

Claims priority, application Japan, Apr. 16, 1992, 4-096858; Apr. 16, 1992, 4-096859; Apr. 24, 1992, 4-107001

Int. Cl.⁶ H01F 1/18

U.S. Cl. 148—113

10 Claims

I. A process for producing a grain oriented electrical steel sheets having excellent magnetic properties, comprising the steps of:
 heating a slab comprising, in terms of by weight, 0.025 to 0.075% of C, 3.4 to 5.0% of Si, 0.015 to 0.080% of sol. Al, 0.0030 to 0.013% of N, 0.014% or less of (S+O.405 Se) and 0.05 to 0.8% of Mn, sol. Al (%) / Si (%) being 0.0080 or more, with the balance consisting of Fe and unavoidable impurities at a temperature below 1280° C.;
 hot-rolling the heated slab;
 subjecting the hot-rolled steel sheet to cold rolling including final rolling with a reduction ratio of 80% or more once or at least twice with intermediate annealing between cold rolling;

5,512,112

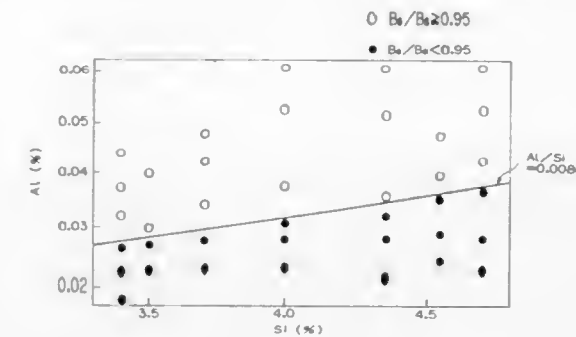
METHOD OF MAKING HIGH STRENGTH, HIGH TOUGHNESS ALUMINUM-COPPER-MAGNESIUM-TYPE ALUMINUM ALLOY

William A. Cassada, III, Richmond, Va., assignor to Reynolds Metals Company, Richmond, Va.
 Continuation of Ser. No. 937,935, Aug. 28, 1992, Pat. No. 5,376,192. This application Jun. 27, 1994, Ser. No. 267,069

Int. Cl.⁶ C22F 1/04; C22C 21/12

U.S. Cl. 148—550

2 Claims



subjecting the final cold-rolled steel sheet to decarbonization annealing with regulating the average diameter of primary recrystallized grains of the steel sheet subjected to decarbonization annealing to 18 to 35 μ m in a period between the completion of the decarbonization annealing and the initiation of final annealing;

coating the steel sheet subjected to decarbonization annealing with an annealing separator and subjecting the coated steel sheet to final annealing wherein the final annealing is effected in such a manner that the partial pressure of nitrogen, P_{N_2} (%), in an annealing atmosphere in a final annealing furnace is 12.5% or more in a steel sheet temperature range of from 900° C. to 1150° C. in the heating stage of the final annealing; and subjecting the steel sheet to nitriding to cause the steel sheet to absorb 0.0010% by weight or more of nitrogen in a period between the completion of the hot rolling and the initiation of secondary recrystallization in the final annealing.

5,512,111

ALUMINUM ALLOY MATERIAL FOR SHUTTER OF RECORDING MEDIUM CASSETTE, PROCESS FOR PRODUCING THE SAME, AND ALUMINUM ALLOY SHUTTER MADE OF THE SAME

Shozo Tahara, Nara; Taizo Kimura, Kanagawa; Hiroki Miyazaki, Ichikawa, and Kazuhiro Hanaki, Nagoya, all of Japan, assignors to Sumitomo Light Metal Industries, Ltd., Tokyo, Japan

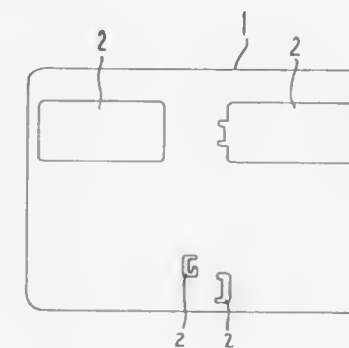
Filed Apr. 14, 1994, Ser. No. 227,551

Claims priority, application Japan, Apr. 14, 1993, 5-112274; Jul. 21, 1993, 5-201020

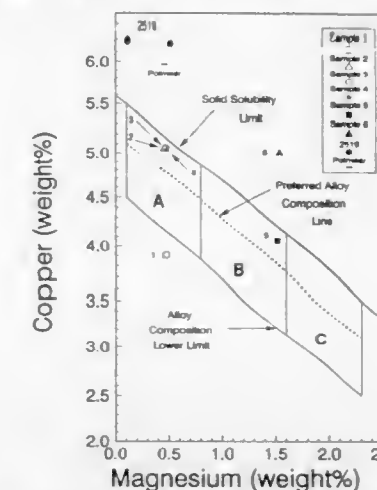
Int. Cl.⁶ C22C 21/06

U.S. Cl. 148—440

6 Claims



I. A shutter for a recording medium cassette comprising an aluminum alloy sheet having a synthetic resin coated thereon at a thickness not greater than 5 μ , the aluminum alloy comprising 3.0–6.0 wt. % Mg, aluminum and inevitable impurities and the coated alloy sheet not having the coating crack or delaminate therefrom when the alloy sheet is bent at a 90° outside bend radius, said bend radius being equal to the alloy sheet thickness.



I. A process for producing an aluminum alloy product having improved combinations of high strength and fracture toughness, said process comprising:

- casting an ingot having a chemical composition consisting essentially of:
 about 2.50 to 5.50% by weight of copper,
 about 0.10 to 2.30% by weight of magnesium,
 about 0.10 to 1.0% by weight of silver,
 between about 0.05% and 0.15% by weight of zirconium,
 between about 0.05% and 0.15% by weight of vanadium,
 balance aluminum and incidental impurities, the amounts of copper and magnesium being selected to maintain the solute content below the solid solubility limit for copper and magnesium in aluminum;
- homogenizing said ingot;
- working said ingot to produce a product;
- solution heat treating said product to obtain a saturated solid solution;
- aging said product to develop an improved combination of high strength and fracture toughness.

5,512,113

ONE-PIECE SINGLE METAL SPINNERET HAVING SOFTENED CAPILLARY ZONE

Mark A. Short, Ridgeway, and Thomas E. Willis, Midlothian, both of Va., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

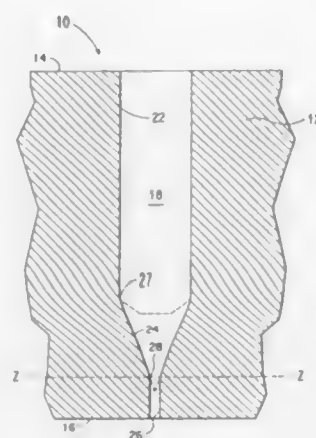
Filed Nov. 9, 1993, Ser. No. 152,666

Int. Cl.⁶ B29F 3/04; C21D 1/04

U.S. Cl. 148—565

5 Claims

I. A spinneret comprising a one-piece single metal body having:
 (a) an entrance face, and
 (b) an exit face with
 (c) at least one spinning passage extending from the entrance face to the exit face wherein the spinning passage includes a lead hole with a cross-sectional area and extends for a length from the entrance face into the metal body and a capillary with a cross-sectional area and extends for a length through a capillary zone from the exit face into the metal body to a point of connection with the lead hole, wherein the metal in the capillary zone is softer and has a yield strength which is less than the metal in the remainder of the body and wherein the



cross-sectional area of the lead hole is greater than the cross-sectional area of the capillary, and the length of the capillary is more than 1.5 times the diameter of the capillary.

5,512,114

ONE-PIECE SINGLE METAL SPINNERET AND METHOD FOR MAKING IT

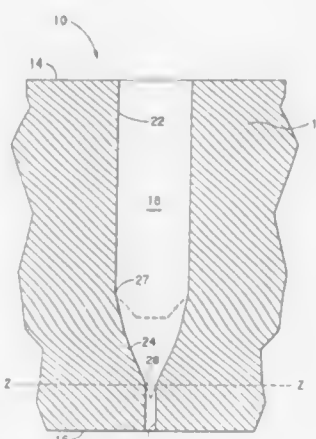
Mark A. Short, Ridgeway, and Thomas E. Willis, Midlothian, both of Va., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 152,666, Nov. 9, 1993. This application Oct. 6, 1994, Ser. No. 318,954

Int. Cl.⁶ C21D 1/04

U.S. Cl. 148—565

5 Claims



1. A process for making a spinneret from a one-piece single metal body exhibiting a yield strength of greater than 350 MPa and having an entrance face and an exit face comprising the steps of:

- drilling at least one lead hole from the entrance face into the body;
- annealing only a capillary zone of the body extending from the exit face into the body to an inner end of capillary by heating only the capillary zone to a temperature above the recrystallization temperature and below the melting point of the metal whereby the metal only in the capillary zone exhibits a yield strength of less than 350 MPa;
- forming at least one capillary from the exit face, through the capillary zone, into the body, and connecting with the lead hole.

5,512,115

VECTORIAL ASSEMBLY METHOD FOR FIRST AND SECOND STAGE ASSEMBLIES OF ROAD VEHICLE TIRES

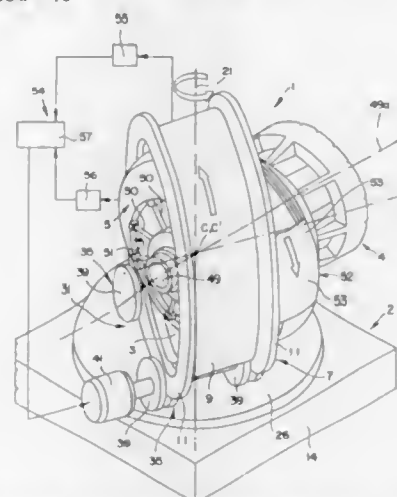
Karl J. Siegenthaler, Rome, Italy, assignor to Bridgestone Corporation, Tokyo, Japan

Filed Nov. 22, 1994, Ser. No. 343,384

Claims priority, application Italy, Dec. 21, 1993, T093A0981 Int. Cl.⁶ B29D 30/30

U.S. Cl. 156—75

5 Claims



1. A vectorial assembly method for first and second stage assemblies of road vehicle tires, the method comprising the steps of placing the first stage assembly about a first support rotatable about a first axis; placing the second stage assembly inside a second support comprising a toroidal body rotatable about a second axis coaxial with the second stage assembly; rotating the first and second stage assemblies about their respective axes, for detecting the respective imbalanced vectors; positioning the assemblies such that the resulting imbalanced vector is minimized; inserting the first stage assembly inside the second stage assembly after arranging the two assemblies in such relative angular positions as to form a tire having said minimized resultant imbalanced vector; and mating the two assemblies.

5,512,116

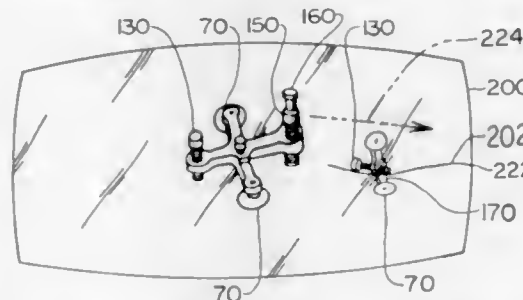
METHOD OF REPAIRING AUTOMOBILE WINDSHIELD

Richard A. Campfield, 9249 Loquat Dr., Riverside, Calif. 92508 Continuation-in-part of Ser. No. 155,452, Nov. 19, 1993, Pat. No. 5,425,827, which is a continuation-in-part of Ser. No. 881,625, May 12, 1992, Pat. No. 5,429,692, which is a

continuation-in-part of Ser. No. 580,075, Sep. 10, 1990, Pat. No. 5,116,441. This application Jun. 1, 1995, Ser. No. 459,039 Int. Cl.⁶ B32B 35/00

U.S. Cl. 156—94

14 Claims



1. A method of repairing a crack in a windshield having a portion of said crack which is surfaced and accessible for progressive surface injection of repair resin said portion defining a remainder portion of said crack comprising first inserting a first resin of selected viscosity into said remainder portion and then inserting a

second resin of selected viscosity which is higher than that of the first resin into said remainder portion.

5,512,117

CHARGE PLATE FABRICATION PROCESS

Brian G. Morris, Dayton, Ohio, assignor to Scitex Digital Printing, Inc., Dayton, Ohio

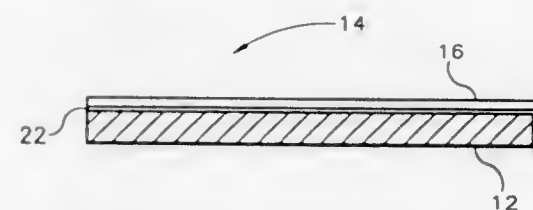
Continuation of Ser. No. 891,333, May 29, 1992, abandoned.

This application Apr. 18, 1994, Ser. No. 229,114

Int. Cl.⁶ B32B 31/00

U.S. Cl. 156—155

6 Claims



1. A method of fabricating a charge plate assembly for an ink jet printer comprising the steps of:

- forming a charge plate coupon having a plurality of charging electrodes and electrical connections on an etchable substrate;
- providing a ceramic charge plate substrate;
- providing an initial adjusted distance between adjacent electrodes to compensate for changes in length of the charge plate coupon due to coefficients of thermal expansion of the charge plate coupon and the charge plate substrate;
- assembling the charge plate coupon and the charge plate substrate in a fixture by applying a layer of adhesive between the charge plate coupon and the charge plate substrate;
- curing the assembly in the fixture to create an assembly having a desired final array length; and
- etching away the etchable substrate subsequent to the step of curing the charge plate assembly.

5,512,118

METHOD OF COVERING ROOFS WITH ROOFTOP CURABLE HEAT SEAMABLE ROOF SHEETING

James A. Davis, Uniontown, and Joseph K. Valaitis, Brecksville, both of Ohio, assignors to Bridgestone/Firestone, Inc., Akron, Ohio

Continuation of Ser. No. 93,348, Jul. 16, 1993, abandoned,

which is a division of Ser. No. 690,453, Apr. 24, 1991, Pat. No. 5,242,970. This application Oct. 11, 1994, Ser. No. 320,871

Int. Cl.⁶ B29C 65/02; B32B 31/04

U.S. Cl. 156—157

10 Claims

1. A method for covering a roof comprising the steps of: applying layers of rooftop curable sheet material prepared from an uncured heat seamable polymeric composition of matter to the roof being covered, wherein said composition of matter of each layer consists essentially of

- 100 parts by weight of a curable semi-crystalline polymer having more than about 2 percent by weight crystallinity and selected from the group consisting of polyolefins prepared from monomers containing at least 2 carbon atoms, said polymer having an ethylene content of at least 60 percent by weight and having up to about 3.7 weight percent unsaturation;
- from about 20 to 300 parts by weight of a filler selected from the group consisting of reinforcing and non-reinforcing materials and mixtures thereof, per 100 parts of said polymer;
- from about 20 to 150 parts by weight of at least one processing material, per 100 parts of said polymer; and
- from about 1.5 to 10 parts by weight of a sulfur cure package having at least one vulcanizing accelerator, said cure package capable of allowing said composition of matter to cure at

temperatures of from about 50° C. to about 69° C.; overlapping adjacent edges of said layers; and seaming the overlapped areas under sufficient heat and pressure to provide a peel adhesion seam strength at 70° C., when preheated 15 minutes prior to testing, of greater than 2.9 pounds/inch and a seam shear strength at 70° C., when preheated 15 minutes prior to testing, of greater than 27.5 pounds/square inch, said composition of matter being curable at temperatures of from about 50° C. to about 69° C.

5,512,119

METHOD OF MAKING A HYBRID PREPREG

Makoto Takezawa, Makiji Miyao, Sadahisa Wada, and Hiroshi Inoue, all of Oi, Japan, assignors to Tonen Corporation, Tokyo, Japan

Division of Ser. No. 634,839, Dec. 27, 1990, Pat. No. 5,279,879. This application Sep. 27, 1993, Ser. No. 127,928

Claims priority, application Japan, Dec. 28, 1989, 1-342441; Dec. 29, 1989, 1-340586; Dec. 29, 1989, 1-340587; Dec. 29, 1989, 1-340588; Jan. 26, 1990, 2-16706; Jan. 26, 1990, 2-16707; Jan. 26, 1990, 2-16708; Feb. 23, 1990, 2-43743; Feb. 23, 1990, 2-43744; Feb. 23, 1990, 2-43745

Int. Cl.⁶ B32B 29/02; B65H 81/00

U.S. Cl. 156—171

8 Claims

1. A method of manufacturing a hybrid prepreg which comprises the steps of:

- winding a unidirectional fiber reinforced prepreg, in which reinforcing fibers each having a diameter of 5–30 μm are used, around the periphery of a drum having a fixed diameter so that the arrangement direction of the reinforcing fibers are oriented in the circumferential direction of the drum;
- winding, at fixed pitches, foreign fibers each having a diameter of 50–500 μm which differ from said reinforcing fibers of said prepreg, around the periphery of said unidirectional fiber reinforced prepreg which has already been wound around said drum; and
- while the prepreg is wound around said drum or after the prepreg is removed from said drum, laying, further, a second unidirectional fiber reinforced prepreg, in which reinforcing fibers each having a diameter of 5–30 μm are used, over the surface of the unidirectional fiber reinforced prepreg on which said foreign fibers are disposed, in such a manner that the arrangement direction of the reinforcing fibers of said second unidirectional fiber reinforced prepreg is oriented in the circumferential direction of said drum.

5,512,120

APPARATUS AND METHOD FOR APPLYING A LABEL TO A CONTAINER

Gaylen R. Hinton, Merced, and Stanley B. Black, Modesto, both of Calif., assignors to Trine Manufacturing Company, Inc., Turlock, Calif.

Continuation of Ser. No. 29,511, Mar. 11, 1993, abandoned.

This application Jul. 1, 1994, Ser. No. 269,512

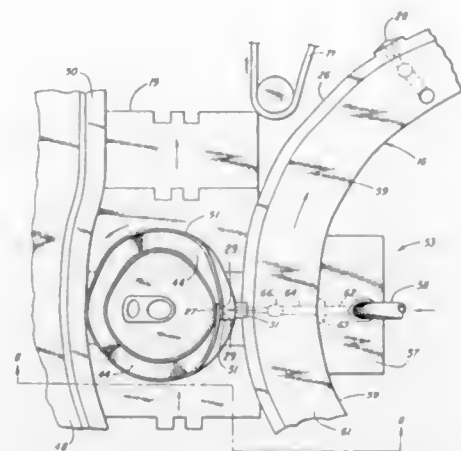
Int. Cl.⁶ B32B 31/00

U.S. Cl. 156—215

13 Claims

11. A method for applying a heat shrinkable film to a container having a right-circular, cylindrical sidewall section, and at least one inwardly directed end section, comprising the steps of:

- applying an adhesive to an inner face of a leading end of the film;
- applying an adhesive to the inner face of a trailing end of the film;
- bringing the sidewall portion of the container into contact with said adhesively treated leading end;
- wrapping the film around the container with said adhesively treated trailing end over-lapping said leading end, forming a first compressive seam between portions of leading end trailing ends supported by the sidewall portion of the container.



- and leaving an unsupported, free standing portion of the film and said ends, extending beyond said sidewall section;
- e. forming a second compressive seam between said free standing end portions by deflecting only said end portions into compressive contact with the inwardly directed end section of the container; and,
- f. heating at least said free standing portion of the film, shrinking the film around the inwardly directed section of the container.

5,512,121

METHOD OF MANUFACTURING A MOP

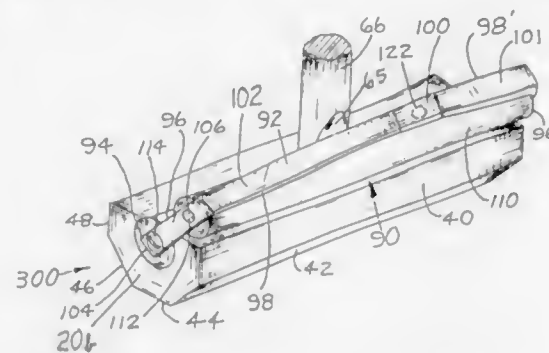
Arthur K. Brown, Jr., 2036 Greenleaf Blvd., Elkhart, Ind. 46514

Filed Sep. 7, 1994, Ser. No. 301,668

Int. Cl.⁶ A47L 13/20

U.S. Cl. 156—257

6 Claims



1. A method of manufacturing a mop comprising the steps of:
- obtaining a sponge from a source of supply, said sponge having a generally rectangular shape with a top surface separated from a bottom surface by a predetermined uniform thickness, said sponge having a first end separated from a second end by first and second parallel side surfaces;
- forming a groove in said top surface along a plane parallel to said first and second side surfaces to create first and second lands;
- applying a layer of adhesive to said sponge in said groove;
- obtaining a cylindrical member from a source of supply, said cylindrical member having a first end and a second end;
- placing said cylindrical member in said groove such that said first and second ends thereof are aligned with the first and second ends of said sponge;
- curing said adhesive to affix said sponge to said cylindrical member;
- attaching a first handle to said cylindrical member;
- obtaining a wringer assembly from a source, said wringer assembly having a strap with a first end and a second end, said strap having a first side adjacent said first end and a second side adjacent said second end, said first side and second side being

connected to a center section, said first and second sides each having first and second holes a fixed distance from first and second ends;

obtaining a roller from a source of supply;

securing said roller to said strap by means extending through said second holes in said first and second sides; and

securing said strap to said cylindrical member by means extending through each of said first holes in said first and second sides of said strap such that said roller is parallel to said cylindrical member, one of said first and second lands acting on and urging said roller into engagement with said first handle when said strap is in a first rest position, said strap being adapted to rotate in an arc to a second position to uniformly remove any liquid from said sponge where the other of said first and second lands act on and urge said roller into engagement with said first handle.

5,512,122

PRINTING METHOD

Harold W. Sokyrka, Saskatchewan, Canada, assignor to Lumina Inc., Mississauga, Canada

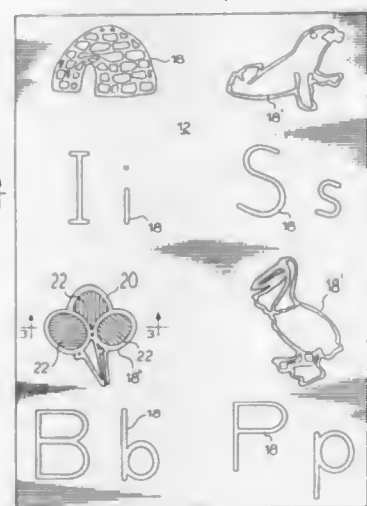
Continuation of Ser. No. 47,133, Apr. 16, 1993, abandoned, which is a continuation-in-part of Ser. No. 962,257, Oct. 16, 1992, abandoned. This application May 4, 1994, Ser. No. 242,681

Claims priority, application Canada, Oct. 17, 1991, 2053675

Int. Cl.⁶ B32B 31/00

U.S. Cl. 156—275.5

10 Claims



1. A method of making three dimensional signs comprising:
- providing a substrate, applying an adhesive printing compound to the substrate, wherein said substrate has not been pre-treated for adhering said compound to said sign, said compound being a gel formed of ultraviolet radiation curable resin and a filler, said printing compound being arranged in a predetermined pattern;
- subjecting said printing compound to ultraviolet radiation after said pre-determined pattern has been formed, whereby said printing compound adheres to said sign after subjecting said compound to ultraviolet radiation.

5,512,123

METHOD FOR USING PULSED OPTICAL ENERGY TO INCREASE THE BONDABILITY OF A SURFACE

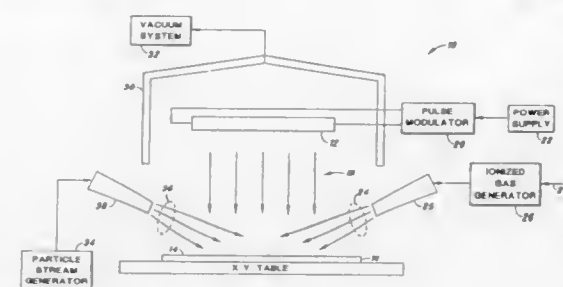
Michael C. Cates, Del Mar; Richard R. Hamm, and Edmond Chu, both of San Diego, all of Calif., assignors to Maxwell Laboratories, San Diego, Calif.

Continuation-in-part of Ser. No. 156,355, Nov. 23, 1993, abandoned, which is a continuation of Ser. No. 885,728, May 19, 1992, abandoned. This application Sep. 2, 1994, Ser. No. 300,389

Int. Cl.⁶ B32B 31/00

U.S. Cl. 156—272.6

18 Claims



1. A method for improving the capability of a surface of an organic structure to bond with another material, comprising the steps of:

generating pulsed, incoherent, broadband optical energy having a multiplicity of wavelength components which range from 160 to 5000 nanometers;

photodecomposing any adventitious organic substances on a surface of the organic structure and photodecomposing a thin layer of molecular bonds forming said surface by:

- irradiating a target area of the surface of the structure with the pulsed, incoherent, broadband optical energy at a pulse rate of between 0.1 and 20 Hz, and a pulse width of from 1 to 180 microseconds, at an optical power density at the surface of the structure within the range of 0.01 to 0.5 J/cm²/sec, the surface having a surface free energy, and the optical power density being of sufficient intensity to photodecompose any adventitious organic substances on the surface and to photodecompose a thin layer of molecular bonds forming the surface; and
- exposing the target area of the surface to ionized gas that chemically reacts with the target area of said surface to increase the surface free energy of the surface.

5,512,124

HOT-MELT ADHESIVE THAT HAS GOOD OPEN TIME AT ROOM TEMPERATURE AND CAN FORM CREEP-RESISTANT BONDS

Dennis Hansen, City of Luck, Wis., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 721,916, Jun. 20, 1991, abandoned, which is a continuation of Ser. No. 190,039, May 4, 1988, abandoned. This application Jan. 14, 1994, Ser. No. 182,846

Int. Cl.⁶ C09J 500/123/08

U.S. Cl. 156—334

19 Claims

1. A method for adhesively bonding a first substrate to a second substrate, the method comprising the steps of:

- (a) providing a first substrate;
- (b) applying to the first substrate in a thin layer about 50 μ m thick and in molten form, a hot melt adhesive comprising by weight:
- (1) an ethylene/vinyl acetate copolymer having from 14 to 35 weight % vinyl acetate and a melt index of at least 500, and
 - (2) from 50 to 200 parts of a tackifying resin per 100 parts of the copolymer, which resin has a ring and ball softening point within the range of from 70° to 115° C. and a combined aromatic and olefinic content within the range of from 0.5 to 50 mole %;

- (c) cooling the thin layer of the molten hot melt adhesive until it is no longer molten, wherein the non-molten thin layer of adhesive remains tacky for 5 seconds to about 330 seconds at room temperature; and
- (d) applying a second substrate to the tacky, non-molten thin layer of adhesive in step (c) to adhesively bond the first substrate to the second substrate.

5,512,125

MAGNETIC MARKER APPLYING DEVICE FOR A PRINTING PRESS

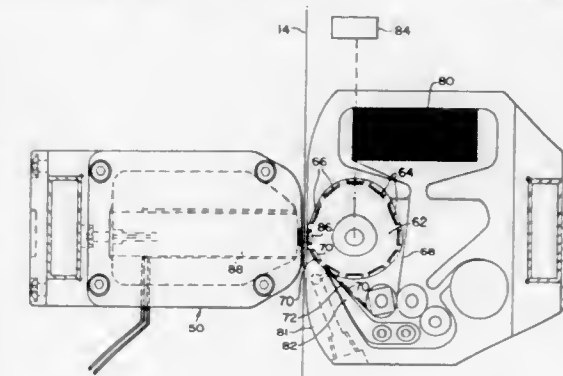
Stanley Momot, 6405 Laurel Ave., La Grange, Ill. 60525; Richard Oesterlin, 814 Quincy Ave., Hinsdale, Ill. 60521; Edward Hudyma, 631 Derbyshire La.; Kenneth Dabisch, 216 Flaggstaff Dr., both of Bolingbrook, Ill. 60440; Richard Fedrigon, 935 Ontario St., Oak Park, Ill. 60302; Ira Goldberg, 54 Westbury Ct., Thousand Oaks, Calif. 91360, and Ragy Isaac, 895 Brampton Cir., Bolingbrook, Ill. 60440

Filed Aug. 24, 1994, Ser. No. 295,128

Int. Cl.⁶ B32B 31/00

U.S. Cl. 156—353

16 Claims



16. A marker applying device for a substrate, comprising:
- a plurality of markers having magnetic material in the markers, and an adhesive on a surface of the markers;
- means for sequentially positioning the markers at an actuating location;
- an electromagnet positioned with the substrate being intermediate the electromagnet and positioning means, with the markers being sequentially positioned by the positioning means in a configuration with the adhesive facing the electromagnet and substrate; and
- means for electrically pulsing the electromagnet to produce a magnetic force, such that the electromagnet deposits the markers on the substrate such that the adhesive on the markers retains the markers on the substrate.

5,512,126

OPTICAL LAMINATOR

Rengan Kannabiran, Wayland, and Leroy C. Vargas, New Bedford, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Mar. 11, 1994, Ser. No. 212,519

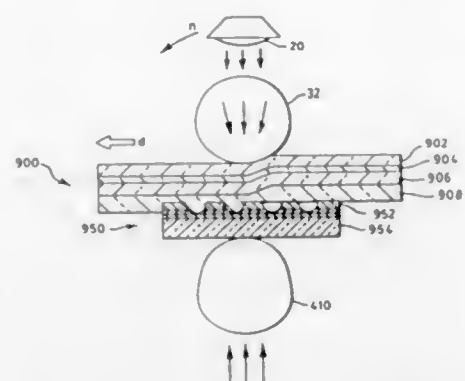
Int. Cl.⁶ B32B 31/00

U.S. Cl. 156—380.9

13 Claims

1. An optical laminator useful for substantially interfacially adhering a protective overcoat onto a receiving surface when the protective overcoat and receiving surface are continuously conveyed between an optical lamination roller and a source of resistance and wherein the protective overcoat is capable of being made bondable to the receiving surface upon irradiation with optical radiation, the optical laminator comprising

an optical lamination roller positioned to establish a nip zone when brought into association with the resistance source, the



- optical lamination roller being axially rotatable and configured to transmit and concentrate optical radiation in the production of an activation zone;
- conveying means for effectuating the positioning of the protective overcoat into the nip zone in optical contiguity with the optical lamination roller;
- compressing means for generating a compressive force at the nip zone, the compressive force being of a magnitude sufficient to promote the adhering of the protective overcoat after exposure onto the receiving surface; and
- an optical radiation source capable of emitting optical radiation at an intensity sufficient to activate the protective overcoat when the optical radiation is transmitted through the optical lamination roller; the optical radiation source capable of emitting optical radiation through the optical lamination roller.
8. An optical lamination process for adhering a protective overcoat onto a receiving surface, the optical lamination process comprising the steps of
- providing a protective overcoat capable of being made bondable to the receiving surface upon irradiation with optical radiation;
- insertingly conveying a first region of the protective overcoat in substantial interfacial association with a first region of the receiving surface into a nip, the nip being established by an optical lamination roller brought into association with a resistance source, the optical lamination roller being axially rotatable and configured to transmit and concentrate optical radiation in the production of an activation zone;
- bonding the first region of the protective overcoat to the first region of the receiving surface by
- a) transmitting optical radiation through the optical lamination roller to irradiate the inserted first region of the protective overcoat, the transmission of the optical radiation establishing an activation zone on the protective overcoat wherein the protective overcoat becomes bondable to the receiving surface; and
- b) generating compressive force in the nip to pressurewise urge the protective overcoat onto the receiving surface; and repeating the conveying, compressing, and bonding steps until the protective overcoat is adhered onto the receiving surface.
13. An optical laminator useful for substantially interfacially adhering a protective overcoat onto a receiving surface when the protective overcoat and receiving surface are continuously conveyed between an optical lamination roller and a source of resistance and wherein the protective overcoat is capable of being made bondable to the receiving surface upon irradiation with optical radiation, the optical laminator comprising
- an optical lamination roller positioned to establish a nip zone at points along its cylindrical surface when brought into association with the resistance source, the optical lamination roller being substantially solid, axially rotatable, and configured to transmit optical radiation in the production of an activation zone;
- conveying means for effectuating the positioning of the protective overcoat into the nip zone in optical contiguity with the optical lamination roller;

compressing means for generating a compressive force at the nip zone, the compressive force being of a magnitude sufficient to promote the adhering of the protective overcoat after exposure onto the receiving surface; and

an optical radiation source capable of emitting optical radiation at an intensity sufficient to activate the protective overcoat when the optical radiation is transmitted through the optical lamination roller; the optical radiation source capable of emitting optical radiation through the optical lamination roller.

5,512,127

MACHINE FOR MANUFACTURING VULCANIZED-RUBBER TUBES

Andrea Deregibus, Padua, Italy, assignor to Deregibus A. & A. S.p.A., Saccolongo, Italy

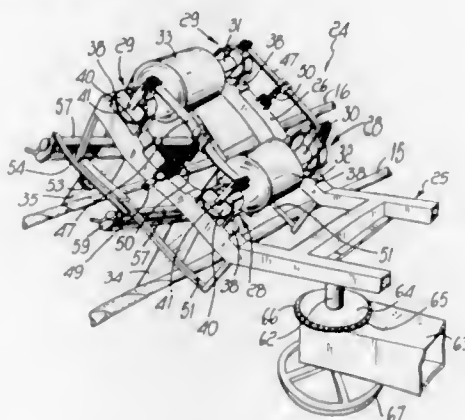
Filed Dec. 20, 1993, Ser. No. 169,252

Claims priority, application Italy, May 26, 1993, PD93A0122

Int. Cl.⁶ B29C 53/62; B65H 81/02

U.S. Cl. 156—429

8 Claims



1. Improved machine for manufacturing vulcanized-rubber tubes, comprising a pair of heads arranged oppositely to mandrels which rotate two or more tubular cores supported by supporting elements with fixed rollers on a supporting frame, said tubular cores being flanked by a thermally insulated openable box-like container which is suitable to contain said cores, said cores being wrapped with tubes to be vulcanized and unloaded by transfer means; the heads of said container having means for supplying electric power to the cores, and means being provided for removing the cores from said container; said machine comprising a carriage which can move along guides which are parallel to said cores, a frame fixed to said carriage, and means provided on said frame for simultaneous wrapping of said cores, said means comprising at least two pairs of supports, one pair for each core, to which the ends of corresponding shafts are rotatably retained, said shafts supporting respective reels which are parallel to said core and on which ribbons of the materials suitable to form the tubes are wound, said ribbons being wrapped around said cores by said means for simultaneous wrapping of said cores, said frame supporting, in a downward region, a pair of parallel bars, a respective rubular element being slideable on each of said bars, lockable by means of a screw, and rigidly coupled to a bar, the ends of cross-members which support guiding means for said ribbons being articulated to the ends of said bar, wherein said frame is constituted by a base from which two wings diverge, each wing supporting two pairs of said reel supports in an upward region and two pairs of said guiding means in a downward region.

5,512,128

EASY-LOAD FILM APPLICATOR

Christoph Manusch, Hemmingen; Udo Obersteller, Langenhagen, and Wulf Hermannsen, Ronnenberg, all of, Germany, assignors to Pritt Produktionsgesellschaft mbH, Hanover, Germany

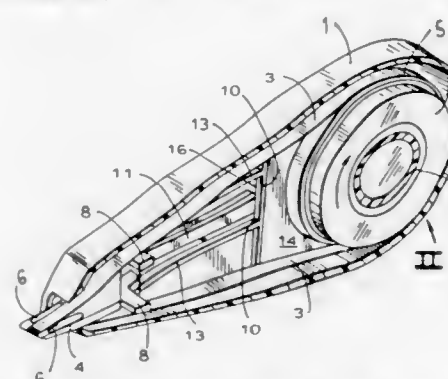
Filed Jul. 1, 1994, Ser. No. 270,155

Claims priority, application Germany, Jul. 2, 1993, 43 22 118.1

Int. Cl.⁶ B32B 35/00

U.S. Cl. 156—577

13 Claims



1. An applicator for a film carried on a tape, the applicator comprising:
- a housing having a base part and a cover part that fit together;
- a supply spool on which the tape carrying the film is wound, the supply spool being rotatable in the base housing part about an axis fixed in the base part;
- a take-up spool onto which the tape is wound, the take-up spool being rotatable in the base housing part adjacent the supply spool about an axis fixed in the base part;
- a slide displaceable longitudinally in the housing relative to the spools between a retracted inner end position relatively close to the spools and an extended outer end position relatively far from the spools and projecting from the housing;
- an applicator foot fixed on and displaceable with the slide, the tape being spanned over the foot; and
- means on the housing for releasably retaining the foot and slide in the front extended position.

5,512,129

METHOD FOR REGENERATING ALKALINE SOLUTIONS FOR PICKLING ALUMINUM

Dieter Brodalla, Düsseldorf, Germany; Roland Fransson, Aseda, Sweden; Herbert Breunig, Holzheim, and Michael Ferner, Gundelfingen, both of, Germany, assignors to Josef Gartner & Co., Germany

Continuation of Ser. No. 927,670, Sep. 2, 1992, abandoned.

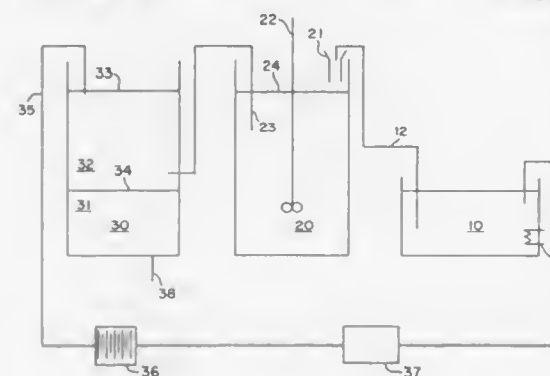
This application Aug. 18, 1994, Ser. No. 292,930

Claims priority, application Germany, Mar. 15, 1990, 40 08 379.9

Int. Cl.⁶ B44C 1/22; C23F 1/00

U.S. Cl. 134—2

14 Claims



1. A method for regenerating alkaline solutions for pickling aluminum to recover aluminum hydroxide, comprising:
- a) providing an aqueous pickling solution for pickling aluminum comprising alkali hydroxide and a complexing agent in a pickling bath;
- b) contacting the pickling solution with aluminum to be pickled, so that aluminum is dissolved in the pickling solution as aluminate;
- c) adjusting the concentration of aluminate, alkali hydroxide, and complexing agent in the pickling solution to maintain a concentration of about 30 to 60 g/l aluminate given as equivalents of Al, about 30 to 60 g/l alkali hydroxide given as equivalents of sodium hydroxide, and about 0.1 to 5 g/l complexing agent given as gluconate or equivalents of gluconate, and adjusting the temperature of the pickling solution in the pickling bath to maintain the temperature of the pickling solution between 40° to 90° C., so that the pickling solution in the pickling bath with respect to precipitation of aluminum as aluminum hydroxide is undersaturated or metastably supersaturated;
- d) transferring the pickling solution from the pickling bath to a reactor section, defining an aqueous reactor solution, for precipitating aluminum as aluminum hydroxide from said reactor solution;
- e) cooling the reactor solution by about 5° to 70° C. so that the reactor solution in the reactor section with respect to precipitation of aluminum as aluminum hydroxide is unstably supersaturated;
- f) precipitating aluminum as aluminum hydroxide from the reactor solution in the reactor section, thereby reforming alkali hydroxide; and,
- g) recovering the aluminum hydroxide and the reformed alkali hydroxide.

5,512,130

METHOD AND APPARATUS OF ETCHING A CLEAN TRENCH IN A SEMICONDUCTOR MATERIAL

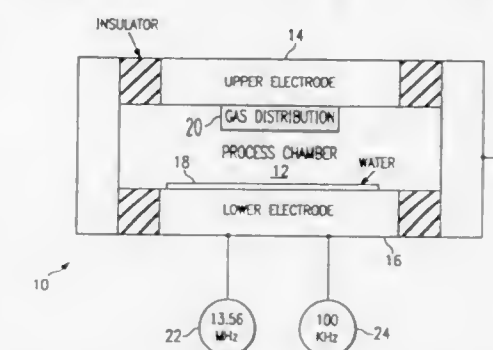
Gabriel G. Barna, Richardson; James G. Frank, Garland; Richard P. VanMeurs, Austin, and Duane E. Carter, Plano, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Mar. 9, 1994, Ser. No. 209,750

Int. Cl.⁶ H01L 21/00

U.S. Cl. 156—651.1

16 Claims



1. A method of etching in a semiconductor material, comprising the steps of:
- providing a process chamber and placing said semiconductor material on a first electrode in said process chamber;
- applying a first power supply to said first electrode of said process chamber at a first power level, the first power supply operating at a first frequency;
- simultaneously applying a second power supply to said first electrode at a second power level, the second power supply operating at a second frequency;
- introducing a plasma chemistry within the process chamber to selectively etch the semiconductor material;

allowing said plasma chemistry to etch said semiconductor material for a predetermined time period while said first and second power supplies are applied;
 subsequently applying said first power supply operating at said first frequency at a third power output level, said third power output level being lower than said first power level;
 simultaneously applying said second power supply operating at said second frequency at a fourth power output level which is higher than said second power output level; and
 allowing said plasma chemistry to etch said semiconductor material for a second predetermined time period while said first and second power supplies are applied at said third and fourth power output levels, respectively.

5,512,131 FORMATION OF MICROSTAMPED PATTERNS ON SURFACES AND DERIVATIVE ARTICLES

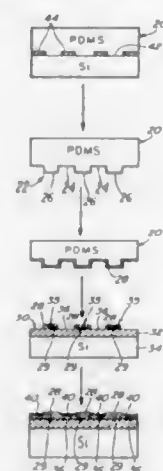
Amit Kumar, Sacramento, Calif., and George M. Whitesides, Newton, Mass., assignors to President and Fellows Of Harvard College, Cambridge, Mass.

Filed Oct. 4, 1993, Ser. No. 131,841

Int. Cl.⁶ B44C 1/22

U.S. Cl. 156—655.1

39 Claims



1. A method of patterning a material surface, comprising the steps of:

- (a) providing a stamp having a surface including at least one indentation formed therein, said indentation contiguous with a stamping surface defining a first pattern;
- (b) coating said stamping surface with a molecular species terminating at a first end in a functional group selected to bind to said material;
- (c) positioning said stamping surface in a first orientation and contacting a portion of said material surface with said stamping surface to hold said molecular species against said material surface portion to allow said functional group to bind thereto; and
- (d) removing said stamping surface to provide a self-assembled monolayer of said molecular species on said material surface according to said first pattern in said first orientation.

5,512,132 METHOD FOR CUTTING AND PLACING INDIVIDUAL CHIPS OF LIGHT LOCK MATERIAL

Wallace S. Stewart, and Danny L. Grelsch, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 999,646, Dec. 31, 1992, Pat. No.

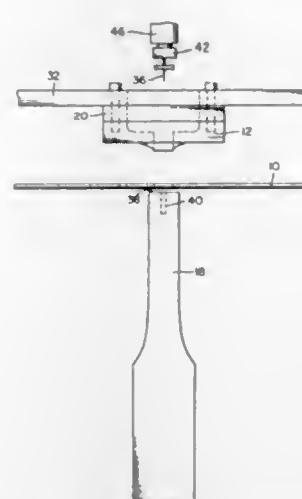
5,368,464. This application Sep. 19, 1994, Ser. No. 308,885

Int. Cl.⁶ B32B 31/18

U.S. Cl. 156—73.3

5 Claims

1. A method of cutting and placing individual chips of light lock material in a cartridge, said method comprising:



positioning light lock material between an ultrasonic horn and a hollow centered anvil;

contacting said ultrasonic horn and said hollow centered anvil with opposing sides of said light lock material;
 energizing said ultrasonic horn so as to cut said light lock material and form an individual chip of light lock material;
 picking said individual chip of light lock material through said hollow center of said anvil; and
 placing said individual chip of light lock material in a cartridge.

5,512,133 METHOD FOR DEINKING RECYCLED PAPER USING A LOW FLOW ELONGATED OPEN TOP FLOTATION VESSEL

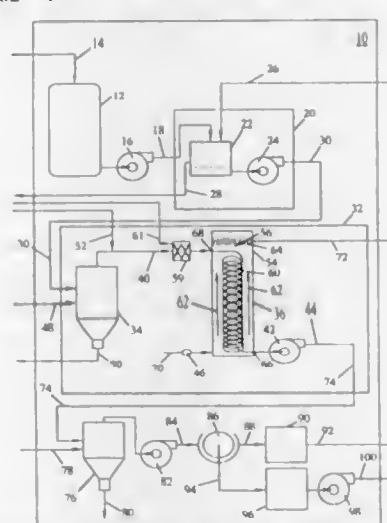
Larry D. Markham, Mobile, Ala., assignor to International Paper Company, Purchase, N.Y.

Filed Aug. 1, 1994, Ser. No. 283,589

Int. Cl.⁶ D21B 1/08

U.S. Cl. 162—4

10 Claims



1. A method for producing pulp for papermaking from waste printed paper which comprises mixing the waste printed paper in a pulping apparatus with a repulping solution which comprises water and an ink particle agglomerating agent under conditions which are sufficient to disintegrate the printed paper and provide a pulp slurry which includes water, wood fibers, relatively small ink particles of about or less than the size of the wood fibers and relatively large ink particle agglomerates substantially larger than the wood fibers, conducting the pulp slurry through a screen having openings therein which are dimensioned to block passage therethrough of relatively large ink particle agglomerates while allowing passage therethrough of water and wood fibers and at least a portion of

relatively small ink particles providing a filtered pulp slurry including water, wood fibers and relatively small ink particles which passed through the openings of the screen in the slurry with the wood fibers and water, conducting the filtered pulp slurry through a cyclone cleaner to separate ink particles from the pulp slurry providing a cleaned pulp slurry including water, wood fibers and a reduced amount of relatively small ink particles as compared to the filtered pulp slurry, and a contaminated pulp slurry containing a higher concentration of ink particles, introducing gas bubbles into the cleaned or the contaminated pulp slurry, conducting either or both of the bubble-containing pulp slurries at a consistency of about or less than 1% through one or more elongate upright open top vessels over a residence time of 10 to 60 seconds from an entrance port to an exit port thereof, said entrance and exit ports vertically spaced apart and located adjacent upper and lower ends of the one or more vessels, the flow rate and flow conditions of the pulp slurry and dilution water through the one or more vessels being selected to maintain an upper surface level of the slurry in the one or more vessels adjacent its upper end at atmospheric pressure and to enable air bubbles in the slurry to rise to the upper surface, the air bubbles having ink particles associated therewith so as to generate a froth on the upper surface containing ink particles and ink particle agglomerates elevated to the surface in association with the air bubbles, and removing the froth from the upper surface, whereby the concentration of ink particles in the pulp slurry exiting the one or more vessels is substantially reduced as compared with that of the pulp slurry entering the one or more vessels.

- lated on dry substance, and said stock having a pH in the range of from about 6 to about 11;
- (b) adding an acidic solution of an aluminum compound to the stock of step (a) less than about 2 minutes before said stock enters the wire to form paper, and said aluminum compound being added to said stock in an amount of from 0.001 to 0.5% by weight, calculated as Al_2O_3 and based on dry fibers and optional fillers;
- (c) adding an anionic retention agent free of cationic groups to the stock of step (a), said anionic retention agent being an anionic starch, selected from the group consisting of phosphorylated starches and anionic potato starches and said anionic retention agent being added to said stock in an amount of from 0.05 to 10% by weight, based on dry fibers and optional fillers; and
- (d) thereafter dewatering said stock on a wire, wherein the total amount of said aluminum compound is added to said stock prior to said anionic retention agent.

5,512,136 APPARATUS AND METHOD FOR REMOVING PAPER WEB TRIM FROM A FORMING WIRE

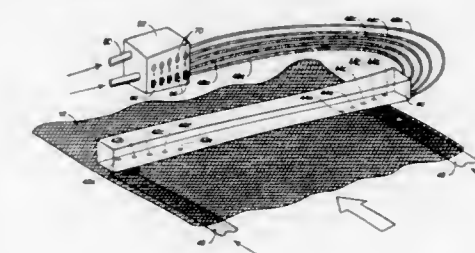
Mustafa N. Altug, Dalton, and Leo J. Robert, Cheshire, both of Mass., assignors to James River Paper Company, Inc., Richmond, Va.

Filed Mar. 30, 1995, Ser. No. 413,359

Int. Cl.⁶ D21F 1/32; 1/30

U.S. Cl. 162—195

5 Claims



5,512,134 PROCESS FOR REMOVING PRINTING INKS FROM PRINTED WASTEPAPER OR FROM PAPER CIRCUIT WATERS

Peter Daute, Essen; Berthold Schreck, Duesseldorf, and Klaus Hornfeck, Mettmann, all of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Germany

PCT No. PCT/EP93/00160, § 371 Date Jul. 29, 1994, § 102(e) Date Jul. 29, 1994, PCT Pub. No. WO93/15260, PCT Pub. Date Aug. 5, 1993

PCT Filed Jan. 25, 1993, Ser. No. 256,996

Claims priority, application Germany, Feb. 3, 1992, 42 03 000.5

Int. Cl.⁶ D21C 5/02

U.S. Cl. 162—5

18 Claims

1. A process for removing printing inks from printed wastepaper comprising in disintegrating printed wastepaper to form a paper stock suspension containing detached printing ink particles and then removing said detached printing ink particles from said paper stock suspension, wherein an alkoxylate of a blown oil is present in said paper stock suspension in an amount effective to deink said paper stock suspension.

5,512,135 PROCESS FOR THE PRODUCTION OF PAPER

Bruno Carré, Grenoble, France, and Ulf Carlson, Billdal, Sweden, assignors to Eka Nobel AB, Bohus, Sweden

PCT No. PCT/SE92/00417, § 371 Date Jan. 3, 1994, § 102(e) Date Jan. 3, 1994, PCT Pub. No. WO93/01353, PCT Pub. Date Jan. 21, 1993

PCT Filed Jun. 12, 1992, Ser. No. 178,264

Claims priority, application Sweden, Jul. 2, 1991, 9102053; Jun. 1, 1992, 9201700

Int. Cl.⁶ D21H 21/06

U.S. Cl. 162—175

12 Claims

1. A process for the production of paper on a wire by forming and dewatering a stock of lignocellulose-containing fibers, comprising the steps of:

- (a) providing a stock of lignocellulose-containing fibers, said stock containing at least 50% by weight of said fibers, calcu-

1. A paper web forming wire and knock-off showers combination comprising
 a paper web forming wire having two spaced edges and a forming wire support surface between said spaced edges for supporting a wet paper web during paper web formation;
 paper slurry delivery means for delivering a paper slurry to the forming wire support surface of said paper web forming wire;
 a plurality of knock-off shower nozzles located above and adjacent to said paper web forming wire, said knock-off shower nozzles being spaced from one another and arrayed laterally relative to the path of movement of the paper web forming wire for directing a plurality of liquid knock-off sprays directly on to said paper web forming wire along two spaced marginal portions of said paper web forming wire adjacent to and inwardly of the two spaced edges of said paper web forming wire;
 liquid delivery means for delivering liquid to said plurality of knock-off shower nozzles; and
 control means operatively associated with said liquid delivery means and said plurality of knock-off shower nozzles for selectively and independently controlling the flow of liquid

through said knock-off shower nozzles of said plurality of knock-off shower nozzles from said liquid delivery means to vary the location of liquid knock-off sprays directed on to the marginal portions of said paper web forming wire and to vary the total quantity of liquid directed onto the marginal portions of said paper web forming wire by said knock-off shower nozzles, said plurality of knock-off shower nozzles comprising two spaced groups of adjacent nozzles, with one of said groups located above each of the two spaced marginal portions of said paper web forming wire and the plurality of knock-off shower nozzles spaced to provide overlapping sprays along the two spaced marginal portions of said paper web forming wire when liquid exits from adjacent knock-off shower nozzles above the two spaced marginal portions of said upper web forming wire, said control means including a plurality of valves, each said valve being operatively associated with two of said knock-off shower nozzles, one of said two knock-off shower nozzles positioned above one of said margin portions of said paper web forming wire and the other of said two knock-off shower nozzles positioned above the other of said marginal portions of said paper web forming wire, said two knock-off shower nozzles being substantially equidistant from their respective paper web forming wire spaced edges, and each said valve of said plurality of valves operable to selectively simultaneously establish or terminate flow of liquid through its respective operatively associated two knock-off shower nozzles.

5,512,137

METHOD AND APPARATUS FOR MEASURING CONTAMINATING IMPURITIES IN PULP SLURRY

Yasubumi Shimizu, and Shozo Morinaga, both of Tokyo, Japan, assignors to Nippon Paper Industries Co., Ltd., Tokyo, Japan

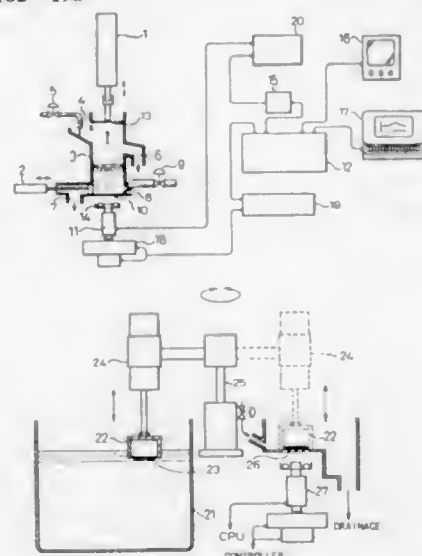
Filed Dec. 27, 1994, Ser. No. 363,919

Claims priority, application Japan, Dec. 28, 1993, 5-335431

Int. Cl.⁶ G01N 21/89; D21F 7/00; G01B 11/28

U.S. Cl. 162—198

15 Claims



1. A method of measuring contaminating impurities in pulp slurry, comprising introducing pulp slurry into a container which has associated therewith a mesh wire, effecting relative movement between the pulp slurry in the container and the mesh wire to permit moisture in the pulp slurry to pass through the mesh wire while trapping fibrous portions of the pulp slurry on the mesh wire to form a wet mat, pressing the wet mat against a flat transparent plate, taking an image of a surface of the wet mat through the transparent plate with a CCD camera, and processing the image taken by the CCD camera to measure impurities per unit area of the wet mat.

5,512,138

FELT TREATMENT - INORGANIC DEPOSIT PREVENTION BY SPRAY TREATMENT

Robert J. Duffy, Buenos Aires, Argentina, and Philip Kershaw, Warrington, England, assignors to W. R. Grace & Co., New York, N.Y.

Filed Apr. 21, 1994, Ser. No. 230,985

Int. Cl.⁶ D21F 1/32; 1/30

U.S. Cl. 162—198

10 Claims

1. A method for treating papermaking felts which continuously circulate between a paper sheet contact stage and a suction box stage to maintain the porosity of the felts, which comprises contacting the felts during papermaking operations with an aqueous felt conditioner composition consisting essentially of a pH control agent and a nonionic or an ionic surfactant, wherein the pH control agent is present in an amount sufficient to provide a pH in the range of 9 to 13, wherein the surfactant is present in a concentration range of 30 ppm to 2000 ppm on a weight basis, and wherein the felts are contacted with a felt conditioner composition at a point after the felt no longer contacts the paper sheet and at a point before the felt enters the suction box.

5,512,139

METHOD AND DEVICE FOR MAKING TISSUE

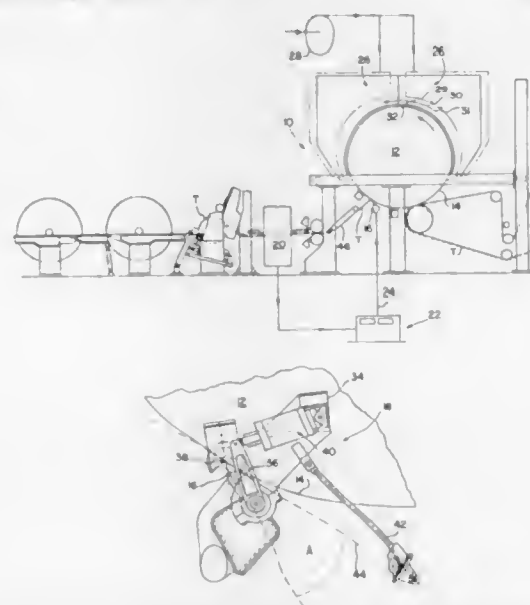
Brian J. Worcester, Janesville, Wis., assignor to Beloit Technologies, Inc., Wilmington, Del.

Filed Dec. 8, 1993, Ser. No. 164,515

Int. Cl.⁶ D21G 3/04

U.S. Cl. 162—111

9 Claims



9. A process for making tissue, said process comprising the steps of:

supporting the tissue on a peripheral surface of the Yankee dryer; peeling the tissue away from the peripheral surface of the Yankee dryer by means of a doctor which cooperates with the peripheral surface such that a series of microfolds are generated in the resultant tissue;

said doctor further including;

a frame;

a blade adjustable secured to said frame such that a distal end of said blade bears against said peripheral surface;

adjusting an angle defined between said doctor and said peripheral surface such that when the angle is adjusted, the physical dimensions of the microfolds change; sensing the physical dimensions of the microfolds downstream relative to the doctor by means of a sensor, the sensor generating a signal proportional to the physical dimensions of the microfolds; receiving the signals generated by the sensor, such signals being received by a control circuit; analyzing the signals

received by the control circuit and generating a control signal for adjusting the angle defined between the doctor and the peripheral surface so that the physical dimensions of the microfolds are optimized; and wherein the step of adjusting the angle includes pivoting the doctor about a distal end of the doctor by moving said blade relative to said frame and moving said frame relative to said peripheral surface.

5,512,140

IN-SERVICE CLEANING OF COLUMNS

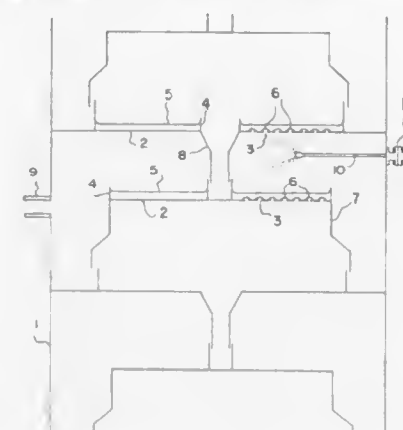
Charles R. Rutan, Rosharon, Tex., assignor to Occidental Chemical Corporation, Niagara Falls, N.Y.

Filed Jan. 11, 1994, Ser. No. 179,868

Int. Cl.⁶ B01D 3/16; B08B 9/00

U.S. Cl. 202—158

20 Claims



1. Apparatus comprising

(1) a vertical column,

(2) baffles inside said column,

(3) means for passing a fluid through said column;

(4) sealable apertures in the side of said column;

(5) a removable hollow lance inserted through any of said sealable apertures into said column through which a liquid can be supplied to the interior of said column; and

(6) means for supplying a liquid to said lance at a pressure of at least about 1000 psig.

5,512,141

DISTILLATION APPARATUS

Peter Koistinen, Espoo, and Reijo Rantala, Laitila, both of, Finland, assignors to Keeran Corporation N.V., Geneva, Switzerland

PCT No. PCT/FI91/00389, § 371 Date Aug. 16, 1993, § 102(e)

Date Aug. 16, 1993, PCT Pub. No. WO92/10265, PCT Pub.

Date Jun. 25, 1992

PCT Filed Dec. 16, 1991, Ser. No. 75,499

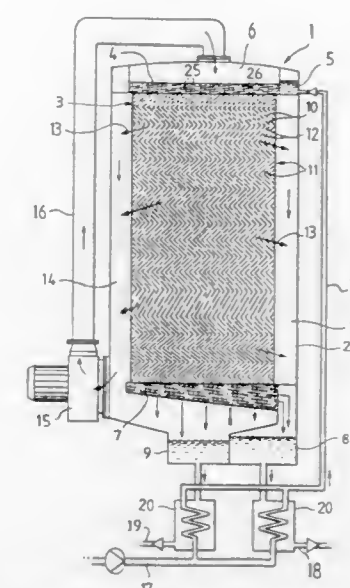
Claims priority, application Finland, Dec. 14, 1990, 906170

Int. Cl.⁶ B01D 3/14; 1/22; C01B 29/00

U.S. Cl. 202—182

27 Claims

1. In a distillation apparatus for the evaporation of a liquid for its subsequent condensation, the apparatus comprising a housing, a plurality of flat, bag-like heat exchange elements formed from thin film material and provided in the housing, the heat exchange elements having exterior surfaces for evaporating vaporizing liquid to generate vapor, interior spaces for condensing the vapor into a condensed liquid, an upper end, and a lower end opposing the upper end, the heat exchange elements being placed one against the other; means for directing vaporizing liquid along the exterior surfaces of the heat exchange elements; a compressor for increasing the pressure and temperature of the generated vapor; and means coupled to the compressor for directing the vapor into the interior spaces of the heat exchange elements, the improvement comprising:



each of the interior spaces of the bag-like heat exchange elements being divided into a plurality of parallel vapor ducts extending vertically from the upper end to the lower end thereof; and vapor feeding apertures arranged along the upper end of the heat exchange element and communicating with the parallel vapor ducts.

5,512,142

PROCESS AND DEVICE FOR PURIFYING ORGANICALLY POLLUTED WASTE WATER

Jakob Hoiss, Ruffinistr. 8, D-8000 München 19, Germany

Continuation of Ser. No. 910,072, Jul. 13, 1992, abandoned.

This application Jul. 14, 1994, Ser. No. 274,160

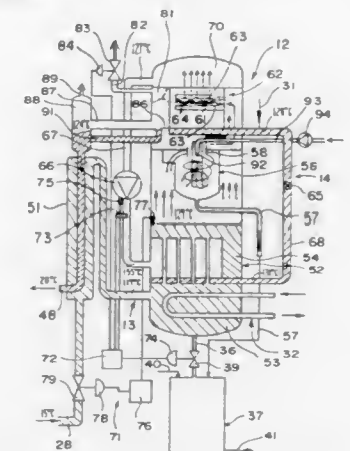
Claims priority, application Germany, Nov. 11, 1989, 39 37

608.7

Int. Cl.⁶ B01D 3/10; 3/42

U.S. Cl. 203—10

20 Claims



1. A process for purifying organically polluted waste water comprising the steps of: providing a primary treatment system and a separate secondary system, said primary treatment system including a waste water flowpath, a first heat exchanger in said waste water flowpath, a second heat exchanger downstream of said first heat exchanger, and a means for detecting the level of a waste water sump solution; said secondary system including a raw water inlet, an opposite side of said first heat exchanger, an opposite side of said second heat exchanger, means for heating the raw water, and a means for detecting an operational parameter of the secondary system;

heating the raw water to form raw water vapor;
 evaporating a portion of the waste water primarily by indirect heat exchange with said raw water vapor in the first heat exchanger to form waste water vapor and a waste water sump solution, the level of which varies;
 condensing the waste water vapor and evaporating the raw water during condensation of the waste water vapor in the second heat exchanger;
 detecting the level of the waste water sump solution;
 detecting an operational parameter of the second system;
 admitting waste water to the primary system as a function of the detected level of the waste water sump solution; and
 drawing off waste water from the waste water sump solution as a function of the detected operational parameter of the secondary system when the detected value exceeds a set value.

5,512,143

ELECTROLYSIS METHOD USING POLYMER ADDITIVE FOR MEMBRANE CELL OPERATION WHERE THE POLYMER ADDITIVE IS IONOMERIC AND ADDED TO THE CATHOLYTE

James T. Keating, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 13, 1992, Ser. No. 867,494

Int. Cl.⁶ C25B 1/16

U.S. Cl. 205—512

11 Claims

1. In a process for the electrolysis of a solution in an electrolytic cell which comprises an anode, a cathode, an anode compartment, a cathode compartment, and a fluorine-containing ion exchange membrane which separates said compartments, where the improvement comprises adding fluorinated ionomer resin to said cathode compartment.

5,512,144

PULSE METHOD FOR SULFUR DIOXIDE ELECTROLYSIS

John E. Stauffer, 6 Pecksland Rd., Greenwich, Conn. 06831, assignor to John E. Stauffer, Greenwich, Conn.

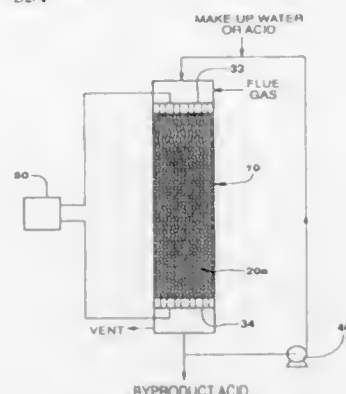
Filed Mar. 28, 1995, Ser. No. 412,255

The portion of the term of this patent subsequent to Sep. 6, 2011, has been disclaimed.

Int. Cl.⁶ C25B 1/00

U.S. Cl. 205—554

5 Claims



1. A process for the mitigation and control of air pollution caused by the emission of sulfur dioxide in effluent vent, flue or exhaust gas, said process comprising the removal of sulfur dioxide from a stream of such gas by scrubbing the gas in a column with aqueous sulfuric acid to solubilize and remove sulfur dioxide from the gas, said column containing electrically conductive packing material which serves both as a gas-liquid contact surface for scrubbing and as the electrochemically active surface of a bipolar electrode, and two electrical contacts arranged so that the bed of packing material is spaced between the contacts and is in electrical contact with said contacts;

applying a pulsed electrical potential across said two contacts in excess of about 0.2 volts in order to effect electrolysis; and maintaining the concentration of the aqueous sulfuric acid by means of make-up water or acid.

5,512,145

ENERGY CONVERSION SYSTEM

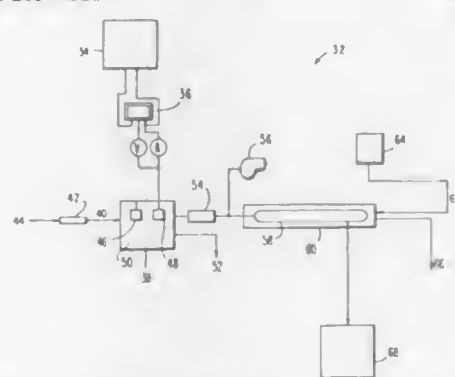
Joel W. Hollenberg, Suffern, N.Y., assignor to The Cooper Union for the Advancement of Science and Art, New York, N.Y.

Filed Oct. 7, 1994, Ser. No. 319,610

Int. Cl.⁶ C25B 1/02

U.S. Cl. 205—628

61 Claims



31. A method for converting electrical energy to hydrogen, comprising the steps of:

- (a) providing an electrical energy source;
- (b) providing an electrically operated electrolyzer operable at an optimum operating voltage to convert water into hydrogen and oxygen; and
- (c) transferring electrical energy from the electrical energy source to the electrolyzer by a passive load matching means to convert any voltage from the energy source in excess of the optimum operating voltage into current, such that water conversion within the electrolyzer is increased.

46. A method for converting electrical energy to hydrogen, comprising the steps of:

- (a) providing an electrical energy source;
- (b) using said electrical energy from the electrical energy source to drive an electrically operated electrolyzer operable to convert water into hydrogen and oxygen at pressures produced by said electrolyzer; and
- (c) storing hydrogen gas converted by said electrolyzer in a hydrogen storing means containing metal hydrides which operates to store said hydrogen gas at only those pressures which are produced by the electrolyzer.

5,512,146

GEL CASSETTE FOR ENHANCED ELECTROPHORETIC SEPARATION AND PROCESSES FOR THE PREPARATION THEREOF

Donald H. Brunk; Charles F. Collier, both of Wilmington, and Charles W. Robertson, Rockland, all of Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 113,480, Aug. 27, 1993, Pat. No. 5,433,837. This application Apr. 21, 1995, Ser. No. 426,324

Int. Cl.⁶ G01N 27/26; 27/447

U.S. Cl. 264—79

1 Claim

1. A process for the preparation of a gel cassette for the electrophoretic separation of molecular fragments therein, comprising:

- (a) providing containment means comprising a base portion, a plurality of walls positioned essentially perpendicularly to said base portion, a top portion, and a well portion, and wherein said walls further include at least one aperture therethrough in a first region adapted for introduction of gel and an

5,512,148

INDUCING TILTED PARALLEL ALIGNMENT IN LIQUID CRYSTALS

Willis H. Smith, Jr., Newbury Park, and Leroy J. Miller, West Hills, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

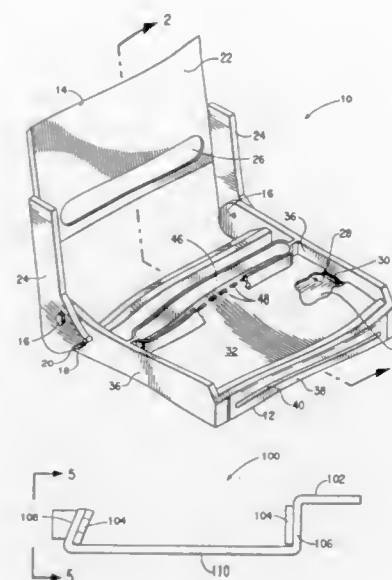
Continuation of Ser. No. 64,565, May 19, 1993, abandoned.

This application Aug. 2, 1994, Ser. No. 284,720

Int. Cl.⁶ C23C 14/34

U.S. Cl. 204—192.23

19 Claims



aperture therethrough in a second region adapted for discharge of the electrophoretically separated molecular fragments to a suitable medium;

- (b) positioning said containment means within a fixture having elastomeric material overlaying said first and second regions;
- (c) introducing gelatinous material into said containment means by forming a hole through said elastomeric material overlaying said first region and injecting gelatinous material therethrough; and
- (d) curing said gelatinous material.

5,512,147

METHOD OF MAKING AN ELECTROLYTE FOR AN ELECTROCHEMICAL CELL

John B. Bates, Oak Ridge, and Nancy J. Dudney, Knoxville, both of Tenn., assignors to Martin Marietta Energy Systems, Inc., Oak Ridge, Tenn.

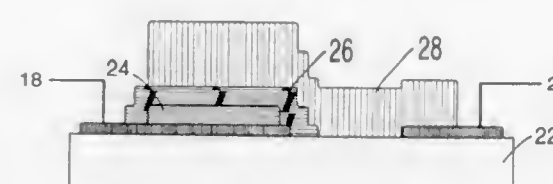
Division of Ser. No. 921,538, Jul. 29, 1992, Pat. No. 5,338,625.

This application May 25, 1994, Ser. No. 248,892

Int. Cl.⁶ C23C 14/34

U.S. Cl. 204—192.15

1 Claim



1. A method for making an amorphous electrolyte for an electrochemical cell comprising the steps of:

- (a) selecting a sputtering apparatus chosen from the group consisting of rf magnetron sputters and diode sputters for deposition of thin films;
- (b) selecting a lithium orthophosphate target material for sputtering in said sputtering apparatus;
- (c) selecting a pure Nitrogen process gas for operation in said sputtering apparatus;
- (d) operating said sputtering apparatus at a total gas pressure of 20 milliTor and a total gas flow rate of at least 14 sccm; and
- (e) depositing said electrolyte at an average rate of 8 Angstroms per minute.

5,512,149

SACRIFICIAL ANODE DEVICE WITH OPTIMIZED ANODE/CATHODE INTERFACE SURFACE CONTACT AREA

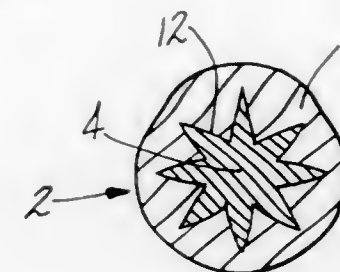
Gilbert J. MacKenna IV, 36 St. James Ave., Enfield, Conn. 06082

Filed Sep. 1, 1994, Ser. No. 299,599

Int. Cl.⁶ C23F 13/00

U.S. Cl. 204—197

4 Claims



1. A sacrificial anode device for protecting a metal structure from corrosion in an essentially dry environment, said device comprising:

- (a) an axially elongated cathode metal portion, said cathode metal portion having exposed opposite ends which are operable to be releasably secured to the metal structure, said cathode metal portion having a medial part with a stellate cross-sectional configuration comprising alternating peaks and valleys; and
- (b) an anode metal cladding on said cathode metal portion and covering at least a fraction of said stellate part of said cathode metal portion, said anode metal cladding being disposed medially of said opposite ends of said cathode metal portion, and said anode metal cladding being intimately

adhered to said cathode metal portion to form a fluted cathode-anode interface.

5,512,150 TARGET ASSEMBLY HAVING INNER AND OUTER TARGETS

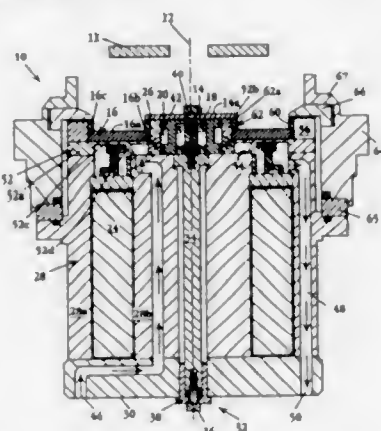
Allen J. Bourez; Brij B. Lal, both of San Jose, and Michael A. Russak, Los Gatos, all of Calif., assignors to HMT Technology Corporation, Fremont, Calif.

Filed Mar. 9, 1995, Ser. No. 401,449

Int. Cl.⁶ C23C 14/35

U.S. Cl. 204—192.2

17 Claims



17. A method for forming on a substrate a magnetic recording medium having at least two sputtered layers of different compositions, an improvement for enhancing the coercivity of the medium, comprising,

- sputtering said layers from a target assembly having inner and outer concentric targets, and having inner and outer magnetic means disposed adjacent said inner and outer targets;
- orienting the polarity of at least one of said magnetic means to achieve ignition of a sputtering plasma in the inner target only, when power is supplied to the inner target at a preselected level; and
- reversing the polarity of said one magnetic means to produce a magnetic flux sufficient to ignite a sputtering plasma in the outer target only, when power is supplied to the outer target at a preselected level.

5,512,151 METHOD OF MAKING THIN-LAYER COMPONENT

Shunichi Hayamizu, Amagasaki; Tomoko Miyaura, Habikino, and Noboru Saeki, Osaka, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

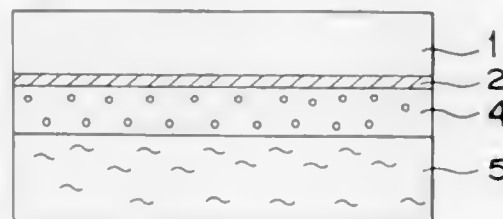
Division of Ser. No. 36,689, Mar. 25, 1993, abandoned. This application Jun. 7, 1994, Ser. No. 255,886

Claims priority, application Japan, Sep. 25, 1992, 4-256795

Int. Cl.⁶ C23C 14/34

U.S. Cl. 204—192.15

9 Claims



I. A method for producing a thin layer component (100)-oriented platinum in a vacuum chamber which has a target as a first

electrode and an auxiliary electrode providing spaces through which particles sputtered out of the target can pass, comprising:

- setting a substrate as a second electrode in a manner such that the auxiliary electrode is arranged between the target and the substrate;
- introducing an argon and oxygen gas mixture into the vacuum chamber; and
- forming an electric field between the auxiliary electrode and the target independently of an electric field formed between the auxiliary electrode and the substrate, such that plasma is generated only between the auxiliary electrode and the target.

5,512,152 PROCESS FOR PREPARATION OF STABILIZED OXIDE THIN LAYERS

Heloiz Schicht, Bethau; Herbert Schindler, Torgau; Klaus Januschewitz, Recklinghausen; Werner Gregorowius, Köln, and Wilfried Kaiser, Torgau, all of Germany, assignors to Saint Gobain Vitrage, Courbevoie, France

Filed Jul. 15, 1994, Ser. No. 275,520

Claims priority, application Germany, Jul. 15, 1993, 43 23 654.5

Int. Cl.⁶ C23C 14/34; B05D 3/06; 5/06

U.S. Cl. 204—192.26

10 Claims

1. A process for preparing a stabilized layer-coated substrate, which comprises:

- a) depositing a metallic oxide surface layer onto a surface of a substrate by vacuum deposition; and
- b) irradiating said metallic oxide surface layer with infrared radiation, wherein said irradiation is effected using a wavelength and for a duration sufficient to impart an intensity of 1 kW/m² to 90 kW/m² thereto, and wherein said substrate is maintained at a temperature which does not exceed about 100° C.

5,512,153 CORROSION PROTECTION SYSTEM

Stephen Day, Ashton Keynes; Frank J. Lowe, Grange Park, both of, United Kingdom, and Christian Pierre, Brussels, Belgium, assignors to Raychem Ltd., London, United Kingdom

PCT No. PCT/GB92/01374, § 371 Date Jan. 20, 1994, § 102(e) Date Jan. 20, 1994, PCT Pub. No. WO93/02311, PCT Pub. Date Feb. 4, 1993

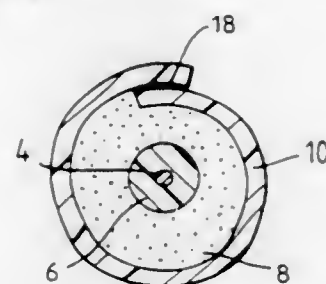
PCT Filed Jul. 24, 1992, Ser. No. 193,171

Claims priority, application United Kingdom, Jul. 25, 1991, 9116114

Int. Cl.⁶ C23F 13/00

U.S. Cl. 204—196

12 Claims



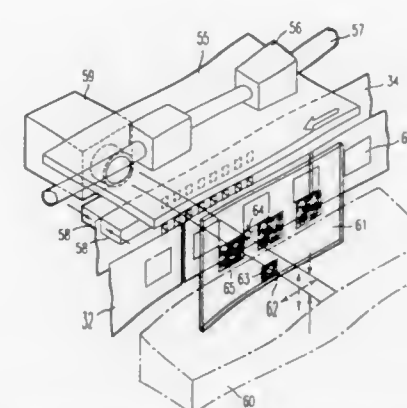
1. A corrosion protection system comprising a flexible elongate element comprising

- (1) a continuous elongate core which is composed of a material having a resistivity at 23° C. of less than 5x10⁻⁴ ohm.cm and a resistance at 23° C. of less than 0.03 ohm/meter,
- (2) a conductive polymer composition which electrically surrounds the core and is in electrical contact with the core, and

(3) a polymeric jacket surrounding the conductive polymer composition, and containing between it and the conductive polymer composition a carbon rich material,

characterized in that the material of the polymeric jacket

- (i) is permeable to ions;
- (ii) comprises a fabric which comprises a pure or modified polyacrylonitrile, a modacrylic, polyvinylidene dichloride, polyvinylidene difluoride, poly(ethylenetetrafluoroethylene), poly(ethylene-chlorotrifluoroethylene), polyvinyl fluoride, polyvinyl chloride, poly(butylene terephthalate), polyvinylacetate, or copolymers or blends thereof;
- (iii) is a wraparound and comprises two longitudinal edges which abut or overlap and are held together at least partly by an adhesive;
- (iv) is resistant to acid to the extent that if a section of the jacket material is immersed in hydrochloric acid of at least 0.01N concentration at 60° C. for 90 days and then subjected to a tensile test according to British Standard test number 1932 part 1:1989 for individual yarns of the fabric or British standard test number 2576:1986 for the fabric as a whole, and a load versus elongation curve is plotted from the tensile test, then
- (a) the maximum load recorded during that test is at least 60% of the maximum load recorded for a load versus elongation curve for a similar section of the same material which has not been subjected to immersion in the said hydrochloric acid, and
- (b) the elongation of the said section at the maximum load is at least 60% of the elongation at the maximum load of a similar section which has not been subjected to immersion in the said hydrochloric acid; and
- (v) is resistant to chlorine to the extent that if a section of the jacket material is immersed in acidified sodium hypochlorite for 90 days, during which time sufficient acid is added to the hypochlorite solution periodically such that chlorine is continually present, and then the said section subjected to a tensile test, and a load versus elongation curve plotted from the tensile test, then
- (a) the maximum load recorded during that test is at least 70% of the maximum load recorded for a load versus elongation curve for a similar section of the same material which has not been subjected to immersion in acidified sodium hypochlorite solution, and
- (b) the elongation of the said section at the maximum load is at least 60% of the elongation at the maximum load of a similar section which has not been subjected to immersion in the acidified sodium hypochlorite solution.



means for rinsing and drying of the electrophoretic photoresist layer on said products;

means for exposing said photoresist layer;

at least one photomask and means for horizontally and vertically adjusting the photomask relative to the products under an influence of a detecting apparatus which detects marks present on the products and the photomask;

means for moving said photomask, said detecting apparatus and said means for horizontally and vertically adjusting the photomask, along with the products during adjustment of the photomask and during exposure and, following exposure, moving in a direction opposite to a direction of travel of the products;

means for developing the exposed photoresist layer to remove the photoresist from areas which subsequently require a metal deposit;

means for rinsing and activating said areas requiring a metal deposit;

a bath for electrodeposition of a metallic coating on said areas which require a metal deposit;

means for rinsing said products to remove remaining electrolyte;

means for stripping the exposed photoresist layer which has served as a mask during the electrodeposition process;

means for final cleaning, rinsing and drying of said products;

means for unloading said products from said transport means; and

means for driving said transport means in a fully continuous mode.

5,512,155 FILM FORMING APPARATUS

Yoshitaru Fukasawa, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

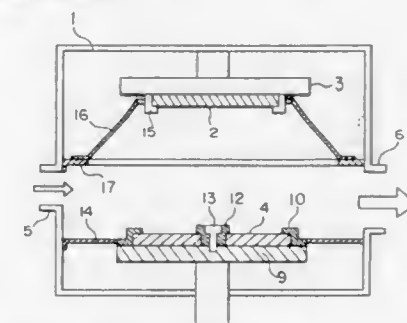
Continuation of Ser. No. 107,132, Aug. 16, 1993, abandoned, which is a continuation of Ser. No. 863,388, Apr. 3, 1992, abandoned, which is a continuation of Ser. No. 531,390, Jun. 1, 1990, abandoned. This application Dec. 29, 1994, Ser. No. 366,380

Claims priority, application Japan, Jun. 2, 1989, 1-139136

Int. Cl.⁶ C23C 14/34; 16/00

U.S. Cl. 204—298.11

9 Claims



1. A film forming apparatus comprising:

5,512,154 APPARATUS FOR SELECTIVELY ELECTROPLATING APERTURED METAL OR METALLIZED PRODUCTS

Jorg W. Rischke, Veldhoven, and Wilhelmus G. L. van Sprang, Eindhoven, both of, Netherlands, assignors to MECO Equipment Engineers B.V., 's-Hertogenbosch, Netherlands

Filed Jan. 27, 1994, Ser. No. 186,907

Claims priority, application Netherlands, Jan. 28, 1993, 9300174

Int. Cl.⁶ C25D 5/02

U.S. Cl. 204—204

14 Claims

1. An apparatus for selectively electroplating apertured metal or metallized products, the apparatus comprising:

- a loading station wherein said products are loaded onto means for fully continuously transporting said products through said apparatus;
- a pretreatment section wherein said products are cleaned, deoxidized and washed;
- a bath for applying an electrophoretic photoresist layer to said products while said products are being transported through said bath;
- a source of direct current for providing a required current for an electrophoretic process for applying the photoresist layer from said bath;

- a) means for forming a metal silicide thin film containing a transition metal selected from the group consisting of Mo, Ti, W, Ta, V, Nb and Hf, said forming means including:
- 1) a film forming chamber;
 - 2) a film forming substrate arranged within said film forming chamber;
 - 3) a film forming source, arranged within said film forming chamber, comprising a Si component and at least one transition metal component selected from the group consisting of Mo, Ti, W, Ta, V, Nb and Hf; and
 - 4) support/shield structures arranged within said chamber for supporting said substrate and said source and for shielding said substrate; and
- b) means for preventing emission from said support/shield structures of metal silicide particles deposited on said support/shield structures during operation of said film forming apparatus, said preventing means including the surface of said support/shield structures coated with at least one metal selected from the group consisting of Mo, Ti, W, Ta, V, Nb and Hf, such that the difference in the thermal expansion coefficient between said metal silicide thin film and said support/shield structures is within the range of $\pm 7.5 \times 10^{-6}/^{\circ}\text{C}$.

5,512,156

SPUTTERING ELECTRODE

Hitoshi Yamanishi, Higashiosaka; Isamu Aokura, Osaka; Toshiyuki Sumitsu, Mino, and Takahiro Takisawa, Moriguchi, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

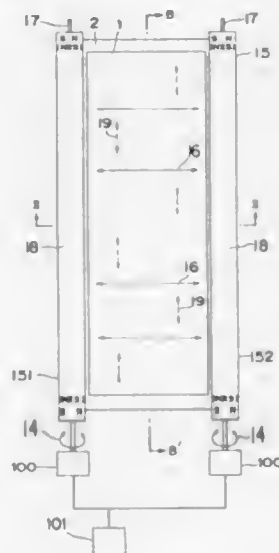
Filed Jun. 24, 1994, Ser. No. 265,019

Claims priority, application Japan, Jun. 24, 1993, 5-153234

Int. Cl. C23C 14/35

U.S. Cl. 204—298.16

7 Claims



1. A magnetron sputtering electrode assembly having a rectangular flat-plate target with a sputtering surface and opposite longitudinal edges, said magnetron sputtering electrode assembly comprising:

elongated permanent magnets, respectively arranged along the opposite longitudinal edges of the rectangular flat-plate target and outwardly from the opposite longitudinal edges of the rectangular flat-plate target in the transverse direction thereof, for passing lines of magnetic force transversely across the sputtering surface of the rectangular flat-plate target such that the lines of magnetic force are continuously parallel to the entire width of the sputtering surface of the rectangular flat-plate target; and

a driving device for reversing the polarity of said permanent magnets to thereby change by 180 degrees the direction of the

lines of magnetic force caused by said permanent magnets in parallel to the sputtering surface of the rectangular flat-plate target.

5,512,157

ELECTROPHORESIS PLATE

Philip A. Guadagno, Vidor; Rajani Rayachoti, and Eric H. Petersen, both of Beaumont, all of Tex., assignors to Helena Laboratories Corporation, Beaumont, Tex.

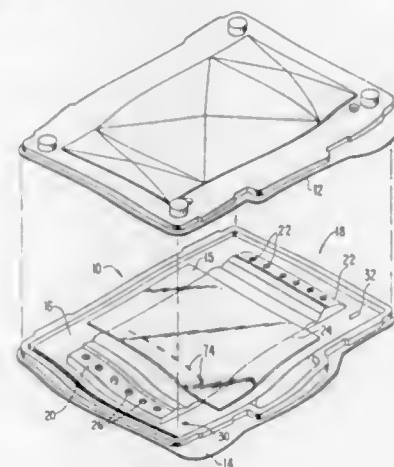
Continuation of Ser. No. 86,918, Jul. 7, 1993, abandoned,

which is a continuation-in-part of Ser. No. 79,228, Jun. 21, 1993, abandoned. This application Dec. 22, 1994, Ser. No. 361,702

Int. Cl. G01N 27/26; 27/447

U.S. Cl. 204—616

26 Claims



1. An electrophoresis plate, comprising:
- a substrate;
- an electrophoresis medium layer comprising agarose as a gelling agent with a substantially uniform thickness on the substrate;
- a surfactant selected from the group consisting of povidones and water-soluble cellulose in an amount sufficient such that a liquid expressed from the electrophoresis medium layer forms a substantially uniform layer on said electrophoresis medium layer; and
- a removable film on the electrophoresis medium layer.

5,512,158

CAPILLARY ELECTROPHORESIS METHOD AND APPARATUS FOR ELECTRIC FIELD UNIFORMITY AND MINIMAL DISPERSION OF SAMPLE FRACTIONS

Wesley D. Cole, Palo Alto, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

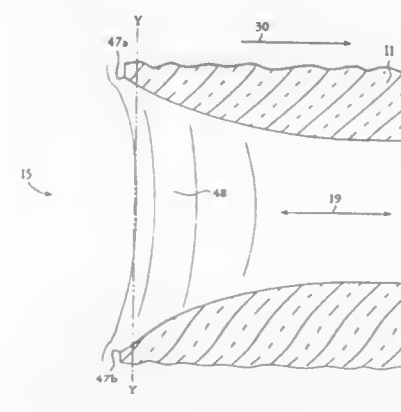
Filed Feb. 28, 1995, Ser. No. 395,268

Int. Cl. G01N 27/26; 27/447

U.S. Cl. 204—453

17 Claims

1. A method of forming a capillary tube for use in capillary electrophoresis comprising:
- selecting an entrance end portion of said capillary tube, said entrance end portion having an inside diameter, interior and exterior surface, and an end surface that is generally perpendicular to said interior and exterior surfaces;
- removing material from said interior surface of said entrance end portion such that said entrance end portion has a smooth contour with an increasing inside diameter with approach to said end surface; and
- removing material at an exit end portion of said capillary tube such that a smooth contour is defined from said interior surface to a second end surface opposite to said end surface of said entrance end portion.



5,512,159

BIOSENSOR

Toshihiko Yoshioka, Osaka; Mariko Kawaguri, Moriguchi; Shiro Nankai, Hirakata; Haruhiro Tsutsumi, Onsen; Hideyuki Baba, Matsuyama; Yoshinobu Tokuno, Matsuyama, and Shoji Miyazaki, Matsuyama, all of Japan, assignors to Matsushita Electric Industrial Co. Ltd., Osaka, Japan

Continuation of Ser. No. 881,634, May 12, 1992, abandoned.

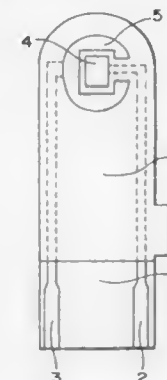
This application Aug. 19, 1994, Ser. No. 293,131

Claims priority, application Japan, Jan. 21, 1992, 4-008219

Int. Cl. G01N 27/327

U.S. Cl. 204—403

6 Claims



1. A biosensor for measuring a substrate in a liquid sample, comprising:
- an insulating base plate having a principle surface,
- an electrode system including a working electrode and a counter electrode formed spaced apart on said principle surface of said base plate, and first and second leads respectively connected to said working electrode and said counter electrode, and
- a reaction layer formed on said electrode system so as to contact said working electrode and said counter electrode and including an enzyme, a hydrophilic polymer and an electron acceptor,
- wherein the electron acceptor is reduced by means of a reaction between the enzyme and the substrate in the liquid sample and is subsequently electrochemically oxidized and a resulting value of oxidation current between the working electrode and the counter electrode is indicative of a concentration of the substrate, and
- wherein said counter electrode has a substantially circular outer peripheral edge, a substantially square inner peripheral edge defining a square opening therein having four corners, and opposing generally radial edges defining a gap therebetween extending from a side of said square opening to said outer peripheral edge,
- wherein said working electrode has a substantially square outer periphery and is centrally located and aligned within said square opening of counter electrode, and
- wherein said first lead extends through said gap of said counter electrode to contact said working electrode.

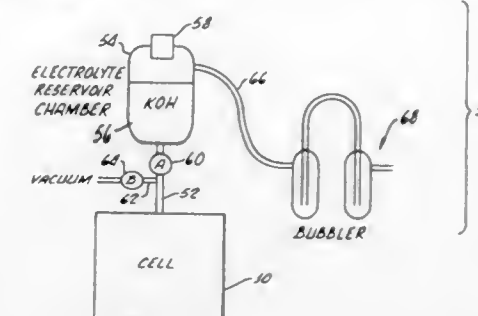
5,512,160
NICKEL-CADMIUM BATTERY ACTIVATION PROCESS
Hong S. Lim, Agoura Hills, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Aug. 10, 1995, Ser. No. 513,645

Int. Cl. H01M 10/44

U.S. Cl. 205—61

18 Claims



1. A process for activating a nickel-cadmium cell comprising: cycling the cell a multiplicity of times in an electrolyte flooded condition;
- partially replenishing the cell with fresh electrolyte during each cycle except the last cycle; and
- removing excess electrolyte to a predetermined volume of electrolyte during the last cycle.

5,512,161

PROCESS FOR GALVANICALLY FORMING STRUCTURED PLATE-SHAPED BODIES

Heinz Dinglreiter, Forst; Helmut Kalb, Eggenstein-Leo., and Richard Rapp, Stutensee, all of Germany, assignors to Kernforschungszentrum Karlsruhe GmbH, Karlsruhe, Germany

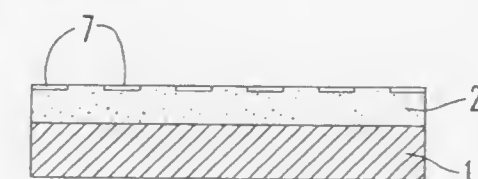
Filed Mar. 6, 1995, Ser. No. 404,173

Claims priority, application Germany, Sep. 23, 1992, 42 31 742.8

Int. Cl. C25D 1/10

U.S. Cl. 205—67

4 Claims



1. A process for galvanically forming a structured plate, comprising the steps of:
- a) providing a layer of a plastic material,
 - b) structuring said plastic material layer at one side thereof such that structure bodies with planar front surfaces are formed thereon,
 - c) the structuring being done in such a way that the structure bodies rise from a structure base which forms contiguous electrically conductive surfaces and said front surfaces of said structure bodies extend parallel to said structure base,
 - d) providing on said front surfaces isolated spangles of an electrically conductive material which are electrically insulated from each other by:
- i.1) coating said plastic material surfaces to be structured with an electrically conductive material,
 - i.2) impressing a structured metal stamp into the surface coated with said electrically conductive material such that the coating of electrically conductive material is divided into a part disposed at the bottom of recesses formed into

said plastic material layer by said impressing step and a part remaining on the raised front surface areas of said structure bodies and

- d.3) cutting the raised front surface areas with the electrically conductive material thereon down to the electrically conductive material in said recesses which remains on the front surfaces of said structure bodies and then forms said isolated electrically conductive spangles sized and arranged at a distance from each other such that a line across the front surfaces of a structure body in any direction intersects at least one of said spangles and
- e) galvanically covering said structure base and said structure bodies with a metal to form said structured plate on said layer of plastic material.

5,512,162

METHOD FOR PHOTO-FORMING SMALL SHAPED METAL CONTAINING ARTICLES FROM POROUS PRECURSORS

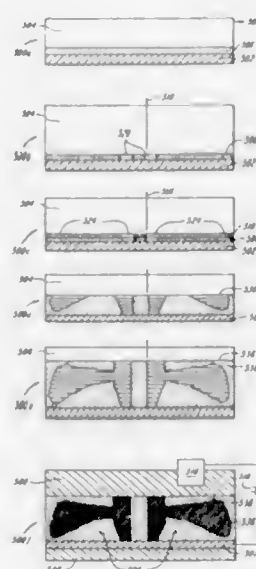
Emanuel Sachs, Somerville, and Che-Chih Tsao, Cambridge, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Aug. 13, 1992, Ser. No. 929,604

Int. Cl.⁶ C23C 28/00; B05D 3/06

U.S. Cl. 205—91

32 Claims



1. A method for making a metal-containing article, comprising the steps of:

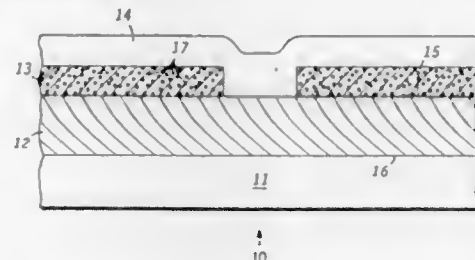
- providing a layer of a porous ground on a selected area of a base substantially immersed within a fluid that contains a metal source;
- exposing selected regions of said layer of porous ground to light, thereby metallizing said selected regions;
- repeating steps (a) and (b) a selected number of times to produce a selected number of layers; and
- joining said metallized regions of at least two of said layers.

5,512,163 METHOD FOR FORMING A PLANARIZATION ETCH STOP

Timothy J. Warfield, Tempe, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.
Division of Ser. No. 894,978, Jun. 8, 1992, abandoned. This application Apr. 1, 1994, Ser. No. 221,591
Int. Cl.⁶ C25D 15/00; H01L 21/463; 21/465

U.S. Cl. 205—109

18 Claims



14. A method for planarizing a monolithic semiconductor integrated circuit, comprising the steps of:
- providing the monolithic semiconductor integrated circuit;
 - providing a first electroplating solution, the first electroplating solution comprising a metal;
 - electroplating a first conductive layer on a portion of the monolithic semiconductor integrated circuit;
 - providing a second electroplating solution, the second electroplating solution comprising the metal and a grit material;
 - electroplating a second conductive layer on at least a portion of the first conductive layer, the second conductive layer comprising the metal and the grit material;
 - forming a planarization layer on the second conductive layer; and
 - planarizing the planarization layer, wherein the step of planarizing the planarization layer is stopped when the second conductive layer is encountered.

5,512,164

METHOD FOR SPUTTERING WITH LOW FREQUENCY ALTERNATING CURRENT

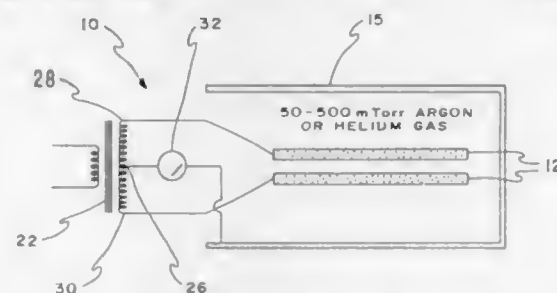
John R. Timberlake, Allentown, N.J., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Continuation-in-part of Ser. No. 70,835, Jun. 3, 1993, abandoned. This application Sep. 21, 1994, Ser. No. 309,715

Int. Cl.⁶ C23C 28/02; 14/34

U.S. Cl. 205—186

7 Claims



1. A method for low frequency alternating current sputtering comprising:

- connecting a source of low frequency alternating current to a high voltage step-up transformer having outer taps and a center tap;
- connecting the center tap of the transformer to an electrically conductive vacuum vessel containing substrates to be coated, and further, said vessel containing a gas capable of becoming ionized with an applied high voltage;
- connecting target electrodes containing material with which the substrates will be coated to the outer taps of the trans-

former, the distance between either of the target electrodes and the substrate being greater than the distance between the target electrodes themselves, such that the potential difference between the target electrodes is greater than the potential difference between either of the target electrodes and the substrate;

- d. initiating and sustaining a discharge such that breakdown occurs between a target electrode and the substrate, while no breakdown occurs between the target electrodes, such that sputtering occurs from the target electrodes onto the substrates.

3. The method of claim 1 wherein a substrate coated with sputtered copper is electroplated in a copper plating solution to produce a thicker copper coating.

5,512,165

PERSONAL TOOL BOX

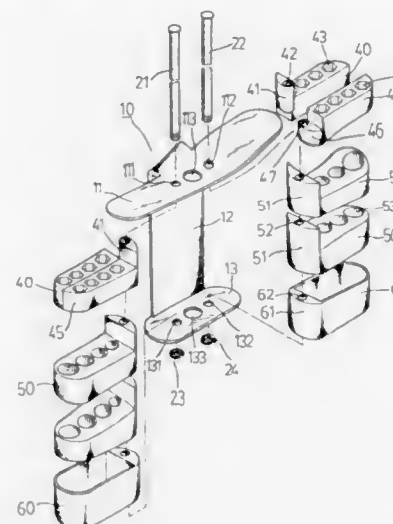
Lai-Ho Liu, No. 8, Taming Lane, Hsinking Rd., Taiping Hsiang, Taichung Hsien, Taiwan

Filed Jun. 27, 1995, Ser. No. 495,705

Int. Cl.⁶ B65D 85/20

U.S. Cl. 206—234

2 Claims



1. A personal tool box comprising:

- a base frame having a horizontal top wall, a horizontal bottom wall, and an upright back wall connected between said horizontal top wall and said horizontal bottom wall, said horizontal top wall and said horizontal bottom wall each having a tool rest hole aligned with each other for resting a hand tool;
- two pivots connected in parallel between said horizontal top wall and said horizontal bottom wall;
- at least one pair of bit carriages respectively turned about said pivots, each pair of bit carriages including a first bit carriage and a second bit carriage abutted against each other at the same elevation and respectively turned about one pivot, each bit carriage having a plurality of hexagonal storage chambers at a top side for keeping tool bits;
- at least one pair of socket carriages respectively turned about said pivots below said at least one pair of bit carriages, each socket carriage having a plurality of circular chambers of different diameters at a top side for keeping a variety of sockets; and
- at least one pair of storage cases respectively turned about said pivots below said at least one pair of socket carriages for keeping accessories.

5,512,166

PROCESS AND APPARATUS FOR THE CONTINUOUS REPLACEMENT OF THE CATALYST IN A MOVING-BED UNIT

Patrice Herrenscheidt, le Pecq; François-Xavier Cormerais, and Thierry Patureaux, both of Fontaine la Mallet, all of France, assignors to Total Raffinage Distribution, S.A., Levallois-Perret, France

Filed Jul. 10, 1992, Ser. No. 911,924

Claims priority, application France, Jul. 10, 1991, 91 08680
Int. Cl.⁶ C10G 35/12

U.S. Cl. 208—152

14 Claims

1. A process for continuously replacing a first catalyst of solid particles circulating as a moving bed with particles of a second catalyst in a hydrocarbon treating unit having at least one processing reactor and treatment occurring in the unit, without the necessity of interrupting treatment occurring in such unit, said process comprising

- withdrawing the first catalyst downstream of each reactor relative to the direction of catalyst circulation;
- injecting simultaneously the second catalyst upstream of each reactor at essentially the same volume flow rate as the rate of withdrawal of the first catalyst, with said second catalyst particles having an effectively measurable difference in bulk density from that of the first catalyst;
- measuring bulk density continuously or at effective intervals to sense the bulk density of the catalyst withdrawn downstream of each reactor sufficiently to detect the occurrence of a change in bulk density, and
- interrupting the withdrawal of the first catalyst and the injection of the second catalyst when the bulk density of the withdrawn catalyst has been sensed to be different from that of the first catalyst and becomes equal to that of the second catalyst.

5,512,167

BACKPULSE PISTON ASSEMBLY FOR CROSSFLOW FILTERS

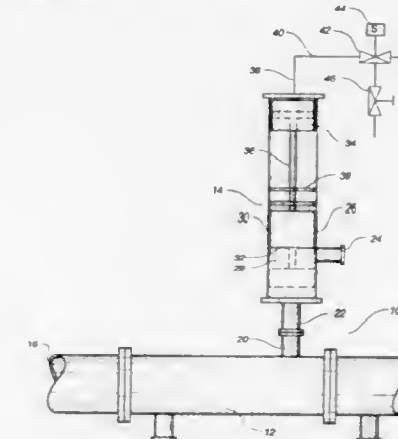
Lorne C. Gramms, Calgary, Canada; Ronald W. Bowman, and Robert R. Craycraft, both of Ventura, Calif., assignors to Case Engineering & Laboratory, Inc., Ventura, Calif.

Filed Jun. 8, 1994, Ser. No. 257,507

Int. Cl.⁶ B01D 65/02

U.S. Cl. 210—108

16 Claims



1. A filtration system comprising:

- a crossflow filter having an interior membrane, said crossflow filter having a feed inlet and a concentrate outlet and a permeate outlet, said interior membrane interposed between said feed inlet and said permeate outlet;
- a backpulse piston-and-cylinder assembly having a first port connected to said permeate outlet and a second port positioned at a different location than said first port, said assembly having an interior piston movable between a first position blocking fluid flow between said first port and said second

port and movable to a second position permitting fluid flow between said first and second ports; and actuation means connected to said piston for moving said piston from said second position to said first position, said actuation means comprising:
a pneumatic cylinder having a rod connected to said piston; and
a source of air pressure connected to said pneumatic cylinder so as to move said piston from said second position to said first position, said pneumatic cylinder having a bleed valve means connected thereto, said bleed valve means being operable for allowing air to flow with resistance from said pneumatic cylinder relative to a movement of said piston from said first position toward said second position.

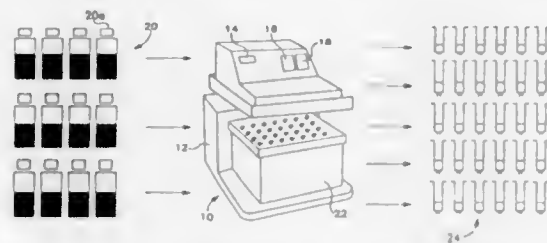
7. The system of claim 1, further comprising:
control means connected to said actuation means for causing a movement of said piston relative to a pressure differential across said interior membrane.

5,512,168 PROGRAMMABLE SOLID PHASE EXTRACTION AND ELUTION DEVICE

Martin J. Fetner, and Elwood F. Seasholtz, both of Allentown, Pa., assignors to Applied Separations, Inc., Allentown, Pa. Division of Ser. No. 101,784, Aug. 3, 1993, Pat. No. 5,443,734, which is a continuation of Ser. No. 788,578, Nov. 6, 1991, abandoned, which is a continuation-in-part of Ser. No. 488,306, Mar. 5, 1990, abandoned. This application Jun. 7, 1995, Ser. No. 173,335
Int. Cl.⁶ B01D 15/08

U.S. Cl. 210—198.2

17 Claims



1. A programmable system for removing and concentrating solutes from dilute solutions thereof and then recovering said concentrated solute for further use, said system comprising:

a plurality of fluid solution receptacles containing diverse solutions;

means for sequentially metering and transferring predetermined sample solution amounts from one or more of said fluid solution receptacles to one or more of a plurality of cartridge receiver tubes in the sequence selected, each of said cartridge receiver tubes containing an amount of a solid phase sorbent, said cartridge receiver tubes and sorbent being adapted to cause the removal of at least one solute from said sample solution amount placed in said cartridge receiver tubes and retain said solute so that a concentrated solution of said solute may be eluted and removed therefrom; and

programmable control means adapted to individually select one or more of said solution receptacles so that predetermined sample solution amounts of the fluid contained in one or more of said solution receptacles may be sequentially removed therefrom to individually selected ones of said cartridge receiver tubes, to meter and cause the transfer of said sample solution amounts from said individually selected ones of said solution receptacles to said individually selected ones of said cartridge receiver tubes, and to control the operation of said sequential metering and transfer of solutions by causing the creation of individual fluid flow paths adapted to permit said predetermined sample solution amounts to be delivered from each of said selected fluid solution receptacles in accordance with said predetermined sequence to said one or more of said selected cartridge receiver tubes.

5,512,169 LIQUID COLUMN PACKING MATERIALS

Dwight E. Williams, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Filed Dec. 30, 1992, Ser. No. 998,466

Int. Cl.⁶ B01D 15/08; C07K 17/00; C12N 11/00

U.S. Cl. 210—198.2

19 Claims

1. A packing material for liquid chromatographic or catalytic columns comprising a porous protein-adsorptive support having a coating of crosslinked protein on the external surfaces thereof, said coating of crosslinked protein being a relatively thin but saturated one, and where the signal obtained by at least one surface selective analytical method for nitrogen due to the saturated crosslinked protein coating does not exceed 67 percent of that for a bulk amount of said crosslinked protein.

5,512,170 LIQUID CHROMATOGRAPH

Yoshiaki Yamada, Ishioka, and Hironori Kaji, Hitachinaka, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Dec. 15, 1994, Ser. No. 356,751

Claims priority, application Japan, Dec. 27, 1993, 5-330597

Int. Cl.⁶ B01D 15/08

U.S. Cl. 210—198.2

18 Claims



2. A liquid chromatograph, comprising a sample separating column, a sample retainer having a certain capacity, sample feeding means for feeding a sample to the sample retainer, and sample volume setting means for setting volume of the sample to be fed to the sample separating column, and further comprising means for setting in advance a range of volume of the sample to be fed to the sample retainer wherein when the volume of the sample set by the sample volume setting means is not more than the capacity of the sample retainer, the volume of the sample fed to the sample separating column, thereby identifying a value of the volume of the sample set in the range by the sample volume setting means as volume of the sample fed to the sample separating column.

5,512,171 PARTICLE SEPARATOR

Saleam Essop, and Allen G. Bullard, both of P.O. Box 1638, Hillcrest 3650, South Africa

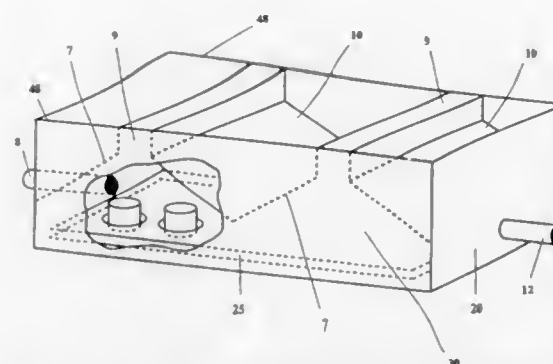
Filed Jan. 31, 1995, Ser. No. 381,477

Int. Cl.⁶ C02F 1/24; 1/465

U.S. Cl. 210—221.2

1 Claim

1. A particle separator device comprising,
a separator vessel,
one or more separation zones formed within said separator vessel by converging inclined plates which extend the entire width of the separator vessel,
a contaminate removal zone located just above the point of closest convergence of said converging inclined plates.



means for removing contaminate particles from said contaminate removal zone,
inlet means for introducing contaminated liquid into one end of said separator vessel,
exit means for removing purified liquid from the end of said separator vessel opposite said inlet means,
an electrode assembly comprised of upper and lower electrode plates, said upper electrode plate formed with one or more openings, said lower electrode plate having one or more electrode studs which protrude upwardly through said openings in said upper electrode plate, said electrode assembly being located on the floor of said separator vessel below the lower end of said converging inclined plates,
one or more vertically oriented baffles located in said separation zones, said baffles being places such that said electrode studs are centrally located in the spaces between said baffles,
a stabilization baffle located near the point of closest convergence of said converging inclined plates and just below said contaminate removal zone,

means for electrically charging said upper and lower electrode plates, whereby an intensity of micron sized gas bubbles are produced proximate said electrode studs,
means for electrically charging said converging inclined plates whereby gas bubbles are formed on the underside of said converging inclined plates, and
means for electrically charging said stabilization baffle whereby gas bubbles are formed on said stabilization baffle.

5,512,172 METHOD FOR SEALING THE EDGE OF A FILTER MEDIUM TO A FILTER ASSEMBLY AND THE FILTER ASSEMBLY PRODUCED THEREBY

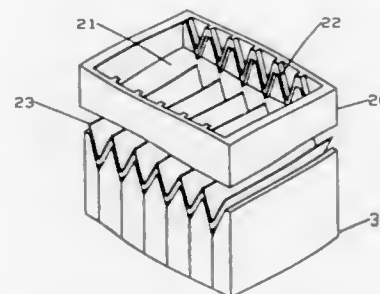
Keith S. Marble, Smith Falls, Canada, assignor to Racal Filter Technologies, Ltd., Canada

Filed Jun. 10, 1994, Ser. No. 259,748

Int. Cl.⁶ B01D 29/07

U.S. Cl. 210—232

36 Claims



1. A filter assembly comprising, in combination:
an enclosed frame defining a center opening, and having an inside surface, an upstream fluid inlet and a downstream fluid outlet and an inwardly projecting sealing means running continuously in a horizontal plane along the inside surface of said frame;

a pleated filter medium positioned in said frame across said center opening between said inlet and said outlet, having its lateral perimeter edge welded to said frame along said sealing means, wherein said sealing means has a preformed shape corresponding to the shape of the lateral perimeter edge of said filter medium to ensure the formation of a leak-proof edge seal and to resist pleat deformation.

5,512,173 DEMINERALIZATION APPARATUS AND CLOTH FOR PACKING DILUTING CHAMBER OF THE DEMINERALIZATION APPARATUS

Hajime Uchida, Yokohama; Motohiko Tajima, Sagami-hara, and Hiroshi Horie, Funabashi, all of Japan, assignors to Nippon Rensui Co., and Nitivy Co., Ltd., both of Tokyo, Japan

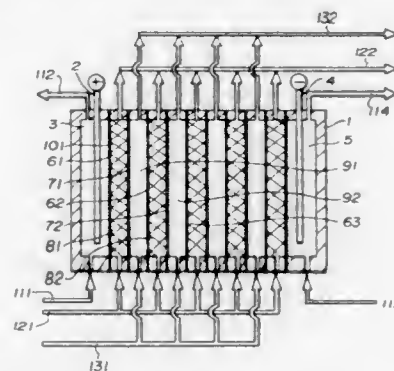
Filed Apr. 18, 1994, Ser. No. 229,299

Claims priority, application Japan, Apr. 21, 1993, 5-116581

Int. Cl.⁶ B01D 61/44

U.S. Cl. 204—632

4 Claims



1. A demineralization apparatus comprising:
an anode chamber disposed at one end of a vessel having an anode at the inside of the anode chamber;
a cathode chamber disposed at the other end of the vessel having a cathode at the inside of the cathode chamber; and
at least one diluting chamber and at least one concentrating chamber, disposed alternatively between the anode chamber and the cathode chamber,
the diluting chamber having an anion exchange membrane on the anode chamber side and a cation exchange membrane on the cathode chamber side,
the diluting chamber having an inlet for water to be treated and an outlet for demineralized water,
the concentrating chamber having an inlet for water and an outlet for ion-concentrated water,
the diluting chamber containing a cloth comprising a mixture of strongly acidic cation exchange fibers, strongly basic anion exchange fibers and ionically inactive synthetic fibers, the ionically inactive synthetic fibers in the mixture being present in an amount of from 20 to 70% by weight.

5,512,174 FILTERING DEVICE FOR THE CLARIFICATION OF LIQUIDS

Bernard Capon, La Celle St Cloud, France, assignor to Degremont, Rueil Malmaison, France

Filed May 19, 1994, Ser. No. 246,137

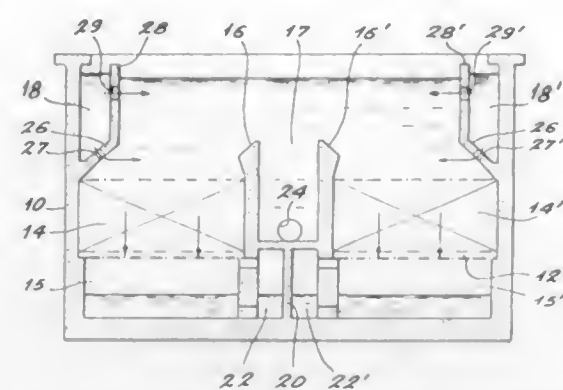
Claims priority, application France, May 28, 1993, 93 06479

Int. Cl.⁶ B01D 24/22; 24/46

U.S. Cl. 210—264

3 Claims

1. A filtering device for clarification of waste water, comprising:
an open tank provided with side walls, a base, and a floor positioned in parallel spaced relation to the base;



the floor incorporating nozzles for permitting fluid communication between spaces located above and below the floor; first parallel spaced vertical partitions extending above the floor and forming an axial channel extending the length of the tank that serves as a conduit for removing wash water during a cleaning phase;

second parallel spaced vertical partitions extending below the floor that serve as conduits for removal of filtered waste water during a filtering phase and also to introduce pressured water and air to the nozzles during a cleaning phase said second parallel spaced vertical partitions having a watertight partition therebetween defining two adjacent axial channels extending the length of the tank;

filter material supported by the floor and contained between the side walls and outward surfaces of the first vertical partitions; The first and second partitions and said watertight partition effectively dividing the filtering device into two independent cells;

side channels formed on opposite side walls of the tank for supplying waste water to each cell of the filtering device, wherein each channel includes

- an upwardly inclined wall section extending from the side wall of the tank and including calibrated lower orifices through which waste water flows into the tank at controlled rates during a filtering phase, and through which wash water flows during a cleaning phase;
- an upwardly extending vertical wall section extending from the inclined wall section of the tank and including upper calibrated orifices through which waste water flows into the tank at controlled rates;
- the calibrated orifices in the side channels subjecting each cell to equal distribution of waste water over the entire length of each cell, during a filtering phase, and equal distribution of wash water through the side channels during the cleaning phase.

5,512,175

ASSEMBLY FOR REMOVING HYDROPHILIC CONTAMINANTS, METHOD OF THE SAME, AND APPARATUS FOR PRODUCING PHENOL

Mikio Saito, Sagami-hara, and Tsuneo Yamaguchi, Kawasaki, both of, Japan, assignors to Wako Industrial Co., Ltd., Tokyo, Japan

Filed Apr. 19, 1994, Ser. No. 229,889

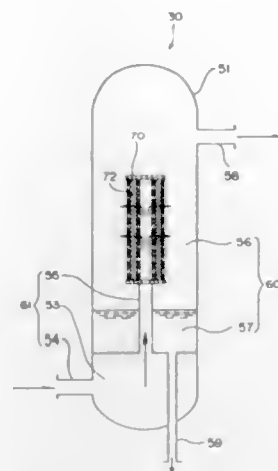
Claims priority, application Japan, Jul. 12, 1993, 5-171464
Int. Cl.⁶ B01D 21/00; 24/48; C07C 37/68

U.S. Cl. 210-299

6 Claims

1. A hydrophilic contaminants removing apparatus for removing moisture including the hydrophilic contaminants from a mixed liquid, the mixed liquid including the moisture and an oil-state liquid, the apparatus comprising:

- a chamber containing the mixed liquid,
means for supplying the mixed liquid from the chamber to a coalescing means,
coalescing means for coalescing and separating the moisture from the mixed liquid resulting in the oil-state liquid, the



oil-state liquid and the moisture being released from the coalescing means into a separated liquid chamber, the moisture forming a water sedimentation layer at a bottom portion of the separated liquid chamber,

means cooperating with the bottom portion of the separated liquid chamber for collecting the water sedimentation layer; and

means cooperating with an upper portion of the separated liquid chamber for collecting the oil-state liquid;

wherein the coalescing means comprises:

- an alkali resistant and solvent resistant fiber layer including capillary tubes,
- a cylindrical shaped porous holding cylinder having end portions connectable and disconnectable from a main body of the removing apparatus, wherein the fiber layer is wound about the outer peripheries of the holding cylinder so as to be held by the cylinder, the fiber layer including a highly densified portion formed at the end portions, and

end plates attached to both end portions and including an endless ring-shaped thin protrusion protruding toward and cutting into the highly densified portion of the fiber layer.

5,512,176

DESALINATION PROCESS

E. Allan Blair, Pennington, N.J., assignor to Saudi Basic Industries Corporation, Riyadh, Saudi Arabia

Division of Ser. No. 96,766, Jul. 23, 1993, Pat. No. 5,354,835.
This application Jun. 21, 1994, Ser. No. 262,949

Int. Cl.⁶ C02F 1/58; B01D 39/16; 71/54

U.S. Cl. 210-633

11 Claims

1. In a method for recovering water having a lower salt content in a form of a less saline water, from a starting saline water solution the improvement comprising:

- immersing a hydrogel polymer shape in a saline water solution at about room temperature for a time sufficient to absorb said less saline water within said polymer, said polymer being comprised of a polyol and a polyisocyanate, said polyol is comprised of a block copolymer of A and B, wherein in said block copolymer constituent A is from about 15 to 35% by weight and B is from about 55% to 75% by weight, and wherein said polyol of A and B has an equivalent weight from about 1000 to 2000, the polyol is polyfunctional with hydroxyl functionality of two to eight and the polyisocyanate has two isocyanate groups and the hydrogel polymer in a cured condition has a tensile strength of at least 3500 psi and wherein A in said block copolymer is of poly-ethylene oxide and B is of a poly-propylene oxide, poly-butylene oxide or poly tetra methylene ether;

removing said hydrogel polymer shape from said starting saline water; and

recovering by heating, said less saline water by heating said hydrogel polymer to from 30° C. to 80° C.

5,512,177

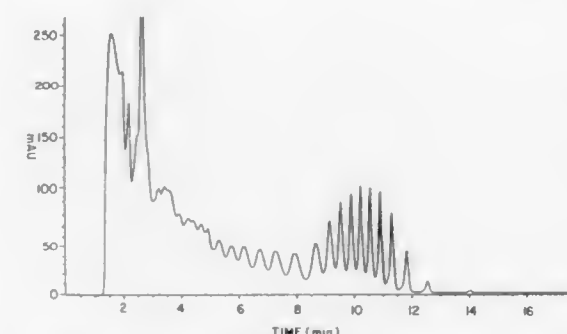
NARROW POLY- AND MONO-DISPERSED ANIONIC OLIGOMERS, AND THEIR USES, FORMULATIONS AND PROCESS

Alan D. Cardin, Cincinnati, Ohio; Michael J. Mullins, Midland, Mich.; William A. Fordyce, Midland, Mich.; Thomas A. Chamberlin, Midland, Mich., and Michael J. Fazio, Midland, Mich., assignors to The Dow Chemical Co., Midland, Mich., and Merrell Dow Pharmaceuticals Inc., Cincinnati, Ohio

Continuation of Ser. No. 818,753, Jan. 9, 1992, Pat. No. 5,424,063. This application Nov. 22, 1993, Ser. No. 156,329
Int. Cl.⁶ B01D 15/08; B07C 9/00

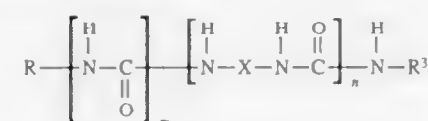
U.S. Cl. 210-635

22 Claims



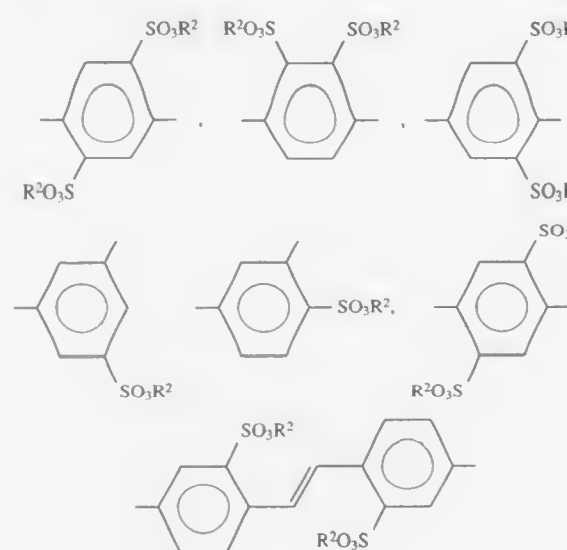
1. A process for the preparation of narrow polydispersed anionic oligomers, having a polydispersity ratio of 1.0 to 1.3, which are water-soluble oligomers comprising 3 to 50 recurring units coupled by carbonyl linking moieties, said oligomer having anionic groups and predominantly linear geometry such that regular spacing between anionic groups exists in an aqueous medium, and which are represented by any one of the following formulae:

A) polyureas of the formula:

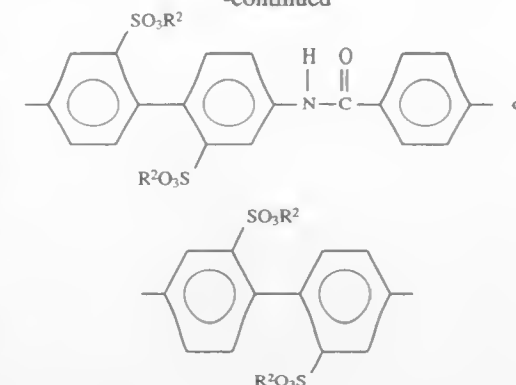


wherein:

- R represents hydrogen, C₁₋₂₀ alkyl, phenyl, or phenyl substituted with from 1 to 2 —SO₃R² moieties and up to 3 substituents independently selected from chloro, bromo or C₁₋₄ alkyl;
- R² represents hydrogen or a pharmaceutically acceptable cation; m is 0 or 1, with the proviso that when m is 0, R is hydrogen; X represents:

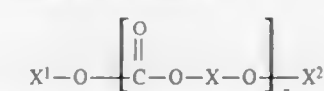


-continued



n is 3-50; and
R³ represents —R or —X—NH₂ where R and X are defined as before;

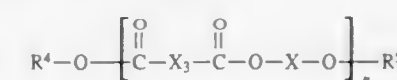
B) polycarbonates of the formula:



wherein:

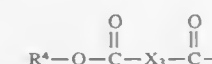
- X and n are defined as in Formula I above;
- X¹ represents HO—X—, wherein X is defined as in Formula I above, C₁₋₂₀ alkyl, phenyl or phenyl substituted with from 1 to 2 —SO₃R² moieties and up to 3 substituents independently selected from chloro, bromo or C₁₋₂₀ alkyl; and
- X² represents hydrogen or —CO₂X¹, wherein X¹ is defined as above;

C) polyesters of the formula:



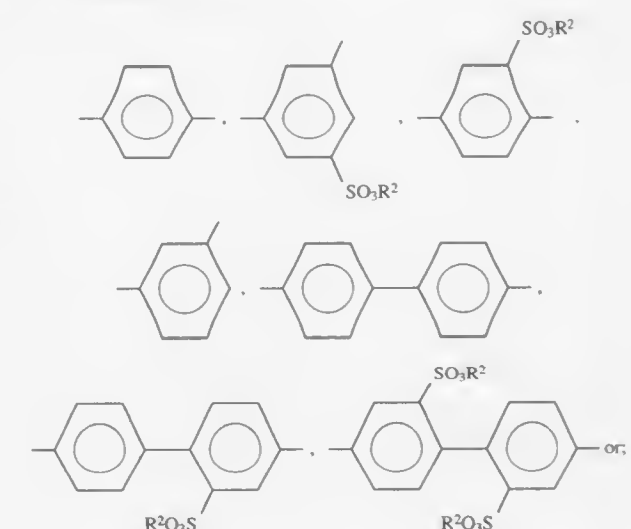
wherein:

- X and n are defined as in Formula I above;
- R⁴ represents —R², as defined above in Formula I, or —X¹, as defined above in Formula II;
- R⁵ represents:

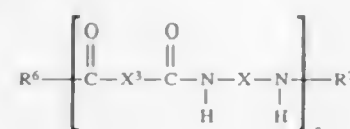


wherein R⁴ is defined above as in Formula III above, or —R² as defined in above Formula I;

X³ represents:



D) polyamides of the formula:



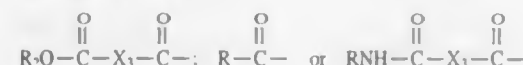
wherein:

X and n are defined as above in Formula I;

X³ is defined as above in Formula III;

R⁶ represents H₂N—X—NH—, R²O—, RNH— or R—C(O)—NH—X—NH—, where R, R² and X are defined above as in Formula I;

R⁷ represents hydrogen,



wherein R and R² are defined as above in Formula I, and X³ is defined above as in Formula III,

which comprises the steps of:

- 1) restricting a crude polydispersed anionic oligomer mixture, having a polydispersity ratio > 1.3, containing oligomers of one of Formulas I-IV to a narrow polydispersed anionic oligomer mixture, wherein the manner of restricting is chosen from a group consisting of gel filtration, membrane permeation and reverse phase chromatography; optionally followed by;
- 2) isolating a monodispersed anionic oligomer mixture; and
- 3) optionally converting the narrow polydispersed or monodispersed anionic oligomer mixtures from step 1) or 2) into a desired pharmaceutically-acceptable salt.

5,512,178 WATER TREATMENT METHOD AND APPARATUS THEREFOR

Fumin Dempo, Saitama, Japan, assignor to Yoshihisa Masuda, and Shiro Shimaya, both of Japan

Continuation of Ser. No. 907,535, Jul. 2, 1992, abandoned.

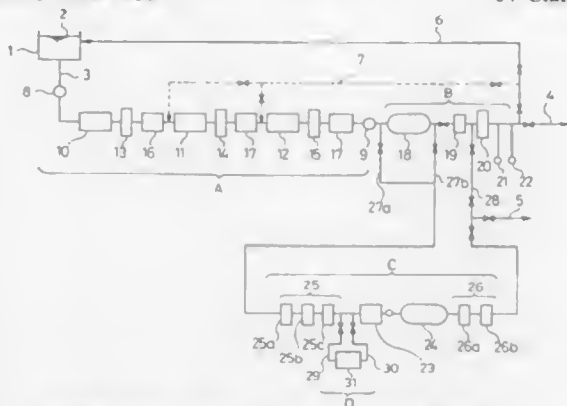
This application Mar. 20, 1995, Ser. No. 406,782

Claims priority, application Japan, Apr. 17, 1992, 4-122944

Int. Cl. C02F 9/00

U.S. Cl. 210-638

37 Claims



1. A water treatment method comprising the steps of:

- flowing treatment objective water through a first portion of a treatment system comprising an ozone supply unit, a filtering unit and an ultraviolet-ray irradiating unit, to purify the treatment objective water;
- flowing the treatment objective water through a second portion of the treatment system having a precision filter and an ion-exchange resin tower;
- treating said treatment objective water within said first portion of said treatment system by injecting ozone from said ozone supply unit, filtering the water with said filtering unit and irradiating the water with the ultraviolet-ray irradiating unit, to form a clean water;

treating said clean water within said second portion of the treatment system by filtering out small impurities with said precision filter and removing ions with said ion-exchange resin tower, to form a super pure water;

reducing an amount of dissolved oxygen in said clean water; and enabling said treatment objective water to flow out to a location on the outside of the treatment system, from a final step, as one of super pure water and potable water which can immediately be used;

wherein said method further includes the step of flowing said treatment objective water through a third portion of the treatment system comprising a reverse osmosis membrane and an ultraviolet-ray irradiating unit provided downstream of said ozone supply unit, to treat said treatment objective water.

5,512,179 MEMBRANE PROCESS FOR SEPARATION OF FLUID MIXTURES

Hartmut E. A. Bruschke, Nussloch, and Walter H. Schneider, Schriesheim, both of Germany, assignors to Deutsche Carbone AG, Frankfurt, Germany

Filed Mar. 20, 1995, Ser. No. 407,217

Claims priority, application Germany, Mar. 24, 1994, 44 10 243.7

Int. Cl. B01D 6/36

U.S. Cl. 210-640

10 Claims

10. A process for separation of fluid mixtures by means of a combined pervaporation-vapor permeation process comprising: separating the feed flow into a vapor portion and a liquid portion and passing the portions through separate lines into a module containing a membrane;
- passing the vapor portion and the liquid portion of the feed flow over a vertically arranged membrane from bottom to top as a vapor-liquid mixture, so that a permanent thorough mixing of vapor and liquid results, and no stationary liquid film is able to form on the surface of the membrane; and
- recovering a component of the feed flow in a permeate flow on an opposite side of the membrane from said feed flow.

5,512,180 EXTRACTING ORGANIC COMPOUNDS FROM AQUEOUS SOLUTIONS

Sa V. Ho, St. Louis, Mo., assignor to Monsanto Company, St. Louis, Mo.

Continuation of Ser. No. 5,470, Feb. 3, 1993, abandoned,

which is a continuation-in-part of Ser. No. 854,180, Mar. 20, 1992, abandoned. This application Nov. 17, 1994, Ser. No. 341,345

Int. Cl. B01D 69/10

U.S. Cl. 210-643

31 Claims

1. A process for separation of fluid mixtures by means of a combined pervaporation-vapor permeation process comprising: passing a feed flow over a vertically arranged membrane from bottom to top as a vapor-liquid mixture, so that a permanent thorough mixing of vapor and liquid results, and no stationary liquid film is able to form on the surface of the membrane; and
- recovering a component of the feed flow in a permeate flow on an opposite side of the membrane from said feed flow.

5,512,181 REMOVING SILICA FROM COOLING WATERS WITH COLLOIDAL ALUMINA AND DIALYSIS

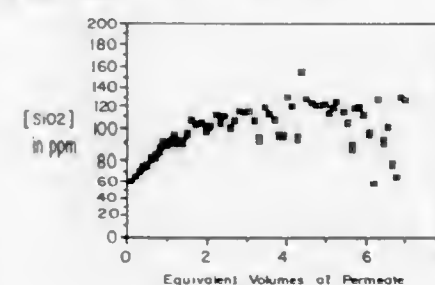
Stephen A. Matchett, Grand Haven, Mich., assignor to NALCO Chemical Company, Naperville, Ill.

Filed Nov. 1, 1993, Ser. No. 143,729

Int. Cl. B01D 11/00

U.S. Cl. 210-644

5 Claims



1. A method for reducing the silica content of cooling water blow-down which comprises the steps of:
 - a) adding an effective silica absorbing amount of a colloidal alumina having an average surface area of at least 25m²/g to a cooling water blow-down containing silica;
 - b) mixing the cooling water blow-down with the colloidal alumina for a period of time sufficient for the colloidal alumina to adsorb at least a portion of the silica;
 - c) dialyzing the cooling water blow-down in a diafiltration cell containing a membrane whereby said cooling water blow-down permeates through the membrane; and then,
 - d) recovering as the permeate a cooling water blow-down having a reduced silica content.

5,512,182 PROCESS FOR REMOVING TRACE AMOUNTS OF AMMONIA-CONTAINING COMPOUNDS FROM AQUEOUS STREAMS

Morris Sheikh, Bloomfield Hills, and Amitabh B. Ghosh, Madison Heights, both of Mich., assignors to American Laboratories, Madison Heights, Mich.

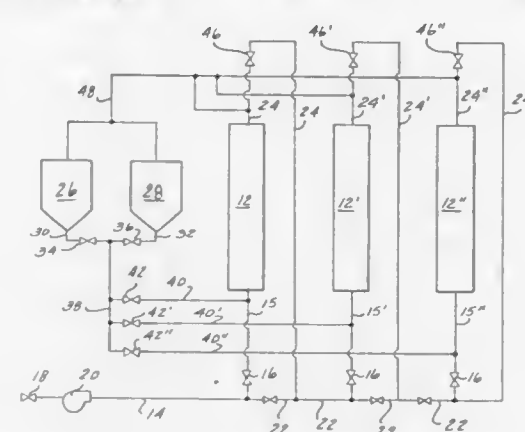
Continuation of Ser. No. 806,120, Dec. 12, 1991, abandoned.

This application Jan. 18, 1994, Ser. No. 183,126

Int. Cl. C02F 9/00

U.S. Cl. 210-668

15 Claims



1. A method for converting ammonia-containing materials in an aqueous process fluid to nitrogen and water such that the level of ammonia-containing materials are reduced to a level below about 0.017 ppm, the method comprising the steps of: concentrating the ammonia-containing materials in a confined location by introducing the aqueous process fluid into a first reaction vessel containing an adsorbent-catalyst material having a porous surface, said adsorbent-catalyst material packed within said reaction vessel;

maintaining the aqueous process fluid in contact with said adsorbent-catalyst material for an interval sufficient to effect transfer of a major portion of the ammonia-containing materials from the aqueous fluid into concentrated contact with said porous surface of said adsorbent-catalyst material;

removing the aqueous fluid from said first reaction vessel after said major portion of ammonia-containing materials has been mass transferred to and concentrated on said adsorbent-catalyst material, said removed aqueous fluid containing a residual quantity of ammonia-containing materials;

introducing said removed aqueous fluid into at least one subsequent reaction vessel containing additional quantities of said adsorbent-catalyst material packed within said subsequent reaction vessel;

maintaining said removed aqueous fluid in contact with said additional quantities of adsorbent-catalyst material contained in said subsequent reaction vessel for an interval sufficient to effect mass transfer of a major portion of said residual quantity of ammonia-containing materials from said removed aqueous fluid into contact with said porous surface of said adsorbent-catalyst material;

contacting said adsorbent-catalyst material having said ammonia-containing materials concentrated thereon with an aqueous inorganic oxidizing agent, said aqueous inorganic oxidizing agent present in an amount sufficient to convert said ammonia-containing materials concentrated on said adsorbent-catalyst to nitrogen and water; and

removing the aqueous fluid from said subsequent reaction vessel;

wherein said adsorbent-catalyst consists essentially of a solid, porous material which is essentially impervious to oxidative processes and to which aqueous-borne ammonia-containing materials are selectively attracted, said adsorbent-catalyst selected from the group consisting of activated alumina, Group VIII metals, Group IB metals and mixtures thereof.

5,512,183 ALKYL-ALLYLPHOSPHONATE COPOLYMER USED FOR BOILER WATER TREATMENT

Scott M. Boyette, Wilmington, Del., and Alan E. Golaszewski, The Woodlands, Tex., assignors to Betz Laboratories, Inc., Trevose, Pa.

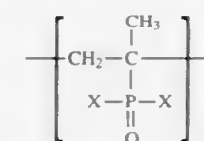
Filed Dec. 7, 1994, Ser. No. 350,879

Int. Cl. C02F 5/14

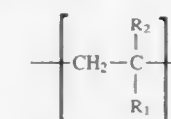
U.S. Cl. 210-697

14 Claims

1. A method of controlling the deposition of scale imparting precipitates on the structural parts of a boiler water system comprising adding to said boiler water system an effective amount for the purpose of a water soluble copolymer consisting essentially of repeat unit moieties (a) and (b), said repeat unit moiety (a) having the structure:



wherein X=OH or OM, wherein M is a cation, said repeat unit moiety (b) having the structure:



wherein R₁ and R₂ are independently hydrogen, C₁₋₁₀ linear or branched alkyl, phenyl, or alkyl substituted phenyl, said copolymer having a molar ratio of a:b of from about 3:1 to about 0.5:1.

5,512,184 AMPHOLYTIC POLYMERS AND POLYMERIC MICROEMULSIONS

Michael S. Ryan, Fairfield; David L. Dauplaise, Stamford, and Robert J. Proverb, Fairfield, all of Conn., assignors to Cytec Technology Corp., Wilmington, Del.

Continuation of Ser. No. 200,795, Feb. 23, 1994, Pat. No. 5,380,444. This application Sep. 8, 1994, Ser. No. 303,262
Int. Cl.⁶ C02F 1/56

U.S. Cl. 210—734

11 Claims

1. A method of flocculating suspended solids in an aqueous dispersion which comprises treating said dispersion with an effective amount of a microemulsion or a dilute aqueous solution, said microemulsion or dilute aqueous solution comprising a copolymer of (alk)acrylamide and at least one ethylenically unsaturated anionic comonomer, wherein said (alk)acrylamide is substituted with quaternary dialkyl aminomethyl groups;

said anionic comonomer is present in an amount ranging from about 1 to 15 mole percent; and
said copolymer has a standard viscosity of at least about 2.1 cps when measured at 0.1 percent concentration in a 1 molar sodium chloride solution and said copolymer having been derived from microemulsion polymerization.

5,512,185 PURIFICATION OF STABLE ORGANIC COMPOUNDS

Roger A. Mader, Stillwater, and Robert J. Ryther, St. Paul, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 335,450, Nov. 7, 1994, Pat. No. 5,443,742.
This application Jul. 31, 1995, Ser. No. 508,383

Int. Cl.⁶ C02F 1/72

U.S. Cl. 210—758

16 Claims

1. A process for removing undesirable reducing compounds from an organic material used as a raw material in photothermographic compositions comprising the steps of:

- providing said organic material with undesirable reducing compounds in a liquid carrying medium;
- adding to said liquid carrying medium and organic material at least one metal oxidizing agent, said oxidizing agent being added in a quantity sufficient to substantially prevent undesired silver reduction caused by said reducing compounds in photothermographic coatings;
- oxidizing said undesirable reducing compounds; and
- removing said metal oxidizing agent from said liquid carrying medium.

5,512,186 METHOD FOR INHIBITING MICROBIAL ADHESION ON SURFACES

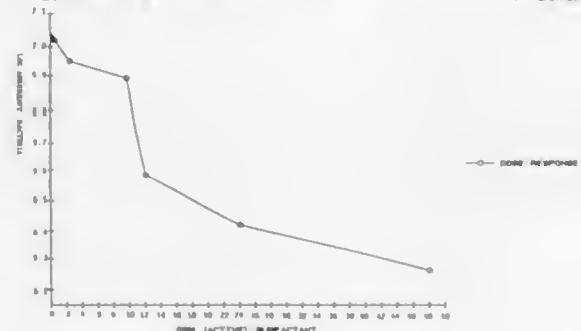
J. Barry Wright, and Daniel L. Michalopoulos, both of Jacksonville, Fla., assignors to Betz Laboratories, Inc., Trevose, Pa.

Filed Apr. 28, 1995, Ser. No. 430,569

Int. Cl.⁶ C02F 1/50

U.S. Cl. 210—764

9 Claims



1. A method for inhibiting the microbial colonization of surfaces in contact with an aqueous system which comprises adding to said system an effective amount of an dinonylsulfosuccinate surfactant, said method substantially preventing the adhesion of microbes to said surfaces while preserving the viability of the microbes in said system, allowing for the discharge of the microbes from said system.

5,512,187 METHODS FOR PROCESSING RED CELL PRODUCTS FOR LONG TERM STORAGE FREE OF MICROORGANISMS

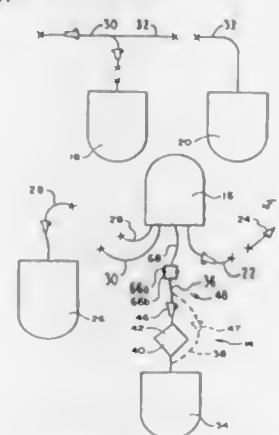
Donald H. Buchholz, Barrington, and Richard L. Kandler, McHenry, both of Ill., assignors to Baxter International Inc.

Continuation of Ser. No. 167,631, Dec. 14, 1993, abandoned, which is a continuation of Ser. No. 48,074, Apr. 15, 1993, abandoned, which is a continuation of Ser. No. 697,202, May 8, 1991, abandoned. This application Sep. 1, 1994, Ser. No. 299,793

Int. Cl.⁶ B01D 37/00;36/00

U.S. Cl. 210—767

2 Claims



1. A method of processing a blood product containing red blood cells to remove microorganisms prior to long term storage, the method comprising the steps of:

collecting the blood product containing red blood cells in a first container that forms a part of a sterile, closed blood collection system including a storage container, a first fluid path that leads into the storage container, the first fluid path including a dry inline filter medium comprising a mass of synthetic fibers having an average fiber diameter of about 10 microns or less and a bulk density of about 0.7 gram per cubic centimeter or less, and a second fluid path that leads from the storage container to the first container and bypasses the filter medium, adding a storage solution to the blood product without wetting the filter medium,

before conveying any of the blood product containing the storage solution from the first container into the storage container through the first fluid path and the filter medium, and before wetting the filter medium, refrigerating the blood product containing the storage solution in the first container together with the closed blood collection system to cool the blood product containing the storage solution and the dry inline filter medium to a temperature of about 3 to 5 degrees C., thereby creating a precooled blood product containing the storage solution and a precooled dry inline filter medium, only after both the blood product containing the storage solution and the dry inline filter medium have been cooled to a temperature of about 3 to 5 degrees C., conveying the precooled blood product containing the storage solution from the first container into the storage container through the first fluid path and the precooled filter medium to remove microorganisms from the precooled blood product, venting air from the storage container into the first container through the second fluid path that bypasses the filter medium, and

after venting the air from the storage container, storing the filtered, microorganism-depleted blood product containing the storage solution in the storage container at a temperature of about 3 to 5 degrees C. for a period that exceeds twenty-four hours after filtration.

5,512,188 GREASE COMPOSITION FOR CONSTANT VELOCITY JOINT COMPRISING BORON NITRIDE POWDER AND ZINC DITHIOPHOSPHATE

Hiroto Kinoshta, Yokohama; Souichi Nomura, Tokyo, and Masaru Mishima, Kawasaki, all of Japan, assignors to Nippon Oil Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 115,457, Sep. 1, 1993, abandoned, which is a continuation of Ser. No. 846,357, Mar. 5, 1992, abandoned. This application Aug. 11, 1995, Ser. No. 514,387
Claims priority, application Japan, Mar. 7, 1991, 3-042081
Int. Cl.⁶ C10M 125/26;123/02

U.S. Cl. 252—18

19 Claims

1. A grease composition for a constant velocity joint comprising a base oil containing 2 to 25 wt. % of thickener, 0.5 to 20 wt. % of boron nitride powders, and 0.1 to 10 wt. % zinc dithiophosphate wherein said wt. percentages are based on total weight of the composition.

5,512,189 ANTIWEAR AND ANTIOXIDANT ADDITIVES

Shi-Ming Wu, Newtown, Pa., and Andrew G. Horodysky, Cherry Hill, N.J., assignors to Mobil Oil Corporation, Fairfax, Va.

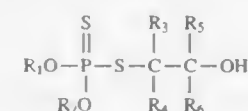
Continuation-in-part of Ser. No. 24,014, Mar. 2, 1993, abandoned. This application Jul. 22, 1994, Ser. No. 278,780

Int. Cl.⁶ C10M 137/10; C07F 9/17

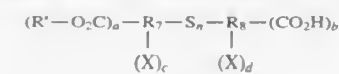
U.S. Cl. 252—46.6

19 Claims

1. A lubricant composition comprising a major proportion of a lubricant selected from the group consisting of a mineral oil or synthetic oil or blend thereof and a minor multifunctional antiwear and antioxidant amount of a reaction product of an alkoxylated diorgano phosphorodithioate of the formula:



where R_1 and R_2 are the same or different straight or branched chain hydrocarbyl radicals containing 1 to 30 carbon atoms or aromatic hydrocarbyls, R_3 , R_4 , R_5 and R_6 are each independently a hydrogen atom or a hydrocarbyl radical containing 1 to 60 carbon atoms, at least one of R_3 , R_4 , R_5 and R_6 is a hydrogen atom and a sulfur-containing carboxylic acid having the structural formula:



where: $n=0-2$,

$a=0-1$,

$b=0-1$,

$c=0-1$, and

$d=0-1$, X is H, SH or $\text{CH}_2\text{CO}_2\text{H}$; provided that when $n=0$,

$c+d=1$ and X is SH and if n is not 0, then X is not SH, and where R' is hydrogen or a hydrocarbyl radical which contains from about 1 to 60 carbon atoms and R_7 and R_8 are the same or different hydrocarbyl radicals containing from about 1 to 30 carbon atoms or R_7 is a hydrogen atom.

5,512,190 LUBRICATING OIL COMPOSITION PROVIDING ANTI-WEAR PROTECTION

Gregory P. Anderson, Pleasant Valley; Julian H. Dancy, Poughkeepsie; Doris Love, Fishkill, and Jayne M. Lucas, Campbell Hall, all of N.Y., assignors to Texaco Inc., White Plains, N.Y.

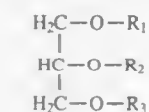
Filed Aug. 22, 1994, Ser. No. 293,260

Int. Cl.⁶ C10M 135/36

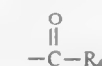
U.S. Cl. 252—47

24 Claims

8. A lubricating composition comprising a major portion of a lubricating oil and a minor portion, effective to impart anti-wear properties to the lubricating composition of an additive comprising the reaction product of 2,5-dimercapto-1,3,4-thiadiazole and a mixture of unsaturated mono-, di-, and tri-glycerides of formula:



where R_1 , R_2 and R_3 comprise hydrogen or hydrocarbyl radicals having the formula:



where R_4 is a C_6 to C_{24} unsaturated hydrocarbon.

5,512,191 AQUEOUS FUNCTIONAL FLUID HAVING IMPROVED RESISTANCE TO MICRO-ORGANISMS

Mark K. Krueger, Loveland, Ohio, assignor to Cincinnati Milacron Inc., Cincinnati, Ohio

Continuation of Ser. No. 171,496, Dec. 22, 1993, abandoned.

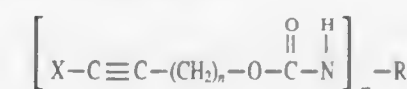
This application Mar. 28, 1995, Ser. No. 412,353

Int. Cl.⁶ C10M 173/02

U.S. Cl. 252—49.3

9 Claims

1. An aqueous metalworking fluid composition, free of formaldehyde and formaldehyde producing agents, having improved resistance to attack by bacteria comprising a) water, b) a water soluble or dispersible organic lubricant selected from the group consisting of water soluble or dispersible synthetic, naturally occurring and modified naturally occurring organic substances and mixtures thereof having a friction reducing characteristic, c) a bacteria controlling effective amount of the combination comprising: d) a water soluble or dispersible nitrogen bearing organic compound or salt thereof selected from the group consisting of a halogen or hydroxyl and unsubstituted aliphatic primary amines and salts thereof and morpholine and e) a water soluble or dispersible carbamate having the formula



where

X is iodine

R is an aliphatic, aromatic or alkylaromatic group having from 1 to 20 carbon atoms and a free valence equal to m

m is a whole integer from 1 to 3 and

n is a whole integer from 1 to 3.

5,512,192

DISPERSANT-VISCOSITY IMPROVERS FOR LUBRICATING OIL COMPOSITIONS

Richard M. Lange, Euclid, and Carmen V. Luciani, Wickliffe, both of Ohio, assignors to The Lubrizol Corporation, Wickliffe, Ohio

Continuation of Ser. No. 398,195, Mar. 2, 1995, abandoned.

This application Jun. 14, 1995, Ser. No. 490,378

Int. Cl.⁶ C10M 145/00

U.S. Cl. 252—51.5 A

46 Claims

1. A dispersant-viscosity improver for lubricating oil composition comprising the reaction product of reactants comprising

- (a) an oil soluble, substantially hydrogenated, vinyl substituted aromatic-aliphatic conjugated diene block copolymer said copolymer having a number average molecular weight ranging from about 30,000 to about 300,000, grafted with an ethylenically unsaturated carboxylic acid or functional derivative thereof;
- (b-1) at least one polyester containing at least one condensable hydroxyl group; and
- (b-2) at least one polyamine having at least one condensable primary or secondary amino group.

5,512,194

ACICULAR FERROMAGNETIC IRON OXIDE PARTICLES AND PROCESS FOR PRODUCING THE SAME

Makoto Ogasawara, Koka; Masakazu Yada, Suzuka; Kaoru Sakurai, Yokkaichi; Kazuya Haga, Yokkaichi; Masahide Miyashita, Yokkaichi, and Yasumasa Hirai, Yokkaichi, all of Japan, assignors to Ishihara Sangyo Kaisha, Ltd., Osaka, Japan

Division of Ser. No. 150,794, Nov. 12, 1993, abandoned, which is a continuation of Ser. No. 763,270, Sep. 20, 1991, abandoned. This application Jun. 7, 1994, Ser. No. 255,956

Claims priority, application Japan, Sep. 26, 1990, 2-256380;

Sep. 26, 1990, 2-256382

Int. Cl.⁶ C01G 49/02

U.S. Cl. 252—62.56

2 Claims

1. A process for producing acicular ferromagnetic iron oxide particles comprising crystalline particles having an aspect ratio not lower than 4, a saturation magnetization of more than 90 emu/g, expressed by the formula of FeO_x , wherein, and modified with 2 to 15 atomic percent by weight zinc ions as expressed as Zn/Fe , which comprises the step of oxidizing a particulate acicular magnetic iron oxide, which comprises a particulate crystal expressed by the formula of FeO_x , wherein, and modified with 2 to 15 atomic percent by weight zinc ions as expressed as Zn/Fe , at a temperature of 50° to 250° C.

5,512,195

PROCESS FOR PRODUCING SINGLE PHASE MAGNETITE POWDER

Yasuhiko Mano, Toyohashi; Takeshi Mochizuki, Shizuoka; Isamu Sasaki, and Akira Shimokawa, both of Kosai, all of Japan, assignors to Fuji Electrochemical Co. Ltd., Tokyo, Japan

PCT No. PCT/JP94/00531, § 371 Date Oct. 3, 1994, § 102(e) Date Oct. 3, 1994, PCT Pub. No. WO94/27911, PCT Pub. Date Dec. 18, 1994

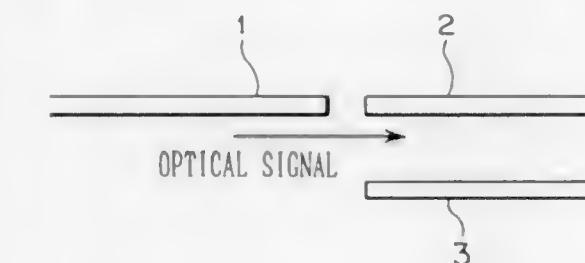
PCT Filed Mar. 31, 1994, Ser. No. 313,152

Claims priority, application Japan, May 20, 1993, 5-141473; May 20, 1993, 5-141474; Aug. 31, 1993, 5-215872

Int. Cl.⁶ C01G 49/08; 49/06

U.S. Cl. 252—62.56

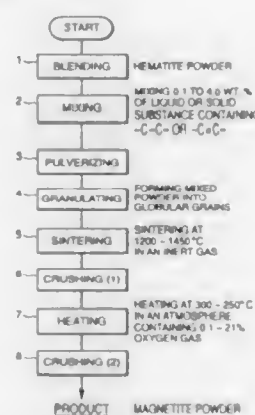
5 Claims



1. A bismuth-substituted rare earth iron garnet single crystal grown on a non-magnetic substrate having a lattice constant of 12.490 Å–12.510 Å by the liquid phase epitaxial method, and represented by a general equation:



where R denotes at least one element selected from the group consisting of yttrium (Y), ytterbium (Yb) and lutetium (Lu), and x, y, z and w are numerical values in the ranges $0.50 \leq y/x \leq 1.35$, $1.40 \leq x+y \leq 1.90$, $0.0 \leq w/z \leq 0.3$ and $0.7 \leq z+w \leq 1.25$.



1. A process for producing single phase magnetite powder, comprising adding 0.1 to 4.0% by weight of a liquid or powdered substance having a carbon-to-carbon single or double bond to hematite powder, stirring the mixture to obtain a substantially homogeneous mixture, and heating the mixture in an inert gas at 1200° to 450° C.

5,512,196

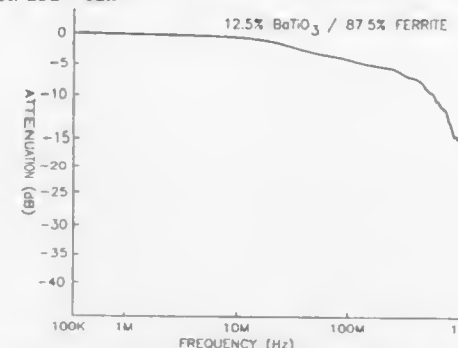
FERROELECTRIC-FERROMAGNETIC COMPOSITE MATERIALS

Joseph V. Mantese, Troy; Adolph L. Micheli, Harrison Township, and Dennis F. Dungan, Mt. Clemens, all of Mich., assignors to General Motors Corporation, Detroit, Mich. Continuation-in-part of Ser. No. 915,582, Jul. 20, 1992, abandoned. This application Jun. 27, 1994, Ser. No. 265,899

Int. Cl.⁶ C04B 35/26; 35/468

U.S. Cl. 252—62.9

7 Claims



1. A composite ferroelectric-ferromagnetic material for use as an electrical filter, said material consisting essentially of:

a first phase of grains of a ferroelectric material and a second phase of grains of a ferromagnetic material wherein the first phase is interconnected to a second phase and so that said ferroelectric and ferromagnetic grains substantially retain their respective discrete electromagnetic properties; said composite ferroelectric-ferromagnetic material having a closed porosity ranging from 0 to 3 volume percent of the composite, wherein said composite ferroelectric-ferromagnetic material is suitable for reducing electromagnetic interference of an electrical lead, and said composite having a capacitive loss, which is the imaginary permittivity/real permittivity, of less than 0.1 at one Khz, and said ferromagnetic material is present in about 30 to about 70 percent by volume of the composite and said ferroelectric material is present in about 30 to about 70 percent by volume of the composite, and wherein said ferromagnetic material is a copper-based ferrite, and said ferroelectric material is selected from the group consisting of barium-based and strontium-based materials, wherein said copper-based ferrite is of the AB_2O_4 type where A is Cu and at least one selected from the group consisting of Mg, Zn, Ni and Mn, and B is primarily Fe, and including MgO in excess of the stoichiometric amount for a AB_2O_4 compound.

2. A refrigerant consisting of:

a mixture of a first mole fraction of CH_2FCF_3 and a second mole fraction of a component selected from the group consisting of:

- a mixture of CHClFCF_3 and CH_3CClF_2 ;
- a mixture of CHF_2CH_3 and CHClFCF_3 ;
- a mixture of CHF_2CH_3 and CH_3CClF_2 ; and
- a mixture of CHClFCF_3 , CH_3CClF_2 and CHF_2CH_3 ,

wherein said first mole fraction is about 0.7 to less than 1.0 and said second mole fraction is more than 0.0 to about 0.3.

5,512,198

LUBRICATING COMPOSITIONS COMPRISING FLUOROALKANE REFRIGERANT, AN ESTER AND/OR POLYGLYCOL OIL, AND AN INORGANIC BORON COMPOUND

Umekichi Sasaki, Motoshi Sunami, and Hiroshi Hasegawa, all of Yokohama, Japan, assignors to Nippon Oil Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 102,253, Aug. 5, 1993, abandoned.

This application Mar. 8, 1995, Ser. No. 400,534

Claims priority, application Japan, Aug. 5, 1992, 4-208933

Int. Cl.⁶ C09K 5/04; C10M 105/32; 105/08

U.S. Cl. 252—68

12 Claims

1. A fluid composition for a refrigerator, which comprises

- (A) 100 parts by weight of a fluoroalkane refrigerant selected from the group consisting of difluoromethane (HFC-32), trifluoromethane (HFC-23), pentafluoroethane (HFC-125), 1,1,2,2-tetrafluoroethane (HFC-134), 1,1,1,2-tetrafluoroethane (HFC-134a), 1,1,2-trifluoroethane (HFC-143), 1,1,1-trifluoroethane (HFC-143a) and 1,1,1-difluoroethane (HFC-152a); and
- (B) 1–500 parts by weight of the refrigerator oil composition, which comprises
- (a) a base oil composed principally of an oxygen-containing compound selected from the group consisting of dibasic acid esters, polyol esters, complex esters, polyol carbonate esters, polyglycols and mixtures thereof,
- (b) 0.005–5.0 wt. %, based on the total weight of the refrigerator oil composition, of a boron compound selected from the group consisting of alkali metal borates, alkali earth metal borates, ammonium borates and mixtures thereof, and
- (c) 0.1–50 wt. %, based on the total weight of (b) and (c), of a solvent selected from the group consisting of monohydric alcohols, glycols, cellosolves and mixtures thereof.

5,512,197

NEAR AZEOTROPIC MIXTURE SUBSTITUTE FOR DICHLORODIFLUOROMETHANE

Jack A. Jones, Los Angeles, Calif., assignor to The California Institute of Technology, Pasadena, Calif.

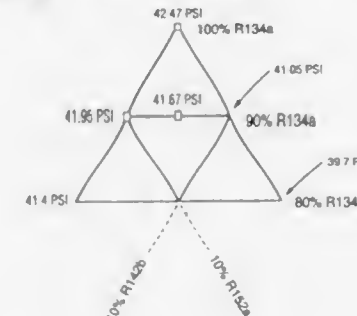
Continuation of Ser. No. 503,465, Mar. 23, 1990, abandoned.

This application Oct. 21, 1993, Ser. No. 140,968

Int. Cl.⁶ C09K 5/04

U.S. Cl. 252—67

2 Claims



5,512,199

HAND WIPE SOLUTION

Mohammed A. Khan, Sandy, and Minh Q. Hoang, Taylorsville, both of Utah, assignors to Becton Dickinson and Company, Franklin Lakes, N.J.

Filed Nov. 2, 1993, Ser. No. 147,181

The portion of the term of this patent subsequent to Jun. 15, 1999, has been disclaimed.

Int. Cl.⁶ C11D 3/48

U.S. Cl. 252—106

10 Claims

1. A hand wiping formulations that requires no scrubbing, washing and rinsing comprising:

- (a) an alcohol;
- (b) an antimicrobial agent;
- (c) a water soluble polymer;
- (d) a polyalkylene glycol;
- (e) a moisturizer and/or emollient; and
- (f) water

5,512,200

LOW PH ACIDIC COMPOSITIONS

Silverio M. Garcia, Spring, Tex., assignor to Thomas G. Bongard, Jupiter, Fla.

Filed Apr. 18, 1994, Ser. No. 229,373

Int. Cl.⁶ A61K 33/00

U.S. Cl. 252—142

6 Claims

1. An aqueous acidic composition consisting essentially of first and second inorganic acids, said first acid being a strong acid which dissociates essentially completely in water and said second acid being selected from the group consisting of inorganic acids having a dissociation constant of less than about 10^{-1} ; third and fourth acids, said third acid being selected from the group consisting of organic acids having a dissociation constant of from about 10^{-1} to about 10^{-5} and said fourth acid being selected from the group consisting of organic acids having a dissociation constant of less than about 10^{-4} ; and water, said first and second acids each comprising between about 5 and about 20 weight percent of the final composition and said third and fourth acids each comprising between about 1 and about 5 weight percent of the final composition.

5,512,201

SOLDER AND TIN STRIPPER COMPOSITION

Rajwant Singh, Fullerton, Calif.; Nenad Mandich, Homewood, Ill., and Gerald A. Krulik, San Clemente, Calif., assignors to Applied Chemical Technologies, Inc., Santa Ana, Calif.

Filed Feb. 13, 1995, Ser. No. 388,444

Int. Cl.⁶ C23D 1/00

U.S. Cl. 252—142

5 Claims

1. A metal dissolving liquid for stripping tin, solder and the underlying tin-copper alloy from the copper substrate of a printed circuit board, consisting essentially of an aqueous solution of about 20 to 50 weight percent of 70% nitric acid aqueous solution; about 0.1 to 2.6 weight percent of a source of ferric ions selected from the group consisting of ferric nitrate, ferric chloride, ferric acetate, ferric lactate, ferric ammonium sulfate, ferric ammonium chloride, ferric citrate, ferric hydroxide, ferric oxide, and non-sulfur bearing water soluble ferric salts of organic and inorganic nature; about 0.5 to 10 weight percent of a chloride ion source; about 0.25 to 7.5 weight percent of a 70% methylsulfonic acid aqueous solution; about 0.1 to 5 weight percent of a water soluble organic amine selected from the group consisting of ethylenediamine, diethylenetriamine, triethylenepentamine, monoethanolamine, diethanolamine, triethanolamine, 1, 1, 1', 1' tetrakis(hydroxy-ethyl)ethylenediamine, 1,4-diazabicyclo[2.2.2] octane, hexamethylenetetramine, glycine, alanine, propanolamine, propylenediamine, and cyclohexylamine; and about 0.03 to 2.5 weight percent of sulfamic acid.

5,512,202

PRECLEANING FLUIDS FOR USE IN A PROCESS FOR THE REMOVAL OF CONTAMINANTS FROM SURFACES

Ronald E. Borah, Chesterton, Ind., assignor to EET, Inc., Bellaire, Tex.

Division of Ser. No. 43,435, Apr. 5, 1993, Pat. No. 5,421,906.

This application Apr. 7, 1995, Ser. No. 418,765

Int. Cl.⁶ C11D 7/08; B08B 3/08; C23G 1/02

U.S. Cl. 252—142

2 Claims

1. A precleaning fluid for preparing surfaces contaminated with at least one contaminant, the surfaces including porous surfaces, surfaces of particulates, and surfaces with irregularities, for application of an extraction fluid to remove the at least one contaminant; the precleaning fluid comprising: from about 6 to about 12 wt. % sulfamic acid, from about 5 to about 10 wt. % hydrofluoric ammonium bifluoride, from

about 2 to about 4 wt. % hydrochloric acid, about 1 to about 4 wt. % surfactant, about 8 to about 14 wt. % sodium citrate, about 2 to about 5 wt. % oxalic acid, about 10 to about 20 wt. % triethanolamine; about 1 to about 5 wt. % 36° Baume nitric acid solution; about 3 wt. % of glycolic acid; and, optionally, about 1 to about 2 wt. % d-limonene.

5,512,203

CUTINASE CLEANING COMPOSITIONS

Pappachan Kolattukudy, Columbus, Ohio, and Ayrookaran J.

Poulose, Belmont, Calif., assignors to Genencor International, Inc., Rochester, N.Y.

Continuation of Ser. No. 800,365, Nov. 27, 1991, abandoned, which is a continuation-in-part of Ser. No. 600,836, Oct. 22, 1990, abandoned, which is a continuation of Ser. No. 341,200, Mar. 29, 1989, Pat. No. 4,981,611, which is a continuation of Ser. No. 56,500, May 29, 1987, abandoned. This application

Aug. 1, 1994, Ser. No. 283,879

Int. Cl.⁶ C11D 3/386

U.S. Cl. 252—174.12

16 Claims

1. An enzymatic cleaning composition for use in an aqueous solution consisting of a microbial cutinase and a cleaning effective amount of a non-ionic surfactant or a combination of non-ionic surfactants compatible with said cutinase wherein said composition comprises from about 0.01 percent to about 5.0 percent by weight of cutinase based on the weight of the non-ionic surfactant wherein the weight of the cutinase employed in said composition is sufficient so that upon dilution in said aqueous solution there is sufficient cutinase so as to achieve a cutinase concentration of at least 0.05 mg/liter.

5,512,204

IMINO-AZACYCLOPENTANEPOLYOL

Veronika M. L. J. Aarts, Beek, Netherlands; Dirk A. W. Stanssens, Lanaken, Belgium, and Renier H. M. Kierkels, Beegden, Netherlands, assignors to DSM N.V., Heerlen, Netherlands

PCT No. PCT/NL93/00070, § 371 Date Jan. 9, 1995, § 102(e) Date Jan. 9, 1995, PCT Pub. No. WO93/20050, PCT Pub. Date Oct. 14, 1993

PCT Filed Mar. 25, 1993, Ser. No. 313,023

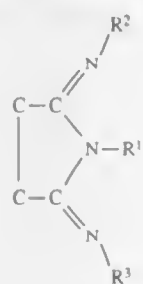
Claims priority, application Netherlands, Mar. 27, 1992, 9200569

Int. Cl.⁶ C07D 207/04

U.S. Cl. 252—182.13

24 Claims

1. A polyol represented by the formula



wherein R¹ represents H, phenyl, an alkyl group having 1–12 C-atoms, OH, a hydroxyalkyl group having 1–12 C-atoms, a hydroxyaryl group having 1–12 C-atoms or a hydroxyaralkyl

group having 1–12 C atoms, and wherein R² and R³, independently of one another, represent OH, a hydroxyalkyl group having 1–12 C-atoms, a hydroxyaryl group having 1–12 C-atoms or a hydroxyaralkyl group having 1–12 C-atoms, and wherein R¹ is not H when both R² and R³ represent OH.

5,512,205

UV CURABLE CROSSLINKING AGENTS USEFUL IN COPOLYMERIZATION

Yu-Chin Lal, Pittsford, N.Y., assignor to Bausch & Lomb Incorporated, Rochester, N.Y.

Continuation of Ser. No. 922,452, Jul. 30, 1992, Pat. No. 5,310,779, which is a continuation-in-part of Ser. No. 884,481, May 15, 1992, abandoned, which is a continuation of Ser. No. 788,071, Nov. 5, 1991, abandoned. This application May 9, 1994, Ser. No. 242,652

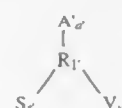
The portion of the term of this patent subsequent to May 10, 2011, has been disclaimed.

Int. Cl.⁶ C09K 3/00

U.S. Cl. 252—182.14

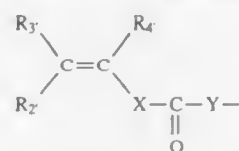
14 Claims

1. A composition having at least two different types of ethylenically polymerizable groups and having the schematic representation:

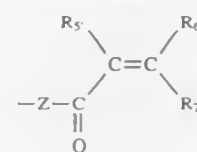


wherein

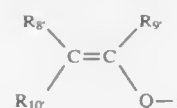
V denotes a vinyl-containing group having the formula:



A' denotes an acrylic-containing group having the formula:



S denotes a styrene-containing group having the formula:



wherein

R₁ is an alkyl radical, polyalkylene oxide, poly(perfluoro)alkylene oxide, dialkyl-capped polydimethylsiloxane, dialkyl-capped polydimethylsiloxane modified with fluoroalkyl or fluoroether groups; R₂–R₁₀ are independently H, or alkyl of 1 to 5 carbon atoms; Q is an organic group containing aromatic moieties having 6–30 carbon atoms; X, Y, and Z are independently O, NH or S; V' is 1, or higher; and a', s' are independently greater than or equal to 0, and a'+s' is greater than or equal to 1.

5,512,206

PEROXYGEN BLEACH COMPOSITION

Robert Steltenkamp, and Robert Heffner, both of Somerset, N.J., assignors to Colgate-Palmolive Co., Piscataway, N.J.

Continuation-in-part of Ser. No. 870,362, Apr. 17, 1992, abandoned. This application May 23, 1994, Ser. No. 249,374

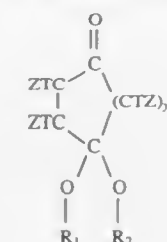
Int. Cl.⁶ C09K 3/00; C01B 15/04

U.S. Cl. 252—186.40

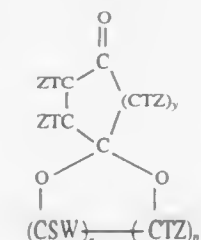
8 Claims

1. A peroxygen bleaching composition which comprises approximately by weight of a mixture of:

- about 1 to about 75% of an inorganic peroxygen bleaching compound; and
- about 1 to about 75% a peroxygen bleach activator which is characterized by the formula:



(I)



(II)

wherein y is 1, 2 or 3, n is 1 to 10, r is 1 to 8, T, W, S and Z are independently selected from the group consisting of hydrogen, an alkyl group having 1 to about 8 carbon atoms, a halogenated alkyl group having 1 to about 8 carbon atoms, fluorine, chlorine, bromine, an alkylaryl group having about 7 to 12 carbon atoms and mixtures thereof and R₁ and R₂ are selected independently from the group consisting of alkyl groups having 1 to about 8 carbon atoms, halogenated alkyl groups having 1 to about 8 carbon atoms, cycloalkyl groups having about 5 to about 8 carbon atoms, aryl groups having about 6 to about 12 carbon atoms and alkylaryl groups having about 7 to about 12 carbon atoms.

5,512,207

AZAAROMATIC COMPOUNDS, PROCESS FOR THEIR PREPARATION, AND THEIR USE IN LIQUID-CRYSTALLINE MIXTURES

Javier Manero, Frankfurt am Main; Hubert Schlosser, Glasbitten/Taunus, and Rainer Wingen, Hattersheim/Main, all of, Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Germany

Filed Oct. 22, 1993, Ser. No. 141,776

Claims priority, application Germany, Oct. 26, 1992, 42 36 106.0

Int. Cl.⁶ C09K 19/34; C07D 401/04

U.S. Cl. 252—299.61

5 Claims

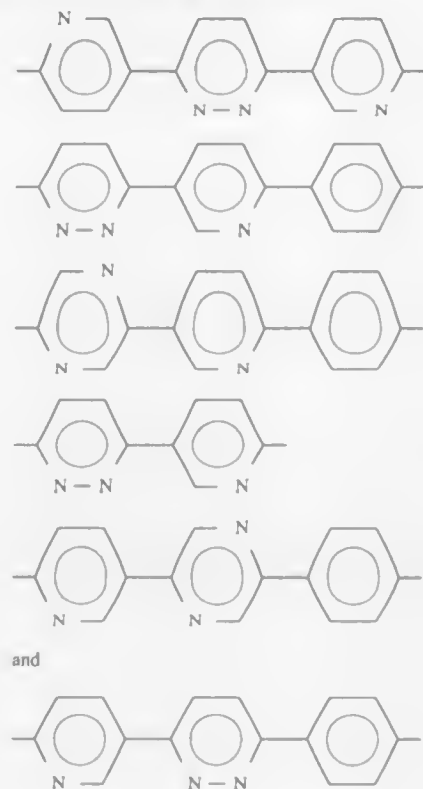
1. A ferroelectric liquid-crystalline mixture comprising at least one compound of the formula (I)



in which the symbols and indices have the following meanings:



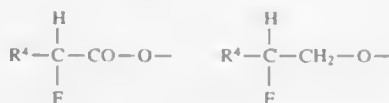
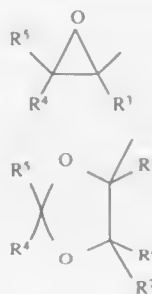
is selected from the group consisting of



R^1 and R^2 are, independently of one another, a straight-chain or branched alkyl radical having 1 to 20 carbon atoms (with or without asymmetrical carbon atoms), it also being possible for one or more CH_2 groups to be replaced by $-\text{O}-$, $-\text{CO}-$,



$-\text{Si}(\text{CH}_3)_2-$, or 1,4-phenylene, with the proviso that oxygen atoms must not be bonded directly to one another, or one of the following chiral groups:



R^3 , R^4 , R^5 , R^6 and R^7 are, independently of one another, hydrogen or a straight-chain or branched alkyl radical having 1-16 carbon atoms (with or without asymmetrical carbon atoms), it also being possible for one or more CH_2 groups to be replaced by $-\text{O}-$, with the proviso that oxygen atoms must not be bonded directly to one another, R^4 and R^5 together may also be $-(\text{CH}_2)_4-$ or $-(\text{CH}_2)_5-$ if they are bonded to an oxirane or dioxolane;

M^1 and M^2 are, independently of one another, $-\text{O}-$, $-\text{CO}-$, $-\text{O}-\text{CO}-$, $-\text{CH}_2-\text{O}-$ or $-\text{O}-\text{CH}_2-$;

a and d are zero; and
b and c are zero or one;
m and n are zero or one.

5,512,208

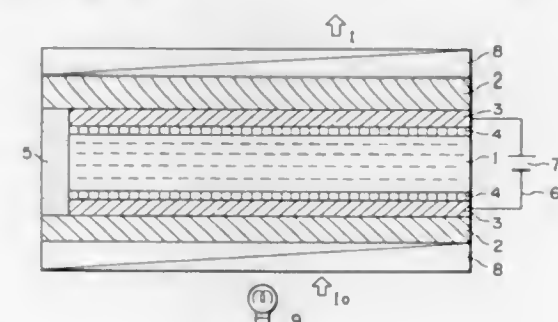
FERROELECTRIC CHIRAL SMECTIC LIQUID CRYSTAL COMPOSITION AND LIQUID CRYSTAL DEVICE USING SAME

Masahiro Terada, Atsugi; Takeshi Togano, Yokohama; Masataka Yamashita, Hiratsuka; Takashi Iwaki, Isehara; Shosei Mori, and Kenji Shinjo, both of Atsugi, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

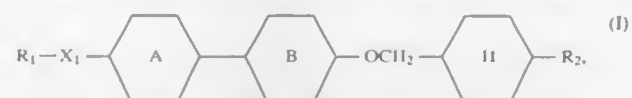
Continuation of Ser. No. 378,929, Jul. 12, 1989, abandoned. This application Apr. 30, 1993, Ser. No. 53,828

Claims priority, application Japan, Jul. 14, 1988, 63-176589; Jun. 9, 1989, 1-147986

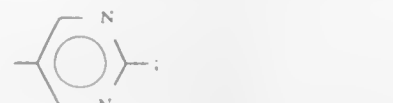
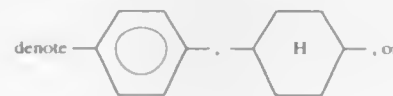
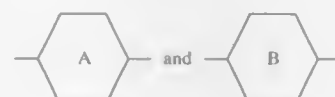
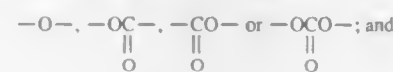
Int. Cl.⁶ C09K 19/34; 19/30; 19/12; G02F 1/13
U.S. Cl. 252-299.6 5 Claims



1. A ferroelectric chiral smectic liquid crystal composition comprising:
at least one compound represented by the following formula (I):



wherein R_1 denotes a linear or branched alkyl group having 1-18 carbon atoms which is optionally substituted with alkoxy group or halogen, R_2 denotes a linear or branched alkyl group having 1-12 carbon atoms; X_1 denotes a single bond,

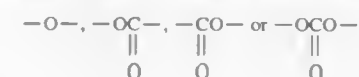


at least one compound represented by the following formula (II):



wherein R_3 and R_4 denote a linear or branched alkyl group having 1-18 carbon atoms, at least one of R_3 and R_4 being optically

active; and X_2 and X_3 denote a single bond,



wherein said composition contains at least one mesomorphic compound having a dielectric anisotropy $\Delta\epsilon$ of below -2.

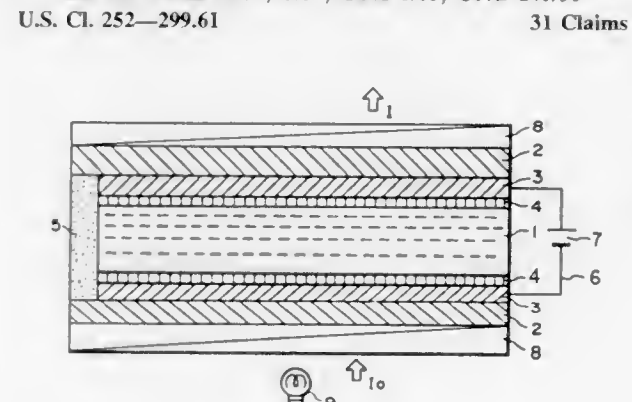
5,512,209

QUINOXALINE COMPOUND, LIQUID CRYSTAL COMPOSITION CONTAINING THE COMPOUND, LIQUID CRYSTAL DEVICE USING THE COMPOSITION, DISPLAY APPARATUS AND DISPLAY METHOD

Takao Takiguchi, Tokyo; Takashi Iwaki, Machida; Takeshi Togano, Yokohama; Yoko Yamada; Shinichi Nakamura, both of Isehara, and Ikuro Nakazawa, Atsugi, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 26, 1994, Ser. No. 233,256
Claims priority, application Japan, Apr. 27, 1993, 5-101039; Apr. 1, 1994, 6-064904

Int. Cl.⁶ C08K 19/34; 19/32; G02F 1/13; C07D 241/36
U.S. Cl. 252-299.61 31 Claims



1. A quinoxaline compound represented by the following formula (I):



wherein

R_1 and R_2 independently denote halogen or a linear or branched alkyl group having 2-18 carbon atoms capable of including one or non-neighboring two or more $-\text{CH}_2-$ groups which can be replaced with $-\text{O}-$, $-\text{S}-$, $-\text{CO}-$, $-\text{CO}-\text{O}-$, $-\text{O}-\text{CO}-$, $-\text{CH}=\text{CH}-$ or $-\text{C}\equiv\text{C}-$; said linear or branched alkyl group being capable of including hydrogen which can be replaced with fluorine;

X_1 and X_2 independently denote a single bond, $-\text{CO}-\text{O}-$, $-\text{O}-\text{CO}-$, $-\text{CH}_2\text{CH}_2-$ or $-\text{C}\equiv\text{C}-$;

A_1 , A_2 and A_3 independently denote a single bond, 1,4-phenylene, 1,4-phenylene having one or two substituents comprising F, Cl, Br, CH_3 , CF_3 or CN; 1,4-cyclohexylene, pyrimidine-2,5-diyl, pyridine-2,5-diyl, thiophene-2,5-diyl, 2,6-naphthylene, thiazole-2,5-diyl, thiadiazole-2,5-diyl, pyrazine-2,5-diyl, pyridazine-3,6-diyl, benzothiazole-2,6-diyl, benzoxazole-2,5-diyl, indan-2,5-diyl, 2-alkylindan-2,5-diyl having a linear or branched alkyl group having 1-18 carbon atoms, coumaran-2,5-diyl, 2-alkylcoumaran-2,5-diyl having a linear or branched alkyl group having 1-18 carbon atoms, quinoxaline-2,6-diyl or quinoxaline-2,7-diyl; with the proviso that:

at least one group of A_1 , A_2 and A_3 is quinoxaline-2,6-diyl or quinoxaline-2,7-diyl and the remaining two groups of A_1 , A_2 and A_3 cannot be a single bond simultaneously; and when A_1 or A_2 is quinoxaline-2,6-diyl and A_3 is 1,4-phenylene, then the remaining A_1 or A_3 cannot be 1,4-phenylene.

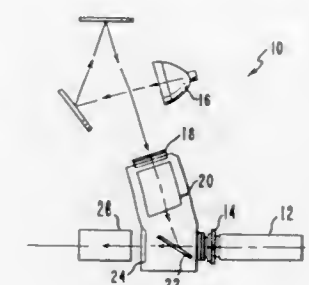
5,512,210

FAR-RED EMITTING PHOSPHOR FOR CATHODE RAY TUBES

Esther Sluzky, 1532 Bella Vista Dr., Encinitas, Calif. 92024; Mary A. Lemoine, 1421 Marshall St., Oceanside, Calif. 92054, and Kenneth R. Hesse, 1221 La Paloma Glen, Escondido, Calif. 92026

Continuation of Ser. No. 10,217, Jan. 26, 1993, abandoned, which is a division of Ser. No. 861,680, Apr. 1, 1992, Pat. No. 5,202,777, which is a division of Ser. No. 708,552, May 31, 1991, abandoned. This application Dec. 21, 1993, Ser. No. 171,194

Int. Cl.⁶ C09K 11/80
U.S. Cl. 252-301.4 R 1 Claim



1. A far-red emitting phosphor having a composition consisting essentially of:

$\text{Y}_{3-x}\text{Gd}_x\text{Al}_{5-y}\text{Ga}_y\text{O}_{12}:\text{A}$, wherein said phosphor is a polycrystalline phosphor which emits far-red electromagnetic radiation in response to an electron beam, and wherein said phosphor has a radiance versus input wavelength spectral response essentially matching the radiance versus input wavelength spectral response of a hydrogenated amorphous silicon photoconductor, and wherein $x=2$, $y=0$ and A is Chromium.

5,512,211

CONCENTRATED AQUEOUS DIALKYL SULFOSUCCINATE WETTING AGENT FORMULATION HAVING LOW VOLATILE ORGANIC COMPOUND CONTENT

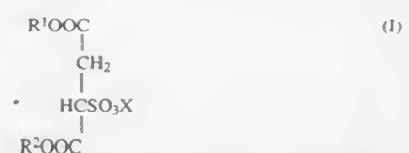
Brian J. McSwigan, Princeton, and Gerard E. Lindowdki, Freehold, both of N.J., assignors to Cytec Technology Corp., Wilmington, Del.

Filed Dec. 30, 1994, Ser. No. 366,569
Int. Cl.⁶ B01F 17/10 31 Claims

U.S. Cl. 252-353 31 Claims

1. A concentrated aqueous dialkylsulfosuccinate wetting agent formulation comprising:

(a) at least about 60% w/w of a dialkyl sulfosuccinate represented by the formula (I):



wherein R^1 and R^2 are independently selected from an alkyl group having five to thirteen carbon atoms and X is selected from the group consisting of an alkali metal, an alkaline earth metal, ammonium or a substituted ammonium radical;

(b) at least one nonionic surfactant cosolvent in an amount effective to assist in the solvation of said dialkylsulfosuccinate; and

(c) water, wherein said formulation is substantially free of volatile organic compounds.

5,512,212

CORROSION INHIBITOR COMPOSITION AND METHOD OF USE

J. Michael Brown, The Woodlands, Tex.; James R. Ohlsen, Ventura, Calif., and Richard D. McBride, Sugar Land, Tex., assignors to Betz Laboratories, Inc., Trevose, Pa.

Division of Ser. No. 202,403, Feb. 25, 1994, Pat. No. 5,415,805. This application Jan. 17, 1995, Ser. No. 373,708

Int. Cl.⁶ C23F 11/18

U.S. Cl. 252—387

6 Claims

1. An iron corrosion inhibiting composition comprising a combination of (A) an aqueous solution of an alcohol selected from the group consisting of diethylene glycol monobutyl ether, butanol, butyl cellulosolve, isopropanol, methanol, propylene glycol, 2-ethylhexanol, hexylene glycol, and glycolic acid, an acid selected from the group consisting of acetic acid and orthophosphoric acid, a fatty imidazoline prepared by reacting long chain fatty acids and polyamines, and an ethoxylated fatty diamine, and (B) an aqueous solution of a molybdate compound or salt selected from the group consisting of sodium molybdate dihydrate.

5,512,213

AQUEOUS STABILIZED ISOTHIAZOLONE BLENDS

Donald J. Paterson, Jacksonville, Fla., assignor to Betz Laboratories, Inc., Trevose, Pa.

Filed Mar. 1, 1995, Ser. No. 396,940

Int. Cl.⁶ A01N 59/00; 43/80; C07D 275/03

U.S. Cl. 252—400.62

11 Claims

1. A method of stabilizing an aqueous solution containing an isothiazolone compound against chemical decomposition of the compound which comprises adding to the solution a stabilizing amount of a metal salt, wherein the cation of said metal salt is an alkali metal, and the anion is selected from the group consisting of acetate, citrate, phosphate and borate.

5,512,214

LITHIUM BATTERY ELECTRODE COMPOSITIONS

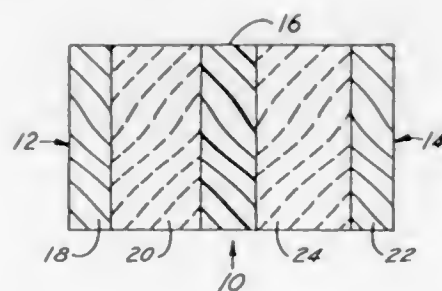
Rene Koksang, 4231 Norwalk Dr., No. EE101, San Jose, Calif. 95129

Continuation of Ser. No. 40,224, Mar. 30, 1993, abandoned. This application Oct. 17, 1994, Ser. No. 324,371

Int. Cl.⁶ H01B 1/00; 1/04; 1/08; H01M 4/58

U.S. Cl. 252—506

22 Claims



1. A method of preparing a composition for an electrode comprising forming a wet mixture consisting essentially of ammonium metavanadate (NH_4VO_3) and fine particles of carbon dispersed in a solvent, removing at least a portion of the solvent and decomposing the ammonium metavanadate in an oxygen-containing environment at a temperature sufficient to form particles of an oxide of vanadium represented by the nominal general formula V_2O_5 intermingled with and in grain-to-grain contact with the fine carbon particles.

5,512,215

SHADING FILM FOR COLOR FILTER AND COATING FOR FORMING SHADING FILM

Shinichi Tachizono, Chiba; Hironobu Chiyoda, Kokubunji; Toshiya Yamamoto, Matsudo; Shigeo Takashima, Chiba; Masayoshi Tsuboi, Tokyo; Hiroshi Yamane, Tokyo; Shigeo Kotera, Tokyo, and Minoru Aoki, Tokushima, all of Japan, assignors to Hitachi Powdered Metals Co., Ltd., Japan

PCT No. PCT/JP93/00855, § 371 Date Jun. 9, 1994, § 102(e) Date Jun. 9, 1994, PCT Pub. No. WO94/00783, PCT Pub. Date Jan. 6, 1994

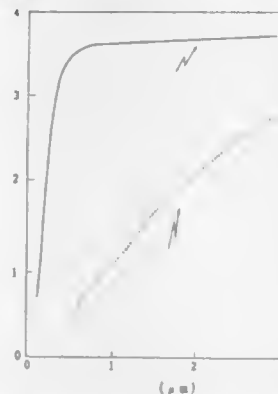
PCT Filed Jun. 24, 1993, Ser. No. 199,265

Claims priority, application Japan, Jun. 26, 1992, 4-193354

Int. Cl.⁶ G02B 5/20; B05D 5/06

U.S. Cl. 252—584

13 Claims



1. A shading film formed on a transparent substrate to form a color filter, comprising particles of a material with a layered lattice structure and having an optical density of not smaller than 1.8, in which the maximum diameter of said particles is not more than 3 μm, an average diameter of the particles is within the range of 0.05 μm to 0.08 μm, and 40 wt % to 95 wt % of the particles have a diameter of not more than 0.1 μm, and the average aspect ratio of the particles is not smaller than 10/1.

5,512,216

CYCLONE VORTEX PROCESS

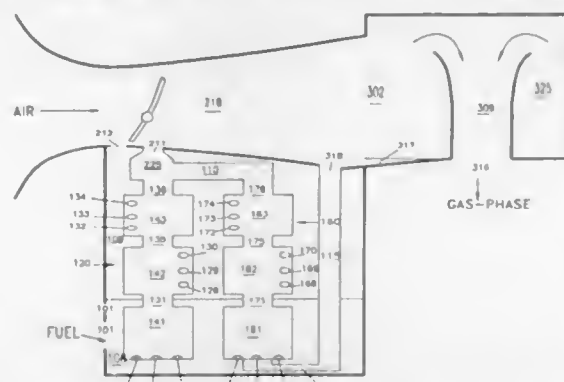
Howard P. Rock, Kelly P. Rock, both of Salt Lake City, Utah, and Grant R. Wood, Billingham, Wash., assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 346,257, Nov. 23, 1994. This application Jun. 5, 1995, Ser. No. 461,444

Int. Cl.⁶ F02M 29/06

U.S. Cl. 261—79.1

30 Claims



1. A method of preparing a gas-phase fluid, comprising the steps of:

- introducing a two-phase fluid into a flow path;
- spinning the fluid in said flow path to create a spinning column of fluid containing aerosol particles;
- subjecting said spinning column to rapid differentials in pressure and changes in velocity;

5,512,218

METHOD OF MAKING BIOPOLYMER-BASED NONLINEAR OPTICAL MATERIALS

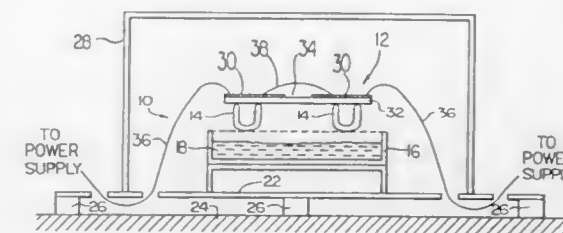
Joseph D. Gresser, Brookline; Debra J. Trantolo, Princeton; Donald L. Wise, Belmont, all of Mass., and Gary E. Wnek, Latham, N.Y., assignors to Cambridge Scientific, Inc., Belmont, Mass.

Filed Mar. 24, 1994, Ser. No. 217,312

Int. Cl.⁶ B29D 11/00; G02F 1/37

U.S. Cl. 264—1.34

6 Claims



1. A method of producing a biopolymer film exhibiting nonlinear optical activity comprising the steps of:

- providing a biopolymer solution comprising a biopolymer in a helicogenic solvent, said biopolymer having a molecular weight in the range of approximately 10 kDa to approximately 236 kDa and forming an α -helical structure in said biopolymer solution;
- dispensing said biopolymer solution between a pair of electrodes, said biopolymer solution having a surface; and
- applying an electric field between said electrodes and parallel to said surface of said biopolymer solution to thereby orient said biopolymer with respect to said electric field, said solvent evaporating upon said application of said electric field to form a biopolymer film exhibiting nonlinear optical activity.

5,512,217

REACTOR AND METHOD OF USE

Robin J. Batterham, Sandringham; Warwick A. Hoffmann, Northcote, and David S. Conochie, Hawthorn East, all of, Australia, assignors to Technological Resources Pty. Limited, Australia

PCT No. PCT/AU93/00340, § 371 Date Mar. 16, 1994, § 102(e) Date Mar. 16, 1994, PCT Pub. No. WO94/01210, PCT Pub. Date Jan. 20, 1994

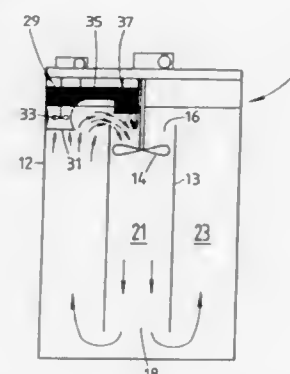
PCT Filed Jul. 9, 1993, Ser. No. 196,132

Claims priority, application Australia, Jul. 9, 1992, PL3436; Jul. 9, 1992, PL3437

Int. Cl.⁶ B01F 3/04

U.S. Cl. 261—36.1

36 Claims



1. A reactor for introducing a gas into a fluid comprising, a mixing tank for the fluid, a partition means for dividing the tank into at least two chambers, a first pump means located in one of the chambers for circulating the fluid downwards in one chamber and then upwards in the other chamber, an aerator assembly for separating and thereafter aerating a sidestream of the fluid from the circulating fluid in the tank and introducing the aerated fluid into the tank for mixing the aerated fluid with the circulating fluid in the tank, the aerator assembly comprising a venturi aerator and a second pump means for circulating the sidestream of the fluid from the tank throughout the aerator, the aerator having:

- an aerator inlet;
- an aerator outlet;
- a constriction intermediate the aerator inlet and the aerator outlet for creating a region of reduced pressure in the fluid, the constriction being elongate in a section transverse to the direction of flow of the fluid through the constriction; and
- a means for introducing the gas into the constriction to aerate the fluid.

5,512,219

METHOD OF CASTING A MICROSTRUCTURE SHEET HAVING AN ARRAY OF PRISM ELEMENTS USING A REUSABLE POLYCARBONATE MOLD

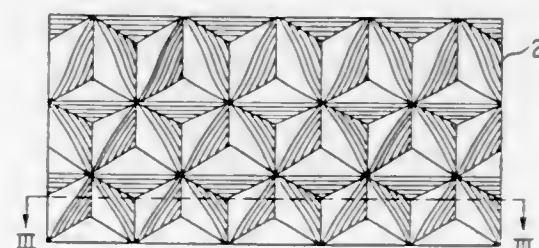
William P. Rowland, Southington, and David C. Martin, Berlin, both of Conn., assignors to Reflexite Corporation, Avon, Conn.

Filed Jun. 3, 1994, Ser. No. 253,676

Int. Cl.⁶ B29C 33/40; 33/56

U.S. Cl. 264—1.6

10 Claims



1. A method for forming a reusable mold for curing a retroreflective sheet of a radiation curable plastic material having an array of prism elements, comprising the steps of:

- providing an embossing mold having a facet side with a positive array of prism elements and a base side;
- molding a polycarbonate material on the facet side of said embossing mold to form a mold comprising a negative array of prism elements.

5,512,220

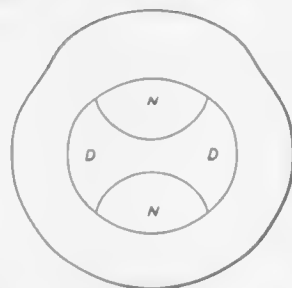
METHOD OF MAKING A CLEAR AXIS, SEGMENTED MULTIFOCAL OPHTHALMIC LENS

Jeffrey Roffman; Robert LaBelle; Edgar Menezes, and Carl Crowe, all of Jacksonville, Fla., assignors to Johnson & Johnson Vision Products, Inc., Jacksonville, Fla.
Division of Ser. No. 827,199, Jan. 28, 1992, abandoned, which is a continuation-in-part of Ser. No. 728,903, Jul. 10, 1991, Pat. No. 5,198,844. This application May 14, 1993, Ser. No. 62,918

Int. Cl.⁶ B29D 11/00

U.S. Cl. 264—2.5

3 Claims



1. A method of producing a segmented multifocal lens for focusing light on the retina of an eye comprising:
making a first lens surface mold for a first lens optical power, said first lens surface mold having a central zone,
making a second lens surface mold for a second lens optical power, said second lens surface mold having a central zone, separating each lens surface mold into at least two segments along a path from one point on the circumferential edge of each said surface mold to a second point on the circumferential edge of each said surface mold, said path being outside the central zone of each of such lens surface molds, such that segments from said first and second lens surface molds are fitted together to form a multifocal lens surface mold having at least one segment from each of said first lens surface mold and from said second lens surface mold,
molding a segmented multifocal lens for focusing light on the retina of the eye using said multifocal lens surface mold, wherein the segments of the multifocal lens surface molds may be separated and reused with the same segments or from segments from a third lens surface mold.

5,512,221

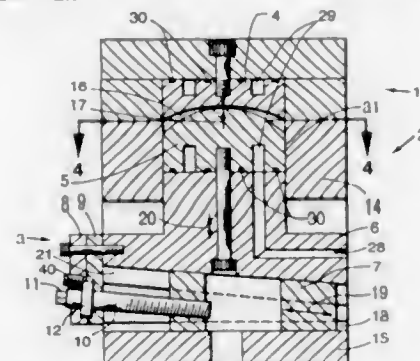
LENS THICKNESS ADJUSTMENT METHOD AND APPARATUS IN A THERMOPLASTIC INJECTION MOLD FOR OPHTHALMIC FINISHED SPECTACLE LENSES
Steven M. Maus, Osseo, and George J. Galic, Columbia Heights, both of Minn., assignors to Galic Maus Ventures, Columbia Heights, Minn.

Filed Dec. 22, 1994, Ser. No. 363,066

Int. Cl.⁶ B29D 11/00

U.S. Cl. 264—2.5

17 Claims



1. An injection mold apparatus for molding thermoplastic vision-corrective spectacle lens, said injection mold having a

mechanism determining a preset fixed thickness of said lens by precisely adjusting and then locking into a fixed position said mechanism without removing said injection mold mounted onto a clamping platen of an injection molding machine nor disassembling said injection mold, the apparatus comprising:

- said injection mold having at least one mold cavity formed between two moldhalves which open and close about a parting line, with each moldhalf housing at least one of an opposing pair of curved optically polished mold inserts, each having a surface facing into said mold cavity and each of said inserts having a substantially planar back surface which faces away from said mold cavity, said insert optically polished surface facing into said mold cavity being of specified surface curvatures and said opposing pair of mold inserts thereby forming partforming surfaces of said mold cavity;
 - said insert back surface being mechanically supported against a substantially mating planar face of a loadbearing support assembly which in turn is capable of transmitting mechanical forces from said insert within said moldhalf to said clamping platen of said injection molding machine, such that melt pressures which may be exerted upon said partforming surfaces of said mold cavity after being filled by injection are ultimately supported by a countervailing clamping force applied by said injection molding machine;
 - an adjustable and lockable mated pair of opposing wedge blocks, each wedge having a specified inclined plane geometry such that a specified amount of linear displacement of one wedge block causes a correspondingly predetermined specified linear displacement of the opposing wedge block in a direction perpendicular to the parting line plane, said mated pair of opposing wedge blocks comprising said loadbearing support assembly which mechanically transmits forces between said inserts back surface and said clamping platen of said injection molding machine;
 - means for adjustment for determining said preset fixed thickness of said lens external to said injection mold, said means for adjustment being capable of being moved to a plurality of positions when the mold is not filled with plastic;
 - means for mechanical linkage of motions of said mated pair of opposing wedge blocks in response to operator manually-driven motions of said means for adjustment external to said injection mold, by which motions a specified amount of linear displacement of one wedge block is produced when the mold is not filled with plastic;
 - means for locking said mated pair of opposing wedge blocks into a fixed position after said adjustment is made when the mold is not filled with plastic;
- such that there is substantially no slippage between said mated pair of opposing wedges during subsequent injection molding cycles, thereby determining a preset fixed thickness of said lens.

5,512,222

METHOD OF USING A CHILLED TROUGH FOR PRODUCING SLABS OF POLYURETHANE FOAM

Edward Sabol, Chestnut Hill, Pa., and Thomas Cushman, Ossian, Ind., assignors to Foamex L.P., Linwood, Pa.

Filed Mar. 15, 1995, Ser. No. 404,413

Int. Cl.⁶ B29C 44/20

U.S. Cl. 264—51

6 Claims

1. A method for producing a continuous slab of expanded polymeric foam from a mixture of liquid foam reactants, comprising the steps of:
- continuously introducing the mixture of liquid foam reactants into a bottom portion of a trough having inner surfaces and an open top;
 - permitting the mixture to expand upwardly in the trough due to the chemical reaction between said reactants;
 - cooling the inner surfaces of the trough as the mixture expands upwardly in the trough;

5,512,224

METHODS FOR MAKING CIRCUIT BOARDS BY VACUUM IMPREGNATION

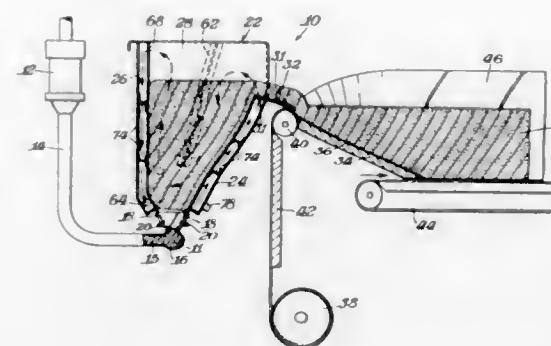
Jonas Medney, Rockville Center, and Fred E. Klimpl, Great Neck, both of N.Y., assignors to Composites Ltd., Hauppauge, N.Y.

Division of Ser. No. 458,863, Dec. 28, 1989, which is a continuation of Ser. No. 907,863, Sep. 15, 1986, Pat. No. 4,943,334. This application Nov. 1, 1990, Ser. No. 608,070. The portion of the term of this patent subsequent to Jul. 24, 2007, has been disclaimed.

Int. Cl.⁶ B29C 39/12;39/42;53/60

U.S. Cl. 264—102

9 Claims



- causing the mixture, while in a partially expanded state, to flow from the top of the trough and over a pour plate; and
- continuously moving the partially expanded foam mixture way from the pour plate on a continuously travelling open-topped channel-shaped conveyor within which the foam mixture completes its vertical expansion.

5,512,223

APPARATUS AND METHOD FOR LOCAL PRESSURIZING TYPE INJECTION MOLDING

Nobuo Morikita, Chiba, Japan, assignor to Sumitomo Heavy Industries, Ltd., Japan

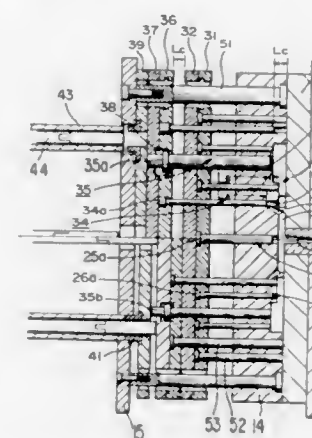
Filed Aug. 1, 1994, Ser. No. 283,705

Claims priority, application Japan, Aug. 4, 1993, 5-193263

Int. Cl.⁶ B29C 45/57;45/40;45/38

U.S. Cl. 264—71

10 Claims



1. A method of molding a product by local pressurizing injection molding of a resin, said method comprising the steps of:

- filling a cavity formed between a stationary die and a movable die with the resin through a gate;
- advancing a first local pressurizing pin to close the gate and to produce a first pressurizing force on the resin, at a first point in time;
- advancing a second local pressurizing pin to force additional resin into the cavity at a second point in time different from the first point in time to produce a second pressurizing force on the resin; and
- advancing an ejector pin into the cavity and simultaneously further advancing said first local pressurizing at a third point in time, different from said first and second points in time, to eject a molded product.

5,512,225

METHOD OF INCREASING INTERLAYER ADHESION OF MULTI-LAYER COMPOSITIONS HAVING A FLUOROPLASTIC LAYER

Tatsuo Fukushi, Woodbury, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Oct. 24, 1994, Ser. No. 328,080

Int. Cl.⁶ B29C 47/06

U.S. Cl. 264—127

17 Claims

1. A method for increasing the adhesion of a first layer comprising fluoroplastic to a second layer comprising peroxide-curable hydrocarbon elastomer having a number-average molecular weight of at least 50,000, comprising the steps of:

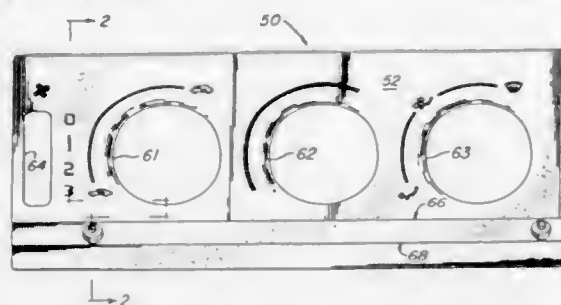
- adding a primary-amine containing unsaturated compound or polymer, having a number-average molecular weight of less than 10,000, to a composition comprising said hydrocarbon elastomer;
- forming a multi-layer article comprising a layer comprising the mixture resulting from step A and a layer comprising said fluoroplastic; wherein said two layers are in superimposed one on another, said fluoroplastic comprises interpolymerized units derived from vinylidene fluoride, and said primary-amine containing compound or polymer is present in an amount sufficient to increase the adhesion between the two layers compared to compositions without said primary-amine containing compound or polymer.

5,512,226

METHOD FOR MAKING A MOLDED APPLIQUE PRODUCT HAVING BACKLIGHTING CAPABILITY
 George B. Rosica, Hockessin, Del., and Vance E. Smith, Caro, Mich., assignors to Kaumagraph Flint Corporation, Millington, Mich.
 Continuation-in-part of Ser. No. 786,341, Nov. 8, 1991, Pat. No. 5,264,172. This application Oct. 1, 1993, Ser. No. 130,197. The portion of this patent subsequent to Nov. 23, 2010, has been disclaimed.
 Int. Cl.⁶ B29C 45/16; 45/14

U.S. Cl. 264—132

30 Claims



1. A method of making an applique product derived from synthetic resins by an in-situ polymerization molding process so as to produce a three dimensional product, said method comprising the steps of:

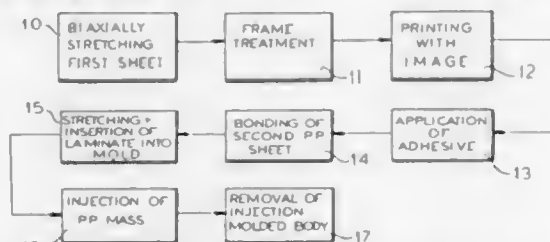
- (1) providing a flat substrate having a front surface and a back surface, said substrate being made of a synthetic resin,
- (2) printing on a surface of said substrate,
- (3) cutting the printed substrate for fitting within a forming tool,
- (4) forming the printed substrate into a three dimensional shape to produce a formed substrate having low internal stress,
- (5) providing a mold having a mold cavity in which a mold surface has the same configuration as the front surface of said formed substrate, said mold having a front half and a back half,
- (6) conforming said formed substrate to fit securely into said mold cavity,
- (7) placing the formed substrate into said mold cavity in such a manner that the front surface of said formed substrate is in contact with said mold surface whereupon the mold is then closed for conducting the molding operation,
- (8) simultaneously injecting two flowable monomer resin solutions into the cavity located adjacent said back surface of said formed substrate through a gate means, said resin being constituted so as to polymerize in situ and fuse with said back surface.

5,512,227

METHOD FOR MAKING A GRAPHIC REPRESENTATION ON POLYOLEFIN
 Vittorio Grazioli, Asola, Italy, assignor to Grazioli S.P.A., Mosio di Acquafredda, Italy
 Filed May 26, 1994, Ser. No. 250,759
 Claims priority, application Italy, Jun. 1, 1993, MI93A1147
 Int. Cl.⁶ B29C 45/14

U.S. Cl. 264—132

14 Claims



1. A method of making an injection-molded object having a graphic representation thereon, comprising the steps of:

- (a) printing a graphic representation on a surface of a first film of a stretched polyolefin polymer;
- (b) bonding a second film having a melting point lower than said first film to said surface to form a membrane from said first and second films with said graphic representation between them;
- (c) applying said membrane to an injection-molding mold with said first film in contact therewith; and
- (d) injection molding a polyolefin polymer into said mold and against said second film, thereby partially melting said second film and bonding said membrane to the injection-molded polymer and forming said body with said graphic representation thereon and located thereon beneath said first film.

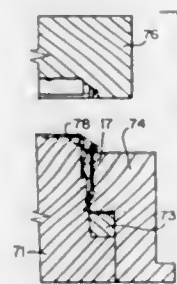
5,512,228

UNITARY TAMPER-EVIDENT FITMENT AND CLOSURE ASSEMBLY

Brian M. Adams, Newark; Daniel Luch, Morgan Hill, and Rawson L. Chenault, San Francisco, all of Calif., assignors to Portola Packaging, Inc., San Jose, Calif.
 Continuation-in-part of Ser. No. 57,050, May 3, 1993, abandoned, Ser. No. 58,872, May 5, 1993, abandoned, Ser. No. 823,200, Jan. 21, 1992, Pat. No. 5,303,837, and Ser. No. 961,088, Oct. 14, 1992, Pat. No. 5,348,184, which is a continuation-in-part of Ser. No. 823,200, Jan. 21, 1992, Pat. No. 5,303,837, Ser. No. 780,774, Oct. 22, 1991, Pat. No. 5,174,465, and Ser. No. 664,658, Mar. 4, 1991, abandoned, said Ser. No. 57,050 is a division of Ser. No. 13,258, Feb. 3, 1993, Pat. No. 5,249,695, which is a continuation of Ser. No. 664,658, Mar. 5, 1991, abandoned, said Ser. No. 58,872 is a continuation of Ser. No. 823,708, Jan. 21, 1992, Pat. No. 5,271,519, which is a continuation-in-part of Ser. No. 664,658, Mar. 5, 1991, abandoned. This application Apr. 12, 1994, Ser. No. 226,767
 Int. Cl.⁶ B29C 45/38; 45/44

U.S. Cl. 264—152

6 Claims



1. A method of forming a cap and a fitment comprising providing a mold shaped with a cavity to form a cap and a fitment, said cap comprising a top, a skirt depending from said top, means forming an aperture extending outward from said cap, and first engagement means on said skirt, said skirt having an interior and an exterior, said fitment being remote from said cap, and fastening means for fastening said fitment to a container surrounding a hole formed in said container, a spout extending upward from said fastening means shaped to receive a portion of said skirt and having second engagement means cooperable with said first engagement means to detachably secure said cap and fitment together, an elongated tab attached to said fitment extending up to at least a bottom edge of said means forming an aperture and located directly beneath and initially attached to said means forming an aperture with a frangible connection, and molding plastic in said mold to fill said cavity in a single shot whereby said cavity is filled with plastic, said tab comprising a runner for flow of molten plastic from said cap to said fitment during molding of said combination, said mold having a core shaped to form said interior of said cap formed with a groove located to form a bead on the inside of said skirt and which further comprises the step of retracting said core toward said fitment whereby said cap seats inside

5,512,231

PROCESSING CELLULOSE ACETATE FORMED ARTICLES USING SUPERCRITICAL FLUID
 Mark C. Thies, Clemson; Nnamdi E. Aniedobe, North Augusta, both of S.C., and George A. Serad, Charlotte, N.C., assignors to Hoechst Celanese Corporation, Somerville, N.J.
 Filed Jan. 26, 1995, Ser. No. 378,705
 Int. Cl.⁶ D01D 1/10; D01F 2/28; 2/30

U.S. Cl. 264—169

10 Claims

1. A process for producing articles of cellulose acetate, said process comprising the steps of:

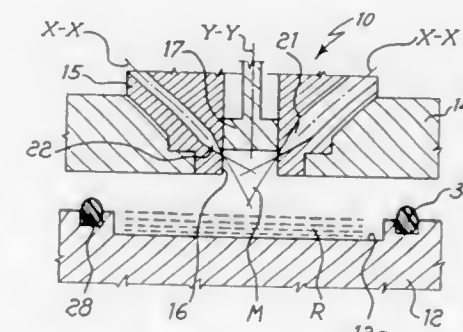
- a) dissolution of the cellulose acetate in a solvent to form a solution, said solvent comprising from 5% to 50% by weight of carbon dioxide and from 95% to 50% of a compatible chemical selected from the group consisting of acetone, triacetin, ethanol and methanol, the solvent being under pressure and temperature conditions such that the solvent is above either the supercritical temperature or pressure, or both, of the supercritical conditions of CO₂;
- b) filtration of the solution to remove insoluble matter; and
- c) extrusion of the solution to form articles.

5,512,232

DEVICE FOR MOULDING ARTICLES OF COMPOSITE MATERIAL AND PROCESS USING SUCH A DEVICE
 Antonio Addeo, Novaro; Roberto Bonari, Cerro Maggiore, and Aurelio Biscotti, Cantalupo di Cerro Maggiore, all of Italy, assignors to Centro Sviluppo Settori Impiego S.r.l., Italy
 Filed Oct. 14, 1994, Ser. No. 323,355
 Claims priority, application Italy, Oct. 15, 1993, MI93A2198
 Int. Cl.⁶ B29L 70/48

U.S. Cl. 264—240

4 Claims



5,512,229

PROCESS OF UNIFORMLY EXPANDING POLYMER FILM

Charles F. Bosse, and Rajagopal R. Kowligi, both of Tempe, Ariz., assignors to Impira, Inc., Tempe, Ariz.

Continuation of Ser. No. 977,562, Nov. 17, 1992, Pat. No. 5,321,109. This application May 25, 1994, Ser. No. 248,606
 Int. Cl.⁶ B29C 55/00; 55/20

U.S. Cl. 264—161

11 Claims

1. A process for uniformly expanding a polymer film in multiple directions, the polymer film having a center, the process comprising in combination the steps of:

- a) securing the periphery of the film to a plurality of symmetrically-disposed film gripping members, each of said film gripping members being equidistant from the center of the film;
- b) simultaneously rotating each of the plurality of film gripping members through an arcuate path defining an arc greater than zero degrees away from the center of the film to stretch and expand the film while maintaining said plurality of film gripping members equidistant from the center of the film; and
- c) maintaining the pulling force exerted by each film gripping member radial relative to the center of the film thereby forming a uniformly expanded polymer film.

5,512,230

PROCESS FOR MAKING CELLULOSE ACETATE FIBERS

Jesse N. Cannon, III, Kingsport, Tenn., assignor to Eastman Chemical Company, Kingsport, Tenn.

Filed Dec. 8, 1994, Ser. No. 351,923

Int. Cl.⁶ D01F 2/28

U.S. Cl. 264—169

6 Claims

1. A method for the production of cellulose acetate fibers comprising

- (I) forming a solution consisting essentially of
 - (a) about 10 to 40 weight percent, based on the total weight of (a), (b), and (c), of cellulose acetate having a DS/AGU of from 1.9 to 2.2;
 - (b) about 20 to 85 weight percent, based on the total weight of (a), (b), and (c), of acetone;
 - (c) about 5 to 40 weight percent, based on the total weight of (a), (b), and (c), of water;
 said solution having a zero shear viscosity at 29° C. of about 100 to about 10,000 poise;
- (II) filtering said solution to form a spinning solution; followed by
- (III) spinning said spinning solution at a temperature of about 25° C. to 95° C., at 200 to 1,500 meter/min. through spinnerette holes having a hole area equivalent to a circular diameter of 20 to 100 microns and length to diameter ratio of 0.5 to 3, thereby forming a cellulose acetate fiber having a dry linear density of 0.5 to 20 denier per filament and a total product denier of from 10,000 to 100,000 denier.

4. A process for moulding manufactured articles of composite material comprising the following steps:

- a) placing a reinforcer fibrous material in the interior of a female half-mould,
- b) positioning a male half-mould opposite to, and spaced apart from, said female half-mould, the male half-mould comprising a central recessed seat inside which a closing ram is slidingly mounted and into which two inclined feed nozzles open for feeding resin and catalyst respectively, with the inclination of said nozzles being such as to mix the resin and catalyst substantially outside of the recessed seat,
- c) feeding said nozzles, with the closing ram in a retracted configuration, with resin and catalyst in amounts sufficient to subsequently impregnate the reinforcer material,
- d) moving the closing ram to a forward position substantially flush with a mould impression of the male half-mould, the closing ram simultaneously closing the nozzles,
- d) tightly closing the half-moulds against each other, so as to allow the catalysed resin to impregnate the reinforcer material and set, and
- e) separating the half-moulds from each other in order to allow the manufactured article to be demoulded.

5,512,233

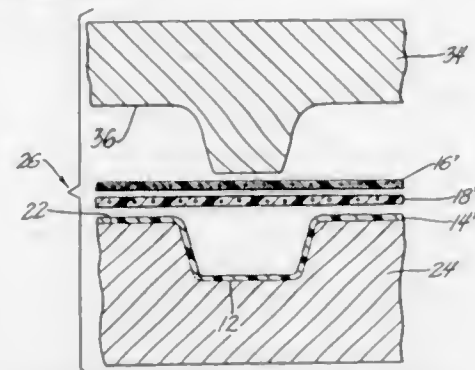
METHOD OF MAKING A PANEL WITH A SPRAY FORMED SKIN

Michael J. Gallagher, Hampton, and William M. Humphrey, Dover, both of N.H., assignors to Davidson Textron Inc., Dover, N.H.

Filed Oct. 26, 1994, Ser. No. 329,313
Int. Cl.⁶ B29C 43/02

U.S. Cl. 264—321

8 Claims



1. A method of making a lightweight panel of curved contour having a skin bonded to a foam layer that is bonded to a self-supporting foam layer, comprising the steps of providing a flexible substrate-forming foam sheet and a flexible second foam sheet, impregnating the substrate-forming foam sheet with a hardening compound that sets when heated to stiffen the impregnated foam sheet, applying a heat curable reactive urethane formulation to a contoured surface of a heated die of a press mold, forming a contoured urethane skin of substantially uniform thickness and developing the skin to a semi-cured state, arranging the second foam sheet over the urethane skin while maintaining the skin in the semi-cured state on the contour die and arranging the impregnated foam sheet over the second foam sheet in interfacial relationship therewith to form an assembly of the urethane skin and the foam sheets between the contour die and a complementary contour die of the press mold, and bonding the assembly together under heat and pressure in a compression molding operation in the press mold at a temperature to accelerate activation of the hardening compound rendering the substrate-forming foam sheet relatively hard, stiff and substantially less compressible than that of the second foam sheet to provide a self-supporting contoured structure and to bond the foam sheets to one another, and forcing the semi-cured skin material into interstices of the second foam sheet and thereafter curing the skin to bond the skin to the second foam layer.

5,512,234

METHOD AND APPARATUS FOR MANUFACTURING SURFACE FASTENER

Toshiaki Takizawa, and Ryulchi Murasaki, both of Toyama, Japan, assignors to YKK Corporation, Tokyo, Japan

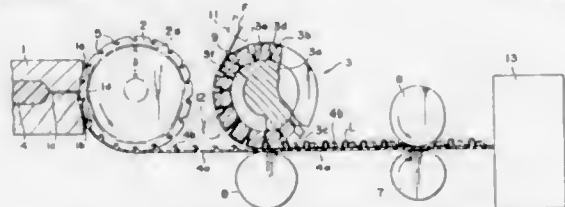
Filed Nov. 17, 1994, Ser. No. 343,856

Claims priority, application Japan, Dec. 28, 1993, 5-337497

Int. Cl.⁶ B29C 41/30; 39/18

U.S. Cl. 264—511

14 Claims



1. A method of continuously manufacturing a surface fastener, comprising the steps of:

- extruding molten resin from an extrusion nozzle;
- extruding the extruded molten resin against a one-way rotating die wheel which has in it cooling means and is

situated in a confronting relationship with the extrusion nozzle with a gap for molding a flat-plate substrate sheet;

- continuously molding said flat-plate substrate sheet by rotating the die wheel in a direction of extrusion of the molten resin; and
- continuously attaching a continuous filament to the substrate sheet while said filament is formed into successive loop members, by pressing the loop members in an upright posture against the substrate sheet.

9. An apparatus for continuously manufacturing a surface fastener, comprising:

- a die wheel having in it means for cooling and adapted to be driven for one way rotation;
- an extrusion nozzle situated in a confronting relationship with said die wheel with a gap for molding a flat-plate substrate sheet therebetween and having an extrusion passage-way for molten resin; and
- a loop-member-forming wheel adapted to be situated adjacent to a surface of said substrate sheet for forming a straight filament into successive loops for attachment of said loops in an upright posture to said substrate sheet.

5,512,235

SUPPORTED POLYCRYSTALLINE COMPACTS HAVING IMPROVED PHYSICAL PROPERTIES AND METHOD FOR MAKING SAME

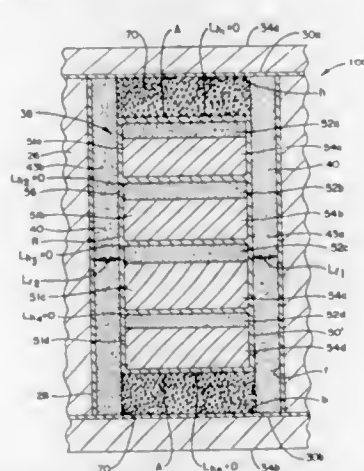
David B. Cerutti, and Henry S. Marek, both of Worthington, Ohio, assignors to General Electric Company, Worthington, Ohio

Filed May 6, 1994, Ser. No. 239,156

Int. Cl.⁶ B22F 3/14; 7/02

U.S. Cl. 419—10

18 Claims



1. A high pressure/high temperature (HP/HT) method for making a metal carbide supported polycrystalline compact in a HT/HP apparatus, said apparatus comprising a generally cylindrical reaction cell assembly having an inner chamber of predefined axial and radial extents and containing transmitting medium layers, and a charge assembly having axial and radial surfaces and formed of at least one subassembly comprising a mass of crystalline particles adjacent a metal carbide support layer, said method comprising the steps of:

- disposing said charge assembly within said chamber of said reaction cell assembly;
- providing axial pressure transmitting medium layers between the axial surfaces of said charge assembly and the respective axial extents of said chamber to define an axial pressure transmitting medium thickness, L_A ;
- providing radial pressure transmitting layers between the radial surface of said charge assembly and the radial extent of said chamber to define a radial pressure transmitting medium thickness, L_R , the ratio L_A/L_R being less than 1; and
- subjecting said reaction cell assembly to HT/HP conditions selected as effective to sinter said crystalline particles into a

polycrystalline compact layer and to bond said polycrystalline compact layer at an interface to said metal carbide support layer for forming said metal carbide supported polycrystalline compact.

5,512,236

SINTERED COINING PROCESS

Peter Jones, Toronto, and Roger Lawcock, Burlington, both of, Canada, assignors to Stackpole Limited, Toronto, Canada

PCT No. PCT/CA92/00555, § 371 Date Aug. 25, 1994, § 102(e)

Date Aug. 25, 1994, PCT Pub. No. WO94/14991, PCT Pub.

Date Jul. 7, 1994

PCT Filed Dec. 21, 1992, Ser. No. 107,845

The portion of the term of this patent subsequent to Jan. 14, 2014, has been disclaimed.

Int. Cl.⁶ B22F 3/12

U.S. Cl. 419—28

17 Claims

1. A coining process for blending, sintering, and coining powder metal articles, that coining process comprising:

- blending carbon, ferro manganese and lubricant with compressible iron powder to form a blended mixture;

pressing said blended mixture to form said articles;

sintering said articles in a reducing atmosphere at a temperature of at least 1250°C.; and

coining said sintered articles to a final shape.

C	0.030 max
Mn	2.0 max
Si	1.0 max
P	0.05 max
S	0.02-0.05
Cr	16.0-20.0
Ni	9.8-14.0
Mo	3.0 max
Cu	0.76-1.5
N	0.035 max

up to about 0.75 weight percent of an element selected from the group consisting of Ti and Cb, and the balance being essentially iron, wherein Cb is not more than about 0.1 weight percent when $Ti \geq (5 \times \% C)$ and Ti is not more than about 0.1 weight percent when $Cb \geq (10 \times \% C)$.

5,512,239

FERRITIC STAINLESS STEEL FOR HEAT EXCHANGER

Yoshito Fujiwara; Yutaka Kobayashi; Mituo Kimura; Masatoshi Iio, and Tohsaku Takamura, all of Kanagawa, Japan, assignors to Tokyo Radiator Mfg. Co., Ltd., Tokyo; Nippon Yakin Kogyo Co. Ltd., and Nissan Motor Co., Ltd., both of Kanagawa, all of Japan

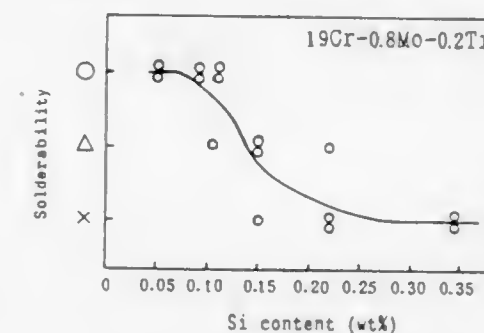
Filed Apr. 18, 1995, Ser. No. 423,377

Claims priority, application Japan, Apr. 22, 1994, 6-084811

Int. Cl.⁶ C22C 38/26; 38/28

U.S. Cl. 420—68

1 Claim



1. A ferritic stainless steel for heat exchangers consisting essentially of:

- not more than 0.015 wt % of C;
- not more than 0.05 wt % of Si;
- not more than 1.0 wt % of Mn;
- 18.0-20.0 wt % of Cr;
- not more than 0.50 wt % Ni;
- 0.70-1.00 wt % of Mo;
- not more than 0.020 wt % of Al;
- not more than 0.015 wt % of N;
- at least one of Nb in an amount of $15(C \text{ wt \%} + N \text{ wt \%}) - 0.7$ wt %, and Ti in an amount of $15(C \text{ wt \%} + N \text{ wt \%}) - 0.7$ wt %; and
- a balance of substantially Fe and inevitable impurities.

5,512,238

FREE-MACHINING AUSTENITIC STAINLESS STEEL

Theodore Kosa, and John H. Magee, Jr., both of Reading, Pa., assignors to CRS Holdings, Inc., Wilmington, Del.

Filed Jun. 7, 1995, Ser. No. 473,412

Int. Cl.⁶ C22C 38/42

U.S. Cl. 420—49

23 Claims

1. An austenitic, stainless steel alloy consisting essentially of, in weight percent, about:

5,512,240

TUNGSTEN ELECTRODE MATERIAL

Fukuhisa Matsuda; Masao Ushio, both of Kawanishi; Kiyoyuki Hasegawa, Fukagawa; Katsuyoshi Akabane, Fukagawa, and Takashi Matsuno, Fukagawa, all of, Japan, assignors to Toho Kinzoku Co., Ltd., Osaka, and Hokkai Tungsten Industrial Co. Ltd., Fukagawa, both of, Japan
PCT No. PCT/JP93/00947, § 371 Date Dec. 30, 1994, § 102(e) Date Dec. 30, 1994, PCT Pub. No. WO94/03650, PCT Pub. Date Feb. 17, 1994

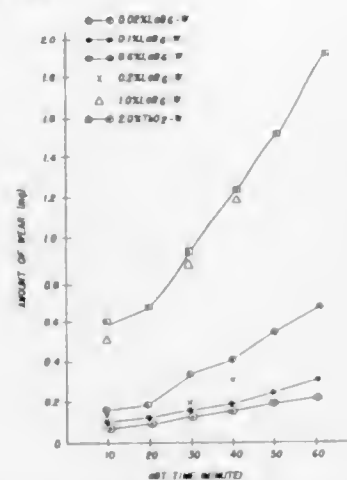
PCT Filed Jul. 9, 1993, Ser. No. 211,236

Claims priority, application Japan, Jul. 31, 1992, 4-224757; Apr. 14, 1993, 5-112138

Int. Cl.⁶ C22C 27/04

U.S. Cl. 420—430

1 Claim



1. An electrode material consisting of 0.02–1.0 wt. % lanthanum boride and 99.0–99.98 wt. % tungsten.

5,512,241

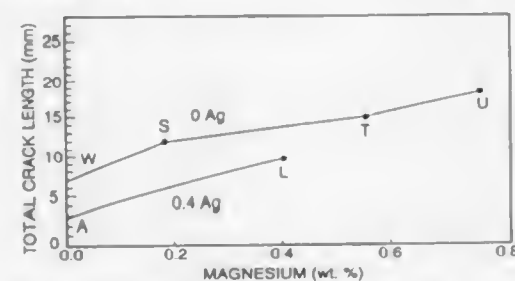
AL-CU-LI WELD FILLER ALLOY, PROCESS FOR THE PREPARATION THEREOF AND PROCESS FOR WELDING THEREWITH

Lawrence S. Kramer, Clarksville; Joseph R. Pickens, Glenelg, both of Md., and Carl E. Cross, Idaho Springs, Colo., assignors to Martin Marietta Corporation, Bethesda, Md.
Continuation-in-part of Ser. No. 103,662, Aug. 10, 1993, Pat. No. 5,455,003, which is a continuation-in-part of Ser. No. 32,158, Mar. 12, 1993, abandoned, which is a continuation of Ser. No. 493,255, Mar. 14, 1990, abandoned, which is a continuation-in-part of Ser. No. 327,666, Mar. 23, 1989, Pat. No. 5,259,897, which is a continuation-in-part of Ser. No. 233,705, Aug. 18, 1988, abandoned. This application Apr. 13, 1994, Ser. No. 226,816

Int. Cl.⁶ C22C 21/00; 21/12

U.S. Cl. 420—528

37 Claims



1. An aluminum-base weld filler alloy consisting essentially of from 3 to 7 weight percent Cu, from 0.4 to 1.8 weight percent Li, less than about 0.01 weight percent Mg as an alloying addition, at least about 0.1 weight percent Ag, and the balance aluminum and incidental impurities.

5,512,242

TIN-BASE WHITE METAL BEARING ALLOY EXCELLENT IN HEAT RESISTANCE AND FATIGUE RESISTANCE

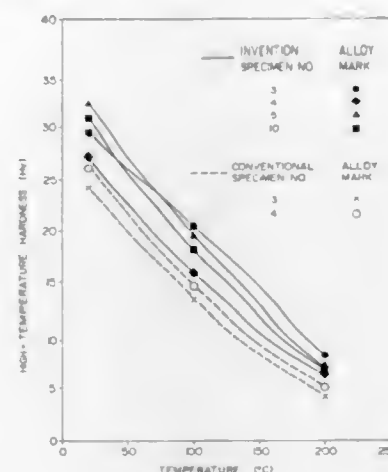
Tadashi Tanaka; Masaaki Sakamoto; Hideyuki Kidokoro; Yoshiaki Sato, and Yutaka Masuda, all of Nagoya, Japan, assignors to Daido Metal Company Ltd., Nagoya, Japan
Filed Oct. 4, 1994, Ser. No. 317,558

Claims priority, application Japan, Dec. 27, 1993, 5-332188

Int. Cl.⁶ C22C 13/00; 13/02

U.S. Cl. 420—561

10 Claims



1. A tin-base white metal bearing alloy excellent in heat resistance and fatigue resistance, consisting essentially of, by weight, more than 3% and up to 15% Sb, 2.1% to 10% Ni, more than 0.001% and up to 1% Cr, 2.5% to 9% Cu, and balance of Sn and incidental impurities.

5,512,243

CYCLOHEXANEDIONE OXYGEN SCAVENGERS

Paul V. Roling, Spring, Tex., assignor to Betz Laboratories, Inc., Trevose, Pa.

Filed Apr. 11, 1995, Ser. No. 420,270

Int. Cl.⁶ C02F 1/20

U.S. Cl. 422—14

15 Claims

10. A method for reducing the amount of oxygen in an aqueous solution comprising adding to an oxygen containing aqueous solution having a pH greater than 7 an oxygen scavenging amount of an oxygen scavenging composition, said composition comprising:

- a cyclohexanedione effective as an oxygen scavenger; and
- an oxygen scavenger selected from the group consisting of hydroquinones, hydroxylamine, hydrazine, dihydroxyacetone, hydroquinone catalyzed furfural, ascorbic acid, isoascorbic acid, water soluble salt forms of ascorbic and isoascorbic acid, salicylaldehyde catalyzed by hydroquinone, aminophenols and polyethylenamines to reduce the amount of oxygen in said solution.

5,512,244

GAS STERILIZATION

Christopher N. Griffiths, Abingdon, and David Raybone, Gloucester, both of, United Kingdom, assignors to United Kingdom Atomic Energy Authority, Harwell, United Kingdom

PCT No. PCT/GB92/00304, § 371 Date Aug. 25, 1993, § 102(e) Date Aug. 25, 1993, PCT Pub. No. WO92/15336, PCT Pub. Date Sep. 17, 1992

PCT Filed Feb. 20, 1992, Ser. No. 108,599

Claims priority, application United Kingdom, Mar. 1, 1991, 9104405

Int. Cl.⁶ A61L 2/00

U.S. Cl. 422—23

22 Claims

1. A method of sterilising articles by exposing them to a biologically active gaseous medium, comprising the operations of activating a gaseous medium to provide free radicals, and/or electronically and/or vibrationally excited species, ensuring that the activated gaseous medium is substantially free of electrically charged species, and exposing the article to be sterilised to only the charged-species-free activated gaseous medium for a period sufficient to ensure that the article is sterilised.

5,512,245

PROCESS FOR THE CLEANING AND/OR DISINFECTION AND PROVIDING MAINTENANCE CARE TO A HOLLOW OR TUBULAR MEDICAL DENTAL TREATMENT INSTRUMENT

Eugen Eibofner, Biberach, and Bernhard Kuhn, Schemmerhofen, both of, Germany, assignors to Kaltenbach & Voigt GmbH & Co., Biberach, Germany

Filed Jul. 19, 1994, Ser. No. 277,239

Claims priority, application Germany, Jul. 26, 1993, 43 25 046.7

Int. Cl.⁶ A61L 2/16; B08B 9/00

U.S. Cl. 422—28

9 Claims

1. A process for cleaning and/or disinfecting and providing maintenance care to a hollow or tubular medical treatment instrument, comprising:

- subjecting the treatment instrument to a cleaning and/or disinfecting with a liquid cleaning or disinfecting agent; and
 - subsequently subjecting the treatment instrument to a maintenance care agent;
- wherein at least one of said agents includes a medium which enables mixing of the cleaning and/or disinfecting agent with said maintenance care agent on at least one interior surface of said treatment instrument, during said maintenance care step.

5,512,246

METHOD AND MEANS FOR DETECTING POLYHYDROXYL COMPOUNDS

Anthony P. Russell, 173 Union St., Sudbury, Mass. 01776, and Charles W. Zepp, Berlin, both of Mass., assignors to Anthony P. Russell, Sudbury, Mass.

Continuation-in-part of Ser. No. 854,301, Mar. 20, 1992, abandoned, which is a continuation-in-part of Ser. No. 410,657, Sep. 21, 1989, Pat. No. 5,137,833. This application Nov. 17, 1993, Ser. No. 153,763

Int. Cl.⁶ C09B 69/10; G01N 33/52; 33/66

U.S. Cl. 422—57

6 Claims

1. A bound dye compound that exhibits quantitative sensitivity to carbohydrate species, the compound comprising a binding moiety selected from the group consisting of boronic acid, boronate ion, arsenious acid, arsenite ion, telluric acid, tellurate ion, germanic acid and germanate ion, covalently linked to a dye group such that the compound exhibits the properties of a dye and wherein binding of said compound to a carbohydrate results in quantitative alteration of the dye properties of said molecule in

response to the concentration of said carbohydrate species, and further wherein said linked compound is covalently bound to a support.

5,512,247

APPARATUS FOR TESTING PIPETTING NEEDLE LINEARITY IN AN AUTOMATED ANALYZER

Guido Bonacina, Emmenbrücke; Thomas Caratsch, Reutlingen, and Rolf Moser, Vitznau, all of, Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

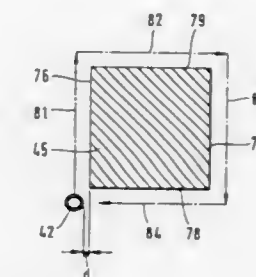
Filed Apr. 11, 1995, Ser. No. 420,279

Claims priority, application Switzerland, May 2, 1994, 1382/94

U.S. Cl. 422—67

Int. Cl.⁶ G01R 31/00

5 Claims



- An analyzer comprising:
 - a horizontally disposed baseplate on which primary containers and secondary containers are disposed;
 - a metering device for measuring a predetermined volume of a liquid;
 - a pipetting needle for transferring a predetermined volume of liquid from a primary container to a secondary container, the pipetting needle being formed of an electrically conductive material and being connected by tubing to the metering device;
 - a transport device for the controlled transport of the pipetting needle in three directions at right angles to one another, two of the transport directions extending horizontally and the third transport direction extending vertically;
 - an electrically conductive reference body having a top edge and being positioned at a predetermined location with respect to the analyzer; and
 - a control device for controlling the metering device and the transport device, the control device comprising:
 - means for guiding the tip of the pipetting needle around the external periphery of the top edge of the reference body, the tip of the pipetting needle being guided at a specific distance from the top edge of the reference body, the distance being a measure of the acceptable curvature of the pipetting needle, and
 - an electrical circuit between the pipetting needle and the reference body for detecting an electrical contact between the tip of the pipetting needle and the reference body.

5,512,248

TWIN-PROBE BLOOD SAMPLE DILUTING DEVICE
Jack F. J. Van, 4 Fl., No. 151, Chen Ho Rd., San Ming Area, Kaohsiung, Taiwan

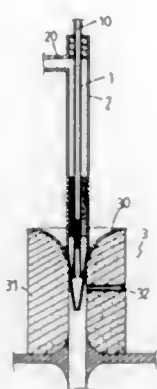
Continuation-in-part of Ser. No. 155,841, Nov. 23, 1993, abandoned. This application Nov. 21, 1994, Ser. No. 345,696

Int. Cl.⁶ G01N 1/14

U.S. Cl. 422—100

1 Claim

1. A blood diluting device comprising:
a tube assembly including an outer tube having a cone-shaped bottom end of a gradually reducing diameter, a top end sealed with a plug, and an intake port near the top end thereof; and



an inner tube concentrically suspended within said outer tube, having a top end extending out of a center hole on the plug of said outer tube,

said intake port of said outer tube connected by a first tube respectively to a parallel set of first and third electromagnetic micropipettes, a third electromagnetic valve, a first pump, a first electromagnetic valve and supply of diluent;

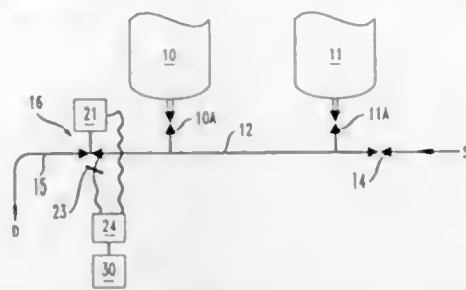
said top end of said inner tube connected by a second tube respectively to a parallel set of second and fourth electromagnetic micropipettes, a fourth electromagnetic valve, a second pump, a second electromagnetic valve and supply of diluent; and

an adapter having a hollow center, an air hole and a bottom terminated by a three-way connector, said air hole connected to a seventh electromagnetic valve, said three-way connector having a first connection to said hollow center of said adapter, a second connection to a first counting bath through a normally opened fifth electromagnetic valve and a third connection to a second counting bath through a normally opened sixth electromagnetic valve.

wherein said blood diluting device operates as follows:

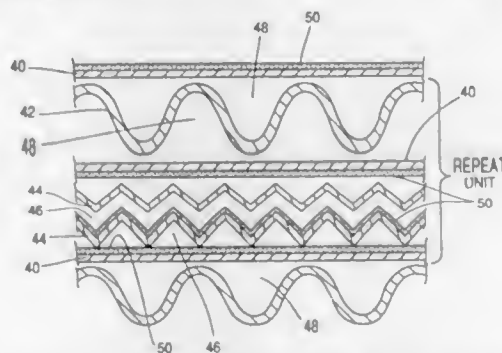
- (1) said first and second micropipettes are activated to suck a blood sample to be analyzed respectively into the outer tube and then the inner tube,
- (2) said tube assembly is placed in said adapter with said outer tube received in said hollow center, so that said adapter and said outer tube are sealed together and said air hole is arranged above said bottom end of said outer tube,
- (3) said third micropipette is activated to draw air into the outer tube, and then said fourth micropipette is activated to draw air into the inner tube, so that the blood sample of said inner tube is isolated from the blood sample in said outer tube,
- (4) said first and second valves are activated to respectively suck diluent into said first and second tubes by action of said first and second pumps,
- (5) said first valve is deactivated and said third and sixth valves are activated, so that said first pump discharges said sample from said outer tube and then said diluent toward said first counting bath,
- (6) said first and third micropipettes are deactivated and said seventh valve is activated permitting said diluent to be completely expelled to said first counting bath,
- (7) said second and sixth electromagnetic valves are deactivated and the fourth and fifth valves are activated, so that the second pump discharges said sample contained in said inner tube and then said diluent toward said second counting bath and, at the same time, said first valve is activated and said third valve is deactivated, so that said first pump sucks additional diluent into said first tube, and
- (8) said first and fourth valves are deactivated, said second and fourth micropipettes are deactivated, and said third valve is activated causing said additional diluent to discharge into said second counting bath, resulting in the blood sample in said second counting bath having a greater dilution ratio than that of the blood sample in said first counting bath.

5,512,249
STERILIZING APPARATUS
Vijay Singh, Bernardsville, N.J., assignor to Schering Corporation, Kenilworth, N.J.
Filed Nov. 10, 1994, Ser. No. 336,898
Int. Cl.⁶ F16K 31/00
U.S. Cl. 422-114 11 Claims



1. Apparatus for sterilizing a transfer conduit comprising:
 - (a) a transfer conduit to be sterilized,
 - (b) a source of steam connected to said transfer conduit,
 - (c) a condensate conduit for draining steam condensate from said transfer conduit,
 - (d) a valve in said condensate conduit comprising a valve body having an upstream portion and a downstream portion, said portions separated by a flow control means selected from the group consisting of diaphragm, a ball, and a gate,
 - (e) a temperature sensor constructed and arranged to sense the temperature in said upstream portion of said valve body,
 - (f) a temperature controller connected to said temperature sensor constructed and arranged to read the temperature sensed by said temperature sensor in the upstream portion of the valve body and to open said valve when the temperature drops below a fixed set point and to close said valve when the temperature is above the fixed set point.

5,512,250
CATALYST STRUCTURE EMPLOYING INTEGRAL HEAT EXCHANGE
Ralph A. D. Betta, Mountain View; Toru Shoji, Sunnyvale; David K. Yee, San Bruno, and Scott A. Magno, Dublin, all of Calif., assignors to Catalytic, Inc., Mountain View, Calif., and Tanaka Kikinzoku Kogyo K.K., Tokyo, Japan
Filed Mar. 2, 1994, Ser. No. 205,279
Int. Cl.⁶ F01N 3/10; F23D 3/40
U.S. Cl. 422-173 74 Claims

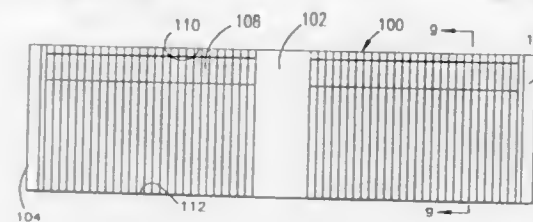


1. A catalyst structure comprising a heat resistant support material composed of a plurality of common walls which form a multitude of adjacent longitudinal channels for passage of a flowing gaseous reaction mixture wherein at least a part of the interior surface of at least a portion of the channels is coated with a catalyst and the interior surface of the remaining channels is not coated with catalyst such that the interior surface of the catalyst-coated channels are in heat exchange relationship with the interior surface of adjacent catalyst-free channels and wherein the catalyst-coated channels have a configuration which forms a more tortuous

flow passage for the reaction mixture than the flow passage formed by the catalyst-free channels.

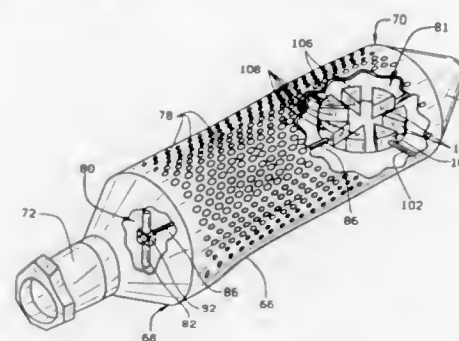
the upper surface of each plate to facilitate the mixing of the flue gases and powdered lime delivered into the dissipator.

5,512,251
COMBINED ELECTRICALLY HEATABLE CONVERTER BODY
Gordon W. Brunson, Chagrin Falls, and William A. Whittenberger, Leavittsburg, both of Ohio, assignors to W. R. Grace & Co.-Conn., New York, N.Y.
Filed Jul. 29, 1994, Ser. No. 282,715
Int. Cl.⁶ F01N 3/10; B01D 53/34
U.S. Cl. 422-174 12 Claims

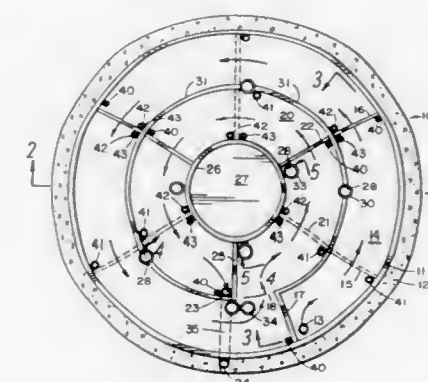


1. A corrugated thin metal strip for a converter body comprising an elongated thin metal strip having parallel marginal edges, a plurality of corrugations extending between said marginal edges, the peaks of the corrugations on one side of the strip for at least a portion of the distance between said marginal edges being deformed in a direction toward the opposite side of said thin metal strip to form a first recess having spaced parallel edges lying parallel to the marginal edges of the elongated corrugated thin metal strip, and a second recess provided in the opposite side of the elongated corrugated thin metal strip thereby forming a pair of recesses in back-to-back relation.

5,512,252
DISSIPATOR FOR FLUE GAS DESULFURIZATION SYSTEM
George Morris, Rte. #4, Box 552, West Frankfort, Ill. 62896
Filed May 9, 1994, Ser. No. 240,028
Int. Cl.⁶ B01D 47/02; C01B 17/60
U.S. Cl. 422-176 6 Claims



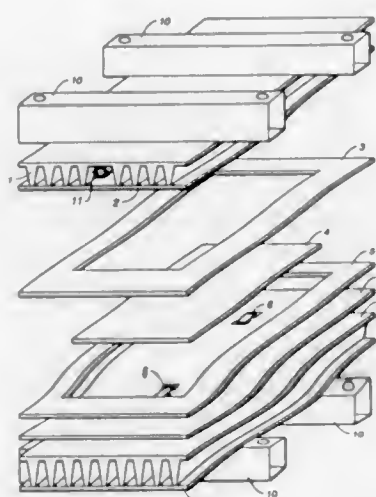
5,512,253
IRRADIATOR APPARATUS
Thomas C. Woodbridge, 746 S. Orlando Ave., Apt. 602, Cocoa Beach, Fla. 32931, and John C. Fenoli, 11207-116th Pl., N.E., Kirkland, Wash. 98033
Continuation of Ser. No. 787,040, Nov. 4, 1991, abandoned.
This application Sep. 27, 1994, Ser. No. 313,415
Int. Cl.⁶ B01J 19/08 15 Claims



1. An irradiator apparatus comprising:
 - a) a casing having a fluid input thereto and a fluid output therefrom, said casing also having a gas input thereto;
 - b) a fluid passageway in said casing connecting said fluid input to said fluid output;
 - c) a gas passageway in said casing connecting said gas input into said fluid passageway for directing gas into said fluid passing through said fluid passageway;
 - d) a plurality of gamma radiation source supports located in said casing and supporting a plurality of gamma radiation sources therein and each said gamma radiation source being positioned adjacent to said fluid and gas passageways for simultaneously irradiating a gas passing through said gas passageway and a fluid passing through said fluid passageway, whereby an irradiated gas is fed into a fluid being irradiated; and
 - e) said irradiator casing having a hollow center portion having said fluid passageway passing therearound for irradiation of materials placed therein.

5,512,254
FLOATING DIELECTRIC PLATE
Peter C. Landgraf, 3650 Morgan Terr. Rd., Clayton, Calif. 94517
Filed Dec. 27, 1994, Ser. No. 364,811
Int. Cl.⁶ B01J 19/12 1 Claim

1. An ozone generator comprising:
 - a) a first insulating member;
 - b) a first electrode disposed on said first insulating member;
 - c) a second insulating member;
 - d) a second electrode disposed on said second insulating member;
 - e) a corona discharge space gasket positioned adjacent to said first electrode;
 - f) a backup gasket positioned adjacent to said second electrode, said backup gasket having at least one aperture for passage of an electric contact from said second electrode;
 - g) a window gasket separating said corona discharge space gasket and said backup gasket and creating a clearance therebetween; and



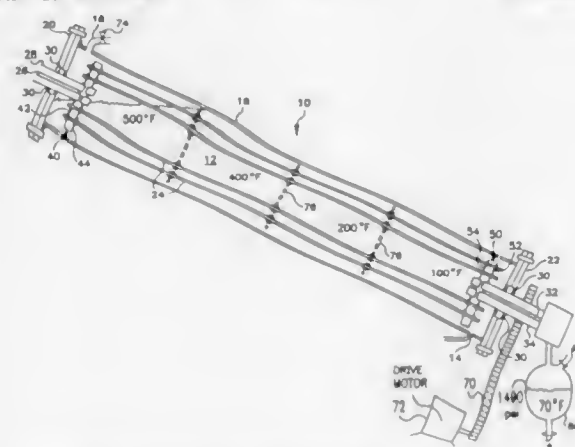
a dielectric plate positioned in said clearance between said corona discharge space gasket and said backup gasket, said dielectric plate isolated from said corona discharge space gasket and said backup gasket, said dielectric plate contacting said electric contact;
wherein said window gasket provides a clearance for the dielectric plate between the corona discharge space gasket and the backup gasket so as to allow the dielectric plate to shift when heating and cooling without resistance.

5,512,255 APPARATUS FOR PRODUCING METHANOL

John A. Coffman, Ballston Spa, N.Y., assignor to Wright Malta Corporation, Ballston Spa, N.Y.
Filed Dec. 6, 1994, Ser. No. 349,912
Int. Cl.⁶ F28D 7/00

U.S. Cl. 422—201

12 Claims



1. A graded temperature methanol reactor, comprising: an inclined container containing a liquid heat transfer medium having a varying temperature along said container, wherein said container has:
 - (a) an inlet opening near a lower end of said container for permitting said liquid heat transfer medium to enter said container, and
 - (b) an outlet opening near an upper end of said container for permitting heated heat transfer medium to exit said container as a vapor; a source of feed gas
 a plurality of conduits within said container and in contact with said heat transfer medium for permitting heat transfer with said heat transfer medium;
 a feed gas contained in said conduit having hydrogen and carbon monoxide in an approximate 2:1 ratio; and

a copper catalyst disposed within said plurality of conduits for causing the hydrogen and the carbon monoxide to react to form methanol, which condenses as the temperature decreases along said container from said upper end to said lower end.

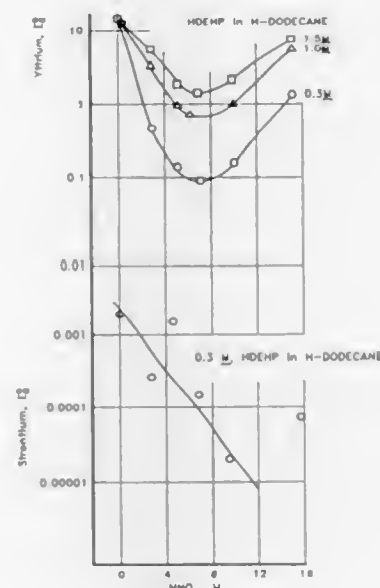
5,512,256 METHOD OF SEPARATION OF YTTRIUM-90 FROM STRONTIUM-90

Lane A. Bray, and Dennis W. Wester, both of Richland, Wash., assignors to Battelle Memorial Institute, Richland, Wash.
Continuation-in-part of Ser. No. 58,901, May 6, 1993, abandoned, which is a continuation-in-part of Ser. No. 880,961, May 8, 1992, abandoned. This application Jun. 29, 1994, Ser. No. 267,649

Int. Cl.⁶ C01F 1/00

U.S. Cl. 423—2

10 Claims



1. A method for purifying Y-90, comprising steps of:
 - (a) purifying a raw Sr-90/Y-90 source to a fresh Sr-90 source "cow" and permitting Y-90 ingrowth by removing at least a first group of impurities including iron, calcium, magnesium, sodium, chromium, and cerium by precipitating said impurities with sodium hydroxide wherein the sodium hydroxide contains little or no carbonate, and further purifying said "cow" by adding sodium carbonate for precipitating Sr-90 and leaving Cs-137 in solution.
 - (b) purifying a HDEHP organic extractant to remove traces of metal impurities,
 - (c) pretreating of said "cow" to a separation ready Sr-90/Y-90 source,
 - (d) pretreating purified organic extractant to a separation ready organic extractant, and
 - (e) separating Y-90 from Sr-90 by mixing said separation ready Sr-90/Y-90 source with said separation ready organic extractant obtaining a Y-90 product that has a Sr-90/Y-90 concentration ratio of not more than 10(E-7), and a metal impurity concentration not more than 10 ppm per curie of Y-90.

5,512,257 PROCESS FOR THE TREATMENT OF FLUE PARTICULATES

Rudolf Frey, Effretikon, Switzerland, assignor to Von Roll Umwelttechnik AG, Zurich, Switzerland
Continuation of Ser. No. 144,615, Nov. 1, 1993, abandoned, which is a continuation of Ser. No. 793,952, Oct. 22, 1991, abandoned. This application May 24, 1995, Ser. No. 449,845
Claims priority, application Switzerland, Jan. 22, 1990, 03359/90

Int. Cl.⁶ C22B 7/02

U.S. Cl. 423—98

17 Claims

1. A process for the treatment of fly ash from an incineration plant to obtain a fly ash substantially free of soluble heavy metal components, comprising the steps of:
 - treating the separated fly ash with an acidic aqueous solution to obtain a liquid of about pH 3 containing at least one dissolvable heavy metal component selected from the group consisting of zinc, cadmium, mercury and lead present in the fly ash and residual solid matter containing unextracted soluble heavy metal components, the acidic aqueous solution being washing liquid from a flue-gas scrubber of the incineration plant containing hydrogen chloride and sodium sulfate;
 - separating the liquid from the residual solid matter by filtration to obtain a cake of filtration residue containing unextracted dissolvable heavy metal components;
 - washing said cake of filtration residue with an aqueous solution of a precipitating agent for heavy metals, thereby binding said dissolvable heavy metals remaining in the filtration residue within said cake of filtration residue in an insoluble form, and
 - recovering said cake of filtration residue containing the heavy metals present in an insoluble form.

5,512,258 VANADIUM CATALYSTS AND DESULFURIZATION OF SULFUR COMPOUND-CONTAINING GASES

Roman A. Bouyanov, Novosibirsk; Albert M. Tsybulesky, Moscow; Dimitri P. Klevtsov, Novosibirsk, and Vladimir I. Mourine, Moscow, all of, Russian Federation, assignors to Institut De Catalyse Du Departement Siberien De L'Academie Des Sciences De Russie and Vniigaz, Russian Federation

Division of Ser. No. 899,912, Jun. 17, 1992, Pat. No. 5,369,076. This application Aug. 16, 1994, Ser. No. 288,750

Claims priority, application Russian Federation, Jun. 17, 1991, 4941760

Int. Cl.⁶ C01B 17/04; 17/16

U.S. Cl. 423—230

6 Claims

1. In a process for the catalytic desulfurization of a gaseous feedstream containing contaminating amounts of at least one sulfur compound, the improvement which comprises, desulfurizing the feedstream employing a catalyst having an active catalytic phase deposited on a support substrate, said active catalytic phase comprising an electroneutral solid solution having an average composition:

$$A_{4x}V_{2x}O_6$$
 in which A is a metal other than vanadium, $0 \leq x \leq 0.2$ and $0 \leq y \leq 0.5$.

5,512,259 PROCESS FOR REDUCING EMISSIONS OF ORGANIC HALOGEN COMPOUNDS FROM INCINERATION SYSTEMS

Hanspaul Hagenmaier, Tübingen, and Gunther Mittelbach, Witten, both of, Germany, assignors to Babcock Deutsche Babcock Anlagen AG, Krefeld-Uerdingen, Germany
PCT No. PCT/EP90/01685, § 371 Date Jul. 29, 1992, § 102(e) Date Jul. 29, 1992, PCT Pub. No. WO91/04780, PCT Pub. Date Apr. 18, 1991

PCT Filed Oct. 8, 1990, Ser. No. 690,976

Claims priority, application Germany, Oct. 6, 1989, 39 33 480.5; Jul. 3, 1990, 40 21 135.5

Int. Cl.⁶ B01D 53/70

U.S. Cl. 423—239.1

21 Claims

1. A method of reducing emissions of organic halogen compounds in off-gas, comprising:
 - directing said off-gas containing organic halogen compounds through a catalyst at a temperature of 150° to 500° C. wherein oxidative conditions are provided, said catalyst comprising 70 to 80 weight percent titanium dioxide (TiO₂), and from 0.5 weight percent to 10 weight percent of at least one of the donors selected from the group consisting of tungsten trioxide (WO₃) and vanadium pentoxide (V₂O₅).

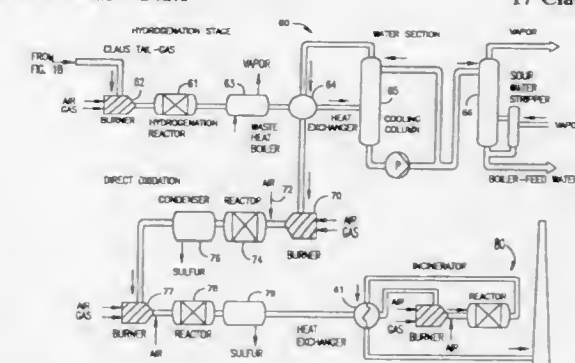
5,512,260 REDUCTION OF SULFUR CONTENT IN A GASEOUS STREAM

Thomas R. Kitiy, West Chester, Pa.; John P. McWilliams, Woodbury, and David A. Pappal, Haddonfield, both of N.J., assignors to Mobil Oil Corporation, Fairfax, Va.
Filed Mar. 4, 1994, Ser. No. 205,436

Int. Cl.⁶ B01D 53/48; 53/86

U.S. Cl. 423—242.1

17 Claims



1. A process for reducing sulfur content in a gaseous stream with the production of elemental sulfur comprising the steps of:
 - treating the gaseous stream by hydrogenation and hydrolysis to convert at least substantially all of the sulfur components therein to hydrogen sulfide;
 - then reducing the water content of the gaseous stream to thereby increase sulfur production;
 - introducing enough oxygen into the gaseous stream to allow conversion of hydrogen sulfide to elemental sulfur;
 - contacting the gaseous stream in an oxidation reactor with an acidic catalyst at a temperature of about 150° C. to about 350° C. in such manner that a reaction consisting essentially of the gas phase direct conversion of hydrogen sulfide to elemental sulfur and water vapor occurs; said contacting being conducted in such manner that sulfur dioxide is produced in only trace amounts; said acidic catalyst being a hydrogen form zeolite or a nickel-impregnated or exchanged zeolite said zeolite having a structure of ZSM-5, ZSM-11, ZSM-12, ZSM-22, ZSM-23, ZSM-35, ZSM-48, MCM-22 or mixtures thereof and said zeolite having a pore size in the range of from about 5 angstroms to about 7 angstroms, a silica-to-alumina ratio of at least 12, a constraint index of from about 1 to about 12, and a significant Bronsted acid activity or a mixture thereof; and

cooling the product gas after it leaves the oxidation reactor to separate elemental sulfur by condensation.

5,512,261 PROCESS FOR REMOVING SULFUR DIOXIDE FROM FLUIDS

Earl Clark, Jr., and Jimmie J. Straw, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jan. 17, 1995, Ser. No. 373,828

Int. Cl.⁶ C01B 17/60; B01D 50/00

U.S. Cl. 423—242.1 30 Claims

1. A process for reducing sulfur dioxide concentration comprising circulating a sulfur dioxide-containing fluid in a loop under conditions sufficient to reduce the concentration of sulfur dioxide in said fluid wherein said loop comprises at least one spraying device.

5,512,262 PROCESS FOR CLEANING HARMFUL GAS

Takashi Shimada, Toshio Okumura, and Toshiya Hatakeyama, all of Hiratsuka, Japan, assignors to Japan Pionics Co., Ltd., Tokyo, Japan

Filed May 12, 1994, Ser. No. 241,758

Claims priority, application Japan, May 19, 1993, 5-139269
Int. Cl.⁶ B01D 53/64; 53/72

U.S. Cl. 423—245.1 12 Claims

1. A process for cleaning a harmful gas, which comprises contacting at a temperature of 10° to 50° C. a gas containing as a harmful component at least one alkoxide compound represented by the chemical formula M(OR)_x, wherein M is an element selected from the group consisting of silicon, arsenic, phosphorus, boron, tantalum and titanium, OR is an alkoxy group and x is the valency of the element, with a cleaning agent which comprises an alkali metal compound selected from the group consisting of a hydroxide, an oxide, and a carbonate, supported on a metallic oxide comprising cupric oxide and manganese dioxide, wherein the total amount of the cupric oxide and manganese dioxide is at least 60% by weight based on the total amount of the metallic oxide, and wherein said alkali metal compound is present in an amount of 10 to 50 parts by weight based on 100 parts by weight of said metallic oxide, to remove said harmful component from said harmful gas.

5,512,263 METHOD FOR CHEMICAL SYNTHESIS EMPLOYING A COMPOSITE MEMBRANE

James A. McIntyre, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed May 6, 1994, Ser. No. 239,017

Int. Cl.⁶ C01B 15/01

U.S. Cl. 423—584 12 Claims

1. A method for chemical synthesis comprising the following steps:

- placing an electron and cation producing composition in contact with an oxidizing agent to produce at least one electron and at least one cation;
- conducting the at least one electron and the at least one cation produced in step (a) via a multiphase conductive path having at least a polymeric-based cation conductive phase and an electron conductive phase that is embedded throughout the cation conductive phase as a substantially continuous interpenetrating network, to an interface between a reducing agent and a reducible composition; and
- reacting the at least one electron and the at least one cation conducted in step (b) with the reducible composition to form a reaction product.

5,512,264 FINELY DIVIDED BLUE MOLYBDENUM OXIDE

Jörg Adel, Ludwigshafen, and Erwin Czech, Biblis, both of, Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Filed Oct. 20, 1994, Ser. No. 326,186

Claims priority, application Germany, Oct. 20, 1993, 43 35 725.3

Int. Cl.⁶ C01G 39/00

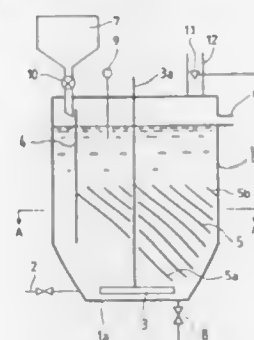
U.S. Cl. 423—606 9 Claims

1. An amorphous, blue mixed-valence molybdenum oxide containing about 10% molybdenum (V) and about 90% molybdenum (VI), having a particle size distribution of from 2 to 100 nm.

5,512,265 METHOD OF PRODUCING AQUEOUS SOLUTION OF SLAKED LIME AND APPARATUS THEREFOR

Isao Funahashi, Fukushima; Kiwamu Yamamoto, Kanagawa, and Koji Suto, Fukushima, all of, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, and Kureha Engineering Co., Ltd., Fukushima, both of, Japan
Continuation of Ser. No. 220,581, Mar. 31, 1994, abandoned, which is a continuation of Ser. No. 868,695, Apr. 15, 1992, abandoned. This application Oct. 20, 1994, Ser. No. 326,349
Claims priority, application Japan, Apr. 26, 1991, 3-125301
Int. Cl.⁶ C01F 11/02; B01F 7/18

U.S. Cl. 423—640 6 Claims



1. A method of producing an aqueous solution of slaked lime comprising the steps of:

- providing an apparatus comprising: a dissolving tank; water supply piping connected to a lower part of the dissolving tank for introducing water into the dissolving tank; effluent piping connected to an upper part of the dissolving tank for discharging aqueous slaked lime solution from the dissolving tank; a stirring blade disposed within the dissolving tank in a bottom part thereof;
- a partition plate disposed within the dissolving tank and beside a side wall of the dissolving tank, said partition plate extending from above a surface of water in the dissolving tank to above the stirring blade for providing a slaked lime introducing zone which is surrounded by the partition plate and the side wall of the dissolving tank;
- a hopper disposed above the slaked lime introducing zone for introducing powder of slaked lime into the dissolving tank; and
- a fluidized slaked lime layer height-control device disposed within the dissolving tank in an outside part of the slaked lime introducing zone above the stirring blade for preventing slaked lime particles from ascending with ascending aqueous slaked lime solution in the dissolving tank, said fluidized slaked lime layer height-control device having at least two slant plates, wherein an upper end of a lowermost slant plate is disposed in contact with the partition plate and a lower end of an uppermost slant plate is disposed in contact with a side wall of the dissolving tank;

introducing the powder of slaked lime into the slaked lime introducing zone of the dissolving tank through the hopper; feeding water, with low speed stirring, to the dissolving tank through the water supply piping at a predetermined rate so that the water ascent rate at an upper part of the dissolving tank is between 0.25 to 1.2 mm/sec; and removing an aqueous solution of slaked lime from the dissolving tank through the effluent piping.

5,512,266 ALUMINOSILICATES AND DETERGENT COMPOSITION

Graham T. Brown, Wirral, England; Theo J. Osinga, AN Cadier en Keer, Netherlands; Michael J. Parkinson, and Andrew T. Steel, both of Wirral, England, assignors to Unilever Patent Holdings BV, Rotterdam, Netherlands

Continuation of Ser. No. 12,807, Feb. 2, 1993, Pat. No. 5,374,370, which is a continuation of Ser. No. 430,988, Nov. 3, 1989, abandoned. This application Sep. 7, 1994, Ser. No. 301,409

Claims priority, application United Kingdom, Nov. 3, 1988, 8825783; May 2, 1989, 8910029

Int. Cl.⁶ C01B 39/28

U.S. Cl. 423—700 12 Claims

1. An alkali metal aluminosilicate of the zeolite P type having a silicon to aluminium ratio not greater than 1.33 and having a calcium binding capacity of at least 150 mg CaO per g anhydrous aluminosilicate.

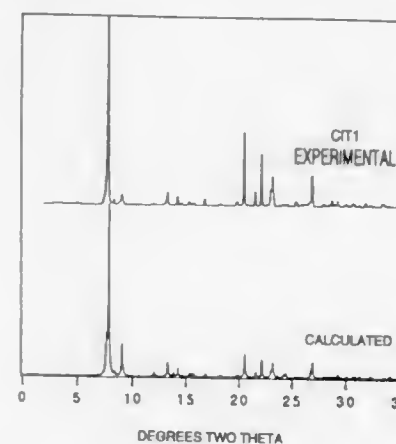
5,512,267 ZEOLITE CIT-1

Mark E. Davis, and Raul F. Lobo, both of Pasadena, Calif., assignors to California Institute of Technology, Pasadena, Calif.

Continuation-in-part of Ser. No. 121,748, Sep. 15, 1993, abandoned. This application Sep. 14, 1994, Ser. No. 306,177

Int. Cl.⁶ C01B 39/04; 39/12; 39/46; 39/48

U.S. Cl. 423—705 22 Claims



1. A zeolite having a mole ratio greater than about 20:1 of a first oxide selected from silicon oxide, germanium oxide, and mixtures thereof to a second oxide comprising boron oxide; wherein said zeolite has, after calcination, the X-ray diffraction lines of Table 1.

5,512,268 POLYMERIC SHELLS FOR MEDICAL IMAGING PREPARED FROM SYNTHETIC POLYMERS, AND METHODS FOR THE USE THEREOF

Mark W. Grinstaff, Pasadena; Neil P. Desai, Los Angeles, both of Calif.; Kenneth S. Suslick, Champaign, Ill.; Patrick Soon-Shiong; Paul A. Sandford, both of Los Angeles, Calif., and Noma R. Merideth, Pacific Palisades, Calif., assignors to Vivorx Pharmaceuticals, Inc., Santa Monica, Calif.

Division of Ser. No. 326,116, Oct. 19, 1994, which is a continuation of Ser. No. 35,150, Mar. 26, 1993, Pat. No. 5,362,478. This application Jun. 6, 1995, Ser. No. 486,268
Int. Cl.⁶ A61B 5/055; 8/13; A61K 49/04

U.S. Cl. 424—9.322 37 Claims

1. A composition for obtaining in vivo medical diagnostic images, said composition comprising imaging agent(s) substantially completely contained within a polymeric shell; wherein said polymeric shell comprises a biocompatible polymer which is substantially crosslinked by way of disulfide bonds, and wherein said crosslinked polymer is a synthetic polymer, wherein said polymer, prior to crosslinking, has covalently attached thereto sulfhydryl groups or disulfide groups, wherein said disulfide bonds are crosslinked directly, that is, without a crosslinking agent being used.

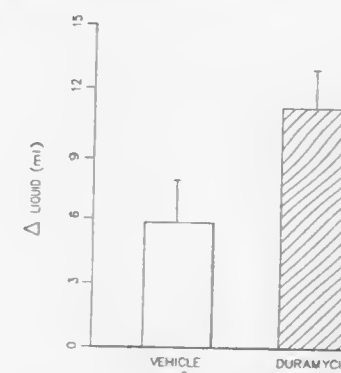
5,512,269 METHOD OF TREATING RETAINED PULMONARY SECRETIONS

Luis M. Molina y Vedia; Monroe J. Stutts; Richard C. Boucher, Jr., and David C. Henke, all of Chapel Hill, N.C., assignors to Burroughs Wellcome, Co., Research Triangle Park, and University of North Carolina at Chapel Hill, Chapel Hill, both of N.C.

Filed Jun. 9, 1993, Ser. No. 74,315

Int. Cl.⁶ A61K 9/12

U.S. Cl. 424—45 27 Claims



1. A method of facilitating lung mucus clearance in a subject in need of such treatment, comprising administering to the lungs of the subject a lantibiotic in an amount effective to facilitate lung mucus clearance; wherein said lantibiotic is delivered by administering an aerosol of respirable particles containing said lantibiotic to the lungs of said subject; wherein said aerosol is comprised of particles having a particle size within the range of from about 1 to about 10 microns; wherein said lantibiotic is a lantibiotic that stimulates a Cl⁻ secretory response; wherein said lantibiotic comprises from 0.1–100 (w/w) of said particles; and wherein said lantibiotic is administered in an amount sufficient to achieve concentrations of lantibiotic on the airway surfaces of said subject of from about 10⁻⁹ Moles/liter to about 10⁻³ Moles/liter.

5,512,270

METHOD OF INHIBITING OXIDANTS USING ALKYLARYL POLYETHER ALCOHOL POLYMERS

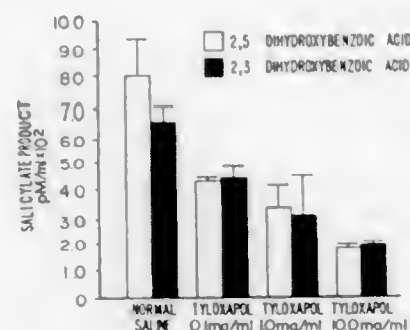
Andrew J. Ghio; Claude A. Piantadosi, both of Durham, N.C., and Thomas P. Kennedy, Richmond, Va., assignors to Duke University, Durham, N.C.

Continuation of Ser. No. 39,732, Mar. 30, 1993, abandoned. This application Aug. 31, 1994, Ser. No. 299,316

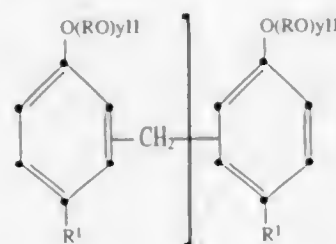
Int. Cl.⁶ A61K 31/045

U.S. Cl. 424—45

8 Claims



1. A method for the treatment of mammalian disease entities resultant from oxidant species consisting essentially of administering to a mammal an amount of alkylaryl polyether alcohol polymer of the formula



where, R=ethylene, R¹=tertiary octyl, x is greater than 1, and y=8 to 18, effective to inhibit oxidant chemical reactions caused by the oxidant species in the mammal, thereby treating the mammalian disease entities.

5,512,271

SILICAS FOR USE IN TRANSPARENT TOOTHPASTE COMPOSITIONS

Ian P. McKeown, Algburth, and Peter W. Stanier, Elworth, both of, England, assignors to Unilever Patent Holdings BV, Vlaardingen, Netherlands

Continuation of Ser. No. 956,857, Oct. 2, 1992, abandoned.

This application Jul. 5, 1994, Ser. No. 266,849

Claims priority, application European Pat. Off., Oct. 2, 1991, 91309047

Int. Cl.⁶ A61K 7/16; C01B 33/12

U.S. Cl. 424—49

11 Claims

- An amorphous precipitated silica having
- a BET surface area in the range from about 100 to 262 m²/g,
- a weight mean particle size in the range 5 microns to 15 microns, with less than 10% of the weight particle size distribution greater than 20 microns,
- a plastics abrasion value in the range from 16 to 26,
- a mean pore diameter in the range from 2 nm to 12 nm,
- a transmission of at least about 70% in the refractive index range of 1.430 to 1.443, and
- an oil absorption in the range from 70 to 130 cm³/100 g, said silica being suitable for use as an abrasive in a transparent toothpaste.

5,512,272

COSMETICS WITH ENHANCED DURABILITY

Duane G. Krzyzik, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Division of Ser. No. 12,682, Feb. 3, 1993, Pat. No. 5,399,342.

This application May 5, 1994, Ser. No. 238,775

Int. Cl.⁶ A61K 7/42; 7/44

U.S. Cl. 424—59

3 Claims

1. In an eye cosmetic containing a film forming agent, a pigment, a wax, and an oil, the improvement comprising said film forming agent being an aqueous latex of a crosslinkable polydiorganosiloxane prepared by a method consisting essentially of:

- homogenizing a mixture consisting essentially of (1) one hundred parts by weight of a polydiorganosiloxane of the formula HO(R₂SiO)_xH wherein R is a radical selected from the group consisting of methyl, ethyl, propyl, phenyl, vinyl, allyl, and 3,3,3-trifluoropropyl, and x is an integer having an average value of three to one hundred; (2) 15–75 millimoles of surface active anionic catalyst per kilogram of polydiorganosiloxane wherein said catalyst is selected from the group consisting of dodecylbenzene sulfonic acid and hydrogen lauryl sulfate; and (3) water, to yield an oil in water emulsion;
- admixing 0.5–15 parts by weight of an alkoxy silicon compound selected from the group consisting of (i) silanes of the formula R₃Si(OR)₃ wherein R¹ is a monovalent hydrocarbon radical having up to twelve carbon atoms, R² is an alkyl radical having up to six carbon atoms, and a has a value of zero or one; (ii) a partial hydrolyzate of the silane which is soluble in the polydiorganosiloxane; and (iii) mixtures of the silane and the partial hydrolyzate;
- maintaining the emulsion at a temperature of fifteen to thirty degrees Centigrade for at least five hours at a pH of less than five until a crosslinked polymer emulsion is formed;
- admixing sufficient base to raise the pH of the crosslinked polymer emulsion to greater than seven; and optionally
- admixing greater than one part by weight of colloidal silica sol or colloidal silsesquioxane; to yield a latex which produces an elastomer upon removal of the water at room temperature.

5,512,273

TOP NAIL COAT COMPOSITION

Frederick L. Martin, St. John, Ind., assignor to Almel, Ltd., Dallas, Tex.

Filed Oct. 31, 1994, Ser. No. 332,539

Int. Cl.⁶ A61K 7/04; 7/043

U.S. Cl. 424—61

17 Claims

- A composition comprising:
- at least one cellulose ester containing monocarboxylic acid groups having from 2 to 4 carbon atoms, and
- solvent for said at least one cellulose ester, said solvent consisting essentially of a mixture of at least one aliphatic solvent for said at least one cellulose ester and at least one cycloaliphatic solvent for said at least one cellulose ester, the composition being at least substantially free of aromatic solvents;
- wherein said at least one aliphatic solvent for said at least one cellulose ester is selected from the group consisting of alkanes having 4 to 6 carbon atoms, aliphatic esters having 3 to 6 carbon atoms, and alkanols having 2 to 6 carbon atoms;
- wherein said at least one cycloaliphatic solvent for said at least one cellulose ester is selected from the group consisting of cycloalkanes having 4 to 6 carbon atoms, cycloaliphatic esters having 4 to 6 carbon atoms, and cycloalkanols having 4 to 6 carbon atoms;
- wherein said at least one cycloaliphatic solvent constitutes from about 1 to about 20 volume percent of said mixture;
- wherein said mixture comprises about 30 to about 45 volume percent ethyl acetate, about 40 to about 65 volume percent n-butyl acetate, and about 5 to about 20 volume percent naphthenic material,

and wherein said naphthenic material is a mixture of acyclic paraffins and cycloparaffins containing less than 1 percent aromatics.

5,512,274

METAL HYDROXIDE DEODORANT FORMULATION

Robin L. Phinney, 2777 Eastview, Saskatoon, Sasic 57J 3H3, Canada

Continuation-in-part of Ser. No. 833,549, Feb. 10, 1992, abandoned. This application Nov. 25, 1992, Ser. No. 982,099

Int. Cl.⁶ A61K 7/32; 7/36; 9/12; C09K 19/00

U.S. Cl. 424—65

14 Claims

1. A deodorant composition consisting essentially of zinc hydroxide and magnesium hydroxide in a sufficient an effective deodorant amount to neutralize 3-methyl-2-benoxanoic acid associated with human perspiration and to maintain the zinc hydroxide in active hydroxide form, together with an acceptable carrier, wherein the magnesium hydroxide and zinc hydroxide are present in a molar ratio up to about 3:1.

5,512,275

TOPICAL LOTION AND METHOD FOR TREATMENT OF ANDROGENIC ALOPECIA

Carol J. Buck, 30 Brooks Bend, Princeton, N.J. 08540

Filed Nov. 22, 1994, Ser. No. 343,647

Int. Cl.⁶ A61K 7/06; 31/19; 31/22; 31/125

U.S. Cl. 424—70.1

10 Claims

1. A composition for the topical treatment of alopecia comprising:

- up to about 2% by weight of an agent having at least one of keratolytic or bactericidal activity;
- from about 2% to about 5% by weight of liquor carbonis detergens;
- from about 3% to about 20% by weight of a rubefacient;
- about 7% by weight of an antidesiccation and/or cornification agent; and
- from about 60% to about 95% by weight of a pharmaceutically acceptable carrier.

5,512,276

COMPOSITION FOR FIXING HAIR BASED ON LIGNIN OR LIGNIN DERIVATIVES AS WELL AS DIHYDROXYPROPYL LIGNIN

Günther Lang, Reinheim; Thomas Clausen, Alsbach; Hans-Jürgen Titze, Gross-Bieberau; Karin Steinbrecht, Darmstadt, and Wolfgang Keil, Frankfurt, all of, Germany, assignors to Wella Aktiengesellschaft, Darmstadt, Germany

PCT No. PCT/EP93/01990, § 371 Date Apr. 18, 1994, § 102(e)

Date Apr. 18, 1994, PCT Pub. No. WO94/05249, PCT Pub. Date Mar. 17, 1994

PCT Filed Jul. 27, 1993, Ser. No. 211,797

Claims priority, application Germany, Aug. 29, 1992, 42 28 897.5

Int. Cl.⁶ A61K 7/11

U.S. Cl. 424—70.11

12 Claims

- Composition for fixing hair comprising
- from 1 to 10 percent by weight of a lignin member selected from the group consisting of sulfur-free lignin, hydroxypropyl lignin, hydroxybutyl lignin and dihydroxypropyl lignin and mixtures thereof;
- from 1 to 15% by weight of a film-forming polymer; and
- a solvent selected from the group consisting of water, alcohols having one to four carbon atoms and mixtures thereof.

12. Dihydroxypropyl lignin.

5,512,277

KERATOTIC PLUG REMOVER

Tomohiro Uemura, Chiba; Masanori Tanahashi, Funabashi; Yoshiyuki Muroi, Ichikai, and Yoshinao Kono, Wakayama, all of, Japan, assignors to Kao Corporation, Tokyo, Japan

Continuation of Ser. No. 882,979, May 14, 1992, abandoned.

This application Mar. 21, 1994, Ser. No. 210,778

Claims priority, application Japan, May 15, 1991, 3-110342; Feb. 12, 1992, 4-025354; Apr. 8, 1992, 4-087032; Apr. 8, 1992, 4-087033

Int. Cl.⁶ A61K 31/74; 7/48

U.S. Cl. 424—78.03

31 Claims

1. A method for removing keratotic plugs which comprises applying a keratotic plug remover composition onto the skin, and peeling off the composition after the composition is dried, wherein said keratotic plug remover composition comprises a cationic polymer compound having a salt forming group, wherein said polymer is one member selected from the group consisting of:

- a polymer consisting of a cationic monomer selected from the group consisting of quaternized products of each of dimethylaminoethyl acrylate, dimethylaminoethyl methacrylate, dimethylaminopropyl acrylamide, dimethylaminopropyl methacrylamide, dimethylaminostyrene, dimethylaminomethylstyrene, 4-vinyl pyridine, 2-vinyl pyridine, and mixtures thereof;
- a copolymer consisting of (1) a cationic monomer selected from the group consisting of quaternized products of each of dimethylaminoethyl acrylate, dimethylaminoethyl methacrylate, dimethylaminopropyl acrylamide, dimethylaminopropyl methacrylamide, dimethylaminostyrene, dimethylaminomethylstyrene, 4-vinyl pyridine, 2-vinyl pyridine, and mixtures thereof, and (2) an amphoteric monomer selected from the group consisting of N-(3-sulfopropyl)-N-acryloyloxyethyl-N,N-dimethylammonium betaine, N-(3-sulfopropyl)-N-methacrylamidepropyl-N,N-dimethylammonium betaine, N-(3-carboxymethyl)-N-methacrylamidepropyl-N,N-dimethylammonium betaine, and N-carboxymethyl-N-methacryloyloxyethyl-N,N-dimethylammonium betaine;
- a copolymer consisting of (1') a cationic monomer selected from the group consisting of quaternized products of each of dimethylaminoethyl acrylate, dimethylaminoethyl methacrylate, dimethylaminopropyl acrylamide, dimethylaminopropyl methacrylamide, dimethylaminostyrene, dimethylaminomethylstyrene, 4-vinyl pyridine, 2-vinyl pyridine, and mixtures thereof, and (2') a monomer having no salt forming group selected from the group consisting of vinyl esters of aliphatic carboxylic acid, (meth)acrylic esters, alkyl vinyl esters, N-vinyl cyclic amides, styrene and alkyl-substituted styrene; and
- mixtures thereof.

5,512,278

OINTMENT BASE USEFUL FOR PHARMACEUTICAL PREPARATIONS

David D. Mundschenk, Dania, Fla., assignor to PhyloMed Corporation, Plantation, Fla.

Filed Jan. 11, 1994, Ser. No. 180,078

Int. Cl.⁶ A61K 31/74

U.S. Cl. 424—78.06

16 Claims

1. An ointment base useful for preparing topically applied medicament formulations, comprising a stable emulsion of at least about 10% by weight of each of water, one or more paraffins, and a liquid polyol; and less than about 10% by weight of each of beeswax, cetostearyl alcohol, a 4-hydroxy benzoic acid lower alkyl ester, a surface active agent, and a dispersing agent.

5,512,279

BIOLOGICAL CONTROL OF DIPTERAN PESTS OF THE GENUS LYCORIELLA USING BACILLUS THURINGIENSIS

Paul Jarrett, Philip F. White, and Nicole J. Pethybridge, all of West Sussex, England, assignors to Agricultural Genetics Company Limited, Cambridge, England
PCT No. PCT/GB91/01957, § 371 Date Apr. 15, 1993, § 102(e) Date Apr. 15, 1993, PCT Pub. No. WO92/08354, PCT Pub. Date May 29, 1992

PCT Filed Nov. 7, 1991, Ser. No. 39,201

Claims priority, application United Kingdom, Nov. 8, 1990, 9024296; Apr. 9, 1991, 9107397

Int. Cl.⁶ A01N 63/00; C12N 1/20

U.S. Cl. 424—93.461

4 Claims

1. A method for the biological control of Dipteran pests of the genus *Lycoriella*, comprising contacting the pests with a *Lycoriella* controlling effective amount of a strain of *Bacillus thuringiensis* sub-species *kyushuensis* selected from group consisting of *Bacillus thuringiensis* HD541 (NCIMB 40373), *Bacillus thuringiensis* HD571 (NCIMB 40374) and mutants thereof having the same insecticidal activity.

5,512,280

MAINTENANCE AND LONG TERM STABILIZATION OF FUNGAL CONIDIA USING SURFACTANTS

Sarjit S. Johal, Hopkinton, and Lorraine M. Marold, Worcester, both of Mass., assignors to EcoScience Corporation, Northboro, Mass.

Filed Oct. 26, 1994, Ser. No. 329,472

Int. Cl.⁶ C12N 1/14; 1/04; A01N 63/04

U.S. Cl. 424—93.5

28 Claims

1. A conidial formulation comprising fungal conidia in combination with an anionic sulfosuccinate surfactant in a concentration of between 0.001 and 100% (weight surfactant/volume), wherein the surfactant inhibits germination of the conidia and is not metabolized or degraded by the fungus.

5,512,281

MAMMALIAN MODEL SYSTEM AND METHODS OF TESTING IMMUNO-OR DRUG PROPHYLAXIS OF FETAL INFECTION BY HIV-1 OR OTHER LENTIVIRUSES

Ruth M. Ruprecht, Brookline, Mass., assignor to Dana-Farber Cancer Institute, Inc., Boston, Mass.

Continuation-in-part of Ser. No. 788,142, Nov. 5, 1991, abandoned. This application Jul. 2, 1992, Ser. No. 908,679

Int. Cl.⁶ A61K 49/00; A01N 63/00

U.S. Cl. 424—93.6

16 Claims

1. A method for infecting a simian fetus with SIV or HIV-1, comprising the steps of:
providing a pregnant monkey of a species susceptible to infection by SIV or HIV-1, said pregnant monkey being free of SIV or HIV-1 infection; and
inoculating the amniotic fluid of said pregnant monkey with SIV or HIV-1, respectively, in an amount effective to cause infection of the fetus with said respective SIV or HIV-1.

5,512,282

MONOSPECIFIC POLYCLONAL ANTIBODIES TO SHIGA-LIKE TOXINS

Howard C. Krivan, Bethesda, and James E. Samuel, Germantown, both of Md., assignors to MicroCarb, Inc., Gaithersburg, Md.

Continuation of Ser. No. 858,299, Mar. 26, 1992, abandoned.

This application Dec. 28, 1993, Ser. No. 174,294

Int. Cl.⁶ A61K 39/108; 39/40; C07K 16/12; G01N 33/53

U.S. Cl. 424—169.1

18 Claims

1. Purified IgG, comprising high titer, monospecific polyclonal antibodies to Shiga-like toxin (SLT) obtained by a process comprising the steps of:

inoculating a bovine animal with a purified, active SLT, derived from *E. coli* and selected from the group consisting of SLT I, SLT II, SLT IV and mixtures thereof; and
recovering and purifying IgG from said animal after said animal has had an immune response to said purified active SLT.

5,512,283

METHODS FOR THE SELECTIVE SUPPRESSION OF AN IMMUNE RESPONSE TO DUST MITE DER P1

Vera S. Byers, San Francisco, Calif., and Robert W. Baldwin, Long Eaton, England, assignors to Allergene, Inc., San Mateo, Calif.

Continuation-in-part of Ser. No. 11,050, Jan. 29, 1993, abandoned, and Ser. No. 849,222, Mar. 10, 1992, abandoned, which is a continuation-in-part of Ser. No. 549,184, Jul. 6, 1990, abandoned. This application Sep. 16, 1993, Ser. No.

123,746

Int. Cl.⁶ A61K 35/16; 39/00; 39/395; 16/00

U.S. Cl. 424—171.1

10 Claims

1. A method for selective suppression of an immune response to dust mite, comprising vaccinating an animal that is sensitized to dust mite Der p 1 allergen with an effective amount of monoclonal antibody H11, or a monoclonal antibody that recognizes the same epitope as monoclonal antibody H11, to suppress an IgE mediated immune response to dust mite in said animal.

5,512,284

METHOD FOR TREATING BACTERIAL INFECTIONS

Ricardo M. Camano, Montevideo, Uruguay, assignor to Teodoro P. Haidenvurcel, and Eduardo H. Pinto, both of Montevideo, Uruguay

Filed Jun. 10, 1993, Ser. No. 75,117

Int. Cl.⁶ A61K 35/78; 31/05; 31/01; 47/00

U.S. Cl. 424—195.1

3 Claims

1. A method for treating infections of *Pseudomonas aeruginosa* and *Staphylococcus aureus* in a human or animal patient, comprising

applying a pharmaceutical composition to the patient's epidermis,
wherein said pharmaceutical composition comprises an essential oil extract from *Schinus molle* L. and a pharmaceutically acceptable carrier and
wherein said essential oil extract further comprises α -phellandrene, β -phellandrene, carvacrol, α -pinene and β -pinene in a clear yellow liquid with specific weight at 2° C. of about 0.9, a refractive index of about 1.49, a polarimetric deviation of about 2.8, an ester number of about 14.

5,512,285

FRAGRANCE EXTRACTION

Peter F. Wilde, Thirsk, United Kingdom, assignor to Advanced Phytonics Limited, Manchester, England
Filed Feb. 14, 1994, Ser. No. 195,786

Claims priority, application United Kingdom, Feb. 22, 1993, 9303546

Int. Cl.⁶ A61K 35/78

U.S. Cl. 424—195.1

10 Claims

1. A process for selectively extracting at least one natural organic component which is soluble in tetrafluoroethane from natural organic material containing the natural organic component, the process comprising

- contacting the organic material in a vessel with liquid tetrafluoroethane solvent to dissolve the at least one organic component in the solvent
- separating the solution of the at least one natural organic component in the solvent from the remaining organic material; and
- removing the solvent to isolate the at least one natural organic component.

5,512,286

EXTRACT FROM LEAVES OF GINKGO BILOBA FOR INTRAVENOUS INJECTION OR INFUSION

Klaus-Peter Schwabe, Karlsruhe, Germany, assignor to Dr. Willmar Schwabe GmbH & Co., Karlsruhe, Germany
Continuation of Ser. No. 766,929, Sep. 27, 1991, abandoned.

This application Feb. 23, 1994, Ser. No. 200,378

Claims priority, application Germany, Sep. 28, 1990, 40 30 758.1

Int. Cl.⁶ A61K 35/78

U.S. Cl. 424—195.1

20 Claims

1. An extract from the leaves of *Ginkgo biloba* containing most of the flavone glycosides, ginkgolides and bilobalide originally present in the leaves, comprising 20 to 30 weight percent flavone glycosides, 2.5 to 4.5 weight percent ginkgolides selected from the group consisting of ginkgolide A, B, C and J and mixtures thereof, 2.0 to 4.0 weight percent bilobalide and less than 10 ppm alkylphenol compounds, said extract being essentially free of components of the leaves with serum-precipitating or hemagglutinating properties.

5,512,287

PRODUCTION OF β -GLUCAN AND β -GLUCAN PRODUCT

Linji Wang; Ike E. Lynch, both of Dillon, and Kenneth Goering, Bozeman, all of Mont., assignors to Centennial Foods, Inc., Dillon, Mont.

Filed May 12, 1994, Ser. No. 241,857

Int. Cl.⁶ A61K 35/78; C07H 11/00; 15/00; 1/00

U.S. Cl. 424—195.1

19 Claims

1. A process for obtaining a water extract of cereal grains comprising:

- mixing ground cereal grains, mixtures of grain or grain fractions in water to form a slurry;
- centrifuging the slurry to remove bran and starch granules;
- heating the resulting liquid phase to destroy β -glucanase activity and to coagulate a protein/oil fraction;
- cooling the liquid phase in a heat exchanger; and
- centrifuging the liquid phase to remove the coagulated protein/oil fraction and to recover the water extract of cereal grains.

5,512,288

GIARDIA VACCINE

Merle E. Olson; Howard Ceri, both of Calgary, and Douglas W. Morck, Airdrie, all of Canada, assignors to University Technologies International, Inc., Alberta, Canada

Continuation-in-part of Ser. No. 985,489, Dec. 4, 1992, abandoned. This application Nov. 23, 1993, Ser. No. 156,618

Int. Cl.⁶ A61K 39/002; C12N 1/10

U.S. Cl. 424—269.1

12 Claims

1. A method of preventing or treating giardiasis in an animal selected from the group consisting of dogs and cats comprising administering to said animal at least one dose of an effective amount of a vaccine strain of giardia wherein said giardia has been cultured in media containing bile so as to make it protectively immunogenic.

5,512,289

SPERMICIDAL ANTI-VIRAL LUBRICANT

COMPOSITION AND METHOD OF USING SAME

Chung-Ye Tseng, Middletown; Jonas Wang, Robbinsville; Marilyn Hudson, Randolph, and Jue-Chen Liu, Neshanic, all of N.J., assignors to Johnson & Johnson Consumer Products, Inc., Skillman, N.J.

Continuation of Ser. No. 98,588, Jul. 28, 1993, abandoned.

This application Jun. 8, 1995, Ser. No. 495,737

Int. Cl.⁶ A61F 2/00; 6/06

U.S. Cl. 424—426

37 Claims

1. A composition, comprising:
a water-soluble polymeric gel matrix comprising a hydroxyalkyl cellulose, wherein said alkyl moiety has from 2 to 6 carbon atoms;
an alkylphenoxypolyethoxyethanol spermicide; and
a solubilizing moiety comprising a polyethoxylated non-ionic compound.

5,512,290

COMPOSITIONS CONTAINING 2-ACETYL-1-PYRROLINE

Philippe Duby, Prilly, and Tuong Huynh-Ba, Pully, both of Switzerland, assignors to Nestec S.A., Vevey, Switzerland
Division of Ser. No. 158,934, Nov. 29, 1993, Pat. No.

5,401,521, which is a division of Ser. No. 979,293, Nov. 20, 1992, Pat. No. 5,280,127. This application Dec. 27, 1994, Ser. No. 364,310

Claims priority, application Switzerland, Dec. 2, 1991, 03529/91

Int. Cl.⁶ A61F 13/00; A61K 9/68

U.S. Cl. 424—439

19 Claims

1. A powder-form composition comprising 2-acetyl-1-pyrrolone incorporated with a support selected from the group consisting of cyclodextrin and maltodextrin.

5,512,291

METHOD OF MAKING RESORBABLE VASCULAR WOUND DRESSING

Shu-Tung Li, I Kiowa Ter., Oakland, N.J. 07436

Division of Ser. No. 46,895, Apr. 15, 1993, Pat. No. 5,376,376, which is a continuation of Ser. No. 821,384, Jan. 13, 1992, abandoned. This application Aug. 31, 1994, Ser. No. 297,926

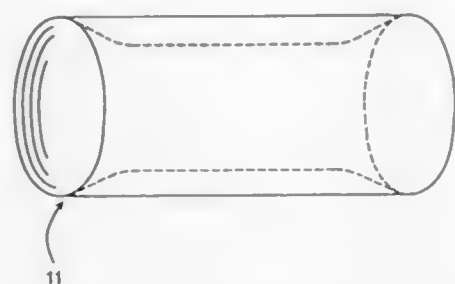
Int. Cl.⁶ A61F 13/00

U.S. Cl. 424—443

10 Claims

1. A method of making a self-expandable resorbable vascular wound dressing for repairing a blood vessel comprising:

- forming an aqueous dispersion containing type I collagen;
- coacervating the collagen with a coacervating agent to form coacervated collagen fibers;
- placing the coacervated collagen fibers into a coaxial cylindrical mold;



- d) freeze drying the fibers in the mold to form a dried collagen matrix conduit;
 e) spraying the freeze dried collagen matrix conduit with water mist;
 f) compressing the water mist treated collagen matrix conduit;
 g) compressing the ends of the collagen matrix conduit to form an inwardly converging tapered inner diameter; and then
 h) crosslinking the compressed collagen matrix conduit with a crosslinking agent.

5,512,292

TRANSDERMAL CONTRACEPTIVE FORMULATIONS METHODS AND DEVICES

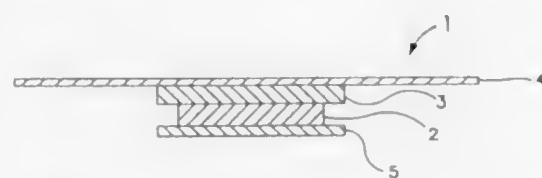
Robert M. Gale; Diane E. Nedberge, both of Los Altos, and Liuda E. Atkinson, Portola Valley, all of Calif., assignors to ALZA Corporation, Palo Alto, Calif.

Continuation-in-part of Ser. No. 994,055, Dec. 17, 1992, Pat. No. 5,376,377, which is a continuation of Ser. No. 873,515, Apr. 20, 1992, abandoned, which is a continuation of Ser. No. 681,259, Apr. 8, 1991, abandoned, which is a continuation-in-part of Ser. No. 605,581, Oct. 29, 1990, abandoned. This application Dec. 21, 1994, Ser. No. 361,356

Int. Cl.⁶ A61F 13/02

U.S. Cl. 424—448

31 Claims



I. A method for the transdermal coadministration of an estrogen and gestodene through the skin from a drug formulation comprised of ethinyl estradiol and gestodene, which method comprises:

- (a) placing a transdermal delivery device on the skin of a person, the device comprising:
 (i) a reservoir comprising ethinyl estradiol, gestodene and a monoglyceride skin permeation enhancer,
 (ii) a backing on the skin-distal surface of the reservoir, and
 (iii) means for maintaining the reservoir in ethinyl estradiol-gestodene-and monoglyceride-transmitting relation with the skin,

whereby ethinyl estradiol and gestodene are coadministered through an area of skin at contraceptive effective rates, and said monoglyceride permeation enhancer is simultaneously coadministered to the area of skin at rates which are sufficient to substantially increase the permeability of the area to at least one of said ethinyl estradiol and gestodene.

5,512,293

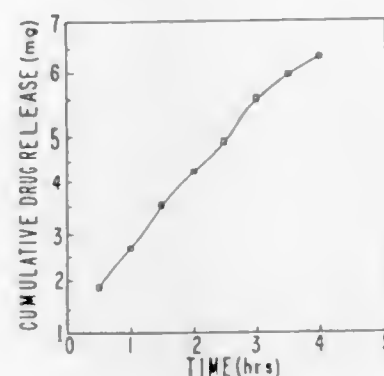
ORAL SUSTAINED RELEASE DRUG DELIVERY DEVICE
 Felix A. Landrau, San Jose; Patricia S. Campbell, Palo Alto; Arthur W. Hall, Alviso, and Juan M. E. Harrison, Mountain View, all of Calif., assignors to ALZA Corporation, Palo Alto, Calif.

Continuation of Ser. No. 919,003, Jul. 23, 1992, abandoned. This application Dec. 9, 1993, Ser. No. 164,181

Int. Cl.⁶ A61L 15/24; A61K 9/70; 47/32

U.S. Cl. 424—449

25 Claims



1. A sustained release delivery device for administering beneficial agent continuously to the oral cavity of an animal for 0.5 to 12 hours at a controlled rate, said device comprising:

- (a) a size and shape for comfortably retaining the device in the oral cavity for 0.5 to 12 hours; and
 (b) a matrix consisting essentially of about 0.1% to about 20% by weight beneficial agent, about 40% to about 95% by weight ethylene vinyl acetate copolymer having a vinyl acetate content of about 4% to about 80% and about 1% to about 60% by weight polyvinyl pyrrolidone.

5,512,294

TARGETED POLYMERIZED LIPOSOME CONTRAST AGENTS

King C. Li, 21 Ryan Ct., Stanford, Calif. 94305; Mark D. Bednarski, 816 Amber La., Los Altos, Calif. 94024; Richard W. Storrs, 2755 Rose Bud Ct., Union City, Calif. 94587; Henry Y. Li, 3350 W. Sunnyside Ave., Visalia, Calif. 93277; Francois D. Trooper, 1851 Magellan Dr., Oakland, Calif. 94611; Curtis K. H. Song, 548 E. Maude Ave., Sunnyvale, Calif. 94086; Dorothy A. Sipkins, 933 Addison St., Palo Alto, Calif. 94301, and Jeremy K. Kuniyoshi, 22344 Carta Blanca St., Cupertino, Calif. 95014

Filed Aug. 5, 1994, Ser. No. 286,555

Int. Cl.⁶ A61K 9/127

U.S. Cl. 424—450

14 Claims

1. A polymerized liposome image contrast agent composition consisting essentially of: liposome forming lipids, said liposome forming lipids having active hydrophilic head groups selected from the group consisting of diethylenetriamine pentaacetic acid, ethylenedinitrile tetraacetic acid, tetraazacyclododecane 1,4,7,10-tetraacetic acid, and cyclohexane-1,2-diamino-N,N'-diacetate, said active hydrophilic head groups having functional surface groups chelated with an image contrast enhancement agent; said liposome forming lipids having hydrophobic tail groups polymerized with a hydrophobic tail group of an adjacent said liposome forming lipid through a functional group selected from the group consisting of diacetylene, olefin, acetylene nitrile, styrene, ester, thiol, amide, α , β unsaturated ketone, and α , β unsaturated aldehyde; said hydrophilic head groups and said hydrophobic tail groups linked to said liposome forming lipid by a variable length linker portion selected from the group consisting of variable length polyethylene glycol, polypropylene glycol and polyglycine.



5,512,295

SYNTHETIC LIPOSOMES FOR ENHANCED UPTAKE AND DELIVERY

Arthur Kornberg, Portola Valley, and Celina Castuma, Palo Alto, both of Calif., assignors to The Board of Trustees of the Leland Stanford Junior University, Stanford, Calif.

Filed Nov. 10, 1994, Ser. No. 337,632

Int. Cl.⁶ A61K 9/127

U.S. Cl. 424—450

12 Claims

1. A liposome comprising a poly- β -hydroxybutyrate calcium polyphosphate complex in the membrane of lamellar forming phospholipids.

5,512,296

METHODS FOR INHIBITING NEURONAL DAMAGE

George J. Cullinan, Trafalga, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

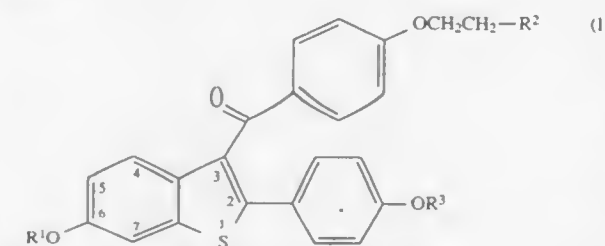
Filed Aug. 22, 1994, Ser. No. 293,852

Int. Cl.⁶ A61K 9/20; 9/48

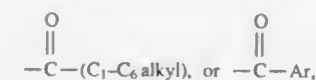
U.S. Cl. 424—451

4 Claims

1. A method of inhibiting central nervous system neuronal damage due to hypoglycemia comprising administering to a human in need thereof an effective amount of a compound having the formula



wherein R¹ and R² are independently hydrogen, —CH₃,



wherein Ar is optionally substituted phenyl;

R² is selected from the group consisting of pyrrolidine, hexamethylenimine, and piperidine; or a pharmaceutically acceptable salt of solvate thereof.

5,512,297

SUSTAINED RELEASE HETERODISPERSE HYDROGEL SYSTEMS FOR INSOLUBLE DRUGS

Anand R. Baichwal, Wappingers Falls, N.Y., assignor to Edward Mendell Co., Inc., Patterson, N.Y.

Division of Ser. No. 118,924, Sep. 9, 1993, Pat. No. 5,455,046.

This application May 22, 1995, Ser. No. 447,235

Int. Cl.⁶ A61K 9/48

U.S. Cl. 424—451

16 Claims

1. A method of preparing a oral extended release formulation of a medicament having poor solubility in water, comprising:

preparing a sustained release excipient comprising from about 10 to about 99 percent by weight of a gelling agent comprising a heteropolysaccharide gum and a homopolysaccharide gum capable of cross-linking said heteropolysaccharide gum when exposed to an environmental fluid, the ratio of said heteropolysaccharide gum to said homopolysaccharide gum being from about 1:3 to about 3:1, from about 1 to about 20 percent by weight of a cationic crosslinking agent capable of crosslinking with said gelling agent to increase the gel strength when exposed to an environmental fluid, and from about 0 to about 89 percent by weight of an inert pharmaceutical diluent; and

adding an effective amount of a medicament having a solubility of less than about 10 g/l to render a desired therapeutic effect, such that a final product is obtained having a ratio of said medicament to said gelling agent from about 1:3 to about 1:8, such that a gel matrix is created when said formulation is exposed to environmental fluid and said formulation provides therapeutically effective blood levels of said medicament for at least 12 hours.

5,512,298

CYTARABINE OCFOSFATE HARD CAPSULE

Minoru Aoki, Tokyo; Hiroshi Ohtaki, Yono; Nobuharu Fukui, Tokyo; Takashi Terada, Kousoku, and Minoru Nakada, deceased, late of Kitamoto, all of Japan, assignors to Nippon Kayaku Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 24, 1993, Ser. No. 36,509

Claims priority, application Japan, Apr. 3, 1992, 4-109053

Int. Cl.⁶ A61K 9/48; 31/505

U.S. Cl. 424—452

7 Claims

1. A cytarabine ocfosfate hard capsule comprising (1) cytarabine ocfosfate, (2) a high molecular compound functioning as a disintegrator Selected from the group consisting of a hydroxypropyl cellulose having a propylation rate of the hydroxy group in the range of 7% to 16%, sodium carboxymethyl starch, pregelatinized starch and crosslinked polyvinylpyrrolidone; and (3) an alkali.

5,512,299

METHOD OF TREATING ORAL INFLAMMATORY DISEASE

Virgil A. Place, Kawaihae, Hi.; Myriam T. Encarnacion, Hayward, Calif.; Patrick S. L. Wong, Palo Alto, Calif., and Juan M. E. Harrison, Mountain View, Calif., assignors to Alza Corporation, Palo Alto, Calif.

Continuation of Ser. No. 860,478, Mar. 30, 1992, abandoned. This application Jul. 14, 1993, Ser. No. 92,024

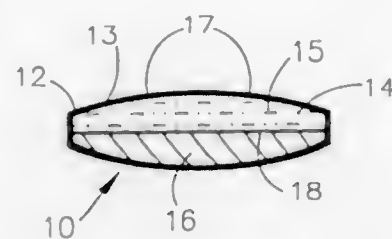
Int. Cl.⁶ A61K 9/20

U.S. Cl. 424—464

22 Claims

1. A method of locally treating oral inflammatory disease comprising:

retaining an osmotic delivery device in a mouth of an animal over an extended delivery period; and
 controlled delivering of beclomethasone dipropionate to the mouth the animal at a constant rate of about 0.01 mg/hour to about 0.5 mg/hour over the extended delivery period, wherein the delivery period is about 1 to about 6 hours.



5,512,300

PREVENTION OF IBUPROFEN FROM FORMING LOW MELTING EUTECTICS WITH OTHER THERAPEUTIC AGENTS IN SOLID DOSAGE FORMS

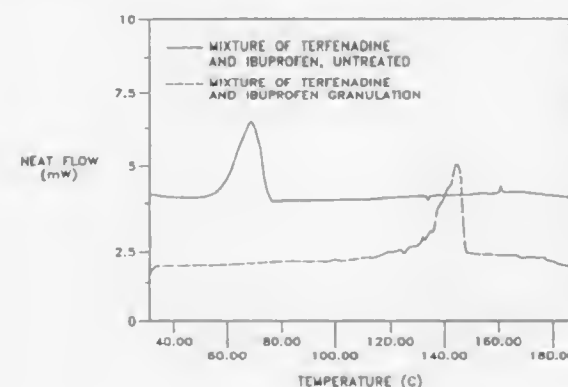
Timothy H. Weng, Randolph, and Michael G. Williams, Flanders, both of N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed Sep. 15, 1992, Ser. No. 945,203

Int. Cl.⁶ A61K 9/10; 9/14; 9/16; 9/20

U.S. Cl. 424—465

22 Claims



1. A method of stabilizing ibuprofen for use in a composition comprising:

- directly heating ibuprofen to form a melt;
- combining said ibuprofen melt with an alkali metal to form an amalgamation; and
- mixing the ibuprofen melt with the alkali metal to form a homogenous paste suitable for inclusion in a composition without disrupting said amalgamation.

5,512,301

COLLAGEN-CONTAINING SPONGES AS DRUG DELIVERY COMPOSITIONS FOR PROTEINS

Suk-Zu Song, Moorpark, and Andrew Morawiecki, Camarillo, both of Calif., assignors to Amgen Inc., Thousand Oaks, Calif.

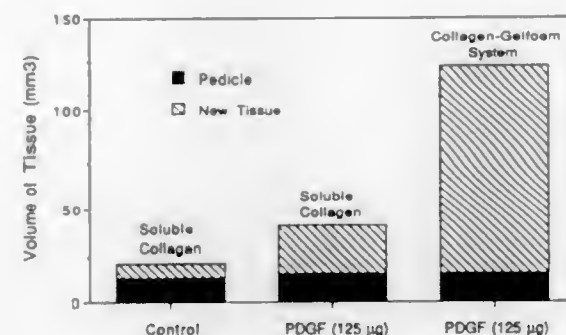
Division of Ser. No. 268,063, Jun. 28, 1994, Pat. No. 5,399,361, which is a continuation of Ser. No. 877,561, May 1, 1992, abandoned. This application Nov. 30, 1994, Ser. No. 348,276

Int. Cl.⁶ A61K 9/14

U.S. Cl. 424—484

3 Claims

1. A collagen-containing sponge comprising an absorbable crosslinked gelatin sponge, soluble collagen, and a therapeutically active amount of PDGF.



5,512,302

PHARMACEUTICAL PROCESS USING STARCH

Graham J. Atkin; Peter Drew, and John L. Turner, all of Nottinghamshire, United Kingdom, assignors to The Boots Company PLC, United Kingdom

PCT No. PCT/EP92/01953, § 371 Date Mar. 4, 1994, § 102(c) Date Mar. 4, 1994, PCT Pub. No. WO93/04676, PCT Pub. Date Mar. 18, 1993

PCT Filed Aug. 25, 1992, Ser. No. 204,191

Claims priority, application United Kingdom, Sep. 6, 1991, 9119052

Int. Cl.⁶ A61K 9/14

U.S. Cl. 424—489

28 Claims

1. A process for the preparation of a solid pharmaceutical composition in the form of agglomerates having a particle size in the range 50 to 2000 µm and a surface area in the range 0.05–0.8 m²g⁻¹ and comprising 70–97% by weight of 2-(4-isobutylphenyl)propionic acid or a pharmaceutically acceptable salt thereof and 3–30% by weight of a starch, said process comprising the steps of

- forming an emulsion comprising 1) 70–97% by weight of 2-(4-isobutylphenyl)propionic acid or a salt thereof 2) a solvent system 3) 3–30% by weight of the starch 4) water and optionally 5) a surfactant
- crystallizing to produce a suspension comprising crystals of 2-(4-isobutylphenyl)propionic acid or the salt thereof in intimate contact with the starch
- agitating said suspension to form agglomerates comprising an evenly distributed mixture of 2-(4-isobutylphenyl)propionic acid or a salt thereof and the starch
- collecting said agglomerates and optionally
- drying said agglomerates.

5,512,303

INJECTABLE PHARMACEUTICAL COMPOSITION

Josue Garza Flores; Laura P. Laisea Soto, both of Mexico City, Mexico; Jose Guillen Pichardo, Sto Domingo, Dominican Rep., and Juan Angeles Uribe, Mexico City, Mexico, assignors to Aplicaciones Farmaceuticas S.A. de C.V., Mexico City, Mexico

Division of Ser. No. 714,583, Jun. 13, 1991, Pat. No. 5,360,616. This application May 17, 1994, Ser. No. 243,823

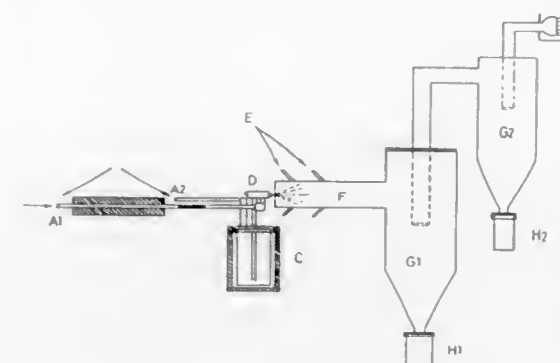
Claims priority, application France, Jun. 14, 1990, 90 07416

Int. Cl.⁶ A61K 9/14; 9/16

U.S. Cl. 424—489

8 Claims

1. Solid, non-porous microspheres having a diameter in the range of from 1–300 µm, wherein said microspheres consist essentially of an injectable analgesic having a melting temperature above 60° C. and thermostable above its melting point and wherein said microspheres are obtained by spraying said analgesic in the melted state to form droplets and rapidly freezing said droplets.



5,512,306

SMOKING SUBSTITUTE

Thommy Carlsson, Helsingborg, and Sven B. Andersson, Ödåkra, both of Sweden, assignors to Pharmacia AB, Sweden

Continuation of Ser. No. 862,533, Jun. 19, 1992. This application Nov. 7, 1994, Ser. No. 335,175

Int. Cl.⁶ A23G 3/30; A24B 15/00

U.S. Cl. 426—3

13 Claims

1. A smoking substitute composition for application to the nose or oral cavity, comprising an inclusion complex of nicotine and a cyclized polysaccharide and an excipient acceptable for pharmaceutical use or as a food additive.

5,512,307

METHOD FOR STABILIZING RICE BRAN AND RICE BRAN PRODUCTS

Neal A. Hammond, Cordova, Tenn., assignor to Bran-Tec, Inc., Baton Rouge, La.

Division of Ser. No. 179,078, Jan. 10, 1994, Pat. No. 5,376,390, which is a division of Ser. No. 975,527, Nov. 12, 1992, Pat. No. 5,292,537. This application Dec. 23, 1994, Ser. No. 362,827

Int. Cl.⁶ C12N 9/96; A23C 9/12

U.S. Cl. 426—44

11 Claims

1. A method for extracting products from a rice bran containing protein and having a naturally occurring lipase enzyme that causes rancidity comprising:

- selecting an antilipase enzyme which inactivates the naturally occurring lipase enzyme in the rice bran;
- mixing the rice bran with water and the antilipase enzyme, said enzyme being in an amount effective to substantially inactivate the lipase enzyme in a period of time that is dependent on the amount of water;
- waiting the period of time for the inactivation to occur whereby a wet stabilized rice bran is produced without denaturing the protein;
- adding water to the stabilized rice bran;
- wet milling the rice bran into a slurry;
- separating the slurry into a solid phase containing insoluble dietary fiber and a liquid phase containing fats, proteins and carbohydrates;
- collecting the solid phase;
- passing the liquid phase through a microfilter with a molecular weight cut-off of about 100,000 or greater;
- collecting the retentate; and
- collecting the permeate.

5,512,305

IN VITRO INHIBITION OF THE HIV VIRUS WITH IONIC TUNGSTONIATE COMPOUNDS

Michael J. Abrams, Creek Rd., R.D. No. 2, Box 31, Glenmore, Pa. 19343; Gerald E. Bossard, 128 Spring Ridge Rd., King of Prussia, Pa. 19406; Craig L. Hill, 2941 Cravey Dr., Atlanta, Ga. 30345; Raymond F. Schinazi, 1524 Regency Walk Dr., Decatur, Ga. 30033, and Brian R. C. Theobald, 15 Lea Road, Sonning Common, Reading RG4 9LH, United Kingdom

PCT No. PCT/GB91/02101, § 371 Date Aug. 26, 1993, § 102(c) Date Aug. 26, 1993, PCT Pub. No. WO92/09292, PCT Pub. Date Jun. 11, 1992

PCT Filed Nov. 27, 1991, Ser. No. 66,007

Claims priority, application United Kingdom, Nov. 28, 1990, 9025847

Int. Cl.⁶ A61K 33/24; C01G 39/00

U.S. Cl. 424—617

6 Claims

1. A method for the in vitro inhibition of the HIV virus, comprising contacting said virus with an ionic tungstionate compound selected from those containing ions of formula (I)



wherein

A is one or more element selected from the group consisting of H, P, Si and Ge;

x is zero or an integer from 1 to 10;

y is an integer from 1 to 40;

a is an integer from 1 to 8;

b is an integer from 15 to 150; and

p is an integer dependent upon the nature and oxidation state of element A.

and their aqua complexes and active fragments.

5,512,308

PREPARATION OF FRUIT AND NUT MIXES WITH IMPROVED TEXTURE AND TEXTURE STABILITY

Martin A. Mishkin, Loveland; Maria D. Villagran, West Chester; Yen C. Hsieh, Cincinnati, and Stephen P. Zimmerman, Wyoming, all of Ohio, assignors to John B. Sanfilippo & Son, Inc., Elk Grove Village, Ill.

Continuation-in-part of Ser. No. 48,540, Apr. 14, 1993, abandoned. This application Jan. 10, 1994, Ser. No. 178,705

Int. Cl.⁶ A23G 3/00

U.S. Cl. 426—93

14 Claims

1. A fruit and nut mix having an improved texture and texture stability, comprising:

- from about 40% to about 85% nuts wherein at least about 20% of the nuts are roasted and at least about 20% of the nuts have substantially crystalline sugar coating and
- from about 15% to about 60% fruit, wherein the fruit and nut mix has an equilibrium water activity of from about 0.35 to about 0.58 and a percent moisture to equilibrium water activity ratio of the fruit of from about 17:1 to about 32:1.

5,512,309

PROCESS FOR TREATING POULTRY CARCASSES TO INCREASE SHELF-LIFE

Fredric G. Bender, McMurry, Pa., and James T. Elfrum, Cranbury, N.J., assignors to Rhone-Poulenc Inc., Princeton, N.J.

Continuation of Ser. No. 171,795, Dec. 22, 1993, abandoned, which is a continuation-in-part of Ser. No. 938,864, Aug. 31, 1992, Pat. No. 5,283,073, which is a continuation-in-part of Ser. No. 712,260, Jun. 7, 1991, Pat. No. 5,143,739, which is a continuation-in-part of Ser. No. 530,131, May 29, 1990, Pat. No. 5,069,922, which is a continuation of Ser. No. 308,357, Feb. 9, 1989, abandoned. This application Jan. 30, 1995, Ser. No. 380,475

The portion of the term of this patent subsequent to Dec. 3, 2008, has been disclaimed.

Int. Cl.⁶ A22C 21/00; A23B 4/027; A23L 1/315

U.S. Cl. 426—332

11 Claims

1. A process for treating poultry carcasses consisting essentially of contacting the poultry carcasses, prior to chilling, with an aqueous treatment solution containing about 4% or greater trialkali metal orthophosphate based on the weight of the solution, said treatment solution having a pH of above 11.5, said treatment being conducted for a period of time effective to reduce the overall aerobic bacterial count without causing organoleptic depreciation of the poultry and thereby increase the shelf-life of the poultry.

5,512,310

PROCESS FOR THE WETTING OF CEREALS WITH A LIQUID

Dieter O. Graef, Neumuehle, D-35633, Lahnu-Dorlar, Germany

PCT No. PCT/EP92/01843, § 371 Date Feb. 17, 1994, § 102(e) Date Feb. 17, 1994, PCT Pub. No. WO93/03843, PCT Pub. Date Mar. 4, 1993

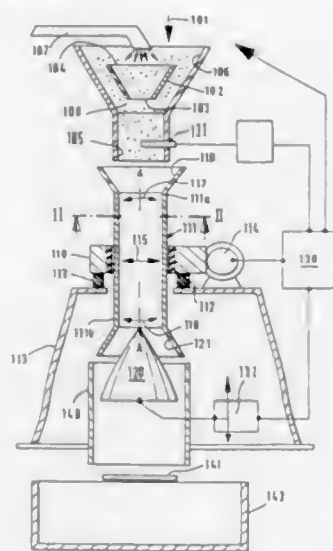
PCT Filed Aug. 12, 1992, Ser. No. 193,010

Claims priority, application Germany, Aug. 17, 1991, 41 27 290.0

Int. Cl.⁶ A23L 1/00

U.S. Cl. 426—507

26 Claims



1. Process for the wetting of cereals with a liquid, comprising the steps of:

mixing the cereals with a liquid, wherein at least a portion of the cereals have husks;
and subsequently exposing the mixture to vibrations in a shaking apparatus sufficient to impart acceleration forces to at least a portion of said cereal/liquid mixture by the contact of at least a portion of the cereal/liquid mixture with a vibrating wall of said apparatus, which acceleration forces provide a substan-

tially uniform wetting of said cereals and a substantially uniform penetration of the liquid from the husk into the inside of the cereal.

5,512,311

STARCH BASED LIPID MIMETIC FOR FOODS

Teresa A. Capitani, Clark; Peter Trzasko, Plainsboro; James P. Zallie, Hillsborough, and William R. Mason, Somerville, all of N.J., assignors to National Starch and Chemical Investment Holding Corporation, Wilmington, Del.

Continuation of Ser. No. 918,344, Jul. 21, 1992, abandoned.

This application Nov. 1, 1994, Ser. No. 333,111

Int. Cl.⁶ A23D 7/00

U.S. Cl. 426—601

30 Claims

1. A method for preparing a food having a reduced lipid content, which comprises the step of replacing at least a portion of the lipid in the food with an aqueous dispersion consisting essentially of water and an effective amount of a non-gelling, pregelatinized starch derivative or a cooked aqueous dispersion consisting essentially of water and an effective amount of a non-gelling, granular starch derivative, said starch derivative having a degree of substitution sufficient to render the starch non-gelling and liquid or flowable when dispersed at 1–50% solids in water at 0°–100° C. and sufficient to impart an oily mouthfeel to the food containing the starch.

5,512,312

RADIANT WALL OVEN AND METHOD OF USING THE SAME

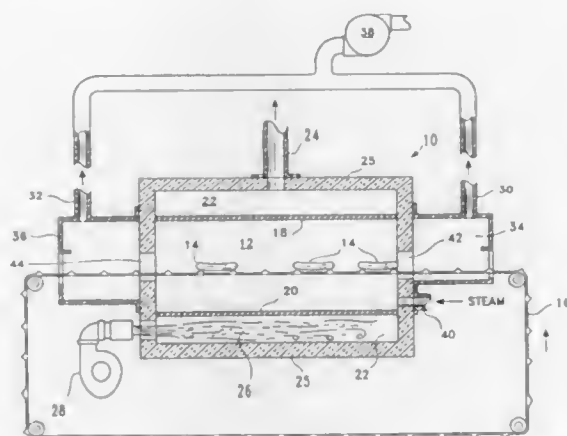
Robert B. Forney, P.O. Box A1, Tiburon, Calif. 94920, and Ernest C. Brown, 19 Ledgewood Dr., Danvers, Mass. 01923

Continuation-in-part of Ser. No. 260,967, Jun. 15, 1994, abandoned. This application Dec. 14, 1994, Ser. No. 356,835

Int. Cl.⁶ A23L 1/00; A47J 27/00; H05B 6/00

U.S. Cl. 426—523

53 Claims



1. A method for cooking a food product, comprising: placing the food product in an oven chamber having heated, radiant walls, with the food product spaced from the walls, maintaining the radiant walls at a temperature at least sufficient to cook the food product;
retaining the food product in the oven chamber and subjected to the heat from the radiant walls for a dwell time sufficient to brown the surfaces of the food product, but not sufficient to burn the exterior surfaces, and
introducing and maintaining an oxygen-deficient atmosphere in the oven chamber, low enough in oxygen that the food product does not flame while in the oven chamber.

**5,512,313
ESTERIFIED ALKOXYLATED POLYOL FAT
SUBSTITUTES HAVING HIGH PRIMARY ESTER
CONTENT**

Charles F. Cooper, Paolo, and Stephen H. Harris, West Chester, both of Pa., assignors to ARCO Chemical Technology, L.P., Greenville, Del., and CPC International Inc., Englewood Cliffs, N.J.

Division of Ser. No. 114,713, Aug. 31, 1993, Pat. No.

5,399,729. This application Dec. 8, 1994, Ser. No. 351,976

Int. Cl.⁶ A23D 7/015

U.S. Cl. 426—611

6 Claims

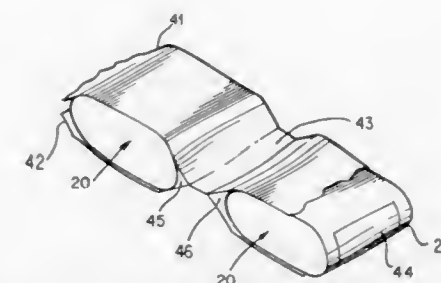
1. An esterified propoxylated glycerin composition suitable for use as a reduced calorie fat substitute wherein

(a) from 3 to 21 oxypropylene units derived from propylene oxide per equivalent of glycerin attached by ether linkages to glycerin are present;

from 2 to 3 C₆–C₂₄ fatty acid acyl groups per equivalent of glycerin attached through ester linkages are present;

(c) at least 40% of the ester linkages are primary ester linkages; and

(d) said esterified propoxylated glycerin composition is characterized by the absence of oxyalkylene units derived from ethylene oxide.



said tumbling also abrading said coatings and any overspray on said coatings.

5,512,316

METHOD OF PROTECTING LADLE LININGS

Julie A. Dody, Easton, Pa., and Charles R. Rumpeltin, Jr., Flanders, N.J., assignors to Minerals Technologies, Inc., New York, N.Y.

Filed Apr. 11, 1994, Ser. No. 226,206

Int. Cl.⁶ B05D 1/02

U.S. Cl. 427—140

15 Claims

1. A method of forming a coated expendable refractory lining having increased resistance to erosive and corrosive materials comprising:

providing an aqueous mixture comprising about 35% magnesite and about 59.6% olivine as refractory materials, about 0.4% bentonite as a plasticizer, and about 5% sodium silicate as a high temperature binder for spraying onto an expendable refractory lining,

supplying said mixture to a spray nozzle which is positionable adjacent said refractory lining, said lining having a temperature of about 55° to about 3000° F., and

spraying said mixture onto said refractory lining to provide a layer of said refractory composition on said refractory lining at a thickness sufficient to provide increased resistance to erosive and corrosive materials.

5,512,317

**DOPED MAGNETIC IRON OXIDE PARTICLES AND
METHOD OF PREPARING THE SAME**

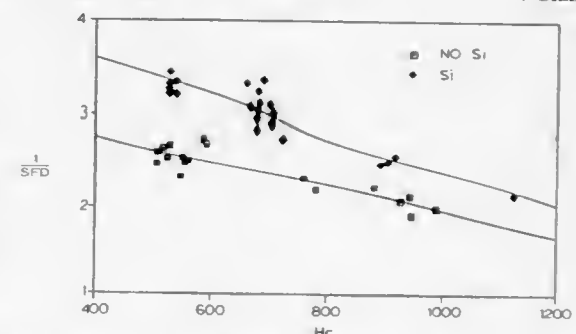
Albena V. Blagev, Woodbury, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 86,090, Jul. 6, 1993, abandoned. This application Jan. 9, 1995, Ser. No. 366,142

Int. Cl.⁶ B05D 7/00

U.S. Cl. 427—215

4 Claims



1. A method of manufacturing a doped magnetic iron oxide particle having the general formula:



comprising the steps of:

(a) forming an aqueous mixture of a magnetic iron oxide and a base;

5,512,315

CAPACITOR MANUFACTURING TECHNIQUE

Geoffrey K. Hooper, Statesville, N.C., assignor to Roederstein Electronics, Inc., Statesville, N.C.

Filed Jun. 1, 1994, Ser. No. 251,907

Int. Cl.⁶ B05D 1/32

U.S. Cl. 427—79

10 Claims

1. In a method of fabricating wound film capacitors, which method comprises the steps of positioning flattened spiral laminates between tapes which mask the flat surfaces but not the rounded surfaces or the end faces of said laminates,

spraying metal onto said end faces in such manner that some of said metal may form overspray on said rounded surfaces, and tumbling the sprayed laminates to abrade surface roughness from said sprayed-on metal, the improvement comprising:

applying a sacrificial coating at least to portions of said rounded surfaces prior to positioning said laminates between said tapes,

- (b) agitating the mixture of step (a) under high shear conditions such that there is turbulent flow with Reynolds number (N_{Re}) of at least 10^3 , impeller discharge rate (Q) of at least 6.8 liters/second and velocity head (H) of at least 450 ergs/gram;
- (c) adding a dopant compound selected from the group consisting of cobalt(II) compounds, iron(II) compounds and mixtures thereof to the agitated mixture of step (b);
- (d) maintaining agitation under the high shear conditions of step (b) and heating the aqueous mixture of step (c) to a sufficient temperature and for a sufficient time for the dopant compound to react with the magnetic iron oxide and form the doped magnetic iron oxide particle; and
- (e) separating the doped magnetic iron oxide particle from the aqueous mixture of step (d).

5,512,318

METHOD FOR PREPARING SURFACES WITH AN ULTRAHIGH-PRESSURE FAN JET

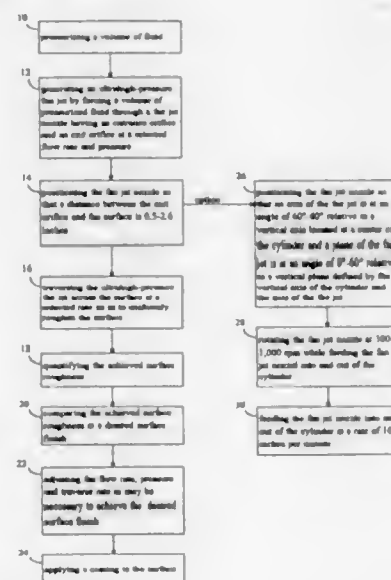
Chidambaram Raghavan, Kent; Steven S. Sisson, Normandy Park, and Richard F. Schmid, King, all of Wash., assignors to Flow International Corporation, Kent, Wash.

Filed Mar. 29, 1995, Ser. No. 412,541

Int. Cl.⁶ B05D 7/22; 3/12

U.S. Cl. 427—230

15 Claims



1. A method for preparing a surface to receive and adhere to a coating comprising:
- generating an ultrahigh-pressure fan jet by forcing a volume of pressurized fluid through a fan jet nozzle having an entrance orifice and an exit orifice, at a pressure of at least 30,000 psi; positioning the fan jet nozzle so that a distance between the exit orifice and the surface is 0.25–2.0 inches; and traversing the ultrahigh-pressure fan jet across the surface so as to uniformly roughen the surface.

5,512,319

POLYURETHANE FOAM COMPOSITE

John H. Cook, Plymouth, and Egils Grinbergs, Farmington Hills, both of Mich., assignors to BASF Corporation, Mt. Olive, N.J.

Filed Aug. 22, 1994, Ser. No. 294,211

Int. Cl.⁶ B05D 3/10; 5/00; B29D 9/00

U.S. Cl. 427—244

21 Claims

1. A method of applying polyurethane foam to fabric comprising:

- (a) coating at least a portion of the fabric with a coating comprising silicone surfactant dissolved in a solvent comprising water; and
- (b) expanding a polyurethane foaming mixture in contact with the portion of said fabric coated in step (a).

5,512,320

VACUUM PROCESSING APPARATUS HAVING IMPROVED THROUGHPUT

Norman L. Turner, Mountain View, and John M. White, Hayward, both of Calif., assignors to Applied Materials, Inc., Santa Clara, Calif.

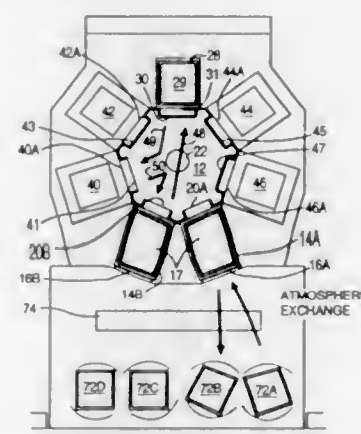
Continuation of Ser. No. 10,684, Jan. 28, 1993, abandoned.

This application Apr. 13, 1994, Ser. No. 227,480

Int. Cl.⁶ C23C 16/00

U.S. Cl. 427—255

18 Claims



1. A vacuum system for single substrate film processing onto glass substrates comprising:
- one or more load lock/cooling chambers having a plurality of shelves for supporting and cooling a plurality of glass substrates therein;
- a heating chamber for heating a plurality of glass substrates to elevated temperatures;
- one or more single substrate processing chambers for deposition of thin films onto said glass substrates; and
- a transfer chamber having access to all of said chambers and having automated means of transferring glass substrates to any of said chambers.
6. A method for depositing thin films onto a glass substrate which comprises the steps in sequence:
- a) loading a plurality of glass substrates into a load lock/cooling chamber and evacuating said chamber;
- b) transferring all of said glass substrates through a connecting vacuum transfer chamber to a chamber adapted for heating said substrates to elevated temperatures;
- c) transferring one of the heated substrates from step b) through the transfer chamber to a single substrate processing chamber and depositing a thin film thereon; and
- d) transferring a substrate from step c) back to the load lock/cooling chamber of step a) and cooling the substrate.

5,512,321

PROCESS FOR COATING ELONGATED MATERIALS WITH MULTIPLE LAYERS

Vladimir A. Paramonov; Anatolij I. Tychinin; Anatolij I. Moroz, all of Moskau, Russian Federation, and Boris L. Birger, Riga, Latvia, assignors to Mannesmann Aktiengesellschaft, Dusseldorf, Germany; I.P. Bardin Central Research Institute of Iron and Steel Industry, Moscow, U.S.S.R., and SKB MGD, Institute of Physics, Riga, Latvia

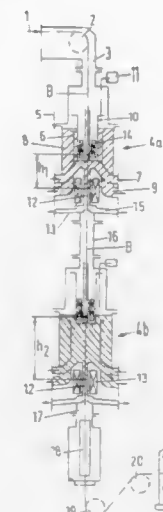
Filed Nov. 18, 1994, Ser. No. 302,765

Claims priority, application Germany, Mar. 13, 1992, 42 08 577.2

Int. Cl.⁶ B05D 1/36

U.S. Cl. 427—405

10 Claims



1. A process for coating elongated metallic material with multiple layers of metallic coating materials, comprising the steps of: providing a plurality of dip baths of molten coating materials arranged above one another in series; linearly guiding the elongated metallic material continuously through the plurality of dip baths in a travel direction defined by a single vertical line; sealing the baths with magnetohydrodynamic seal means to prevent outflow of the molten coating materials in the bath; and, regulating the guiding of the elongated metallic material with respect to temperature and time by at least one of adjusting bath temperatures and bath levels of the molten coating materials.

5,512,322

PROCESS FOR THE PRODUCTION OF MULTICOAT PROTECTIVE AND/OR DECORATIVE COATINGS ON SUBSTRATE SURFACES

Hans-Dieter Hille, Bergisch-Gladbach; Stefan C. Wieditz; Arnold Döbelstein, both of Münster, and Horst Müller, Köln, all of, Germany, assignors to BASF Lacke & Farben Akt., Germany

Continuation of Ser. No. 689,270, Feb. 26, 1992, Pat. No. 5,370,910. This application Nov. 4, 1994, Ser. No. 334,476

Claims priority, application Germany, Jul. 26, 1988, 38 25 278.3

Int. Cl.⁶ B05D 1/36; C08G 18/34; 18/42

U.S. Cl. 427—407.1

41 Claims

1. A process for the production of a multicoat coating on a substrate surface comprising:
- (1) applying an aqueous dispersion of a basecoat composition to a substrate surface wherein said basecoat composition includes
- (a) a polyurethane resin having an acid value from about 5 to about 70 mg of KOH/g, wherein said polyurethane resin is obtained by reacting
- (A) a mixture of a linear polyether diol and a polyester diol, (B) a diisocyanate, and

- (C) a compound containing two groups reactive with isocyanate groups, wherein at least one of said two groups is capable of forming anions, to produce an intermediate (Z) having terminal isocyanate groups, then reacting said intermediate (Z) with

- (D) a polyol containing at least three hydroxyl groups to produce a reaction product that is then transferred into an aqueous phase; and

- (b) a pigment;
- (2) forming a basecoat on said substrate surface;
- (3) applying a topcoat composition to said basecoat; and
- (4) baking said topcoat and basecoat; wherein mixture (A) consists of from about 10 to about 90 mol % of a linear polyether diol (A1) having a number average molecular weight from about 400 to about 2000 and from about 90 to about 10 mol % of a polyester diol (A2) having a number average molecular weight from about 400 to about 2000, wherein the sum of (A1) and (A2) is 100 mol %, and wherein the polyester diol (A2) is obtained from
- (a) a diol and
- (b) an acid wherein from about 60 to about 100 weight % of said acid is a dimeric fatty acid or a cycloaliphatic dicarboxylic acid having more than 18 carbon atoms per molecule, and from about 0 to about 40 weight % of said acid is a dicarboxylic acid having 2 to 18 carbon atoms in the molecule.

wherein the amounts of components (A), (B) and (C) are such that the equivalent ratio of the isocyanate groups to the total of the OH groups of components (A1) and (A2) of mixture (A) and the reactive groups of component (C) is from about 2:1 to about 1.05:1, and wherein the amount of component (D) is such that the equivalent ratio of the OH groups of component (D) to the terminal isocyanate groups of intermediate (Z) is from about 0.5:1 to about 4:1.

5,512,323

WOOD PRETREATMENT FOR WATER-BASED FINISHING SCHEDULES

Bobby E. Beane, Sophia, and Eugen Safta, Winston-Salem, both of N.C., assignors to Lilly Industries, Inc., Indianapolis, Ind.

Filed Jun. 10, 1994, Ser. No. 258,534

Int. Cl.⁶ B05D 1/36; 1/38; 7/06

U.S. Cl. 427—408

12 Claims

1. In a wood finishing process comprising application of a stain to the surface of a wood substrate and subsequent application of at least one water-based film-forming coating composition comprising a vinyl addition polymer, the improvement comprising wetting said surface with a solution of an aluminum salt prior to applying the water-based film-forming coating composition wherein the solution of aluminum salt is of a concentration and pH sufficient to reduce grain raising, relative to that of wood finished without said solution, upon subsequent contact of the wood with the water-based film forming coating composition.

5,512,324

METAL SUBSTRATE WITH INSULATIVE COATING THEREON AND METHOD OF MAKING THE SAME

Naocy J. Paulus, Grand Blanc; Terrence B. Boyer, Davison, and Raymond E. Bedford, Burton, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

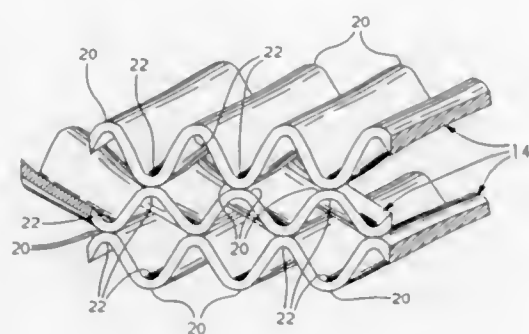
Filed Nov. 14, 1994, Ser. No. 337,708

Int. Cl.⁶ B05D 1/38; 1/02; 3/02

U.S. Cl. 427—409

5 Claims

1. A method comprising:
- a first step of spraying an insulative coating onto a corrugated metal substrate at a distance ranging from about 6 to about 12 inches to provide a first layer amounting to about 10 to 20 weight percent of the total insulative coating to be applied so that build up of the insulative coating does not occur in the



valley of the corrugated metal substrate and cracking of the insulative coating, and thereafter a second step of spraying said insulative coating onto the first layer at a distance ranging from about 3 to 6 inches, wherein said insulative coating comprises Y-alumina having at least 10 percent by weight particles larger than 20 micrometers, about 0.01 to about 0.03 weight percent of a catalyst, and about 5 to about 10 weight percent pseudo-boehmite gel;

drying said insulative coating;
applying an overcoat of polyvinyl alcohol in water to the insulative coating and drying the overcoat; and
stacking a plurality of folded metal substrates, each substrate having the insulative coating and overcoat thereon, on top of each other to build a monolith for a catalytic converter.

5,512,325

NON-SLUMPING, PUMPABLE CASTABLE AND METHOD OF APPLYING THE SAME

Mark C. Langenohl, Pittsburgh, and Gustav O. Hughes, Wilkensburg, both of Pa., assignors to Indresco Inc., Dallas, Tex. Division of Ser. No. 330,759, Oct. 28, 1994. This application Apr. 12, 1995, Ser. No. 420,912
Int. Cl.⁶ B05D 1/02

U.S. Cl. 427—421 7 Claims
1. A method of applying a low moisture, low cement refractory castable to a refractory vessel with a swing valve pump and associated spray nozzle, without the use of forms comprising preparing a tempered pumpable first component consisting essentially of a refractory aggregate, a calcium-aluminate cement, a solid flow aid, and a deflocculating agent and water in the lowest amounts sufficient to achieve a consistency sufficient to enable the composition to be pumped and applied through said swing valve pump and spray nozzle, adding a flocculating agent to said composition just prior to its application through said spray nozzle in an amount sufficient to give the castable a dried bulk density of at least about 120 pcf, and then applying the composition to the refractory vessel without the use of forms.

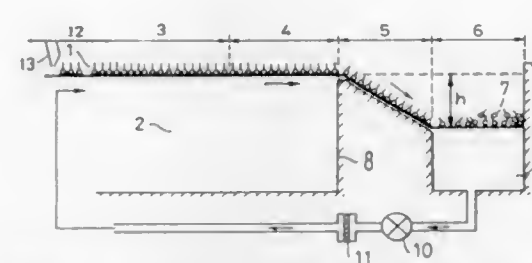
5,512,326

METHOD AND APPARATUS FOR FORMING MONOMOLECULAR FILM OR BUILT-UP MONOMOLECULAR FILM

Otto Albrecht, Aitugl, and Hiroshi Matsuda, Isehara, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan Continuation of Ser. No. 891,207, Jun. 1, 1992, abandoned. This application Feb. 23, 1994, Ser. No. 200,317

Claims priority, application Japan, Jun. 12, 1991, 3-140115
Int. Cl.⁶ B05D 1/20; B05C 3/00

U.S. Cl. 427—430.1 5 Claims
1. In the method for forming a monomolecular film or a built-up monomolecular film by spreading a monomolecular-film-forming material onto a water surface, compressing said material on the water surface, thereby transforming said material into a monomo-



lecular film, and transferring said monomolecular film on the water surface onto a substrate, the improvement which comprises the steps of:

- providing a main tank which has a spread region for spreading said monomolecular-film-forming material, a transfer region for transferring said monomolecular film onto said substrate and a flow-rate-adjusting region for compressing said material;
- providing a storage tank for storing a remainder of said monomolecular film which has not been transferred to said substrate;
- storing water in said main tank and said storage tank wherein the water level of said main tank is higher than the water level of said storage tank;
- moving said monomolecular-film-forming material spread on the water surface from said spread region to said transfer region, and from said transfer region to said flow-rate-adjusting region by generating water or air flow to the water surface;
- transferring said monomolecular film onto said substrate by dipping said substrate into water in said transfer region;
- moving said a remainder of said monomolecular film which has not been transferred to said substrate to said storage tank;
- removing said remainder of said film in said storage region; and
- circulating said water in said storage tank through a return passage to said main tank.

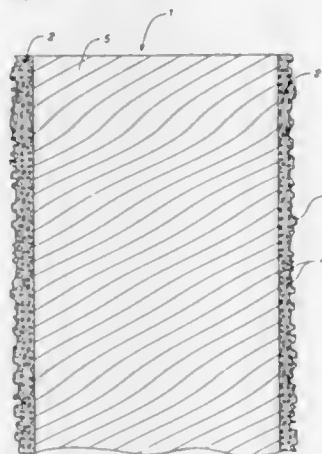
5,512,327

PROCEDURE FOR PRODUCING A HIGHLY POROUS CATALYST LAYER CONSISTING OF A PALLADIUM OR PLATINUM ALLOY

Amyla K. Chakraborty, Erfstadt, Germany, assignor to Gesellschaft für Anlagen-und Reaktorsicherheit (GRS) mbH, Cologne, Germany
Filed Nov. 10, 1994, Ser. No. 337,058
Claims priority, application European Pat. Off., Nov. 11, 1993, 93118283
Int. Cl.⁶ B05D 1/08

U.S. Cl. 427—455

16 Claims



1. A method for producing a catalyst layer on a carrier body, said catalyst layer comprising a metal alloy of a primary metal and one

5,512,329

SUBSTRATE SURFACE PREPARATION

Patrick E. Guire; Shawn G. Dunkirk, both of Eden Prairie; Mark W. Josephson, Richfield, and Melvin J. Swanson, Carver, all of Minn., assignors to BSI Corporation, Eden Prairie, Minn.

Continuation of Ser. No. 816,771, Jan. 2, 1992, abandoned, which is a continuation of Ser. No. 675,604, Mar. 25, 1991, abandoned, which is a division of Ser. No. 447,802, Dec. 8, 1989, Pat. No. 5,002,582, which is a division of Ser. No. 223,149, Jul. 22, 1988, abandoned, which is a continuation-in-part of Ser. No. 138,226, Dec. 24, 1987, abandoned, which is a continuation-in-part of Ser. No. 920,567, Oct. 17, 1986, abandoned, and Ser. No. 108,765, Oct. 15, 1987, Pat. No. 4,973,493, which is a continuation-in-part of Ser. No. 428,074, Sep. 29, 1982, Pat. No. 4,722,906. This application Dec. 27, 1993, Ser. No. 173,914
Int. Cl.⁶ C08F 2/48; B05D 3/06; 1/38

U.S. Cl. 427—508

22 Claims

1. A method of providing a substrate having a solid surface, the method comprising the steps of:

- providing a polymer;
- contacting the substrate surface with a composition comprising a plurality of molecules of the polymer, each having covalently bonded to it at least one latent reactive group capable of active specie generation in response to application of an external stimulus, under conditions which enable the polymer molecules to orient spatially so as to enable the latent reactive groups to come into covalent bonding proximity with the substrate surface; and
- thereafter activating the latent reactive groups by application of the external stimulus to covalently bond the polymer molecules to the substrate surface.

5,512,328

METHOD FOR FORMING A PATTERN AND FORMING A THIN FILM USED IN PATTERN FORMATION

Toshiyuki Yoshimura, Higashi-murayama; Naoko Miura, Kokubunji; Shinji Okazaki, Urawa; Minoru Toriumi, and Hiroshi Shiraishi, both of Hachiohji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 28, 1993, Ser. No. 98,046

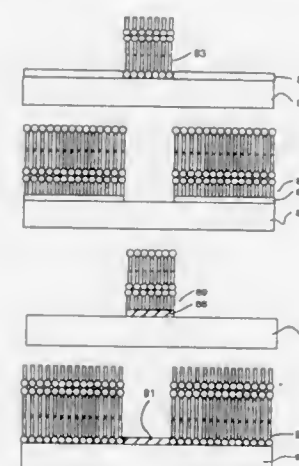
Claims priority, application Japan, Aug. 7, 1992, 4-211214;

Aug. 19, 1992, 4-219996

Int. Cl.⁶ B05D 3/06; 1/18; C08J 7/04; 7/18

U.S. Cl. 427—498

22 Claims



1. A pattern formation method comprising the steps of:
forming a pattern of a thin film of a seed material coated on a surface of a substrate, wherein a surface hydrophilicity characteristic of said seed material differs from a hydrophilicity characteristic of said substrate surface; depositing an oriented material film on one of said seed material or said substrate surface; and
wherein said oriented material film is a Langmuir Blodgett film of a cresol novolak resin having a proportion of p-cresol novolak to m-cresol novolak of at least 20 wt. %.

5,512,330

PARYLENE PRECURSORS FOR DIAMOND-LIKE CARBON COATINGS

Geoffrey Dearnaley, 19826 Wittenburg, San Antonio, Tex. 78256

Filed Oct. 4, 1994, Ser. No. 317,896

Int. Cl.⁶ C23C 14/12; B05D 3/06

U.S. Cl. 427—525

22 Claims

1. A method for producing a diamond-like carbon coating on a cleaned workpiece comprising:

- evacuating a vaporizing chamber to a pressure of at least about 10^{-6} torr;
- vaporizing a solid paraxylene precursor in said chamber at a temperature sufficient to vaporize but insufficient to decompose said precursor;
- pyrolyzing said paraxylene precursor for a time and at a temperature sufficient to disassociate said precursor into substantially monomeric paraxylene;
- condensing said substantially monomeric paraxylene onto the cleaned workpiece in a chamber evacuated to about 10^{-4} to 10^{-5} torr, whereby said substantially monomeric paraxylene polymerizes to form a parylene film;
- bombarding said parylene film with ions at energies between about 500 eV to 100 keV to form the diamond-like carbon coating on said workpiece.

5,512,331

ETCHING METHOD FOR INDIUM SERIES COMPOUND SEMICONDUCTORS

Shinichi Miyakuni, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 1, 1994, Ser. No. 283,819

Claims priority, application Japan, Aug. 31, 1993, 5-215455

Int. Cl.⁶ B44C 1/22

U.S. Cl. 427—528

8 Claims

1. A method for etching an In compound semiconductor comprising etching a compound semiconductor including In in a plasma in a flowing mixture of a halogen and nitrogen in which the halogen flows at a lower rate than the nitrogen and gas pressure is below 0.5 mTorr.

5,512,332

PROCESS OF MAKING RESUSPENDABLE COATED MAGNETIC PARTICLES

Paul A. Liberti, Hurlingham Valley, and Steven P. Piccoli, Morrisville, both of Pa., assignors to Immunivest Corporation, Wilmington, Del.

Continuation-in-part of Ser. No. 397,106, Aug. 22, 1989, which is a continuation-in-part of Ser. No. 245,351, Sep. 16, 1988, Pat. No. 5,449,404, which is a continuation of Ser. No. 906,521, Sep. 16, 1986, Pat. No. 4,795,698, which is a

continuation-in-part of Ser. No. 784,863, Oct. 4, 1985, abandoned. This application Apr. 22, 1994, Ser. No. 231,379

Int. Cl.⁶ H01F 1/00

U.S. Cl. 427—550

22 Claims

1. A process for making resuspendable, coated magnetic particles by direct application of a coating material to a particulate magnetic substrate, said process comprising:

- dividing at least one particle of a magnetic starting material into a plurality of aggregable, smaller sized particles, thereby to provide an uncoated particulate magnetic substrate;
- forming a suspension of said uncoated particulate magnetic substance in a liquid medium; and
- contacting said uncoated, suspended particulate magnetic substance with said coating material, before substantial particulate magnetic substrate aggregation occurs, for a time sufficient for said coating material to adhere to said substrate, thereby forming said resuspendable, coated magnetic particles.

5,512,333

METHOD OF MAKING AND USING A DEGRADABLE PACKAGE FOR CONTAINMENT OF LIQUIDS

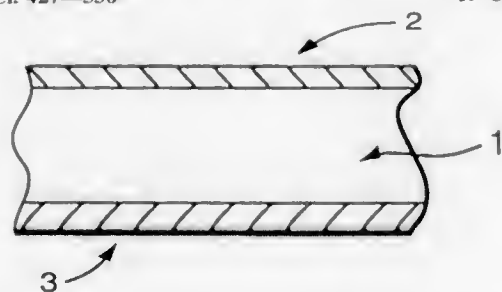
Stuart P. Siskind, Wayne, Pa., assignor to ICD Industries, Wayne, Pa.

Continuation-in-part of Ser. No. 962,100, Oct. 16, 1992, abandoned, and a continuation-in-part of Ser. No. 154,456, Dec. 17, 1993, Pat. No. 5,458,933. This application Apr. 6, 1994, Ser. No. 224,002

Int. Cl.⁶ B05D 3/00

U.S. Cl. 427—536

19 Claims



1. A method of making a compostable package for containing a liquid or a liquid containing material comprising:

providing a base of paperboard having an external surface and an internal surface;
treating at least one of said internal and external surfaces with corona discharge or a flame;

coating the internal surface of said paperboard with a biodegradable polymer capable of preventing leaks and coating the external surface with a biodegradable polymer wherein at least one of said internal and external polymer coatings contains a photodegradable polyolefin, wherein said base of paperboard and said coatings compost at substantially the same rate to carbon dioxide, water, and biomass and wherein at least said treated internal or external surface and said coating define a water insensitive inter-facial bond free of adhesive; and

forming said paperboard into a container wherein said internal surface forms the interior of the container and said external surface forms the exterior of the container.

5,512,334

METHOD FOR THE PRODUCTION OF A BOTTOM RESIST

Rainer Leuschner, Erlangen; Recai Sezi, Roettenbach, and Michael Sehd, Hessdorf-Hannberg, all of, Germany, assignors to Siemens Aktiengesellschaft, München, Germany

Division of Ser. No. 945,766, Sep. 16, 1992, Pat. No. 5,368,901.

This application Sep. 6, 1994, Ser. No. 301,285

Claims priority, application Germany, Sep. 27, 1991, 41 32 313.0

Int. Cl.⁶ B05D 3/06

U.S. Cl. 427—558

14 Claims

1. A method for the production of a resist structure by means of a two-layer O₂/Reactive Ion Etching system, comprising the steps of: applying a varnish layer of a base polymer containing an aromatic group, a cross-linking agent and a strong acid-forming agent to a substrate; flood-exposing the varnish layer with deep UV light so as to release a strong acid from the strong acid-forming agent in a surface region of the layer; thermally curing the layer at a temperature of greater than 100° C. to obtain a bottom resist; applying a silicon-containing or silylizable top resist to the bottom resist; exposing the top resist with deep UV light or near UV light using a mask and developing the top resist to obtain a pattern; and transferring the pattern from the top resist into the bottom resist by using a reactive ion etching oxygen plasma.

5,512,335

FLUID TREATMENT DEVICE WITH VIBRATIONAL ENERGY MEANS

Thomas L. Miller, Vestal; Richard F. Nelson, Apalachin, and John K. Ostrom, Binghamton, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 27, 1994, Ser. No. 267,060

Int. Cl.⁶ B06B 1/00

U.S. Cl. 427—600

14 Claims

1. A method of treating a substrate with fluid, said method comprising:

- providing a housing defining a chamber therein;
- providing fluid to said chamber of said housing at an established rate using fluid injection such that said fluid will move through said chamber and be maintained at an established level within said chamber, said fluid being injected within said chamber on opposite sides of a substrate;
- moving said substrate through said chamber of said housing at an established rate such that said substrate will be exposed to said fluid moving within said chamber for an established time period; and
- providing vibrational energy to said fluid moving within said chamber, said vibrational energy being provided by partly submerging means for providing said vibrational energy within said fluid and activating said means while so partly

5,512,337

PACKAGES WITH CONTROLLED EASY OPEN FEATURES

Richard Littmann, Neenah; Ulrich Weingartner, Menasha; Thomas S. Wildenberg, Kimberly; Jerry Jesse, Neenah, and Deane E. Galloway, Appleton, all of Wis., assignors to American National Can Company, Chicago, Ill.

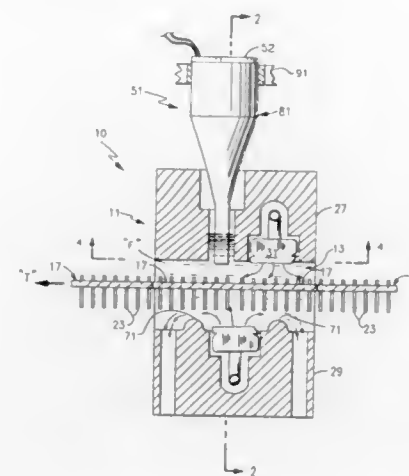
Continuation of Ser. No. 504,175, Apr. 4, 1990, abandoned.

This application Jan. 24, 1994, Ser. No. 190,302

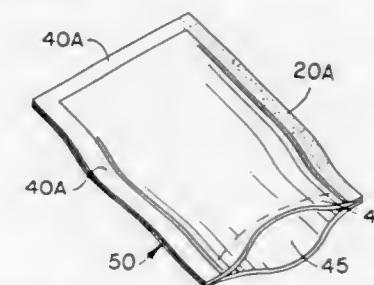
Int. Cl.⁶ B65D 17/28

U.S. Cl. 428—35.4

16 Claims



submerged and while maintaining said means for providing said vibrational energy in a non-contacting relationship with said housing.



1. A hollow tube for making an easy open airtight tear control pouch comprising a polymeric continuous extrusion laminated, oriented barrier film, said tube having a first end and a second end, an outer surface and an inner surface and roughened circumferential area, or portion of a circumferential area, on at least one of said surfaces on at least one end of the tube, said roughening made either continuously or randomly in either the machine direction or cross machine direction, said area corresponding to at least a full width of a seal when said end is sealed to form a pouch, said polymeric barrier film comprising in order: an outer layer of polyester, a layer comprising polyvinylidene chloride copolymer, a layer of low density polyethylene, a layer of ethylene vinyl acetate having a vinyl acetate content of from about 28% to 35% by weight, a first layer of an ionomer resin and a second layer of an ionomer resin, wherein the second layer of an ionomer resin forms the inner surface in contact with the contents of the pouch.

5,512,336

LIQUID CRYSTAL DISPLAY DEVICE

Motohiro Yamahara, Osaka, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

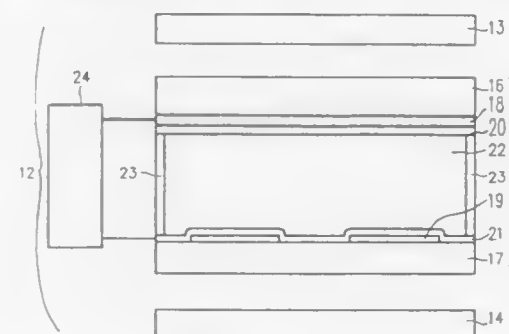
Filed Nov. 18, 1994, Ser. No. 344,709

Claims priority, application Japan, Nov. 25, 1993, 5-295676

Int. Cl.⁶ G02F 1/133

U.S. Cl. 428—1

14 Claims



1. A liquid crystal display device, comprising:
a pair of substrates opposing each other, a plurality of display pixel electrodes being provided in a matrix shape on one of the pair of substrates;
a liquid crystal layer interposed between the pair of substrates; and
an orientation layer for controlling an orientation state of liquid crystal molecules in the liquid crystal layer, the orientation layer being formed on a surface of at least one of the substrates that opposes the liquid crystal layer and in contact with said liquid crystal layer,
wherein the orientation layer is composed essentially of a polymer alloy.

5,512,338

OXYGEN, FLAVOR/ODOR, GREASE/OIL AND MOISTURE BARRIER FILM STRUCTURES

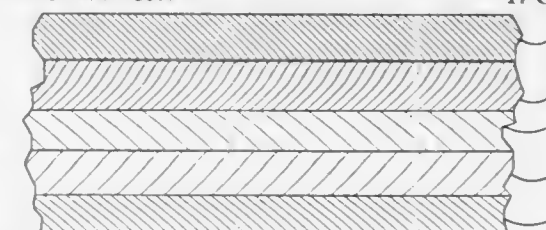
Eber C. Bianchini, Rochester, N.Y.; Anthony R. Knoerzer, Plano, Tex.; Larry A. Parr, Canandaigua, and Leland W. Reid, Palmyra, both of N.Y., assignors to Mobil Oil Corp., Fairfax, Va.

Continuation-in-part of Ser. No. 80,602, Jun. 24, 1993, Pat. No. 5,380,586, which is a continuation of Ser. No. 812,493, Dec. 23, 1991, abandoned. This application Jul. 21, 1994, Ser. No. 278,200

Int. Cl.⁶ B32B 27/00; 27/16; 27/26; 33/00

U.S. Cl. 428—35.4

17 Claims



1. A polymeric film structure which comprises:
(1) a polymeric core having a first treated surface adapted to receive an oxygen barrier and a second treated surface adapted to receive a moisture barrier, wherein said first treated surface and said second treated surface have been treated by a surface treatment selected from the group consisting of flame treatment, plasma treatment, chemical treatment and corona discharge treatment, said polymeric core is selected from the group consisting of oriented polypropylene, polyethylene.

polyethylene terephthalate, nylon and cast polypropylene and said first and second treated surfaces have had applied thereto a primer coating compatible with, respectively, a cross-linked polyvinyl alcohol oxygen barrier coating and a polyvinylidene chloride moisture barrier coating;

(II) a coating of polyvinyl alcohol cross-linked with an aldehyde containing cross-linking agent in the presence of a catalytic amount of sulfuric acid adhered to said first treated surface to provide an oxygen barrier, wherein said aldehyde containing cross-linking agent is selected from the group consisting of urea formaldehyde, melamine formaldehyde, methylated melamine formaldehyde and trimethylol melamine urea formaldehyde; and

(III) a coating of polyvinylidene chloride adhered to said second treated surface of said polymeric core to provide said moisture barrier and to enhance said oxygen barrier, whereby said polymeric film structure has enhanced oxygen, flavor/odor, grease/oil and moisture barrier properties.

14. A polymeric film structure having enhanced oxygen, flavor/odor, grease/oil and moisture barrier properties produced by the following steps:

(i) treating both surfaces of a polymeric core by flame treatment, plasma treatment, chemical treatment or corona discharge treatment;

(ii) coating one treated surface of said polymeric core with a first primer coating adapted to receive an oxygen barrier coating;

(iii) coating the other treated surface of said polymeric core with a second primer coating adapted to receive a moisture barrier coating;

(iv) coating said surface adapted to receive an oxygen coating with an aqueous solution of polyvinyl alcohol, a formaldehyde-containing cross-linking agent selected from the group consisting of urea formaldehyde, melamine formaldehyde, methylated melamine formaldehyde and trimethylol melamine urea formaldehyde and a catalytic amount of sulfuric acid;

(v) cross-linking said polyvinyl alcohol to provide said enhanced oxygen, flavor/odor, grease/oil and moisture barrier; and

(vi) coating said other treated and primed surface of said polymeric core with polyvinylidene chloride moisture barrier coating.

5,512,339

DECOMPOSABLE PACKING MATERIAL

Ralf Dujardin; Rolf Dhein, both of Krefeld, and Martin Wandel, Dormagen, all of Germany, assignors to Bayer AG, Leverkusen, Germany

Continuation of Ser. No. 754,062, Sep. 3, 1991, abandoned.

This application Oct. 22, 1993, Ser. No. 139,869

Claims priority, application Germany, Sep. 15, 1990, 40 29 327.0

Int. Cl.⁶ B29D 22/00; B32B 1/08

U.S. Cl. 428—35.7

16 Claims

1. A biologically degradable film for food packaging consisting essentially of a) an aliphatic polyamide comprising polycaprolactam, a polyamide based on aliphatic dicarboxylic acids and aliphatic diamines wherein each of said aliphatic dicarboxylic acids and aliphatic diamines has 4 to 5 carbon atoms, or copolymers of these two; and b) a linear or slightly branched oligomeric, aliphatic polyester with a molecular weight of from 800 to 4000 g/mol in quantities of from 5 to 25% by weight.

5,512,340

CATALYST AND PROCESS FOR PRODUCING POLYESTER

George R. Goodley, Kinston, N.C., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jun. 8, 1995, Ser. No. 487,767

Int. Cl.⁶ B32B 1/08

U.S. Cl. 428—35.7

11 Claims

1. A process for the production of poly (ethylene terephthalate) polymer which comprises combining a polymerization catalyst formed by combining a cobalt salt that is soluble in ethylene glycol and aluminum compound selected from the group consisting of aluminum chloride and aluminum hydroxychloride in ethylene glycol, where the mole ratio of aluminum to cobalt is 1 to 1 to 16 to 1, with terephthalic acid and ethylene glycol, or low molecular weight poly(ethylene terephthalate) polymer or oligomer, where the concentration of cobalt in the thus formed mixture is in the range of about 10 to 100 parts per million parts of the mixture and polymerizing the mixture.

5,512,341

METAL-POLYMER COMPOSITE INSULATIVE SPACER FOR GLASS MEMBERS AND INSULATIVE WINDOW CONTAINING SAME

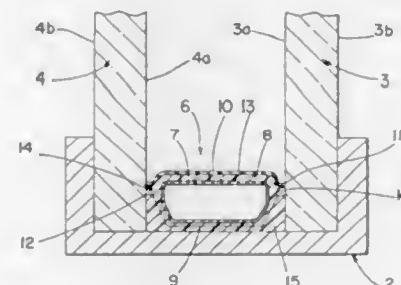
Charles D. Newby, Huxley; Burch E. Zehner, Pataskala; Howard S. Bennett, Jr., Columbus, and Jeffrey R. Ilrandt, Reynoldsburg, all of Ohio, assignors to Crane Plastics Company Limited Partnership, Columbus, Ohio

Continuation-in-part of Ser. No. 5,730, Jan. 19, 1993, which is a continuation-in-part of Ser. No. 870,018, May 18, 1992. This application Nov. 15, 1993, Ser. No. 138,132

Int. Cl.⁶ B32B 7/12

U.S. Cl. 428—35.8

32 Claims



1. A spacer member for use between two glass members, said spacer member comprising a metal-polymer composite, said composite comprising:

(a) a roll-formed metal substrate, said metal substrate having a longitudinal axis, an inner surface, two engagement surfaces and an outer surface, said surfaces substantially enclosing a space, and said inner surface of said metal substrate having an open slit extending substantially parallel to said longitudinal axis and substantially the entire length of said metal substrate; and

(b) a polymer adhered to inner surface and said engagement surfaces of said metal substrate so as to form said metal-polymer composite; whereby said metal substrate substantially resists torsional force about said longitudinal axis.

5,512,342

MULTILAYER PLASTIC PIPE

Stefan Röber; Hans Jadamus, both of Marl; Michael Böer, Oer-Erkenschwick; Roland Feinauer, Marl; Hans-Dieter Herrmann, Marl, and Hans Ries, Marl, all of Germany, assignors to Huels Aktiengesellschaft, Marl, Germany

Filed Jan. 28, 1994, Ser. No. 187,736

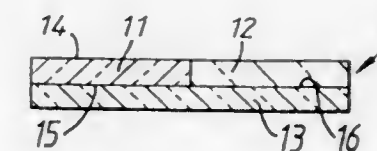
Claims priority, application Germany, Oct. 25, 1993, 43 36 290.7

Int. Cl.⁶ B32B 27/00

U.S. Cl. 428—36.91

20 Claims

1. A multilayer plastic pipe comprising at least:
(I) an outer layer,
(II) an inner layer comprising a moulding composition based on polyvinylidene fluoride, and
(III) an intermediate layer disposed between said inner layer (II) and said outer layer (I) comprising a moulding composition based on a mixture of
(a) polyamide, and
(b) polyglutamide,
wherein the adjacent layers (I) to (III) are each adhesively bonded to one another.



1. A button for forming a segment to be disposed in a recess in multifocal lens, the button comprising a first portion composed of a lead oxide-containing glass, a second portion composed of a glass which contains substantially no lead oxide, the first and second portions being in adjacent contact and forming a face of the button for machining to a desired shape to match the recess in the lens, and a third portion composed of a glass which contains substantially no lead oxide, the first and second glass portions being fused to the third glass portion on a side of the first and second portions remote from the face of the button.

5,512,343

LABEL ASSEMBLY

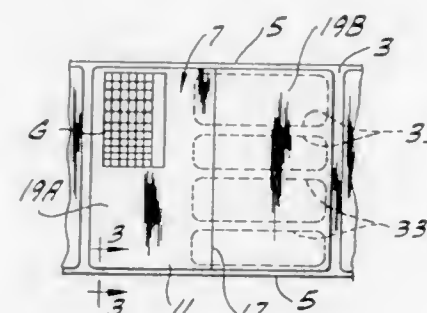
John T. Shaw, Fenton, Mo., assignor to Diagraph Corporation, St. Peters, Mo.

Filed Aug. 1, 1994, Ser. No. 284,093

Int. Cl.⁶ B32B 3/10

U.S. Cl. 428—40

20 Claims



1. A label assembly comprising a carrier of flexible sheet material,

a series of labels on said carrier, each label having a first major region adapted for adhesive securement to a label-receiving surface, a second major region adjoining said first major region but not surrounded by said first major region, a front face facing away from said carrier adapted to receive print, and a rear face facing toward said carrier,

adhesive on the rear face of each label covering substantially the entire rear face of the label, including said first and second major regions, said adhesive holding the label on the carrier and being adapted to remain on the rear face of the label when the label is peeled off the carrier, and

die cuts in the carrier forming a plurality of separate cover pieces substantially covering the rear face of said second major region of each label, said cover pieces being adapted to remain on the label when the label is peeled off the carrier so that the rear face of said second major region is rendered substantially non-adhering by said cover pieces and the rear face of said first major region is adapted for adhesive securement to said label-receiving surface, said cover pieces being spaced apart to provide interconnected areas of said carrier to which the rear face of the label can adhere before the label is peeled off the carrier thereby to increase the tensile strength of the label assembly.

5,512,345

VACUUM INSULATOR CASING AND METHOD OF MAKING VACUUM INSULATOR PANEL

Masato Tsutsumi; Haruhisa Yamasita; Hideo Sampa; Kanako Fujii, and Hiroaki Asakura, all of Osaka, Japan, assignors to Kabushiki Kaisha Toshiba, Kanagawa, Japan

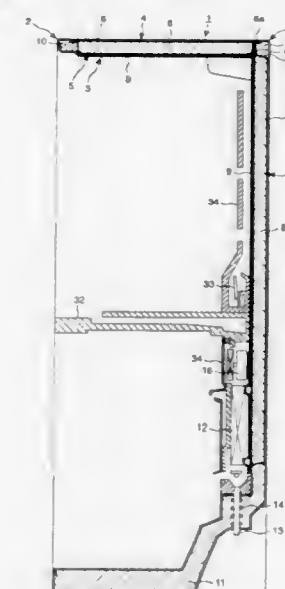
Filed Mar. 28, 1995, Ser. No. 411,876

Claims priority, application Japan, Mar. 28, 1994, 6-057374

Int. Cl.⁶ B32B 1/04

U.S. Cl. 428—69

12 Claims



1. A vacuum insulator casing for thermal insulating comprising: an inner casing including:

at least two planer sections, and
a corner section located between the planer sections;
an outer casing having a shape substantially the same as that of the inner casing, but which is larger, which covers the inner casing so as to form a space therebetween;

- a plurality of vacuum insulator panels each having first and second sides, each panel having:
- a gas tight outer package from which air has been evacuated, and
 - a low thermal conductivity material filled in the package, each vacuum insulator panel being sandwiched between the outer casing and the inner casing so that one side of each panel touches the outer casing and one side of each panel touches the inner casing;
 - a filling insulator material filling any remaining space not occupied by the vacuum insulator panels between the outer and inner casings,
 - wherein the outer casing has an injection port therein located at the corner section thereof for injecting the insulator into the casing, and wherein the insulator is a foamed in place plastic material which is foamed inside of the casing after injection.

5,512,346

INSULATION ASSEMBLY FOR COMPRESSIBLE INSULATION MATERIAL

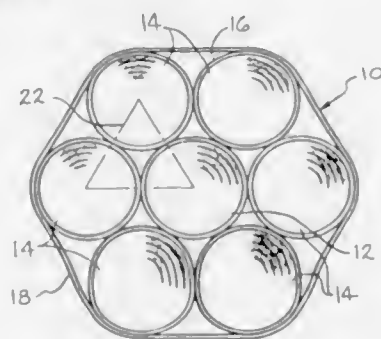
Kenneth M. Johnson, Greer, S.C., assignor to Owens-Corning Fiberglas Technology, Inc., Summit, Ill.

Filed Sep. 21, 1994, Ser. No. 310,179

Int. Cl.⁶ B65D 85/08

U.S. Cl. 428—74

18 Claims



1. An insulation assembly comprising a central roll of compressed, rolled insulation material and six peripheral rolls of compressed, rolled insulation material surrounding the central roll, all of the rolls having longitudinal axes in parallel, each of the rolls being individually restrained, each roll being comprised of a rolled up encapsulated insulation blanket, and the entire assembly being enclosed in a wrapper.

5,512,347

CANVAS REINFORCEMENT STRUCTURE

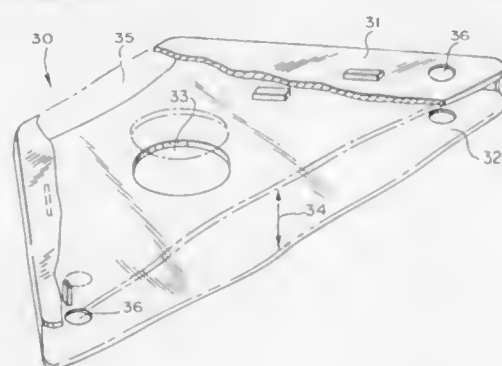
Liu Chu, No. 79, Tai Ming Rd., Wu Jih Hsiang, Taichung Hsien, Taiwan

Filed Jan. 11, 1994, Ser. No. 179,688

Int. Cl.⁶ B32B 3/10

U.S. Cl. 428—81

5 Claims



1. An improved reinforced canvas having at least one corner comprising
- a reinforcement corner block comprised of a one piece integral gusset having a hollow body mounted on the corner of said canvas,
 - said body having
 - spaced apart upper and lower reinforcement pieces and end pieces connecting said upper and lower pieces,
 - said upper, lower and end pieces defining an internal contact limited room for receiving the corner of said canvas,
 - an outlet hole through which the tip of the canvas corner can extend,
 - and further including a through hole
 - and a rivet hole, said through hole and said rivet hole extending through said upper and lower reinforcement pieces;
 - said canvas having a restraint portion with fixed holes there-through and an auxiliary rivet extending through said fixed holes;
 - at least one rivet in said rivet hole of said reinforcement corner block for rivetting said canvas corner together with said reinforcement corner block canvas; and
 - a main rivet rivetted into said through hole, said main rivet and said at least one rivet to increase overall strength of said canvas corner.

5,512,348

ARMOR WITH BREAKAWAY SEWING

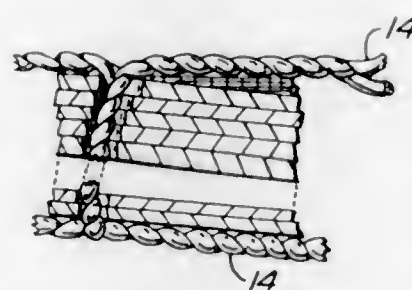
Bernard Mazelsky, West Covina, Calif., assignor to ARA, Inc., City of Industry, Calif.

Continuation of Ser. No. 869,753, Apr. 20, 1992, abandoned, which is a continuation of Ser. No. 629,056, Dec. 14, 1990, abandoned, which is a continuation of Ser. No. 236,662, Aug. 25, 1988, abandoned. This application Apr. 25, 1994, Ser. No. 232,599

Int. Cl.⁶ F41H 1/02; B32B 3/06; 7/00

U.S. Cl. 428—102

6 Claims



1. Flexible body armor comprising:
- a multiplicity of about 23 to 28 plies of an energy-absorbing cloth woven of about 1000 to 3000 denier polyaramid fibers,
 - and
 - stitch threads extending through and sewing together the multiplicity of plies in a grid pattern to define common anchorages, whereby upon impact by a projectile, the polyaramid fibers of the plies are stretched between the projectile and stitch threads anchorages,
 - the stitch threads being formed of a size E nylon having such predetermined low breaking strength in relation to the tensile strength of said polyaramid fibers that the stitch threads break at multiple locations upon being stretched by action of the polyaramid fibers being stretched between the impacting projectile and stitch threads anchorages of said grid pattern, whereby said stitch threads and said polyaramid fibers absorb substantial ballistic impact energy in response to ballistic impact stresses imposed thereon.

5,512,349

METHOD AND APPARATUS FOR MAGNETIC RECORDING DIGITAL VIDEO SIGNALS AND MAGNETIC RECORDING MEDIUM THEREFOR

Kazunobu Chiba; Kenichi Sato, and Yuichi Arisaka, all of Miyagi, Japan, assignors to Sony Corporation, Tokyo, Japan Division of Ser. No. 83,990, Jun. 28, 1993, Pat. No. 5,347,406, which is a division of Ser. No. 784,751, Oct. 30, 1991, Pat. No. 5,253,122, which is a continuation-in-part of Ser. No. 768,871, Oct. 29, 1991. This application Mar. 30, 1994, Ser. No. 219,957

Claims priority, application Japan, Oct. 31, 1990, 2-294676 Int. Cl.⁶ B32B 3/30; 9/00; 19/00; G11B 5/66

U.S. Cl. 428—141

4 Claims

1. A magnetic recording medium for use in recording digital video signals, comprising:
- a non-magnetic film substrate having a major surface, and
 - a magnetic layer on said major surface of the substrate including at least one vacuum deposited thin magnetic metal film;
 - said magnetic layer having an energy product of at least 100 G.cm.Oe as the product of the residual magnetic flux density, thickness and coercive force of said magnetic layer, and said magnetic layer having an average surface roughness no larger than 0.003 μ m, in the center line average height, whereby said energy product and said average surface roughness contribute to a bit error rate no larger than about 1×10^{-4} upon playback of said recorded digital video signals.

5,512,350

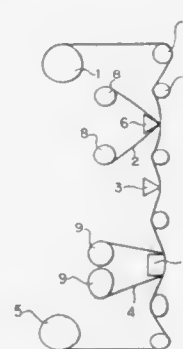
MAGNETIC RECORDING MEDIUM HAVING A MAGNETIC LAYER WITH A SPECIFIED SURFACE ROUGHNESS AND WHICH CONTAINS FERROMAGNETIC POWDER, BINDER, AND A ABRASIVE

Katsumi Ryoke; Katsuhiko Meguro; Hiroaki Doushita; Masaki Suzuki; Toshiyuki Kitahara, and Masami Sato, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan Continuation of Ser. No. 99,430, Jul. 30, 1993, abandoned. This application May 15, 1995, Ser. No. 441,009 Claims priority, application Japan, Jul. 31, 1992, 4-205734; Jul. 31, 1992, 4-205735

Int. Cl.⁶ G11B 5/00

U.S. Cl. 428—141

5 Claims



1. A magnetic recording medium comprising a magnetic layer containing a ferromagnetic powder, a binder and an abrasive material having a Mohs hardness of 8 or more on a non-magnetic support, wherein the average protrusion height, which represents the length between the central line of the surface roughness of the sectional curve of the magnetic layer and the upper end of the abrasive material existing (i) above the central line of the surface roughness of the magnetic layer and (ii) in the surface of the magnetic layer, is 12 nm or less, and wherein the surface of the magnetic layer has been polished with an abrasive tape which comprises an abrasive material having a higher Mohs hardness than the abrasive material incorporated in the magnetic material.

5,512,351

PREPREG, PROCESS FOR PREPARATION OF PREPREG, AND PRODUCTS DERIVED THEREFROM

Kazuo Miyamichi, and Hiroyuki Nakamura, both of Shizuoka, Japan, assignors to Nikkiso Company Limited, Tokyo, Japan Filed Jul. 6, 1994, Ser. No. 267,204

Claims priority, application Japan, Dec. 28, 1993, 5-336981 Int. Cl.⁶ B32B 3/00

U.S. Cl. 428—195

21 Claims

1. Prepreg formed by impregnating tow or fabric of inorganic fibers with a matrix composition or thermally infiltrating the matrix composition into the tow or fabric, said matrix composition comprising:
- (A) 350–750 parts by weight of a fine powder of a metal oxide or oxides having an average particle diameter of not larger than 1 μ m,
 - (B) 80–170 parts by weight of a soluble siloxane polymer having double chain structure,
 - (C) 25–125 parts by weight of a trifunctional silane compound having at least one ethylenically unsaturated double bond in the molecule thereof,
 - (D) 1–4 parts by weight of an organic peroxide, and
 - (E) 25–125 parts by weight of a radically polymerizable monomer having at least two ethylenically unsaturated double bonds.

5,512,352

SMALL CYLINDRICAL ARTICLE HAVING FILM WRAP COVERING WITH SOLVENT SEAL BOND

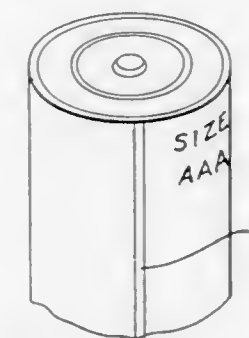
Varjian Haig, Englewood Cliff, N.J., assignor to CMS Gilbreth Packaging Systems, Inc., Trevose, Pa.

Continuation of Ser. No. 259,497, Jun. 14, 1994, which is a division of Ser. No. 906,573, Jun. 30, 1992, Pat. No. 5,350,482. This application May 4, 1995, Ser. No. 434,937

Int. Cl.⁶ B32B 3/00

U.S. Cl. 428—195

6 Claims



1. A small cylindrical article in combination with a thin layer heat shrinkable film material applied thereto comprising
- a cylindrical body having a longitudinal axis and a smooth outer peripheral surface, said body having a diameter less than about 1.75 inches and having at least one opposing end portion forming a shoulder,
 - a label formed from a heat shrinkable polymer film material, said label having a thickness less than about 0.0035 inches, and leading and trailing edges, said leading edge aligned longitudinally with the longitudinal axis of the cylindrical axis of the cylindrical body and adhered thereto by an adhesive retained on the leading edge of the label,
 - said label being wrapped around said cylindrical body so that the trailing edge overlaps the leading edge of said label, the major portion of the label wrapped around the cylindrical article being free of adhesive and substantially unshrunk and tightly wrapped around the article, said trailing edge being bonded to the leading edge by a solvent that had been evenly applied onto an area adjacent the trailing edge of the label to form a solvent seal bond thereat to retain the trailing edge of the label to the leading edge, and

said label includes at least one end portion which is heat shrunk over said shoulder, wherein the label includes a medial portion covered with printed matter and the area adjacent the trailing edge is substantially void of printed matter.

5,512,353

CERAMIC SUBSTRATE FOR AN ELECTRONIC CIRCUIT
Yoichiro Yokotani, Suita; Hamae Ando, Neyagawa, and Koichi Kugimiya, Toyonaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 809,985, Dec. 18, 1991, abandoned.

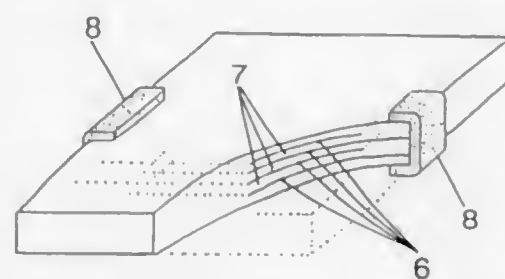
This application Jun. 20, 1994, Ser. No. 263,157

Claims priority, application Japan, Dec. 21, 1990, 2-404856

Int. Cl.⁶ B32B 9/00

U.S. Cl. 428—210

11 Claims



1. A ceramic substrate for a multilayered electronic circuit comprising plural ceramic insulated layers, and plural conductive layers which are patterned on the ceramic layers, the ceramic insulated layers and conductive layers being laminated alternately, wherein the conductive layers comprise metallic copper or an alloy containing metallic copper as its main component, and wherein the ceramic layers entirely comprise a complex oxide or an oxide solid solution containing copper and at least one component other than copper, wherein the complex oxide or the oxide solid solution is prepared by using oxide containing copper as a starting material, whereby the diffusion rate of the copper oxide from the conductive layers to the ceramic layers can be lowered, and wherein each of the complex oxide and the oxide solid solution contains at least one element selected from the group A consisting of strontium, barium, calcium, and lead, and at least one element selected from the group B consisting of tungsten, niobium, and tantalum, so as to form a complex perovskite structure phase.

5,512,354

FABRIC BACKING FOR ORTHOPEDIC SUPPORT MATERIALS

Matthew T. Scholz; Miroslav Tochacek, both of Woodbury, and Jason L. Edgar, Bloomington, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jan. 25, 1993, Ser. No. 9,923

Int. Cl.⁶ A61F 13/04; D04B 1/16; 1/18

U.S. Cl. 428—231

30 Claims

1. A resin-coated sheet material comprising:
(a) a knit fabric comprising a nonfiberglass microdenier yarn of no greater than about 1.5 denier; and
(b) a curable resin coated on the fabric.

5,512,355
ANTI-STATIC WOVEN COATED FABRIC AND FLEXIBLE BULK CONTAINER

William R. Fuson, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jun. 2, 1994, Ser. No. 253,035

Int. Cl.⁶ B32B 7/00

U.S. Cl. 428—244

9 Claims

1. A bulk container having flexible walls of (a) interwoven yarns of axially oriented, crystalline polypropylene and 1% to 18% by weight of the walls of an interlaced carrier yarn comprising fibers selected from the group consisting of polyester and nylon fibers said carrier yarn containing between 5 and 25% by weight sheath-core filaments having a nonconductive sheath of polyester or nylon and an electrically conductive core selected from the group consisting of polyolefin, polyester, or nylon and said core containing electrically conductive carbon black or graphite and (b) a coating of a thermoplastic polymer adhered to the inner surface of the flexible walls, said flexible walls being capable of dissipating an electrical charge.

5,512,356

MULTILAYERED TEXTILE WEB FOR FORMING FLEXIBLE CONTAINERS, TENTS, AWNINGS, AND PROTECTIVE SUITS COMPRISING A RUBBER/POLYVINYLIDENE FLUORIDE FILM/RUBBER LAYER

Volker Haager, Vienna, Austria, assignor to Phoenix Aktiengesellschaft, Hamburg, Germany

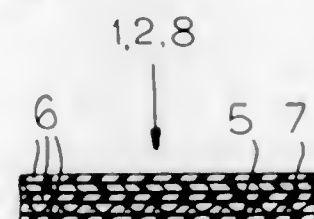
Filed May 15, 1995, Ser. No. 436,257

Claims priority, application Austria, Nov. 16, 1992, 2251/92

Int. Cl.⁶ B32B 7/00; 27/00; F41H 1/02

U.S. Cl. 428—250

1 Claim



1. A multilayered textile web for forming flexible containers, tents, awnings and protective suits, comprising a textile layer, a rubber layer located on one side of the textile layer, and a plastic film located on the other side of the textile layer, said plastic film being sandwiched between two rubber layers, wherein the plastic film comprises polyvinylidene fluoride.

5,512,357

POLYPROPYLENE FLEXIFILAMENTARY FIBER CONTAINING 0.1 TO 10 WEIGHT PERCENT OF AN ORGANIC SPREADING AGENT AND NONWOVEN FABRIC MADE THEREFROM

Kazuhiko Shimura, and Yoshiaki Nakayama, both of Moriyama, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 921,392, Jul. 30, 1992, abandoned, which is a continuation of Ser. No. 785,903, Nov. 4, 1991, abandoned, which is a continuation of Ser. No. 362,462, Feb. 17, 1989, abandoned. This application Apr. 7, 1993, Ser. No. 43,973

Claims priority, application Japan, Jun. 20, 1987, 62-152416; Jun. 26, 1987, 62-157773; Jul. 18, 1987, 62-178179; Aug. 3, 1987, 62-192598; Aug. 12, 1987, 62-199978

Int. Cl.⁶ B32B 5/16; D04H 1/58; D02G 3/00

U.S. Cl. 428—283

7 Claims

1. A fibrillated polypropylene three-dimensional plexifilamentary fiber, wherein said three-dimensional plexifilamentary fiber

has a microwave birefringence of 0.10 or more and a long period scattering intensity ratio of 5 or more, and includes 0.1 wt % to 10 wt % of an organic spreading agent wherein said spreading agent is an organic phosphate, organic carboxylate, sorbitol derivative, aliphatic hydrocarbon, higher fatty acid, higher fatty acid alcohol, fatty acid amide, fatty acid ester, metallic soap, polyethylene resin, polyacetal resin, polybutylene terephthalate resin, hydroxy-di(tertiary butylbenzoic acid) aluminum, p-tertiary butyl sodium benzoate, sodium benzoate, 1,3,2,4-diparamethyl-dibenzylidene sorbitol, 1,3-parachloridibenzylidene-2,4-parachlorbenzylidene-D-sorbitol, 1,3,2,4-dibenzylidene sorbitol, phenyl sodium phosphate, high-density polyethylene, polycapramide, or polybutyl terephthalate.

5,512,358

MULTI-COMPONENT POLYMERIC STRANDS INCLUDING A BUTENE POLYMER AND NONWOVEN FABRIC AND ARTICLES MADE THEREWITH

Susan E. Shawver, Roswell; David C. Strack, Canton; Terry K. Timmons, Marietta, and Debra J. McDowall, Roswell, all of Ga., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Filed Sep. 22, 1993, Ser. No. 125,624

Int. Cl.⁶ B32B 27/00; D02G 3/00; D04H 1/04

U.S. Cl. 428—286

28 Claims

1. A multi-component polymeric spunbond strand including first and second polymeric components and having a cross-section, a length, and a peripheral surface wherein:
the first and second polymeric components are arranged in substantially distinct zones across the cross-section of the strand and extend continuously along the length of the strand;
the first polymeric component is a portion of the peripheral surface of the strand continuously along the length of the strand and comprises a blend of a butene polymer and a first polyolefin other than a butene polymer having up to about 10 weight percent of ethylene in polymeric form said butene polymer comprising butene in an amount from about 90 to about 100% by weight of the butene polymer;
the second polymeric component comprises a second polyolefin having ethylene in an amount less than 10 weight percent.

5,512,359

HIGH FLEXURAL STRENGTH CERAMIC FIBER REINFORCED SILICON CARBOXIDE COMPOSITE

Roger Y. Leung, Schaumburg; Gerald T. Stranford, Palatine, and Stephen T. Gonczy, Mt. Prospect, all of Ill., assignors to AlliedSignal Inc., Morris Township, Morris County, N.J.

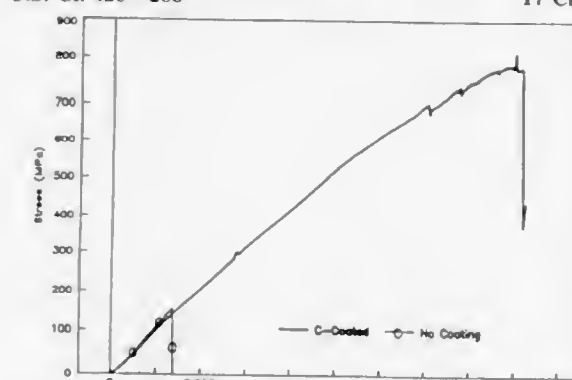
Filed Jan. 12, 1990, Ser. No. 464,470

The portion of the term of this patent subsequent to Jun. 7, 2011, has been disclaimed.

Int. Cl.⁶ D04H 1/58; B32B 9/00

U.S. Cl. 428—288

17 Claims



1. A fiber reinforced glass composite comprising
(a) refractory fibers having a carbon coating about 0.01 μ m to 5 μ m thick;

(b) a carbon-containing black glass ceramic composition having the empirical formula SiC_xO_y wherein x ranges from about 0.5 to about 2.0 and y ranges from about 0.5 to about 3.0.

5,512,360

PTFE REINFORCED COMPLIANT ADHESIVE AND METHOD OF FABRICATING SAME

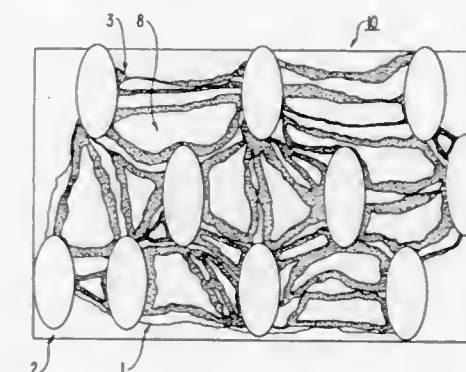
David R. King, Baltimore, Md., assignor to W. L. Gore & Associates, Inc., Newark, Del.

Filed Sep. 20, 1994, Ser. No. 309,275

Int. Cl.⁶ B32B 9/00

U.S. Cl. 428—304.4

8 Claims



1. A compliant, adhesive containing composite comprising:
at least one layer of an expanded porous polymeric substrate having an initial void volume of at least 50%, with 15 to at most 40% by weight adhesive based upon the total weight of said composite in an initial uncompressed condition, wherein said adhesive is evenly distributed within an interior of said porous polymeric substrate to allow exterior surfaces of said polymeric substrate to be substantially free of adhesive when bonded and thus form a discontinuous internal layer of adhesive interrupted by a skeletal structure of said porous polymeric substrate.

5,512,361

INTEGRALLY MOLDED POLYURETHANE FOAM PRODUCTS

Nobuo Takeuchi; Taishi Kitano; Fumio Mizuno; Hiroyoshi Ishikawa; Sotaro Yoshimura, and Tomonari Yamaguchi, all of Aichi, Japan, assignors to Inoac Corporation, Nagoya, Japan

Filed Feb. 1, 1995, Ser. No. 382,266

Claims priority, application Japan, Feb. 3, 1994, 6-032852; Feb. 18, 1994, 6-045249; Jun. 8, 1994, 6-151513

Int. Cl.⁶ B32B 27/00

U.S. Cl. 428—319.3

10 Claims

1. An integrally molded polyurethane foam product comprising a skin member formed into the shape of said foam product by sewing and polyurethane foam that is formed by depositing or pouring a liquid foaming material into said skin member and foaming, wherein said skin member is made by laminating a fabric and a synthetic resin film and is provided with 5 to 100 per cm^2 of through holes in a diameter of 0.01 to 0.03 mm.

5,512,362

Patent Not Issued For This Number

5,512,363

MAGNETIC RECORDING MEDIUM HAVING A MAGNETIC LAYER CONTAINING MAGNETIC POWDER AND AN UNDERLAYER CONTAINING TWO KINDS OF NON MAGNETIC POWDER

Narito Goto; Noboru Koyama, and Hisato Kato, all of Hino, Japan, assignors to Konica Corporation, Japan

Continuation of Ser. No. 12,722, Feb. 3, 1993, abandoned.

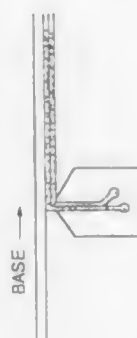
This application Mar. 14, 1995, Ser. No. 404,936

Claims priority, application Japan, Feb. 13, 1992, 4-026978; Mar. 25, 1992, 4-067389; Apr. 2, 1992, 110775

Int. Cl.⁶ G11B 5/00

U.S. Cl. 428—323

6 Claims



1. A magnetic recording medium comprising:

a non-magnetic support,

an outermost magnetic layer containing a first binder and at least one powder selected from the group consisting of ferromagnetic metal powder and hexagonal ferrite powder, said outermost magnetic layer having a thickness of less than 0.5 μm ; and

an inner layer, adjacent to said outermost layer, containing a second binder, a first non-magnetic powder having a first average particle size of 10 to 30 nm, and a second non-magnetic powder having a second average particle size of not less than 40 nm.

5,512,364

MAGNETO-OPTICAL RECORDING MEDIUM

Kiyoshi Chiba, Chofu; Tetsuo Sato, Hino; Masahiko Sekiya, Hino, and Kazutomi Suzuki, Hino, all of Japan, assignors to Teijin Limited, Osaka, Japan

Continuation of Ser. No. 795,222, Nov. 15, 1991, abandoned, which is a continuation of Ser. No. 659,536, Feb. 22, 1991, abandoned, which is a continuation of Ser. No. 246,907, Sep. 16, 1988, abandoned, which is a continuation of Ser. No. 50,527, May 13, 1987, abandoned. This application Feb. 28, 1994, Ser. No. 203,708

Claims priority, application Japan, May 14, 1986, 61-108663; Dec. 26, 1986, 61-308520

Int. Cl.⁶ B32B 5/16; G11B 5/66; 5/74; G11C 13/06

U.S. Cl. 428—332

5 Claims

4
3
2
1

1. A magneto-optical recording medium comprising a transparent substrate made of synthesized resin, a magneto-optical recording layer, and a dielectric layer interposed between said magneto-optical recording layer and said transparent substrate wherein said dielectric layer is a dielectric, transparent, oxide film consisting of In_2O_3 , up to about 30 weight percent SnO_2 based on the weight of said dielectric layer, and any impurities present being Ta, Sb of F, said layer having a volume resistivity of at least 1×10^{-1} Ohm-cm, said medium further comprising a protecting layer having a thickness no greater than 20 angstrom and consisting of a metallic titanium film between said dielectric layer and said magneto-optical recording layer.

5,512,365

LAMINATED SHEET METAL FOR CONTAINER MANUFACTURE AND PRIMER USED IN CONJUNCTION WITH SAME

Tetsuo Miyazawa; Kazuhiro Sato; Katsuhiko Imazu; Seishichi Kobayashi, all of Kanagawa, and Toshio Sue, Tokyo, all of Japan, assignors to Toyo Seikan Kaisha, Ltd., Tokyo, Japan

Filed Sep. 13, 1994, Ser. No. 304,940

Int. Cl.⁶ B05D 1/36, B21D 22/22; 51/26

U.S. Cl. 428—332

25 Claims

1. A laminated sheet metal, comprising:
a sheet metal;
a thermoplastic resin film;
a primer resin layer between said sheet metal and said thermoplastic resin film;
said primer resin layer being of a primer resin composition; and
said primer resin composition containing, in weight percent, from about 50 to about 98 of a polyamidodicarboxylic acid modified epoxy resin; from about 2 to about 50 of a curing agent resin, and from about 0.05 to about 10 of a curing catalyst.

5,512,366

MAGNETO-OPTIC RECORDING MEDIUM AND APPARATUS

Yoshiyuki Nakaki; Takashi Tokunaga; Tatsuya Fukami; Motohisa Taguchi, and Kazuhiko Tsutsumi, all of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

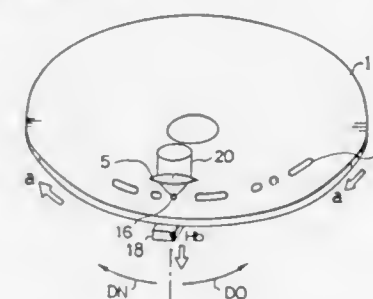
Continuation-in-part of Ser. No. 474,104, Apr. 20, 1990, Pat. No. 5,216,663. This application Nov. 13, 1990, Ser. No. 615,024

Claims priority, application Japan, Nov. 14, 1989, 1-296858; Feb. 22, 1990, 2-43235

Int. Cl.⁶ G11B 5/66

U.S. Cl. 428—332

20 Claims



1. A magneto-optic recording medium comprising a first magnetic layer having perpendicular magnetic anisotropy, a second magnetic layer provided on this first magnetic layer and coupled to said first magnetic layer by an exchange force, and a third magnetic layer provided on this second magnetic layer and coupled to said second magnetic layer by an exchange force, wherein the following relationships are satisfied

$$Tc1 < Tc2 < Tc3$$

where, Tc1: Curie temperature of first magnetic layer

Tc2: Curie temperature of second magnetic layer

Tc3: Curie temperature of third magnetic layer,

the following relationships are additionally satisfied at room temperature

$$Hc1 > Hw1(2) \text{ and } Hc3 > Hw3(2),$$

and there exists a temperature between room temperature and Tc1 at which the following relationship is satisfied

$$Hc2 < Hw2(3) - Hw2(1),$$

where, Hc1: coercivity of first magnetic layer

Hc2: coercivity of second magnetic layer

Hc3: coercivity of third magnetic layer

Hw(j): reversal field shift in i-th layer due to exchange coupling force between j-th layer and i-th layer.

5,512,367

MIXED CROSS-SECTION CARPET YARN

Gerry A. Hagen, Anderson, and Wei Li, Salem, both of S.C., assignors to BASF Corporation, Parsippany, N.J.

Division of Ser. No. 373,813, Jan. 17, 1995, which is a continuation-in-part of Ser. No. 128,454, Sep. 28, 1993, Pat. No. 5,413,857, which is a continuation of Ser. No. 989,812, Dec. 10, 1992, abandoned. This application Jun. 7, 1995, Ser. No. 481,786

Int. Cl.⁶ D02G 3/00

U.S. Cl. 428—362

2 Claims

1. A carpet made with a blend of fibers comprising:
about 51 to 90% by weight of base fibers (a) selected from the group consisting of triangular trilobal fibers having a modification ratio ranging from 2.4 to 3.4; hollow pentagonal fibers;



standard trilobal fibers having a modification ratio of at least 2.6; pointed lobe trilobal fibers having a modification ratio of at least 2.6; and mixtures thereof; and

about 10 to 49% by weight of accent fibers (b) selected from the group consisting of standard trilobal fibers having a modification ratio ranging from 1.7 to 2.4; pointed lobe trilobal fibers having a modification ratio ranging from 2.0 to 2.9; and mixtures thereof;

said fibers (a) and (b) having a denier per filament within the range represented by the area enclosed by sides A, B, C, D, and E of FIG. 1 and when said fibers (a) and (b) are both pointed lobe trilobal fibers with the same modification ratio and denier per filament, said fibers (a) are delustered and said fibers (b) are not delustered.

5,512,368

FIBERS REINFORCED WITH INORGANIC WHISKERS

Mark A. Harmer, and Brian R. Phillips, both of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 16, 1995, Ser. No. 405,121

Int. Cl.⁶ B32B 19/06; C08G 63/183; C08K 3/00

U.S. Cl. 428—364

10 Claims

1. A composition comprising a fiber made of an aramid or polybenzobisthiazole polymer which is anisotropic, and inorganic whiskers in the amount of 0.1 to 50 percent by volume of said composition.

5,512,369

FIBERS CONTAINING POLYMER-COATED INORGANIC PARTICLES

Charles W. Goodrich, Waynesboro, Va., and Howard W. Jacobson, Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 212,402, Mar. 14, 1994, Pat. No. 5,427,854. This application May 16, 1995, Ser. No. 442,068

Int. Cl.⁶ D02G 3/00

U.S. Cl. 428—372

6 Claims

1. An improved synthetic organic fiber containing freely-divided, inorganic particles dispersed within the fiber, the improvement comprising the inorganic particles having a solid coating of an organic polymer that is different from the polymer of the synthetic organic fiber, the coating polymer having a number average molecular weight of at least 600 and less than 2,500.

5,512,370

POLYOLEFIN-EXTRUSION COATING COMPOSITIONS HAVING GOOD COATABILITY, GOOD ADHESION TO THE SUBSTRATE, AND GOOD CHILL ROLL RELEASE
Ray Edwards, Henderson, and Bruce W. Foster, Longview, both of Tex., assignors to Eastman Chemical Company, Kingsport, Tenn.

Division of Ser. No. 115,271, Aug. 31, 1993, Pat. No. 5,387,630. This application Feb. 7, 1995, Ser. No. 384,905
Int. Cl.⁶ B32B 15/08; 27/02; 27/08; 27/10

U.S. Cl. 428—373

17 Claims

1. A process for the low-temperature extrusion coating of a substrate with a polyethylene film having a thickness of at least about 0.0075 mm, said process comprising:

applying a polyethylene extrusion coating composition to at least one surface of said substrate by extrusion coating at a temperature in the range of 175° to 290° C., said polyethylene extrusion coating composition comprising:

(a) a polyethylene component having a melt index in the range of about 2 to 100 dg per minute at 190° C. and having a sufficiently broad molecular weight distribution so that the resulting composition is capable of being extrusion coated at a temperature in the range of 175° C. to 290° C.,

(b) about 2 to 20 weight percent, based on the total weight, of a tackifying resin having a RBSP in the range of about 100° to 140° C., and

(c) about 0.03 to 0.07 weight percent, based on the total weight of the fatty acid amide, erucanide.

5,512,371

COMPOSITE LENSES

Amitava Gupta; Ronald D. Blum; Venkatramani S. Iyer, and Paul J. Nagg, all of Roanoke, Va., assignors to Innotech, Inc., Roanoke, Va.

Filed Mar. 18, 1994, Ser. No. 214,506
Int. Cl.⁶ B32B 27/36

U.S. Cl. 428—412

31 Claims



1. A composite plastic optical quality lens, comprising:
a plastic lens preform portion of optical quality material; and
a cured plastic attached portion that is bonded to said plastic lens preform portion; said cured plastic attached portion having higher scratch resistance, and lower chromatic aberration than said plastic lens preform portion.

5,512,372

EPOXY RESIN COMPOSITION AND APPLICATIONS, IN PARTICULAR IN COMPOSITE STRUCTURES, USING IMIDAZOLE/POLYAMINE MIXTURE

Isabelle Blanc, Lyon; Françoise Eyrley, St. Priest, and Xavier Gambert, Villeurbanne, all of France, assignors to Brochier, S.A., Decines, France

Filed Aug. 24, 1994, Ser. No. 256,376

Claims priority, application France, Jan. 15, 1992, 92 00368
Int. Cl.⁶ C08G 59/44; 59/50; 65/00

U.S. Cl. 428—413

17 Claims

1. A hardenable or polymerizable epoxy composition comprising an epoxy resin and about 5 to about 50 wt % of a hardener based on the total weight of the composition, said hardener including the combination of:

(i) at least one imidazole that only polymerizes said epoxy resin at temperatures above 75° C.; and

(ii) at least one polyamine that only polymerizes said epoxy resin at temperatures below 75° C.; said composition having a lifetime of at least 21 days and being polymerizable in a single step at 75° C.

5,512,373

MAGNETIC RECORDING MEDIUM

Kunihiro Ueda, Saku; Koji Kobayashi; Mitsuru Takai, both of Miyota, and Masashi Higo, Saku, all of Japan, assignors to TDK Corporation, Tokyo, Japan

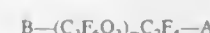
Filed Mar. 9, 1994, Ser. No. 208,756

Claims priority, application Japan, Mar. 9, 1993, 5-072806
Int. Cl.⁶ B32B 27/00; G11B 5/66

U.S. Cl. 428—421

6 Claims

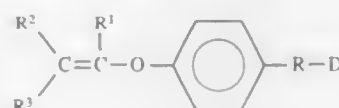
1. A magnetic recording medium comprising a non-magnetic support, a magnetic recording layer comprising a ferromagnetic metal thin film formed on the support and a lubricating layer on the ferromagnetic metal thin film wherein the lubricating layer consists essentially of a mixture of a first lubricant expressed by the following formula:



where

A is selected from the group consisting of hydroxyl radical, carboxyl radical and carboxyl radical esterified with a radical selected from the group consisting of CH₃, C₂H₅, CF₃ and C₂F₅.

B is selected from the group consisting of F, CF₃ and C₂F₅, and m is an integer from 5 to 30; and a second lubricant expressed by the following formula:



where

R is a divalent radical having two or fewer carbon atoms selected from the group consisting of alkylene, alkenylene, alkynylene, fluorinated alkyl and fluorinated alkenylene;

D is a polar radical selected from the group consisting of —OPO(OR⁴)₂, —OP(OR⁴)₂, OPH(OR⁴)₂, —PO(OR⁴)₂, —P(OR⁴)₂, —PH(OR⁴), hydroxyl radical, carboxyl radical, and carboxyl radical esterified, with a member of the group consisting of CH₃, C₂H₅, CF₃ and C₂F₅, wherein R⁴ in each phosphorus-containing radical is selected from the group consisting of H, CH₃, C₂H₅, CF₃ and C₂F₅.

R¹ is selected from the group consisting of F, CF₃ and C₂F₅; and R², R³ are selected from the group consisting of F, CF₃, C₂F₅, CF(CF₃)₂ and C(CF₃)₃, where the weight ratio of the first lubricant to the second lubricant is between 1:0.02 and 1:1.5.

5,512,374

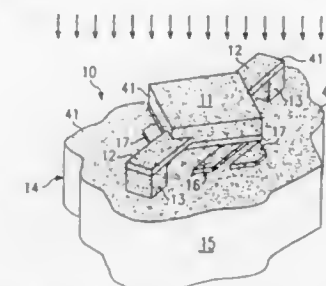
PFPE COATINGS FOR MICRO-MECHANICAL DEVICES
Robert M. Wallace, Dallas; Steven A. Henck, Plano, both of Tex., and Douglas A. Webb, Chandler, Ariz., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed May 9, 1994, Ser. No. 239,497

Int. Cl.⁶ B32B 27/00

U.S. Cl. 428—422

27 Claims



1. An improved micro-mechanical device of the type having a first element selectively movable relative to a second element, portions of the elements contacting in one position of the first element, wherein the improvement comprises:

a film of perfluoropolyether (PFPE) on at least one of the contacting portions of the elements.

5,512,375

PSEUDOMORPHIC SUBSTRATES

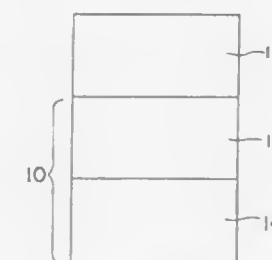
Roger T. Green, Santa Clara County; Gary A. Davis, Alameda County, and Verle W. Aebi, San Mateo County, all of Calif., assignors to Intevac, Inc., Santa Clara, Calif.

Filed Oct. 14, 1993, Ser. No. 138,454

Int. Cl.⁶ B32B 17/06; C30B 29/40

U.S. Cl. 428—426

12 Claims



1. An article comprising:

a substrate; and
an epitaxial layer grown on the substrate;
said substrate including:

(a) a crystalline pseudomorphic material layer having a thickness no greater than a pseudomorphic limit for said crystalline pseudomorphic material layer and said epitaxial layer, the crystalline pseudomorphic material layer and the epitaxial layer having differing lattice constants to provide a tendency for a deformation to be imposed on the epitaxial layer;
(b) a plastically deformable layer having a thickness sufficient to structurally withstand stress forces induced by the epitaxial layer on the pseudomorphic layer bonded to the crystalline pseudomorphic material layer so the crystalline layer is between the plastically deformable layer and the epitaxial layer, the plastically deformable layer being a material that plastically flows at the epitaxial layer growth temperature and having a coefficient of thermal expansion approximately equal to the coefficient of thermal expansion of the pseudomorphic material layer over a temperature range of approximately room temperature to the annealing temperature of the plastically deformable layer, the layers being such that the tendency

for the epitaxial layer to be deformed is overcome without causing substantial crystal defects in the epitaxial layer.

5,512,376

NONPOLAR POLYMERS COMPRISING ANTIPLASTICIZERS

Richard L. Brady, and Samuel A. Thompson, both of Wilmington, Del., assignors to Hercules Incorporated, Wilmington, Del.

Filed Jun. 20, 1994, Ser. No. 262,190

Int. Cl.⁶ B32B 9/04; C08K 5/54; 5/01; C08F 283/12

U.S. Cl. 428—447

28 Claims

1. A curable composition, comprising:

a reactive component curable to form a nonpolar polymer comprising (a) a polyene having at least two hydrosilation reactive carbon-carbon double bonds; and (b) a silicon compound, having at least two hydrosilation reactive ≡SiH groups, said silicon compound comprising at least one member selected from the group consisting of cyclic polysiloxanes, tetrahedral siloxsilanes, and linear polysiloxanes; wherein at least one member selected from the group consisting of the polyene and the silicon compound has more than two hydrosilation reactive sites and having a glass transition temperature of at least about 20° C.;

a hydrosilation catalyst; and

an antiplasticizer in an amount effective to substantially increase the modulus of the polymer, wherein said antiplasticizer comprises at least one member selected from the group consisting of o-terphenyl, m-terphenyl fluorene, fluoranthene, hexaphenylcyclotrisiloxane, 2-vinyl naphthalene, 9-vinyl anthracene, 4,4'-difluorobenzophenone, acenaphthylene, 9-vinyl carbazole, 4-vinyl biphenyl, and triphenylvinylsilane, and said antiplasticizer is present in said curable composition an amount of from about 1 to 30 weight percent based on the weight of said reactive component.

5,512,377

Patent Not Issued For This Number

5,512,378

BIODEGRADABLE STARCH BASED ARTICLES

Catia Bastioli; Giancarlo Romano, both of Novara; Mario Scarati, Milan, and Maurizio Tosin, Serravalle Sesia, all of Italy, assignors to Novamont S.p.A., Milan, Italy

Continuation of Ser. No. 989,221, Dec. 11, 1992, abandoned.

This application Jan. 23, 1995, Ser. No. 376,303

Claims priority, application Italy, Dec. 12, 1991, TO91A0969

Int. Cl.⁶ B32B 9/04

U.S. Cl. 428—484

21 Claims

1. A biodegradable laminated film comprising two layers:

(a) a first layer comprising a starch; and

(b) a hydrophobic layer adjacent to, and in contact with, the first layer, comprising

(i) from 10 to 100% by weight of a wax selected from the group consisting of natural waxes, synthetic waxes and mixtures thereof; and

(ii) from 0 to 90% by weight of a synthetic polymer.

5,512,379

COATED PALLADIUM FINE POWDER AND ELECTROCONDUCTIVE PASTE

Shinroku Kawasumi, and Masatoshi Honma, both of Kanagawa, Japan, assignors to Kawasumi Laboratories, Inc., Kanagawa, Japan

Filed Jan. 23, 1995, Ser. No. 377,129

Claims priority, application Japan, Jan. 21, 1994, 6-022215
Int. Cl.⁶ B22F 1/00

U.S. Cl. 428—548

8 Claims

3. An electroconductive paste comprising palladium particles of a mean particle size in the range of 0.1 to 1.0 μm , coated palladium particles of a mean particle size in the range of 0.1 to 1.0 μm which are coated with nickel or alloy of nickel with other metal, and a binder.

5,512,380

STEEL CORD CONSTRUCTION

Xavier De Vos, Oudenaarde, and Frans Van Giel, Wevelgem, both of Belgium, assignors to N. V. Bekaert S. A., Zvevegem, Belgium

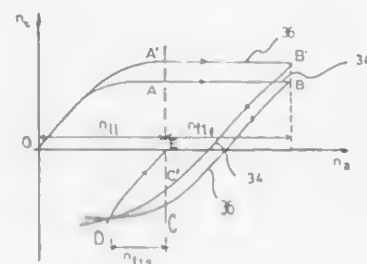
Filed Jul. 1, 1994, Ser. No. 269,787

Claims priority, application European Pat. Off., Jul. 20, 1993, 93202122.3

Int. Cl.⁶ D07B 1/06

U.S. Cl. 428—592

10 Claims



1. A steel cord adapted for the reinforcement of elastomers, said steel cord comprising individual steel filaments, some of said individual steel filaments being twisted individually around their longitudinal axes, some of these steel filaments having a difference in torsion saturation level in comparison with other steel filaments, the cord as a whole having substantially no residual torsions and each of the individual steel filaments having substantially no residual torsions.

5,512,381

COPPER FOIL LAMINATE FOR PROTECTING MULTILAYER ARTICLES

Jiri D. Konicek, Onalaska, Wis., and Donald E. Yuhas, Glen Ellyn, Ill., assignors to AlliedSignal Inc., Morris Township, Morris County, N.J.

Filed Sep. 24, 1993, Ser. No. 126,478

Int. Cl.⁶ B21C 37/00; C25D 7/04; B32B 15/08; 15/20

U.S. Cl. 428—607

1 Claim

1. A protected sheet of copper foil for manufacturing multilayer laminates comprising:

- a sheet of copper foil having a thickness greater than about 8 μm and having a first face adapted for adhering to a fiber reinforced polymer layer and a second protected face to be exposed after said first face is adhered to said fiber reinforced polymer layer;
- a protective sheet of copper having a thickness of about 8 to 250 μm covering said second copper foil face and adhesively attached thereto by a non-metallic adhesive in areas where circuit patterns are not to be developed.

5,512,382

POROUS THERMAL BARRIER COATING

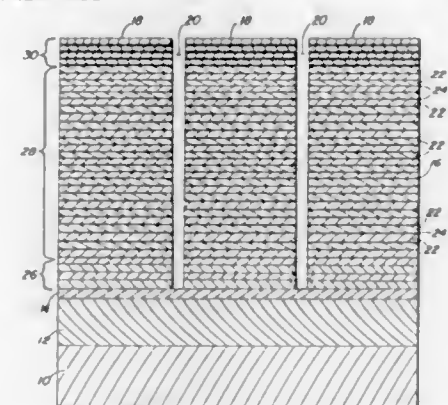
Thomas E. Strangman, Phoenix, Ariz., assignor to AlliedSignal Inc., Morris Township, N.J.

Filed May 8, 1995, Ser. No. 436,846

Int. Cl.⁶ B32B 15/04

U.S. Cl. 428—632

9 Claims



1. A superalloy article having a ceramic thermal barrier coating on at least a portion of its surface, comprising:

- a superalloy substrate;
- a bond coat overlying the substrate and selected from the group consisting of aluminides and MCrAlY where M is a metal selected from the group consisting of iron, cobalt, nickel, and mixtures thereof; and
- a ceramic coat applied to said bond coat by electron beam physical vapor deposition, said ceramic coat including a first portion of unstabilized porosity with respect to sintering densification adjacent said bond coat, and a second portion of stabilized porosity with respect to sintering densification overlying said first portion.

5,512,383

WAVELENGTH CONVERTING ELEMENT AND METHOD OF MANUFACTURING THE SAME

Kiyofumi Chikuma, and Atsushi Onoe, both of Tsurugashima, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

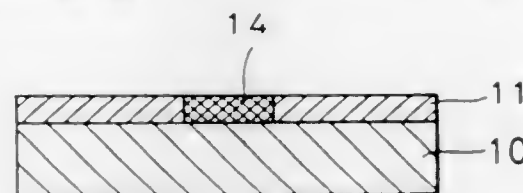
Filed Jun. 28, 1994, Ser. No. 266,629

Claims priority, application Japan, Jun. 28, 1993, 5-157411

Int. Cl.⁶ B32B 9/00; G02B 6/00

U.S. Cl. 428—689

2 Claims



1. A wavelength converting element comprising:

- a substrate of lithium tantalate;
- a thin film of lithium niobate formed on said substrate of lithium tantalate; and
- an optical waveguide comprising potassium niobate, formed on a portion of an upper face of said substrate by performing a proton exchange on an area of said thin film of lithium niobate and then performing a potassium ion exchange on said area to convert said lithium niobate to said potassium niobate, wherein the depth of the potassium niobate is substantially equal to the thickness of the unconverted lithium niobate thin film and a bottom end of said optical waveguide is positioned generally at a level of the upper face of said substrate of lithium tantalate, and wherein an upper face of said optical waveguide is exposed to air.

5,512,384

BATTERY AND METHOD OF BATTERY CONTROL FOR ENHANCING ELECTROCHEMICAL REACTIONS

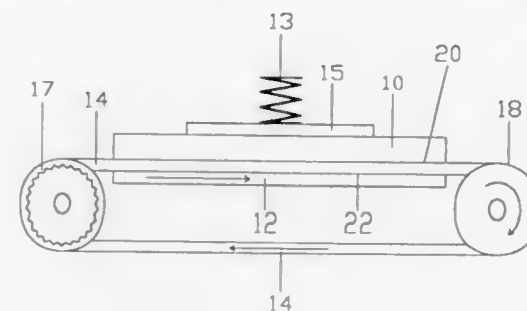
Salvatore Celeste, Peabody; Anthony Cucinotta, Wakefield, and Steven Panora, Malden, all of Mass., assignors to Biocytnerics Laboratories Inc., Danvers, Mass.

Continuation-in-part of Ser. No. 231,744, Apr. 25, 1994. This application May 18, 1995, Ser. No. 445,211

Int. Cl.⁶ H01M 2/38; 6/38

U.S. Cl. 429—51

11 Claims



1. A battery comprising an anode structure having an anode surface and a cathode structure having a cathode surface with said anode and cathode surfaces spaced a fixed distance apart to form an interface, a movable conveyor containing electrolyte, means for advancing said conveyor through said interface so as to physically engage said anode and/or cathode surface with the electrolyte contacting said anode for causing an electrochemical reaction and means for adjusting the position of said anode and cathode structures relative to one another to maintain the spacing of said interface between said anode and cathode surfaces substantially constant even as the anode is consumed.

5,512,385

HYDROGEN STORAGE ALLOY AND NICKEL-METAL HYDRIDE STORAGE BATTERY USING THE SAME

Katsunori Komori, Kadoma; Osamu Yamamoto, Hirakata; Yoshinori Toyoguchi; Kohel Suzuki, both of Yao; Seiji Yamaguchi; Ayako Tanaka, both of Osaka, and Munebisa Ikoma, Shiki, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

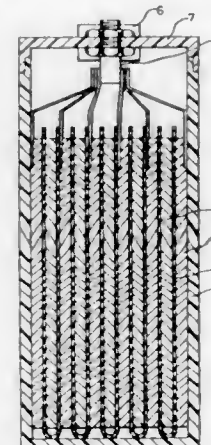
Filed Feb. 23, 1995, Ser. No. 392,579

Claims priority, application Japan, Feb. 28, 1994, 6-030548

Int. Cl.⁶ H01M 4/38

U.S. Cl. 429—101

17 Claims



1. A hydrogen storage alloy represented by the general formula MmNiM_x , wherein Mm is a misch metal or a mixture of rare earth elements, and M is at least one element selected from the group consisting of Al, Mn, Co, Cu, Fe, Cr, Zr, Ti and V, and wherein $5.0 \leq x+y \leq 5.5$, said alloy having a microstructure comprising:

a phase which is composed of a crystal structure of CaCu_2 type, and is capable of absorbing and desorbing hydrogen in a reversible manner, and
at least one phase which consists mainly of an element or elements other than Mm, and is incapable of storing hydrogen.

5,512,386

LIQUID CATHODE LITHIUM CELL

Bernard Simon, Paris, France, assignor to Alcatel Alsthom Compagnie Generale d'Electricite, Paris, France

Filed Jul. 21, 1993, Ser. No. 93,919

Claims priority, application France, Jul. 23, 1992, 92 09088

Int. Cl.⁶ H01M 6/14; 4/36

U.S. Cl. 429—105

10 Claims

1. A liquid cathode lithium cell including an electrolyte and a carbon-based electrode, wherein said electrode is composed of a mixture of a carbon-containing material and of a binder to which an electroactive compound is added, said electroactive compound being more oxidizing than said electrolyte and having a reduction potential that is greater than 3 volts measured relative to a lithium electrode, the proportion of said electroactive compound lying in the range 10% to 80% by weight of said mixture.

5,512,387

THIN-FILM, SOLID STATE BATTERY EMPLOYING AN ELECTRICALLY INSULATING, ION CONDUCTING ELECTROLYTE MATERIAL

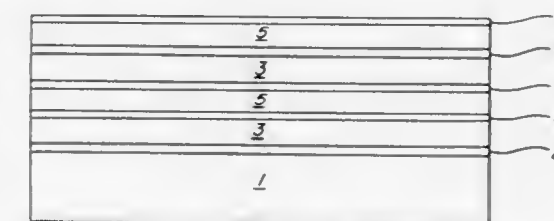
Stanford R. Ovshinsky, Bloomfield Hills, Mich., assignor to Ovonic Battery Company, Inc., Troy, Mich.

Continuation-in-part of Ser. No. 155,059, Nov. 19, 1993, abandoned. This application Feb. 18, 1994, Ser. No. 198,757

Int. Cl.⁶ H01M 10/36; 2/30

U.S. Cl. 429—152

18 Claims



1. A solid state battery comprising:

- a substrate;
- at least one multilayered electrochemical cell deposited onto said substrate, said multilayered electrochemical cell comprising:
 - a solid state layer of negative electrode material capable of electrochemically adsorbing and desorbing lithium ions during charge and discharge;
 - a solid state layer of positive electrode material capable of electrochemically desorbing and adsorbing lithium ions during charge and discharge; and
 - a solid state layer of lithiated silicon nitride material disposed between said layer of positive electrode material and said layer of negative electrode material, where said layer of lithiated silicon nitride material is electrically insulating and capable of readily conducting or transporting lithium ions from said layer of positive electrode material to said layer of negative electrode material while said battery is charging and from said layer of negative electrode material to said layer of positive electrode material while said battery is discharging; and
- an electrically conductive layer deposited a top the last of said at least one multilayered electrochemical cells, said electrically conductive layer providing one battery terminal.

5,512,388

SIDE COVER BATTERY CELL ASSEMBLY

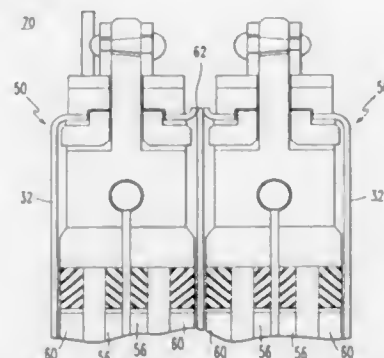
Christopher J. Pulley, Shaker Hts.; Steven J. Specht, Concord, and Geoffrey Barlow, South Russell, all of Ohio, assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Oct. 17, 1994, Ser. No. 323,979

Int. Cl.⁶ H01M 2/06; 2/04

U.S. Cl. 429—179

2 Claims



1. A lithium metal sulfide battery having a case within which at least one positive electrode and at least one negative electrode are provided, said case having a top, a bottom opposite said top, two ends and two sides, said sides having the largest dimensions in said case, said case comprising:

- a first member comprising said top, said bottom, said two ends and one of said two sides, said first member being formed in a drawn form from a sheet of metal; and
- a cover comprising the other of said two sides, said cover being secured to said first member after said at least one positive electrode and at least one negative electrode are provided within said first member;
- a terminal electrically connected to one of said electrodes, the other of said electrodes being electrically connected to said first member;
- said top including an aperture therein;
- said terminal extending through said aperture in said top and being electrically insulated from said first member.

5,512,389

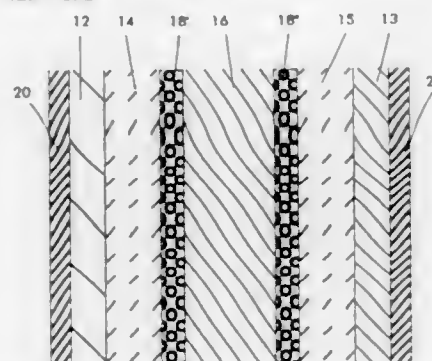
RECHARGEABLE NON-AQUEOUS THIN FILM LITHIUM BATTERY

Sankar Dasgupta, c/o Electrofuels Manufacturing Co. 21 Hanna Ave., and James K. Jacobs, c/o Electrofuel Manufacturing Co. Unit 10, 21 Hanna Ave., both of Toronto, Canada Division of Ser. No. 332,796, Nov. 2, 1994, Pat. No. 5,437,692. This application May 5, 1995, Ser. No. 437,126

Int. Cl.⁶ H01M 6/18

U.S. Cl. 429—192

8 Claims



1. A rechargeable non-aqueous lithium battery comprising:

- a battery housing means;
- a lithium containing negative electrode further comprising a first polymer laminate having embedded therein an electronically conductive carbonaceous substance, said first polymer

laminate having a pair of parallel faces and being impervious to water, said first polymer laminate being permeable to electrons, and a continuous layer of agglomerated particles of fine carbon capable of intercalating lithium, located on one of the parallel faces of said first polymer laminate, said particles of fine carbon having been agglomerated with an organic binder containing a lithium compound, said continuous layer of agglomerated particles of fine carbon having thickness in excess of 0.5 mm;

iii) a lithium-ion conductive solid polymer laminate electrolyte further comprising a second polymer laminate having a pair of parallel faces, and a lithium compound capable of releasing mobile lithium ions dissolved in said second polymer laminate, said lithium compound having a first concentration in said second polymer laminate and said second polymer laminate being non-conductive of electrons, one of said pair of parallel faces of said second polymer laminate opposing said continuous layer of agglomerated particles of fine carbon comprised in said lithium containing negative electrode;

iv) a lithium containing positive electrode, further comprising a third polymer laminate having embedded therein an electronically conductive carbonaceous substance, said third polymer laminate having a pair of parallel faces and being impervious to water, said third polymer laminate being permeable to electrons, and a continuous layer of agglomerated fine particles of an oxide capable of incorporating lithium, located on one of the pair of parallel faces of said third polymer laminate, said oxide being one member of the group consisting of vanadium oxide, manganese oxide, cobalt oxide, nickel oxide and silver-vanadium oxide, said oxide having been agglomerated with an organic binder containing a lithium compound, said continuous layer of agglomerated fine particles of said oxide having thickness in excess of 0.5 mm, said continuous layer of agglomerated fine particles of said oxide opposing the other one of said pair of parallel faces of said second polymer laminate;

vi) a first coating of a lithium ion containing fluid adhesive mixture disposed between at least a portion of said continuous layer of agglomerated particles of fine carbon comprised in said lithium containing negative electrode opposing one of the parallel faces of said second polymer laminate comprised in said lithium ion-conductive solid polymer laminate electrolyte, and a second coating of said lithium ion containing fluid adhesive mixture disposed between at least a portion of said continuous layer of agglomerated fine particles of said oxide comprised in said lithium containing positive electrode opposing the other one of said parallel faces of said second polymer laminate comprised in said lithium ion-conductive solid polymer laminate electrolyte, said lithium containing negative electrode being adherent to one of the pair of parallel faces of said lithium ion-conductive solid polymer laminate electrolyte and said lithium containing positive electrode being adherent to the other one of the pair of parallel faces of said lithium ion-conductive solid polymer laminate electrolyte, said first and said second coatings containing a lithium compound in a second concentration, said second lithium compound concentration being less than said first lithium compound concentration; and

vii) a first metallic current collector means in contact with the other one of said parallel faces of said first polymer laminate comprised in said lithium containing negative electrode, and a second metallic current collector means in contact with the other one of said parallel faces of said third polymer laminate comprised in said lithium containing positive electrode, and said first and said second current collector means having external electrical leads for discharging and charging said rechargeable non-aqueous lithium battery.

5,512,390

LIGHT-WEIGHT ELECTRICAL-STORAGE BATTERY

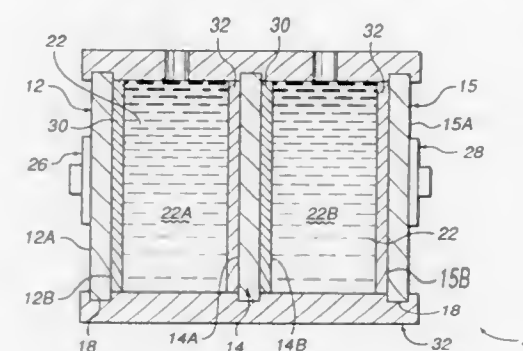
Ivan M. Obushenko, Kiev, Ukraine, assignor to Photran Corporation, Lakeville, Minn.

Filed Jul. 21, 1994, Ser. No. 278,387

Int. Cl.⁶ H01M 10/18

U.S. Cl. 429—204

9 Claims



1. An electrical-storage battery, comprising: first and second graphite electrode-plates, each thereof having first and second surfaces, said electrode-plates spaced apart with said second surface of said first electrode-plate facing said first surface of said second electrode-plate and said electrode-plates defining an electrolyte space therebetween; said electrolyte space containing an electrolyte, said electrolyte being an aqueous solution including sulfuric acid; and said second surface of said first electrode-plate forming an anode and having a layer of lead thereon when the battery is fully charged and said first surface of said second electrode forming a cathode and having a layer of manganese dioxide thereon when the battery is fully charged, whereby when said battery is discharged, said layer of lead transforms at least partially into a layer of lead sulfate and said layer of manganese dioxide at least partially dissolves in said electrolyte.

5,512,391

SOLID STATE ELECTROCHEMICAL CELL CONTAINING A PROTON-DONATING AROMATIC COMPOUND

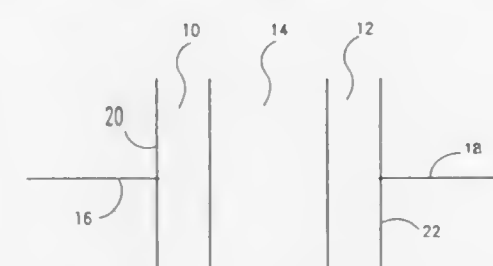
Niles A. Fleischer, Rehovot, Israel, assignor to E.C.R. - Electrochemical Research Ltd., Yavne, Israel

Continuation-in-part of Ser. No. 128,497, Sep. 17, 1993, Pat. No. 5,382,481. This application May 2, 1994, Ser. No. 208,326 The portion of the term of this patent subsequent to Jan. 17, 2012, has been disclaimed.

Int. Cl.⁶ H01M 10/40

U.S. Cl. 429—213

29 Claims



1. A battery comprising an anode, a cathode and a solid state electrolyte between, and in contact with, the anode and cathode, wherein:

- the anode includes a material composed of a proton-donating aromatic compound;
- the cathode includes a proton-accepting compound; and
- the electrolyte is a solid state proton-conducting material.

ELECTROLYTIC CELL USING SMALL PARTICLE GRAPHITE

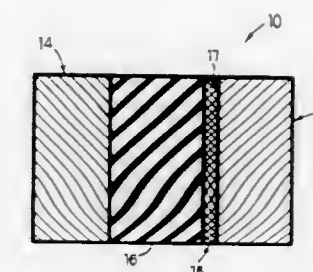
Denis G. Fauteux, Acton, and Jie Shi, Arlington, both of Mass., assignors to Arthur D. Little, Inc., Cambridge, Mass.

Filed Feb. 10, 1995, Ser. No. 386,736

Int. Cl.⁶ H01M 10/36

U.S. Cl. 429—218

12 Claims



1. An electrolytic cell using small particle graphite comprising: a first electrode constructed with lithium; a second electrode constructed with graphite; means, associated with the graphite, for increasing the reversible capacity of the graphite beyond its known theoretical capacity of 372 mAh/g for LiC₆; and an electrolyte associated with the first and second electrodes; the means for increasing the reversible capacity of the graphite beyond the known theoretical capacity of 372 mAh/g for LiC₆ comprises utilization of graphite particles on the second electrode having active surface areas greater than 0.04 m²/g.

VAPOR-GROWN AND GRAPHITIZED CARBON FIBERS PROCESS FOR PREPARING SAME MOLDED MEMBERS THEREOF AND COMPOSITE MEMBERS THEREOF

Minoru Harada, and Masanori Niiyama, both of Shizuoka, Japan, assignors to Nikkiso Company Limited, Tokyo, Japan Continuation-in-part of Ser. No. 85,940, Jul. 6, 1993, Pat. No. 5,409,775. This application Feb. 17, 1995, Ser. No. 389,872 Claims priority, application Japan, Jul. 6, 1992, 4-178

5,512,394
METHOD OF COIL FABRICATION FOR THIN-FILM
MAGNETIC RECORDING HEADS USING PHASE-
SHIFTING MASKS

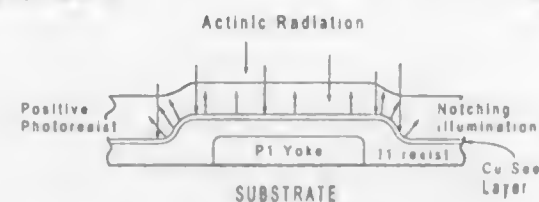
Marc D. Levenson, Saratoga, and Hugo A. E. Santini, San Jose, both of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 242,810, May 13, 1994, Pat. No. 5,414,580. This application Nov. 14, 1994, Ser. No. 337,808

Int. Cl.⁶ G03F 7/00

U.S. Cl. 430—5

5 Claims



1. A method for fabricating a thin-film magnetic read/write head that eliminates contrast effects producing notching in a thin-film magnetic head coil caused by subsurface reflectivity at a reflective layer step during a photolithography step in the fabrication of the coil, the method comprising the steps of:

forming a first permalloy yoke on a substrate, wherein the edges of the first yoke create steps from the top of the first yoke down to the substrate;

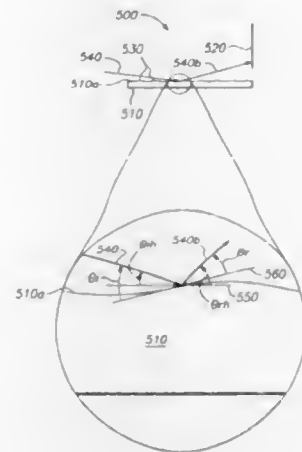
forming a first conformal layer of an electric insulation material over the first permalloy yoke and the substrate;

forming a conductive coil on the electric insulation layer, wherein the conductive coil is fabricated using a lithography process including forming a photoresist layer over the first conformal layer and forming a phase-shifting mask layer over the photoresist layer that contains printable openings in the image of the conductive coil and non-printable openings covered by transparent material of a thickness that creates a 180° phase-shift in illumination, the phase-shifting mask layer creating illumination destructive interference in regions of the photoresist layer that are covered by the phase-shifting mask layer and not in regions of the photoresist layer under an area defined by the printable openings;

forming a second electric insulation layer over the conductive coil, wherein the second electric insulation layer planarizes the coil topography; and

forming a second permalloy yoke over the second electric insulation layer, wherein said second yoke is joined to said first yoke at a back gap but separated from said first yoke by a thin insulating layer at a recording gap.

iv) resistant to corrosion; and
v) having a thermal coefficient of expansion substantially equal to said beryllium substrate and said beryllium carrier; whereby said image mask assembly comprising a beryllium carrier, beryllium mask substrate, and masking material having a thermal coefficient of expansion substantially equal to said beryllium carrier and mask substrate will not be subject to thermal distortion due to the use of materials having matched thermal coefficients of expansion.



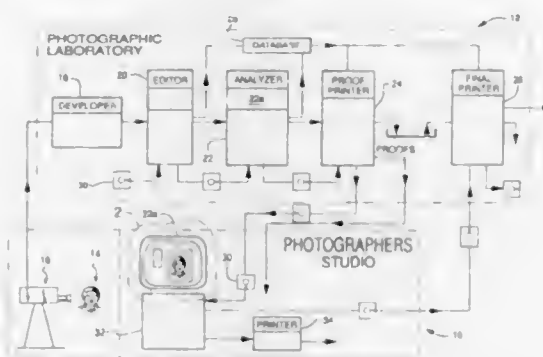
5,512,396
METHOD OF PRODUCING PHOTOGRAPHIC PRINTS
Ray Hicks, 4444 W. Bristol Rd., Flint, Mich. 48507

Filed Jul. 5, 1994, Ser. No. 270,444

Int. Cl.⁶ H04N 1/00

U.S. Cl. 430—21

9 Claims



1. A method of producing photographic prints comprising the steps of:

providing exposed photographic film including at least one frame;

developing the exposed film frame;

acquiring a video image of the frame of developed film at a first work station and storing the video image;

making initial corrections with respect to the frame of developed film at the first work station and storing the initial corrections along with the video image;

displaying the video image of the frame at a subsequent work station utilizing the stored video image and the stored initial corrections;

performing further corrections at the subsequent work station with respect to the frame utilizing the video image, including corrections modifying the initial corrections, and storing the further corrections; and

producing photographic prints at the first work station utilizing the stored initial and further corrections.

5,512,395
IMAGE MASKS FOR SEMICONDUCTOR
LITHOGRAPHY

Michael D. Rostoker, San Jose; Nicholas F. Pasch, Pacifica, and Joe Zelayeta, Saratoga, all of Calif., assignors to LSI Logic Corporation, Milpitas, Calif.

Continuation of Ser. No. 54,995, Apr. 30, 1993, abandoned.

This application Nov. 16, 1994, Ser. No. 340,251

Int. Cl.⁶ G03F 9/00

U.S. Cl. 430—5

7 Claims

1. An x-ray image mask assembly for use in semiconductor wafer x-ray lithography characterized by low distortion comprising:

a) a peripheral beryllium carrier;

b) a beryllium substrate transparent to x-rays having a substantially planar surface and peripherally mounted to said beryllium carrier; and

c) a patterned metal masking material on said planar surface of said beryllium substrate, said patterned masking material further characterized as:

i) relatively opaque to x-rays;
ii) adherent to beryllium;
iii) insensitive to moisture;

5,512,397
STEPPER SCANNER DISCRETIONARY LITHOGRAPHY
AND COMMON MASK DISCRETIONARY
LITHOGRAPHY FOR INTEGRATED CIRCUITS

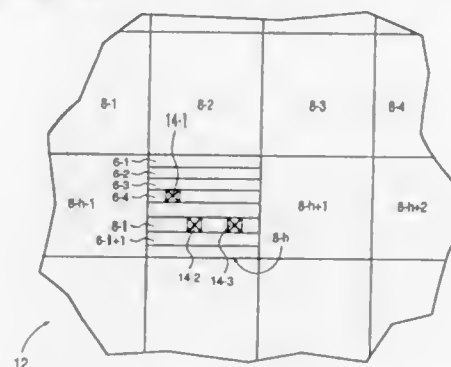
Glenn J. Leedy, 1061 E. Mountain Dr., Santa Barbara, Calif. 93108

Continuation of Ser. No. 838,157, Feb. 18, 1992, abandoned, which is a continuation-in-part of Ser. No. 775,324, Oct. 11, 1991, Pat. No. 5,225,771, which is a division of Ser. No. 482,135, Feb. 16, 1990, Pat. No. 5,103,557, which is a continuation-in-part of Ser. No. 194,596, May 16, 1988, Pat. No. 4,924,589. This application Nov. 2, 1993, Ser. No. 146,470

Int. Cl.⁶ G03F 7/20

U.S. Cl. 430—30

22 Claims



1. A method of fabricating integrated circuits comprising the steps of:

fabricating a plurality of integrated circuit logic elements on a principal surface of a substrate;

forming a resist layer overlying the integrated circuit logic elements;

testing each logic element and determining the presence of defects in each logic element;

determining the location and dimensions of each defect;

providing a fixed mask;

exposing said resist layer with a first exposure through said fixed mask to define electrical interconnects between the logic elements on said resist layer and leaving predetermined portions of said resist layer unexposed, wherein said predetermined portions left unexposed are defined by the location and dimensions of each defect;

exposing said resist layer with a second exposure to define electrical interconnects between the logic elements on said resist layer by exposing only the predetermined portions left unexposed in the preceding step; and

interconnecting the logic elements according to the first and second exposures, thereby excluding the logic elements having defects from the interconnected logic elements.

5,512,398
DIAGNOSTIC METHOD FOR DETERMINING
AGITATION LEVELS IN LOW VOLUME THIN TANKS

David G. Foster, W. Henrietta, and John H. Rosenburgh, Hilton, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 16, 1995, Ser. No. 389,373

Int. Cl.⁶ G03C 5/02; 5/38

U.S. Cl. 430—30

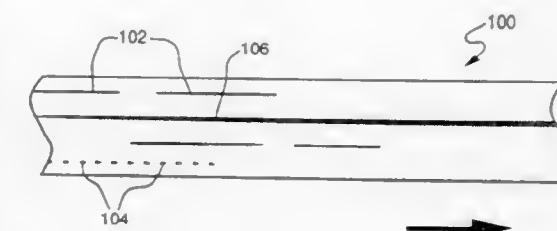
9 Claims

1. A diagnostic method for testing fluid delivery of a photographic processing solution in a processing tank for a photographic processing apparatus of the type having a plurality of nozzles and adapted in use to impinge said photographic processing solution onto a photographic emulsion, the method characterized by:

charging said processing tank with a solution containing a silver solvent;

processing said photographic emulsion; and

testing the processed photographic emulsion for patterns of silver remaining in the photographic emulsion, wherein such (1):



patterns are indicative of nozzle obstructions and thereby agitation levels present in said processing tank.

5,512,399
ORGANIC PHOTO SENSITIVE MEMBER FOR
ELECTROPHOTOGRAPHY

Noriaki Kawata, and Kiyoshi Hikima, both of Nagano, Japan, assignors to Fuji Electric Co., Ltd., Kawasaki, Japan

Filed Sep. 14, 1994, Ser. No. 305,907

Claims priority, application Japan, Sep. 21, 1993, 5-233974

Int. Cl.⁶ G03G 5/10

U.S. Cl. 430—69

9 Claims

1. An electrophotographic organic photosensitive member comprising:

a cylindrical supporting member formed of a material of 10⁴ ohm.cm in volume resistivity containing a cross-linked polyphenylenesulfide resin as a main component, and a highly conductive carbon black of 10⁻¹ ohm.cm or less in volume resistivity, an amount of the cross-linked polyphenylenesulfide resin contained in the cylindrical supporting member being at least 40 wt % to provide dimensional accuracy and

an average particle diameter of the carbon black contained in the cylindrical supporting member being 20 to 50 nm, and

an organic photosensitive layer formed on an outer surface of the cylindrical supporting member.

5,512,400
HYDRAZONE COMPOUND AND
ELECTROPHOTOGRAPHIC PHOTORECEPTOR AND
ORGANIC ELECTROLUMINESCENT ELEMENT BOTH
CONTAINING THE SAME

Atsushi Takesue; Yasuo Murakami; Takanobu Watanabe, and Mitsutoshi Anzai, all of Ibaraki, Japan, assignors to Hodogaya Chemical Co., Ltd., Tokyo, Japan

Filed Dec. 15, 1994, Ser. No. 356,126

Claims priority, application Japan, Dec. 15, 1993, 5-342273;

Oct. 12, 1994, 6-271845

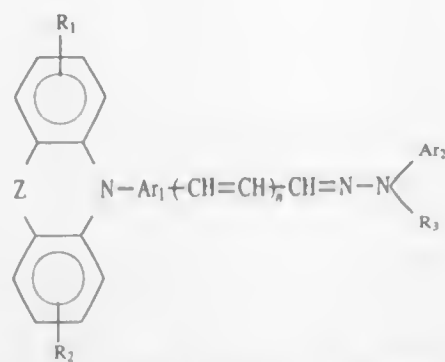
Int. Cl.⁶ G03G 5/06

U.S. Cl. 430—78

3 Claims



1. An electrophotographic photoreceptor having a photosensitive layer on an electrically conductive support, said photosensitive layer containing a hydrazone compound represented by formula (I):



wherein Ar_1 represents a substituted or unsubstituted phenylene group, a substituted or unsubstituted naphthylene group, a substituted or unsubstituted biphenylene group, or a substituted or unsubstituted anthrylene group, Ar_2 represents a substituted or unsubstituted aryl group, R_1 and R_2 each independently represents a hydrogen atom, a halogen atom, an unsubstituted alkyl group, or an unsubstituted alkoxy group, R_3 represents an unsubstituted alkyl group, a substituted or unsubstituted aralkyl group, or a substituted or unsubstituted aryl group, Z represents an ethylene group or a vinylene group, and n is 0 or 1.

5,512,401

POLYIMIDE-AMIC ACID TONER COMPOSITIONS

Guerino G. Sacripante, Oakville; Walter Mychajlowski, Georgetown, both of, Canada, and J. Stephen Kittelberger, Rochester, N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Feb. 27, 1995, Ser. No. 394,974

Int. Cl.⁶ G03G 9/087

U.S. Cl. 430—106

33 Claims

1. A toner composition consisting essentially of a pigment and a polyimide-amic acid resin.

5,512,402

CARRIER FOR ELECTROPHOTOGRAPHY, TWO-COMPONENT TYPE DEVELOPER, AND IMAGE FORMING METHOD

Kenji Okado, Yokohama; Toshiyuki Ugal, Tokyo; Ryoichi Fujita, Kawasaki; Makoto Kanbayashi, Kawasaki; Tsuyoshi Takiguchi, Kawasaki; Yasuhiro Ichikawa, Tokyo, and Wakashi Iida, Higashi Kurume, all of, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 19, 1994, Ser. No. 246,146

Claims priority, application Japan, May 20, 1993, 5-139925; Jun. 22, 1993, 5-173583; Jul. 13, 1993, 5-195309

Int. Cl.⁶ G03G 9/08; 9/107

U.S. Cl. 430—106.6

26 Claims

1. A two-component type developer comprising a toner and a carrier, said toner containing toner particles and an external additive, and said carrier comprising carrier particles, wherein

said toner has a weight average particle diameter of from 3 μ m to 7 μ m; and contains more than 40% by number of toner particles with a particle diameter of 5.04 μ m or smaller, from 10% to 70% by number of toner particles with a particle diameter of 4 μ m or smaller, and from 2% to 20% by volume of toner particles with a particle diameter of 8 μ m or larger, and

said carrier has a 50% particle diameter (D_{50}) of from 15 μ m to 45 μ m; said carrier contains from 1% to 20% of carrier particles with a size smaller than 22 μ m, not more than 3% of carrier particles with a size smaller than 16 μ m, from 2% to 15% of carrier particles with a size of 62 μ m or larger, and not more than 2% of carrier particles with a size of 88 μ m or larger; and said carrier has a specific surface area S_1 as

(I) measured by an air-permeability method and a specific surface area S_2 as calculated by the following expression:

$$S_2 = (6/p \cdot D_{50}) \times 10^4$$

wherein p is a specific gravity of carrier, satisfying the following condition:

$$1.2 \leq S_1/S_2 \leq 2.0.$$

6. A two-component type developer according to claim 1, wherein said carrier has a saturation magnetization of from 35 emu/g to 90 emu/g, a residual magnetization of 10 emu/g or less and a coercive force of 40 oersteds or less, in an applied magnetic field of 3,000 oersteds.

5,512,403

MIXTURE OF CARRIER PARTICLES USEFUL IN ELECTROGRAPHIC DEVELOPERS

Dinesh Tyagi, Fairport, and William E. Yoerger, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 5, 1994, Ser. No. 286,854

Int. Cl.⁶ G03G 9/107; 9/113

U.S. Cl. 430—106.6

20 Claims

1. A mixture of carrier particles useful in electrographic developers comprising toners and carrier particles, said mixture comprises at least a first type of carrier particles and a second type of carrier particles, wherein said first type of carrier particles occupies a position in the triboelectric continuum different from the position in the triboelectric continuum occupied by said second type of carrier particles, said positions determined relative to said toner, and the level of charge to which said mixture of carrier particles charges said toner in a developer composition continuously decreases from a high level when said carrier mixture comprises all of said first type of carrier particles to a low level when said carrier mixture comprises all of said second type of carrier particles, and wherein said first and said second types of carrier particles comprise hard ferrite, and said mixture of carrier particles is employed in combination with a magnetic applicator comprising a rotatable magnetic core and an outer non-magnetizable shell.

5,512,404

DEVELOPER COMPOSITIONS EXHIBITING HIGH DEVELOPMENT SPEEDS

Bijay S. Saha, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 29, 1994, Ser. No. 297,681

The portion of the term of this patent subsequent to Aug. 29, 2014, has been disclaimed.

Int. Cl.⁶ G03G 9/107

U.S. Cl. 430—106.6

5 Claims

4. An electrostatic two-component dry developer composition for use in the development of electrostatic latent images which comprises a mixture of charged toner particles and oppositely charged carrier particles which comprise a hard magnetic ferrite material having a hexagonal crystalline structure of the general formula $M_{0.6}Fe_2O_3$ in which M is strontium, barium or mixtures thereof exhibiting a coercivity of at least 300 Oersteds when magnetically saturated and an induced magnetic moment of at least 20 EMU/g when in an applied magnetic field of 1000 Oersteds in which from 1.0 to 10.0% by weight of the carrier particles in the mixture, based on the total

weight of the mixture, have a number average particle diameter of from 1.0 to 10.0 micrometers and from 99.0 to 90.0% by weight of the carrier particles in the mixture, based on the total weight of the mixture, have a number average particle diameter of from 11.0 to 38.0 micrometers.

5,512,405

IRON OXIDE PARTICLES AND PROCESS FOR PRODUCING THE SAME

Hiromitsu Misawa, Hatsukaichi; Kazuo Fujioka; Koso Aoki, both of Hiroshima; Eiichi Kurita, Yokohama; Yoji Okano, Hiroshima, and Minoru Kozawa, Higashihiroshima, all of, Japan, assignors to Toda Kogyo Corporation, Hiroshima, Japan

Division of Ser. No. 131,668, Oct. 5, 1993, Pat. No. 5,470,660.

This application Jun. 7, 1995, Ser. No. 482,733

Claims priority, application Japan, Oct. 6, 1992, 4-292265; Oct. 15, 1992, 4-304689; Oct. 15, 1992, 4-304690; Oct. 15, 1992, 4-304691

Int. Cl.⁶ G03G 9/083

U.S. Cl. 430—106.6

3 Claims

1. A magnetic toner comprising

100 parts by weight of spherical spinel-type iron oxide particles having a specific surface area represented by the following formula (2):

$$6/(p_1 \cdot d_{31}) \times \phi_{s1}$$

(2)

wherein p_1 represents a specific gravity of said spherical spinel-type iron oxide particles, d_{31} represents an area-average particle diameter ($0.1 \mu\text{m} \leq d_{31} \leq 0.5 \mu\text{m}$), and ϕ_{s1} represents an area shape factor ($1.40 \leq \phi_{s1} \leq 1.60$); and

0.5 to 3.5 parts by weight, calculated as SiO_2 , of fine silica particles which are adhered to the surfaces of said spherical spinel-type iron oxide particles;

the increment of BET specific surface area over said spherical spinel-type iron oxide particles being 1 to 5 m^2/g , and the increment of said BET specific surface area with respect to the amount of said fine silica particles being 1.0 to 4.5; and

10 to 900 parts by weight of a toner resin.

5,512,406

TONERS OF DIFFERENT SIZE FOR ELECTROPHOTOGRAPHY

Kenichi Takeda; Tatsuya Tada, both of Yokohama; Nobuyuki Itoh, Oume; Masao Nakano, Kamakura; Kazuhisa Kemmochi, Yokohama, and Isami Itoh, Kawasaki, all of, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 12, 1994, Ser. No. 321,903

Claims priority, application Japan, Oct. 14, 1993, 5-280332

Int. Cl.⁶ G03G 9/097; 9/08

U.S. Cl. 430—110

9 Claims

1. A toner for electrophotography comprising:

a first toner A comprising a toner particle group (a) having a first particle size distribution and an external additive; and a second toner B comprising a toner particle group (b) having a second particle size distribution different from said first particle size distribution and an external additive;

wherein said toner particle group (a) has a smaller average particle size than that of said toner particle group (b) and the amount of said external additive in said first toner A is greater than the amount of said external additive in said second toner B, and

said external additive comprises at least one kind of fine particles selected from the group consisting of silica, titanium oxide, molybdenum disulfide, tungsten disulfide, boron nitride, lead oxide, antimony oxide, strontium sulfate, aluminum sulfate, calcium carbonate, strontium titanate, cerium oxide, strontium oxide, a metallic salt of a higher fatty acid, graphite, barium fluoride, calcium fluoride, carbon fluoride, carbon black, conductive tin oxide, styrene homopolymer powder, substituted styrene homopolymer powder, styrene copolymer powder, polymethyl methacrylate powder, polybutyl methacrylate powder, polyvinyl chloride powder, polyvinyl acetate powder, polyethylene powder, polypropylene powder, polyester powder, polyurethane powder, polyamide powder, epoxy resin powder, polyvinyl butyral powder, polyacrylic resin powder, rosin powder, denatured rosin powder,

terpene resin powder, phenol resin powder, aliphatic hydrocarbon resin powder, alicyclic hydrocarbon resin powder, aromatic petroleum resin powder, chlorinated paraffin powder, paraffin wax powder, polytetrafluoroethylene powder and polyvinylidene fluoride powder.

5,512,407

BIS(QUATERNARY PHOSPHONIUM) TETRAHALOMANGANATE SALTS AS CHARGE-CONTROL AGENTS

John C. Wilson, Rochester, and Dinesh Tyagi, Fairport, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

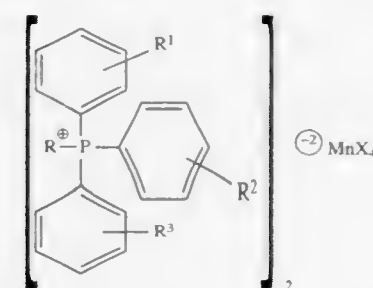
Filed Dec. 7, 1994, Ser. No. 350,790

Int. Cl.⁶ G03G 9/097

U.S. Cl. 430—110

4 Claims

1. A dry, particulate electrostatic toner composition comprising a polymeric binder and a charge-control agent comprising a bis(quaternary phosphonium) tetrahalomanganate salt having the structure:



wherein

R represents alkyl group having from 1 to 24 carbon atoms; a substituted alkyl group having from 1 to 24 carbon atoms substituted with one or more hydroxy-, carboxy-, alkoxy-, carboalkoxy-, acyloxy-, nitro-, cyano-, keto- or halo-groups; a cycloalkyl group having from 3 to 7 carbon atoms; an alkaryl group having from 1 to 20 carbon atoms in the alkyl group and 6 to 14 carbon atoms in the aryl group; an aralkyl group having from 1 to 4 carbon atoms in the alkyl group and 6 to 14 carbon atoms in the aryl group wherein the aryl group is unsubstituted or substituted with one or more alkyl-, hydroxy-, alkoxy-, carboalkoxy-, acyloxy-, amino-, nitro-, cyano-, keto- or halo-groups; phenyl or substituted phenyl; R^1 , R^2 and R^3 , which can be the same or different, represent hydrogen; an alkyl group having from 1 to 24 carbon atoms; hydroxy-, carboxy-, alkoxy-, carboalkoxy-, acyloxy-, amino-, nitro-, cyano-, keto-, or halo-groups; and X , which can be the same or different, represents fluorine, chlorine, bromine or iodine.

5,512,408

DRY TONER WITH GELLED RESIN FOR HIGH SPEED PRINTER

Brian W. Baird, Louisville; George P. Marshall, Boulder; Michael G. Miller, Longmont, and James C. Minor, Niwot, all of Colo., assignors to Lexmark International, Inc., Greenwich, Conn.

Filed Jun. 23, 1995, Ser. No. 496,848

Int. Cl.⁶ G03G 9/087; 9/097; 13/08

U.S. Cl. 430—110

4 Claims

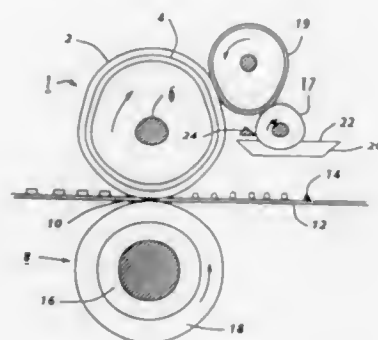
1. A dry toner comprising a resin body, a charge control agent, and carbon black, said resin body comprising about 40 parts by weight of a copolymer of *n*-butyl methacrylate and methyl methacrylate, and about 20 parts by weight of a copolymer of about 80 parts by weight styrene and about 20 parts by weight butyl acrylate about 80 percent cross linked with divinyl benzene, an ester with pentaerythritol rosin of nearly completely hydrogenated wood rosin, and an ester of rosin with pentaerythritol.

5,512,409
FUSING METHOD AND SYSTEM WITH
HYDROFLUOROELASTOMERS FUSER MEMBER FOR
USE WITH AMINO FUNCTIONAL SILICONE OILS
Arnold W. Henry, Pittsford; Clifford O. Eddy, Webster;
George J. Heeks, Rochester; Che C. Chow, Penfield; Louis
D. Fratangelo, Fairport; David Fraser, Rochester; Samuel
Kaplan, Webster, and David H. Pan, Rochester, all of N.Y.,
assignors to Xerox Corporation, Stamford, Conn.

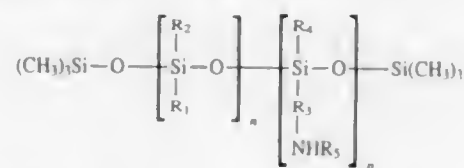
Continuation-in-part of Ser. No. 164,853, Dec. 10, 1993, abandoned. This application Sep. 29, 1994, Ser. No. 315,006
Int. Cl.⁶ G03G 13/20

U.S. Cl. 430—124

13 Claims

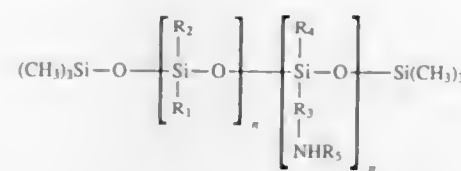


1. The method of fusing thermoplastic resin toner images to a substrate comprising providing a heated thermally stable hydrofluoroelastomer fusing surface at elevated temperature, said hydrofluoroelastomer fusing surface having been prepared in the absence of anchoring sites for a functional release agent of heavy metals, heavy metal oxides, or other heavy metal compounds, forming a film of a fluid amino functional oil on said elastomer surface comprising a fluid amino functional oil having the formula:



where $50 \leq n \leq 200$, p is 1 to 5, and R_1 , R_2 and R_3 are selected from the group consisting of alkyl and arylalkyl radicals having 1 to 18 carbon atoms, R_4 is selected from the group consisting of alkyl and arylalkyl radicals having 1 to 18 carbon atoms and a polyorganosiloxane chain having 1 to 100 diorganosiloxy repeat units, and R_5 is selected from the group consisting of hydrogen, alkyl and arylalkyl radicals having 1 to 18 carbon atoms, said oil having sufficient amino functionality per active molecule to interact with said hydrofluoroelastomer fusing surface in the absence of a heavy metal, heavy metal oxide or other heavy metal compounds anchoring sites to provide an interfacial barrier layer to said toner and a low surface energy film to release said toner from said surface; contacting the toner image on the substrate with the filmed heated elastomer surface to fuse said toner image to said substrate and permitting said toner to cool.

8. A heated pressure fusing system for fusing thermoplastic toner in an electrostatic printing apparatus in which a heated fuser member and a backup pressure member define a fusing arc to fuse toner images to a substrate, said fuser member comprising a thermally stable hydrofluoroelastomer fusing surface said FKM hydrofluoroelastomer fusing surface having been prepared in the absence of anchoring sites for a release agent of heavy metals, heavy metal oxides, or other heavy metal compounds, means to deliver a release agent to said surface, said release agent comprising a fluid amino functional oil having the formula:



where $50 \leq n \leq 200$, p is 1 to 5, and R_1 , R_2 and R_3 are selected from the group consisting of alkyl and arylalkyl radicals having 1 to 18 carbon atoms, R_4 is selected from the group consisting of alkyl and arylalkyl radicals having 1 to 18 carbon atoms and a polyorganosiloxane chain having 1 to 100 diorganosiloxy repeat units, and R_5 is selected from the group consisting of hydrogen, alkyl and arylalkyl radicals having 1 to 18 carbon atoms, said oil having sufficient amino functionality per active molecule to interact with said hydrofluoroelastomer fusing surface in the absence of anchoring sites for said release agent of heavy metals, heavy metal oxides or other heavy metal compounds to provide an interfacial barrier layer to said toner and a low surface energy film to release said toner from said surface.

5,512,410 HEAT IMAGE SEPARATION WITH PHENOLIC THERMAL SOLVENTS AND DYE RELEASING COUPLERS

John Texter, Rochester; Thomas R. Welter, Webster; David T. Southby, Rochester; Jared B. Mooberry, Rochester, and David S. Bailey, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 993,580, Dec. 21, 1992, Pat. No. 5,356,750. This application Oct. 17, 1994, Ser. No. 323,967
Int. Cl.⁶ G03C 8/40; 8/50

U.S. Cl. 430—203

20 Claims

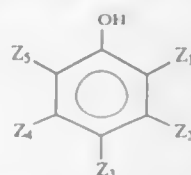
1. An aqueous-developable photographic color diffusion transfer element comprising one and only one dimensionally stable support and one or more layers comprising radiation sensitive silver halide, thermal solvent for facilitating the thermal diffusion of dyes through a hydrophilic binder, a dye-releasing coupler, a dye-receiving layer intermediate said support and dye-releasing coupler containing layers, a stripping layer intermediate aid dye-receiving layer and any layers containing silver halide or dye-releasing coupler, and hydrophilic binder, wherein said dye is heat diffusible in said binder and thermal solvent, wherein said dye-releasing coupler is of the structure



where

Cp is a coupler radical substituted in the coupling position with a divalent linking group, L;

Dye is a dye radical exhibiting selective absorption in the visible spectrum; and where said —L—Dye group couples off upon reaction of said coupler radical with the oxidation product of a primary amine developing agent, and such that said Dye radical is subsequently released from the —L—Dye group; where said stripping layer contains a stripping agent; and wherein said thermal solvent has the structure I.



wherein

- (a) Z_1 , Z_2 , Z_3 , Z_4 , and Z_5 are substituents, the Hammett sigma parameters of Z_2 , Z_3 , and Z_4 sum to give a total, Σ , of at least -0.28 and less than 1.53 ;
- (b) the calculated logP for I is greater than 3 and less than 10.

5,512,411
SULFONYL HYDRAZIDE DEVELOPERS FOR
PHOTOTHERMOGRAPHIC AND THERMOGRAPHIC
Doreen C. Lynch, Afton; Sharon M. Simpson, Lake Elmo, and Paul G. Skoug, Stillwater, all of Minn., assignors to Minnesota Mining & Manufacturing Company, Saint Paul, Minn.
Division of Ser. No. 369,738, Jan. 4, 1995, Pat. No. 5,464,738.
This application Aug. 21, 1995, Ser. No. 517,380

Int. Cl.⁶ G03C 1/498; G03F 1/00

U.S. Cl. 430—203

8 Claims

1. A process comprising the steps of:

- (a) exposing a heat-developable, black-and-white photothermographic element to light and thereafter heating said element to form a visible image thereon;
- (b) positioning said element with a visible image thereon between a source of ultraviolet radiation and an ultraviolet radiation photosensitive imageable medium, and
- (c) then exposing said ultraviolet radiation sensitive imageable medium to ultraviolet radiation through said visible image on said element, thereby absorbing ultraviolet radiation in the areas of said element where there is a visible image and transmitting ultraviolet radiation where there is no visible image on said element;

said heat-developable, black-and-white photothermographic element comprising a support bearing at least one photosensitive, image-forming photothermographic emulsion layer comprising:

- (a) a photosensitive silver halide;
- (b) a non-photosensitive, reducible silver source;
- (c) a reducing agent for said non-photosensitive, reducible silver source; and
- (d) a binder;

wherein said reducing agent for said non-photosensitive reducible silver source consists essentially of a compound of the formula:



wherein:

R^1 and R^2 are each independently selected from the group consisting of: alkyl and alkenyl groups of up to 20 carbon atoms; alkoxy groups of up to 20 carbon atoms; aryl, alkaryl, and aralkyl groups of up to 20 carbon atoms; aryloxy groups of up to 20 carbon atoms; non-aromatic and aromatic heterocyclic ring groups containing up to 6 ring atoms; alicyclic ring groups containing up to 6 ring carbon atoms; and fused ring and bridging groups containing up to 14 ring atoms.

5,512,412 METHOD FOR MAKING A LITHOGRAPHIC PRINTING PLATE

Jos Vaes, Betekom, and Luc Wahbes, Mortsel, both of Belgium, assignors to AGFA-Gevaert, N.V., Mortsel, Belgium
Filed Dec. 20, 1994, Ser. No. 360,089

Claims priority, application European Pat. Off., Jan. 26, 1994, 94200189

Int. Cl.⁶ G03C 8/32; G03F 7/07

U.S. Cl. 430—204

9 Claims

1. A method for making a lithographic printing plate according to the silver salt diffusion transfer process comprising the steps of: image-wise exposing an imaging element comprising on a support in the order given a photosensitive layer comprising a silver halide emulsion and an image receiving layer containing physical development nuclei,

developing said imaging element in the presence of developing agent(s) and silver halide solvent(s) using an alkaline processing liquid and

neutralizing a thus obtained developed imaging element using a neutralization liquid having a pH between 5 and 7 characterized in that said neutralization liquid contains a total concentration of phosphate ions between 0.2 mol/l and 0.4 mol/l.

5,512,413 IMAGING ELEMENT FOR MAKING A LITHOGRAPHIC PRINTING PLATE ACCORDING TO THE SILVER SALT DIFFUSION TRANSFER PROCESS

Lode Deprez, Wachtebeke, and Eddy Michiels, Duffel, both of Belgium, assignors to AGFA-Gevaert N.V., Mortsel, Belgium
Continuation of Ser. No. 340,033, Nov. 14, 1994, abandoned.

This application Jun. 6, 1995, Ser. No. 466,083

Claims priority, application European Pat. Off., Dec. 2, 1993, 93203378

Int. Cl.⁶ G03C 1/30; G06; G03F 7/07

U.S. Cl. 430—204

7 Claims

1. An imaging element comprising on the same side of a support in the order given a base layer, a light sensitive layer containing a silver halide emulsion and a surface layer comprising physical development nuclei characterized in that said base layer and/or said light-sensitive layer comprises gelatin hardened with a divinylsulfonyl hardener such that the time needed to completely brake down said base layer, light sensitive layer and surface layer using an aqueous solution of 0.14% by weight of NaOCl at 25° C. is between 1000s and 1600s.

5,512,414 SOLID PARTICLE COUPLER DISPERSIONS FOR COLOR DIFFUSION TRANSFER ELEMENTS John Texter, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Sep. 23, 1993, Ser. No. 125,990

Int. Cl.⁶ G03C 7/388; 8/10; 8/52

U.S. Cl. 430—213

28 Claims

1. A photographic color diffusion transfer element comprising one and only one dimensionally stable support, wherein said support comprises an opaque and light reflecting layer, and coated thereon in reactive association and in sequence (1) a mordant layer for binding diffusible dyes, (2) a stripping layer, (3) one or more layers comprising radiation sensitive silver halide, a solid particle dispersion of a diffusible-dye forming compound, or radiation sensitive silver halide and a solid particle dispersion of a diffusible-dye forming compound, and (4) a barrier layer comprising a polymer that (a) allows the passage of solutions for processing said element when said element is contacted with an external processing bath and (b) blocks the diffusion out of said element of the diffusible dye formed from said solid particle dispersion of a diffusible-dye forming compound when said element is contacted with an external processing bath, and wherein the size of dye forming compound particles in said solid particle dispersion of a diffusible-dye forming compound is on average less than 1 μ m in largest dimension and wherein the physical state of the dye forming compound in said particles is a microcrystalline physical state.

5,512,415 HIGH CONTRAST PHOTOGRAPHIC SILVER HALIDE MATERIAL

Allison H. C. Dale, Rickmansworth; Roger H. Piggin, Abbots Langley; Michael B. Ledger, Norwood, and David Beaumont, Chalfont St. Giles, all of England, assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 7, 1995, Ser. No. 400,078

Claims priority, application United Kingdom, Mar. 11, 1994, 9404670

Int. Cl.⁶ G03C 1/46

U.S. Cl. 430—264

10 Claims

1. A high-contrast photographic element which is developable at a pH of below 11 and adapted for use in the field of graphic arts; said photographic element comprising a support bearing a high-contrast silver halide emulsion layer which is capable of forming a latent image under conditions of use and, in said emulsion layer or an adjacent hydrophilic colloid layer, a hydrazide nucleating agent and an amine booster; and said photographic element additionally comprising a second silver halide emulsion layer which is not

capable of forming a latent image under conditions of use; both silver halide emulsion layers contributing to the visible silver image formed by exposure and processing of said photographic element.

5,512,416 OPTICAL RECORDING MEDIUM

Kenryo Namba; Akihiko Kuroiwa, both of Tokyo, and Shiro Nakagawa, Chiba, all of Japan, assignors to TDK Corporation, Japan

Continuation of Ser. No. 970,978, Dec. 9, 1992, abandoned, which is a continuation of Ser. No. 918,924, Jul. 22, 1992, abandoned, which is a continuation of Ser. No. 143,312, Jan. 6, 1988, abandoned, which is a continuation of Ser. No. 895,860, Aug. 12, 1986, abandoned, which is a continuation-in-part of Ser. No. 518,359, Jul. 29, 1983, abandoned. This application Jun. 6, 1995, Ser. No. 482,165

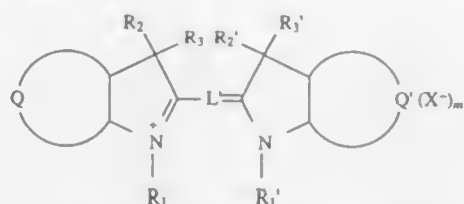
Claims priority, application Japan, Jul. 30, 1982, 57-134397; Jul. 31, 1982, 57-134170; Sep. 25, 1982, 57-166832; Sep. 27, 1982, 57-168048; Oct. 11, 1982, 57-177776; Oct. 18, 1982, 57-182589; Nov. 1, 1982, 57-193685; Dec. 28, 1982, 57-234245; Dec. 29, 1982, 57-233157; Dec. 30, 1982, 57-23241; Dec. 31, 1982, 57-232198; Dec. 31, 1982, 57-232199

Int. Cl.⁶ G03C 1/72; G11B 7/24

U.S. Cl. 430—270.21

4 Claims

1. An optical recording medium of the heat mode type comprising a substrate having deposited thereon a recording layer comprising at least one laser light absorbing dye and having a thickness in the range of from 0.03 to 2 μ m, said dye being represented by the general formula III:



wherein Q and Q' each denote a condensed aromatic ring; R₁ and R₁' each denote a substituted or unsubstituted alkyl group having more than four carbon atoms, wherein the substituents are selected from the group consisting of alkylcarbonyloxy, hydroxy, carboxy and alkoxy carbonyl; R₂, R₂', R₃ and R₃' each denote an alkyl group or an aryl group; L' denotes a methine chain for the formation of mono-, di-, tri- or tetracyanine; X⁻ denotes an anion; and m denotes 0 or 1.

5,512,417

POSITIVE RESIST COMPOSITION COMPRISING A BIS (T-BUTOXYCARBONYLMETHYL)THYMOLPHTHALEIN AS A DISSOLUTION INHIBITOR

Hiroshi Ban, Machida; Akinobu Tanaka, Atsugi; Fujio Yagihashi, Kawasaki; Jun Watanabe, Kawasaki, and Minoru Takamizawa, Kawasaki, all of Japan, assignors to Shin-Etsu Chemical Co., Ltd., and Nippon Telegraph and Telephone Corp., both of Tokyo, Japan

Filed Feb. 14, 1995, Ser. No. 388,508

Claims priority, application Japan, Feb. 14, 1994, 6-037541

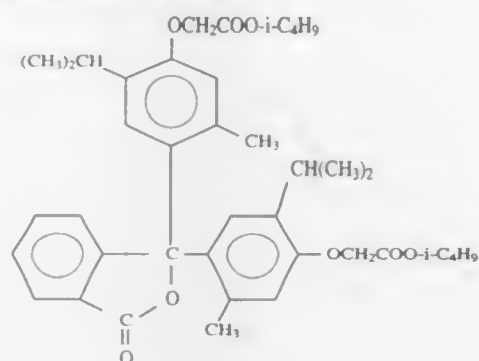
Int. Cl.⁶ G03F 7/004; 7/039

U.S. Cl. 430—270.14

8 Claims

1. A positive resist composition comprising: 63 to 80 parts by weight of a poly(p-hydroxystyrene), 16 to less than 30 parts by weight of a dissolution inhibitor, 4 to less than 7 parts by weight of an onium salt, 0.0065 to less than 0.05% by weight in the resist composition of a nonionic surfactant, 1.2 to less than 6 micromoles per gram of the mixture of poly(p-hydroxystyrene), dissolution inhibitor and onium salt of an acid deactivator and

an organic solvent; said poly(p-hydroxystyrene) being a poly(p-hydroxystyrene) synthesized by an anionic polymerization method and having a weight average molecular weight of from 8,000 to 20,000, said dissolution inhibitor being bis(p-t-butoxycarbonylmethyl)thymolphthalein represented by the following structural formula (I), said onium salt being bis(p-t-butylphenyl) iodonium triflate, said acid deactivator being a compound containing one amino group and one carboxyl group, and said organic solvent being propylene glycol monomethyl ether acetate:



1

5,512,418

INFRA-RED SENSITIVE AQUEOUS WASH-OFF PHOTOIMAGING ELEMENT

Sheau-Hwa Ma, Chadds Ford, Pa., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 10, 1993, Ser. No. 29,038

Int. Cl.⁶ G03C 1/795; 1/73; G03F 7/038

U.S. Cl. 430—271.1

5 Claims

1. An aqueous processable element for thermally-induced photoimaging, said element comprising, in order:

(A) a dimensionally stable support, and

(B) an active layer comprising:

(1) a cationic polymer containing pendant ammonium groups, said cationic polymer being removable from said support by aqueous processing, said pendant groups having the general formula:



wherein:

R₁, R₂, and R₃ are independently selected from the group consisting of hydrogen, substituted and unsubstituted alkyl, substituted and unsubstituted alkenyl, and substituted and unsubstituted aryl;

R₁, R₂, and R₃ together contain not more than about thirty carbon atoms; and

X⁻ is an anion;

(2) an infra-red absorbing material which is non-absorbing in the visible; and

(3) a colorant.

5,512,419

PHOTOPOLYMERIZABLE ELASTOMERIC MIXTURE AND RECORDING MATERIAL CONTAINING THIS MIXTURE, FOR PRODUCING OZONE-RESISTANT FLEXOGRAPHIC PRINTING FORMS

Hans-Joachim Schlosser, Wiesbaden, Germany, assignor to E. I. du Pont de Nemours and Company, Wilmington, Del. Continuation of Ser. No. 47,614, Apr. 16, 1993, abandoned, which is a continuation of Ser. No. 450,077, Dec. 13, 1989, abandoned. This application Oct. 13, 1994, Ser. No. 323,167 Claims priority, application Germany, Dec. 13, 1988, 38 41 853.3

Int. Cl.⁶ G03C 1/73

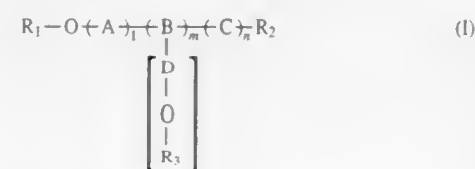
U.S. Cl. 430—281.1

31 Claims

1. A photopolymerizable elastomeric mixture for producing an ozone-resistant flexographic printing form, comprising: an elastomeric binder;

an olefinically unsaturated compound polymerizable by free radicals; and a photoinitiator;

wherein the mixture comprises at least one polyglycol ether of the general formula I



(I)

in which

R₁ and R₂, and R₃ are alkyl,

A, B, C can be identical or different and are

and D oxa-n- or -iso-alkylene, and

1+m+n+o is 3 to 40.

5,512,421

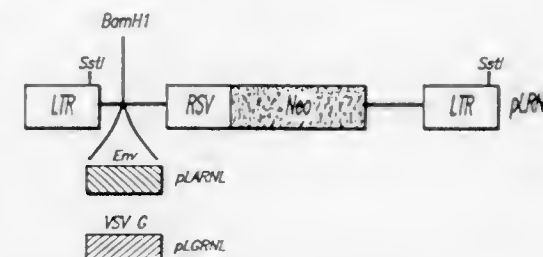
GENERATION, CONCENTRATION AND EFFICIENT TRANSFER OF VSV-G PSEUDOTYPED RETROVIRAL VECTORS

Jane C. Burns, La Jolla; Jiing-Kuan Yee, Del Mar, and Theodore Friedmann, La Jolla, all of Calif., assignors to The Regents of the University of California, Oakland, Calif. Continuation-in-part of Ser. No. 73,209, Jun. 4, 1993, abandoned, which is a continuation-in-part of Ser. No. 740,766, Aug. 8, 1991, abandoned, which is a continuation-in-part of Ser. No. 658,632, Feb. 19, 1991, abandoned. This application Aug. 10, 1993, Ser. No. 104,804

Int. Cl.⁶ C12N 15/86; 7/02; 15/47; 15/48

U.S. Cl. 435—320.1

7 Claims



1. A method for concentrating vector particles, comprising: growing enveloped vector particles, said enveloped vector particles comprising a nucleocapsid protein from a retrovirus, a nucleic acid sequence encapsidated by said nucleocapsid protein, and vesicular stomatitis virus (VSV) G protein; harvesting said vector particles; and pelleting said vector particles by ultracentrifugation to concentrate said vector particles.

5,512,422

METHOD OF FORMING RESIST PATTERN AND ORGANIC SILANE COMPOUND FOR FORMING ANTIREFLECTION FILM FOR USE IN SUCH METHOD

Tetsuro Hanawa, and Maria O. de Beeck, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

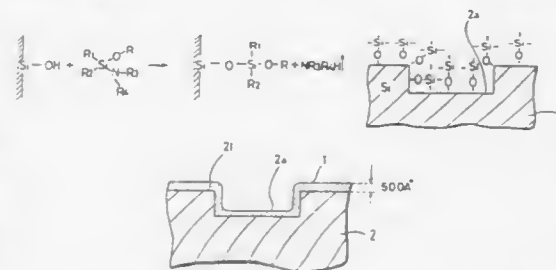
Division of Ser. No. 814,632, Dec. 30, 1991, Pat. No. 5,380,889. This application Mar. 4, 1994, Ser. No. 205,480

Claims priority, application Japan, Aug. 8, 1991, 3-199603

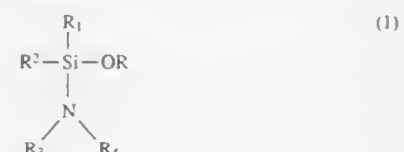
Int. Cl.⁶ G03C 5/00

U.S. Cl. 430—325

10 Claims



1. A method of forming a resist pattern on a substrate by lithography using deep ultraviolet light, comprising the steps of: providing an organic silane compound for forming an antireflection film in the surface of said substrate, the organic silane compound being of the formula



where R_1 , R_2 , R_3 and R_4 individually represent hydrogen or an alkyl group, and R represents a substituent group absorbing deep ultraviolet light;
coating said substrate with said organic silane compound;
applying resist onto said substrate coated with said organic silane compound;
exposing selectively said resist using deep ultraviolet light; and
developing said resist.

5,512,423

OPTICAL INFORMATION RECORDING MEDIUM

Teijiro Kitao, Tondabayashi, and Hironori Oda, Nagoya, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 22,749, Feb. 19, 1993, abandoned, which is a continuation of Ser. No. 502,919, Apr. 2, 1990, abandoned. This application Feb. 4, 1994, Ser. No. 191,717

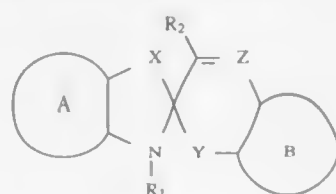
Claims priority, application Japan, May 18, 1989, 1-122867

Int. Cl.⁶ G03C 1/73

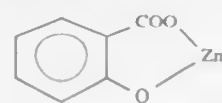
U.S. Cl. 430—345

6 Claims

1. An optical information recording medium comprising a base and a recording layer, the recording layer containing a spiropyran compound expressed by the following formula:



where X is substituted or unsubstituted C; Y is O; Z is N; each of the rings A and B is an aromatic ring which may be substituted; and each of R_1 and R_2 is a hydrogen atom, a halogen atom or a univalent organic residue, and a carboxylic acid metallic complex expressed by the following formula:



and a cellulose ester.

5,512,424

METHOD FOR MANUFACTURING TABLET PROCESSING AGENT FOR SILVER HALIDE PHOTOGRAPHIC LIGHT-SENSITIVE MATERIALS

Hisashi Yoshimoto, Iino, Japan, assignor to Konica Corporation, Tokyo, Japan

Filed Mar. 13, 1995, Ser. No. 402,384

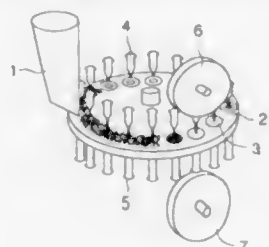
Claims priority, application Japan, Mar. 18, 1994, 6-049009

Int. Cl.⁶ G03C 5/30; 5/38; 5/42

U.S. Cl. 430—458

8 Claims

1. A method of manufacturing a tablet processing agent for a



silver halide photographic light-sensitive material, said method comprising the steps of:

putting particles comprising said processing agent into a mold, and
compressing said particles at a compression pressure in the range of 400 to 4500 kg/cm² and at a compression dwell time in the range of 0.015 to 1.000 second,
wherein said processing agent is a compound selected from the group consisting of a p-phenylene diamine and its derivatives, a hydroxylamine and its derivatives, an alkali metal carbonate, ferric complex of an amino polycarboxylic acid, and a thiosulfate.

5,512,425

SILVER HALIDE COLOR PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL AND METHOD FOR FORMING COLOR IMAGE THEREWITH

Akira Kase, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 159,316, Nov. 30, 1993, abandoned.

This application Aug. 22, 1995, Ser. No. 517,669

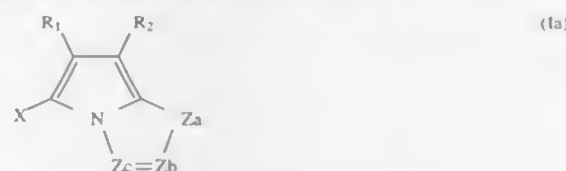
Claims priority, application Japan, Nov. 30, 1992, 4-341015

Int. Cl.⁶ G03C 1/76

U.S. Cl. 430—533

20 Claims

1. A silver halide color photographic light-sensitive material comprising a reflective support having provided thereon at least one yellow dye forming coupler-containing silver halide emulsion layer, at least one magenta dye forming coupler-containing silver halide emulsion layer, and at least one cyan dye forming coupler-containing silver halide emulsion layer each having a different light sensitivity, wherein the reflective support comprises a substrate having provided at least on the surface of an emulsion layer-coated side thereof, a composition prepared by mixing and dispersing a white pigment in a resin containing polyester as a main component; the cyan dye forming coupler-containing silver halide emulsion layer contains at least one cyan dye forming coupler compound represented by the following formula (Ia); a binder or protective colloid used in the light-sensitive material is low calcium gelatin having a calcium content of 200 ppm or less; and the film pH of the light-sensitive material is 4.0 to 6.5:



wherein Z_a represents $-NH-$ or $-CH(R_3)-$, and Z_b and Z_c each represents $-C(R_4)=$ or $-N=$; R_1 , R_2 and R_3 each represents an electron attractive group having a Hammett's substituent constant σ_p of 0.20 or more, provided that the sum of the σ_p values of R_1 and R_2 is 0.65 or more; R_4 represents a hydrogen atom or a substituent, provided that when two R_4 's are present in the formula, they may be the same or different; X represents a hydrogen atom or a group capable of splitting off upon a reaction with an oxidation product of an aromatic primary amine color developing agent; and a group represented by R_1 , R_2 , R_3 , R_4 or X may become a divalent group and combine with a polymer higher than a dimer and a high molecular chain to form a homopolymer or a copolymer.

5,512,426

EMULSIONS WITH HIGH GRAIN SURFACE TO VOLUME RATIOS

David H. Levy, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 31, 1995, Ser. No. 381,787

Int. Cl.⁶ G03C 1/015; 1/035

U.S. Cl. 430—567

10 Claims



1. A radiation sensitive emulsion comprised of a dispersing medium containing a peptizer and silver halide grains

WHEREIN the silver halide grains

- (1) are each surface sensitized and
 - (2) are agglomerated into discrete clumps with adjacent separate grains lying in direct contact, the discrete clumps being separated by the peptizer and having a mean equivalent circular diameter of less than 10 μm .
9. A process of preparing a radiation sensitive emulsion comprising
- (1) forming silver halide grains in the absence of a peptizer,
 - (2) chemically sensitizing the grains, (3) agglomerating the grains so that adjacent grains lie in direct contact, and
 - (4) adding a peptizer to form discrete clumps of the grains agglomerated in step (3).

5,512,427

TABULARLY BANDED EMULSIONS WITH HIGH BROMIDE CENTRAL GRAIN PORTIONS

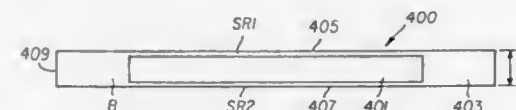
Joe E. Maskasky, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 27, 1995, Ser. No. 394,984

Int. Cl.⁶ G03C 1/035

U.S. Cl. 430—567

10 Claims



1. A radiation-sensitive emulsion comprised of a dispersing medium and silver halide grains, at least 50 percent of total grain projected area being accounted for by tabular grains of a face centered cubic crystal lattice structure having parallel {111} major faces, an average thickness of less than 0.2 μm , and an average aspect ratio of at least 5, the tabular grains each being comprised of a central region and a shell differing in halide content, wherein the central region contains greater than 50 mole percent bromide, based on silver forming the central region, the shell contains at least 60 mole percent chloride, based on silver forming the shell and the shell is comprised of a band extending laterally outwardly from the central region and forming at least 2 percent of the {111} major faces, the band accounting for at least half the volume of the shell.

5,512,428

PHOTOGRAPHIC RECORDING MATERIALS

Michael Missfeldt, Leichlingen, Germany, assignor to Agfa-Gevaert AG, Germany

Filed Sep. 28, 1994, Ser. No. 314,592

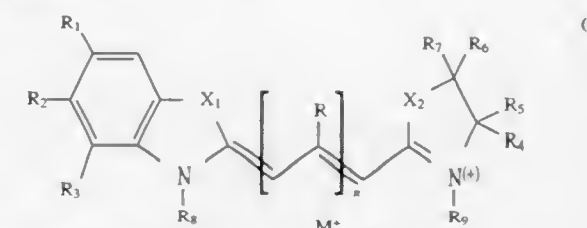
Claims priority, application Germany, Oct. 13, 1993, 43 34 787.8; Dec. 14, 1993, 43 42 617.4

Int. Cl.⁶ G03C 1/16; 1/18

U.S. Cl. 430—583

3 Claims

1. A photographic recording material comprising at least one light-sensitive silver halide emulsion layer, whereby the silver halide is spectrally sensitized by a cyanine dye of the general formula I,



wherein the symbols have the following meanings:

- X_1 and X_2 are the same or different and are O, S, Se or NR_{10} ;
 R_1 and R_2 or R_2 and R_3 are residues to complete an optionally substituted phenanthroline or anthraazole with the remaining group R_3 or R_1 signifying hydrogen;
 R_4 and R_6 are the same or different and are hydrogen or together a π -bond,
 R_5 and R_7 are the same or different and are hydrogen, alkyl or aryl or
 R_4 , R_5 , R_6 and R_7 are the same or different and are residues of an unsubstituted or substituted benzazole, naphthazole, phenanthroline or anthraazole;
 R_8 and R_9 are the same or different and are alkyl, sulfoalkyl, carboxyalkyl, $-(CH_2)_m-CO-NR_{11}-SO_2-R_{12}$ or $-(CH_2)_m-SO_2-NR_{11}-CO-R_{12}$;
 R_{10} is a residue as defined for R_8 or aryl;
 R_{11} is hydrogen or the negative charge ($^-$) which remains when a proton is removed;
 R_{12} is alkyl, aryl, $-O^+$ or $-N(R_{13})_2$;
 R_{13} is hydrogen, alkyl or aryl (the same or different);
 R is hydrogen, C_1-C_4 -alkyl, C_1-C_4 -alkylthio or phenyl;
 m is an integer from 1 to 10;
 n is 0 or 1; and
 M^+ is a cation optionally required to neutralize the charge, with the proviso that at least one of R_8 or R_9 is selected from the group consisting of a sulfoalkyl group, a carboxyalkyl group, a group $-(CH_2)_m-CO-NR_{11}-SO_2-R_{12}$ and a group $-(CH_2)_m-SO_2-NR_{11}-CO-R_{12}$.

5,512,429

ASSAY FOR ENZYME ACTIVITY

David C. Wilton, Bassett, England, assignor to British Technology Group Limited, London, United Kingdom

Continuation of Ser. No. 842,339, Mar. 25, 1992, abandoned.

This application Jun. 20, 1994, Ser. No. 262,355

Claims priority, application United Kingdom, Sep. 19, 1989, 8921156

Int. Cl.⁶ C12Q 1/00; 1/44; G01N 33/53; 31/00

U.S. Cl. 435—4

24 Claims

1. A method of assaying for an enzyme that catalyzes directly or indirectly the release of long chain fatty acids or for an ester substrate for such an enzyme in a clinical sample, which comprises the steps of:

- (1) providing a clinical sample containing an enzyme or an enzyme substrate to be assayed;
- (2) incubating said clinical sample with an ester substrate for the enzyme to be assayed or with the enzyme which acts upon the substrate to be assayed, under conditions effective to release a fatty acid therefrom;

- (3) adding a fatty acid binding protein (FABP) to cause the released fatty acid to bind to said FABP; and
- (4) assaying the binding of the FABP to the fatty acid and correlating the binding result to the amount of enzyme or substrate present in the sample.

5,512,430

DIAGNOSTIC ARRAY FOR VIRUS INFECTION

Yu Gong, Concord, Calif., assignor to HRI Research, Inc., Concord, Calif.

Filed Jul. 13, 1993, Ser. No. 91,234

Int. Cl.⁶ C12Q 1/70; 1/68; C12P 19/34; C07H 17/00

U.S. Cl. 435—5 14 Claims

1. A method for detecting a viral nucleic acid sequence from the human immunodeficiency virus in a sample of hair comprising the steps of:

- providing cells from at least one hair follicle, said cells suspected of containing a viral nucleic acid sequence from the human immunodeficiency virus;
- amplifying said viral nucleic acid sequence from the human immunodeficiency virus in said hair follicle; and
- detecting said viral nucleic acid sequence.

5,512,431

METHODS OF SCREENING FOR NUCLEOSIDE ANALOGS THAT ARE INCORPORATED BY HIV REVERSE TRANSCRIPTASE AND CAUSE INCORRECT BASE PAIRING

Lawrence A. Loeb, Bellevue, Wash., and John M. Essigmann, Brookline, Mass., assignors to Darwin Molecular Corporation, Bothell, Wash.

Filed Jun. 29, 1994, Ser. No. 268,686

Int. Cl.⁶ C12Q 1/70; 1/68

U.S. Cl. 435—5 7 Claims

1. A method of screening for a nucleoside analog that is incorporated and extended at high efficiency by reverse transcriptase of human immunodeficiency virus (HIV RT) and causes incorrect base pairing, comprising:

- determining incorporation and extension by HIV RT of a nucleoside analog; and
- testing the mutagenic potential of said analog, thereby determining whether said analog causes incorrect base pairing.

5,512,432

METHOD DETECTING ANTIGENS AND/OR ANTIBODIES

Yves Lapierre, Dullins, France; Dieter Josef, Fribourg, Switzerland; Jean Adam, Meyriez, Switzerland, and Susanne Greber-Widmer, Herrenschanzen, Switzerland, assignors to Stiftung Fur Diagnostische Forschung, Murten, Switzerland

Division of Ser. No. 969,532, Oct. 30, 1992, Pat. No. 5,338,689, which is a continuation of Ser. No. 684,459, Apr. 11, 1991, abandoned, which is a continuation of Ser. No. 122,152, Nov. 11, 1987, abandoned. This application Aug. 1, 1994, Ser. No. 283,552

Claims priority, application Switzerland, Aug. 24, 1987, 3240/87

Int. Cl.⁶ G01N 33/537; 33/538

U.S. Cl. 435—5 2 Claims

1. A method of detecting target antibodies or antigens by reaction with specific binding partners thereto, wherein one but not both of the target or the binding partner is bound to a carrier, wherein a complex of the carrier-bound target and the binding partner, or of the target and the carrier-bound binding partner, forms an agglutinate which is optically detectable, said method comprising:



providing a microreaction vessel containing a slurry or suspension of inert particles and the known target or binding partner thereto;

adding to the vessel about 10–150 µl of a solution containing the carrier-bound target or binding partner to allow formation of a target-binding partner complex which is carrier-bound and optically detectable;

centrifuging the vessel; and observing the location of the carrier to determine the presence of the target antibody or antigen to be detected, with a strongly positive reaction being indicated by the carrier lying upon or in a top portion of a layer of the inert particles, and a negative reaction being indicated by the carrier-bound target or carrier-bound binding partner lying beneath the inert particles.

5,512,433

METHODS AND COMPOUNDS FOR LABELING DNA WITH XANTHINE AND LOWER ALKYL SUBSTITUTED XANTHINE DERIVATIVES AND REAGENTS FOR THE IN SITU DETECTION OF CHROMOSOMES

Kenneth A. Cruickshank, Naperville, and Douglas J. Taron, Elgin, both of Ill., assignors to Vysis, Inc., Downers Grove, Ill.

Filed Nov. 8, 1990, Ser. No. 611,305

Int. Cl.⁶ C12N 15/00

U.S. Cl. 435—6 17 Claims

1. A reagent for the in situ detection of nucleic acid sequences comprising one or more DNA sequences which (a) contain the bases adenosine, guanosine, cytosine or thymidine and (b) are complementary to the nucleic acid sequences to be detected, wherein the DNA sequences include multiple xanthine or lower alkyl substituted xanthine derivatives labels covalently linked by a linker molecule to any of the bases of the DNA sequences.

5,512,434

EXPRESSION CLONING OF A HUMAN PHOSPHATASE

Stuart A. Aaronson, Great Falls, Va.; Donald P. Bottaro, Kensington, Md.; Toshio Ishihashi, and Toru Miki, both of Rockville, Md., assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Filed Dec. 14, 1992, Ser. No. 988,273

Int. Cl.⁶ C12Q 1/42; 1/48; 1/68

U.S. Cl. 435—6 11 Claims

6. A method for identifying a DNA encoding a protein phosphatase, comprising

- providing an autophosphorylating protein tyrosine kinase,
- transforming a bacterial host with a plasmid comprising
 - an origin of replication;
 - a selectable marker;
 - a DNA test molecule; and
 - a regulatory region which results in the expression of a test protein encoded by said DNA test molecule,
- culturing the transformed bacterial host, in the presence of the phosphorylated form of said autophosphorylating protein tyrosine kinase, under selective conditions, such that plasmid-containing colonies are formed;
- treating said colonies to bring said autophosphorylating protein tyrosine kinase and said test protein in contact with each other;

- screening said colonies to identify colonies that contain the unphosphorylated form of said autophosphorylating protein tyrosine kinase; and
- isolating plasmid DNA from colonies which contain the unphosphorylated form of said autophosphorylating protein tyrosine kinase, whereby said isolated-plasmid DNA encodes said protein phosphatase.

5,512,435

RECEPTOR-BINDING ANTIPROLIFERATIVE PEPTIDES

Markus F. Renschler, 731 Alameda De Las Pulgas, Redwood City, Calif. 94063; Ronald Levy, 966 Mears Ct., Stanford, Calif. 94043; Ramesh R. Bhatt, 777 W. Middlefield #18, Mountain View, Calif. 94025, and William J. Dower, 761 Partridge Ave., Menlo Park, Calif. 94025

Filed Feb. 5, 1993, Ser. No. 14,426

Int. Cl.⁶ C12Q 1/68

U.S. Cl. 435—6 9 Claims

1. A method for identifying antiproliferative peptides, comprising the steps of:

- obtaining a predetermined cell population from a patient, wherein said predetermined cell population comprises cells expressing on their extracellular surface an immunoglobulin superfamily species having a single idiotype characteristic to the predetermined cell population;
- contacting under aqueous binding conditions said immunoglobulin superfamily species to a peptide library comprising a multiplicity of peptide library members having distinct peptide sequences;
- identifying a peptide library member that binds specifically to said immunoglobulin superfamily species idiotype as an anti-idiotype peptide;
- contacting under growth conditions said anti-idiotype peptide to said predetermined cell population or their clonal progeny and measuring an indicator of cell proliferation or activation in the predetermined cell population; and
- identifying an anti-idiotype peptide which inhibits cell proliferation of the predetermined cell population as an antiproliferative peptide.

5,512,436

ENHANCEMENT OF POLYNUCLEOTIDE HYBRIDIZATION

Timothy Stone, High Wycombe, United Kingdom, assignor to Amersham International plc, United Kingdom

PCT No. PCT/EP92/01479, § 371 Date Sep. 2, 1993, § 102(e)

Date Sep. 2, 1993, PCT Pub. No. WO93/01311, PCT Pub. Date Jan. 21, 1993

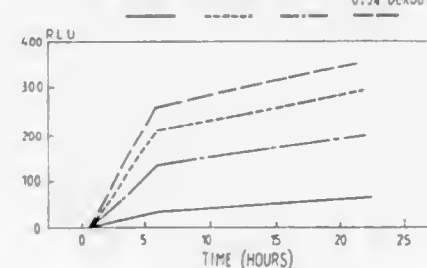
PCT Filed Jun. 30, 1992, Ser. No. 108,578

Claims priority, application United Kingdom, Jul. 1, 1991, 9114180

Int. Cl.⁶ C12Q 1/68; G01N 1/18

U.S. Cl. 435—6 14 Claims

RAPID HYBRIDIZATIONS
Lambda HindIII southern blots



1. The method of enhancing hybridization of complementary polynucleotides which method comprises providing the comple-

mentary polynucleotides in a buffered aqueous medium under hybridization conditions, wherein the buffered aqueous medium contains polystyrene sulphonic acid free in solution and unattached to a nucleic acid probe or target nucleic acid, and said polystyrene sulphonic acid having a molecular weight of between about 1,000 and 1,000,000 daltons.

5,512,437

METHOD FOR DETERMINING HEAD AND NECK SQUAMOUS CELL CARCINOMAS, PROSTATE CARCINOMAS, AND BLADDER TUMORS BY ASSAYING FOR MAGE-3

Béatrice Gaugler; Thierry Boon-Falleur; Benoit van den Eynde; Etienne DePlaen; Francis Basseur; Bernard Lethe, and Pierre van der Bruggen, all of Brussels, Belgium, assignors to Ludwig Institute for Cancer Research, New York, N.Y.

Filed Mar. 1, 1994, Ser. No. 204,727

Int. Cl.⁶ C12Q 1/68; C12P 19/34; G01N 33/53; C07H 21/04

U.S. Cl. 435—6 11 Claims

1. Method for screening for possible presence of cancer, wherein said cancer is selected from the group consisting of head squamous cell carcinoma, neck squamous cell carcinoma, and prostate carcinoma, comprising assaying a tissue sample taken from the head, neck or prostate gland of a subject believed to have a head squamous cell carcinoma, a neck squamous cell carcinoma or a prostate carcinoma, and determining expression of mRNA for a MAGE-3 gene, as a determination of possible presence of said cancer in said subject.

5,512,438

INHIBITING RNA EXPRESSION BY FORMING A PSEUDO-HALF-KNOT RNA AT THE TARGET'S RNA SECONDARY STRUCTURE USING ANTISENSE OLIGONUCLEOTIDES

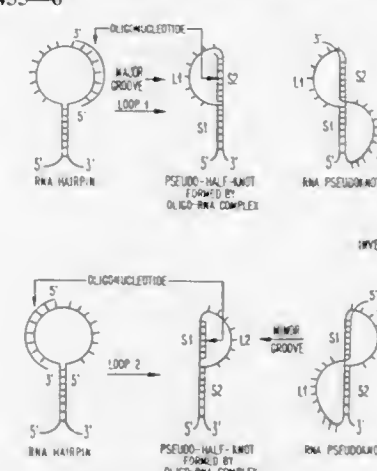
David Ecker, Leucadia, Calif., assignor to ISIS Pharmaceuticals, Inc., Carlsbad, Ga.

Continuation of Ser. No. 916,764, Jul. 20, 1992, abandoned.

This application Jan. 3, 1994, Ser. No. 176,314

Int. Cl.⁶ C07H 21/04; C12Q 1/68; 1/70

U.S. Cl. 435—6 9 Claims



1. A method for preparing an oligonucleotide having at least 12 contiguous nucleotide units capable of binding to a selected RNA having at least one stem-loop structure comprising:

- selecting an oligonucleotide sequence having at least 12 contiguous nucleotide units complementary to the loop portion of either the 3' or 5' side of said stem-loop structure;
- determining the ability of the selected oligonucleotide to form a pseudo-half-knot with said stem-loop structure; and
- if the selected oligonucleotide is determined to be capable of forming a pseudo-half-knot with said stem-loop structure, synthesizing the selected oligonucleotide.

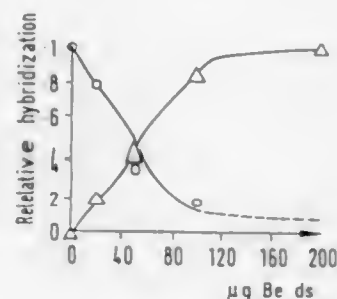
5,512,439

OLIGONUCLEOTIDE-LINKED MAGNETIC PARTICLES AND USES THEREOF

Erik Hornes, and Lars Korsnes, both of Oslo, Norway, assignors to Dynal AS, Oslo, Norway
Continuation of Ser. No. 688,484, May 14, 1991, abandoned.
This application Jul. 6, 1994, Ser. No. 272,372

Claims priority, application United Kingdom, Nov. 21, 1988, 8827157; Nov. 21, 1988, 8827158; Nov. 21, 1988, 8827159; Nov. 21, 1988, 8827160; Nov. 21, 1988, 8827166; Nov. 21, 1988, 8827167; Mar. 22, 1989, 8906643

Int. Cl.⁶ C12P 19/34; C12Q 1/68; G01N 33/553
U.S. Cl. 435—6 20 Claims



1. A plurality of monodisperse, superparamagnetic particles, wherein:
each particle comprises (i) superparamagnetic iron oxide dispersed within a polymer particle, (ii) a coating which reduces non specific binding, and (iii) a functional group carried by said coating for bonding a nucleic acid
the particles are monodisperse and have a diameter standard deviation of less than 5%, and
particles of said plurality carry a plurality of molecules of an oligonucleotide.

5,512,440

PROCESS FOR LYSING MYCOBACTERIA

James A. Down, Cary, N.C.; William E. Keating; Adriann J. Walters, both of Baltimore, Md.; Jillian A. Robson, Pittsboro, N.C., and Allen Reichler, Owings Mills, Md., assignors to Becton Dickinson and Company, Franklin Lakes, N.J.
Continuation-in-part of Ser. No. 10,467, Jan. 28, 1993, Pat. No. 5,376,527, which is a continuation of Ser. No. 809,806, Dec. 18, 1991, abandoned. This application Aug. 9, 1994, Ser. No. 287,734

Int. Cl.⁶ C12Q 1/68; C12P 19/34; C12N 1/06
U.S. Cl. 435—6 26 Claims

1. A process for lysis of Mycobacteriaceae wherein said lysis comprises exposing the Mycobacterium to a lysis effective amount of heat in the absence of lysogenic agents and other physical lysogenic conditions, and wherein said lysis effective amount of heat is provided as forced hot air and renders the Mycobacterium noninfectious.

5,512,441

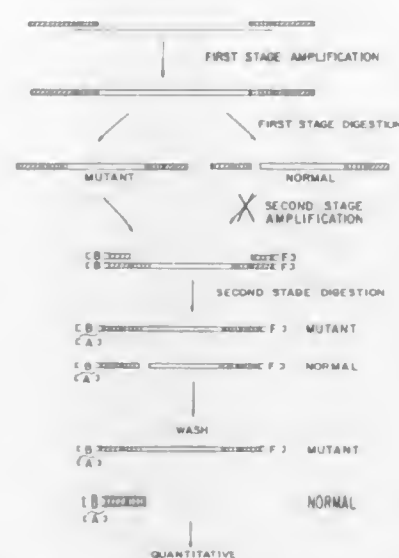
QUANTATIVE METHOD FOR EARLY DETECTION OF MUTANT ALLELES AND DIAGNOSTIC KITS FOR CARRYING OUT THE METHOD

Zeev A. Ronai, Montebello, N.Y., assignor to American Health Foundation, Valhalla, N.Y.

Filed Nov. 15, 1994, Ser. No. 339,786

Int. Cl.⁶ C07H 21/02; 21/04; C12P 19/34; C12Q 1/68
U.S. Cl. 435—6 14 Claims

1. A process for detection in a nucleic acid test sample taken from the genome of an organism of a mutant nucleotide sequence in a specific region of the genome, wherein said region can contain



said mutant nucleotide sequence or a wild-type nucleotide sequence, wherein the test sample is suspected of containing a first genomic strand of nucleic acid having said region with the mutant nucleotide sequence together with a second genomic strand of nucleic acid having said region with the wild-type nucleotide sequence, wherein the first genomic strand, if present in the test sample, is present or is caused to be present in the form of a first genomic duplex consisting of the first genomic strand and a first complementary strand, and the second genomic strand is present or is caused to be present in the test sample in the form of a second genomic duplex consisting of the second genomic strand and a second complementary strand, the process comprising:

- (i) a first amplification step comprising amplifying material in the first and second genomic duplexes present in the test sample in a first polymerase chain reaction in which upstream and downstream long tail primers, DNA polymerase, four different nucleotide triphosphates and a buffer are used in a repetitive series of reaction steps involving template denaturation, primer annealing and extension of annealed primers to form first and second synthesized nucleic acid duplexes, said first synthesized nucleic acid duplexes having said region with the mutant nucleotide sequence, and said second synthesized nucleic acid duplexes having said region with the wild-type nucleotide sequence, said upstream and downstream long tail primers being selected such that synthesized strands formed in the first polymerase chain reaction using the upstream and downstream long tail primers can anneal with Upstream and downstream short tail primers which do not anneal with any nucleic acid strands in the first or second genomic duplexes, said long tail upstream primers also being selected such that the second synthesized duplexes have a restriction site which is not present in said first synthesized duplexes due to the presence in said first synthesized duplexes of said region with the mutant nucleotide sequence, said restriction site being cleavable with a first restriction enzyme,
ii) a first digestion step comprising treating at least a portion of the test sample containing the first and second synthesized duplexes with said first restriction enzyme whereby selectively to cleave said second synthesized duplexes while leaving said first synthesized duplexes uncleaved,
iii) a second amplification step comprising amplifying material in the uncleaved first synthesized duplexes in a second polymerase chain reaction in which the upstream and downstream short tail primers are used selectively further to amplify nucleic acid strands not cleaved in step (ii) whereby to form further synthesized duplexes, said upstream and downstream short tail primers being selected such that they anneal with nucleic acid strands synthesized in said first amplification step but do not anneal with any strands of the first or second genomic duplexes whereby the upstream and downstream short tail primers can be used in the second amplification step

selectively to amplify material in duplexes synthesized in the first amplification step but cannot amplify material in the first or second genomic duplexes, each of said upstream short tail primers being labelled with a first substance that binds tightly with a second substance such that upstream ends of the further synthesized duplexes bind to a supporting surface coated with the second substance, each of said downstream short tail primers being labelled with a detectable marker;

- iv) a binding step comprising causing contact between the test sample and the supporting surface coated with said second substance whereby further synthesized duplexes labelled with the first substance bind thereto;
v) a second digestion step wherein the test sample is again treated with the first restriction enzyme selectively to cleave synthesized duplexes containing nucleic acid strands having said region with the wild type sequence; and
vi) a detection step comprising washing to remove unbound duplexes and assaying for the detectable marker to detect the presence of the mutant nucleotide sequence on uncleaved duplexes bound to the supporting surface.

5,512,442

DETECTION OF VASCULAR ADHESION PROTEIN-1 (VAP-1)

Sirpa Jalkanen, Rouvolantie 79, 20760 Piispantti, and Marko Salmi, Vähä-Hämeenkatu 12a B30, Turku, both of, Finland
Division of Ser. No. 306,483, Sep. 15, 1994, which is a continuation-in-part of Ser. No. 124,490, Sep. 21, 1993, abandoned, which is a continuation-in-part of Ser. No. 895,354, Jun. 9, 1992, abandoned. This application May 23, 1995, Ser. No. 447,800

Int. Cl.⁶ G01N 33/53

U.S. Cl. 435—7.21 21 Claims

1. A method for detecting VAP-1 in bodily fluid from a patient, wherein said VAP-1 specifically binds monoclonal antibody 1B2 (DSM ACC2041), comprising:

- (1) removing a sample of the bodily fluid from the patient;
(2) exposing said sample to a VAP-1-specific antibody; and
(3) detecting VAP-1-specific antibody binding to VAP-1 present in said sample.

5,512,443

SECOND GENERATION MONOCLONAL ANTIBODIES HAVING BINDING SPECIFICITY TO TAG-72 AND HUMAN CARCINOMAS AND METHODS FOR EMPLOYING THE SAME

Jeffrey Schlom, and David Colcher, both of Potomac, Md., assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Continuation of Ser. No. 73,685, Jul. 15, 1987, abandoned.

This application Jul. 2, 1990, Ser. No. 547,336

Int. Cl.⁶ G01N 33/54; 33/53

U.S. Cl. 435—7.23 44 Claims

1. A second generation monoclonal antibody, an immunoreactive fragment or an antigen binding recombinant thereof, which specifically binds both TAG-72 and LS174T cell line antigen but which does not substantially bind normal adult human tissues, wherein said monoclonal antibody has a binding affinity of greater than $3 \times 10^9 \text{ M}^{-1}$ for TAG-72, and wherein said monoclonal antibody is CC49 (ATCC CRL 9459) or CC83 (ATCC CRL 9453) or specifically binds to an epitope specifically bound by CC49 or CC83.

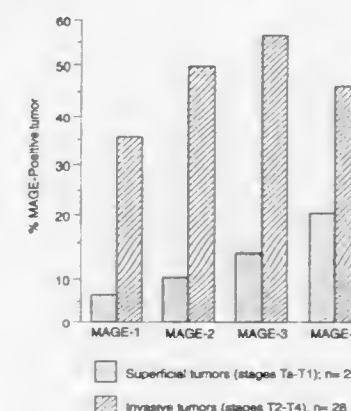
5,512,444

METHOD FOR DETERMINING BLADDER TUMORS BY ASSAYING FOR MAGE-1,2,3 OR 4

Jean-Jacques Patard; Francis Brasseur, and Thierry Boon-Falleur, all of Brussels, Belgium, assignors to Ludwig Institute For Cancer Research, New York, N.Y.

Continuation-in-part of Ser. No. 204,727, Mar. 1, 1994. This application Nov. 30, 1994, Ser. No. 346,774

Int. Cl.⁶ C12Q 1/68; C12P 19/34; C07H 21/04; G01N 33/53
U.S. Cl. 435—6 7 Claims



1. Method for screening for bladder cancer in a subject, comprising assaying a bladder tissue sample from a subject to determine expression of mRNA of at least one member of the group of genes encoding MAGE-1, MAGE-2, MAGE-3 and MAGE-4 tumor rejection antigen precursors, wherein expression of said mRNA is an indication of possibility of bladder cancer in said subject.

5,512,445

METHODS FOR THE DETECTION OF CHLAMYDIA TRACHOMATIS

Yeasing Yang; Paul D. Stull, both of San Diego, Calif., and Marc Spilogola, Albuquerque, N.M., assignors to Gen-Probe Incorporated, San Diego, Calif.

Division of Ser. No. 323,257, Oct. 14, 1994. This application May 25, 1995, Ser. No. 450,186

Int. Cl.⁶ C12Q 1/68; C12P 19/34; C07H 21/04
U.S. Cl. 435—6 54 Claims

1. A method of detecting the presence of nucleic acids in a sample comprising:

- a) contacting said sample with a first oligonucleotide which hybridizes to rRNA or rDNA of *Chlamydia trachomatis* and not to rRNA or rDNA of non-*Chlamydia* bacteria under hybridization conditions corresponding to 0.8M monovalent cation at 60° C. for 15 minutes wherein said oligonucleotide is complementary to a region of *Chlamydia trachomatis* rRNA or a region of DNA encoding said rRNA and has a nucleotide sequence selected from the group consisting of:
i) SEQ ID NO:1, and
ii) RNA equivalents thereof having uracil substitutes for thymine,
and conservatively modified variants thereof, and a second oligonucleotide which hybridizes to rRNA or rDNA of *Chlamydia trachomatis* under said conditions and has a nucleotide sequence selected from the group consisting of:
iii) SEQ ID NO:2, and
iv) RNA equivalents thereof having uracil substitutes for thymine,
and conservatively modified versions thereof.
b) imposing said hybridization conditions on said sample and said first and second oligonucleotides to allow the oligonucleotides to hybridize to nucleic acids encoding *Chlamydia trachomatis* rRNA or rDNA sequences, if present, to form a stable hybrid, and

c) detecting said hybrid, if present in said sample, as an indication of the presence of *Chlamydia trachomatis* nucleic acids in the sample.

5,512,446

LABELED COMPLEX

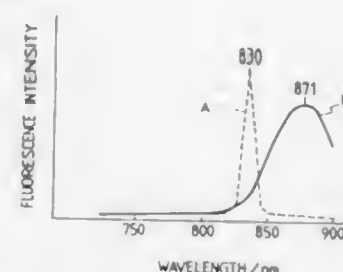
Takeshi Miyazaki, Ebina; Kazumi Tanaka; Tsuyoshi Santo, both of Yokohama; Toshikazu Ohnishi, Machida; Tetsuro Fukui, Kawasaki, and Tadashi Okamoto, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Jun. 18, 1992, Ser. No. 900,302

Claims priority, application Japan, Jun. 21, 1991, 3-150428; Oct. 28, 1991, 3-281645; Jun. 10, 1992, 4-150665

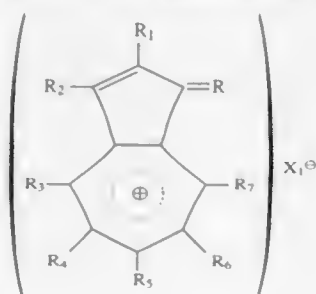
Int. Cl.⁶ C12Q 1/68

U.S. Cl. 435—7.2

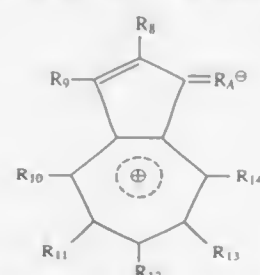
3 Claims



1. A labeled complex for detecting a subject compound to be analyzed by optical means using near-infrared radiation which complex comprises a substance from a living organism and a labeling agent fixed onto the substance and is bonded to the subject compound to be analyzed. Wherein the labeling agent comprises a compound represented by the general formula (I), (II) or (III):

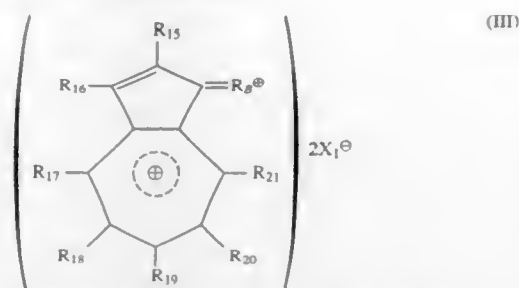


wherein R_1 through R_7 are independently selected from the group consisting of hydrogen atom, halogen atom, alkyl group, aryl group, aralkyl group, sulfonate group, amino group, styryl group, nitro group, hydroxyl group, carboxyl group, cyano group, or arylazo group; R_1 through R_7 may be bonded to each other to form a substituted or an unsubstituted condensed ring; R_8 represents a divalent organic residue; and X_1^- represents an anion;



wherein R_8 through R_{14} are independently selected from the group consisting of hydrogen atom, halogen atom, alkyl group, aryl group, aralkyl group, sulfonate group, amino group, styryl group, nitro group, hydroxyl group, carboxyl group, cyano group, or arylazo group; R_8 through R_{14} may be bonded to each other to form a substituted or an unsubstituted condensed ring; and R_{15}

represents a divalent organic residue;



wherein R_{15} through R_{21} are independently selected from the group consisting of hydrogen atom, halogen atom, alkyl group, aryl group, a substituted or an unsubstituted aralkyl group, a substituted or an unsubstituted amino group, a substituted or an unsubstituted styryl group, nitro group, sulfonate group, hydroxyl group, carboxyl group, cyano group, or arylazo group, R_{15} through R_{21} may or may not be bonded to each other to form a substituted or an unsubstituted condensed ring; R_{22} represents a divalent organic residue; and X_1^- represents an anion.

5,512,447

METHODS FOR THE DIAGNOSIS AND TREATMENT OF DIABETES

Steinunn Baekkeskov; Henk-Jan Aanstoot, both of San Francisco, Calif.; Pietro Decamilli, Guilford, Conn.; Franco Folli, and Michele Solimena, both of New Haven, Conn., assignors to The Regents of the University of California, Oakland, Calif., and Yale University, New Haven, Conn.

Continuation of Ser. No. 756,207, Sep. 6, 1991, abandoned, which is a continuation-in-part of Ser. No. 579,007, Sep. 7, 1990, abandoned. This application Dec. 28, 1993, Ser. No.

174,550

Int. Cl.⁶ G01N 33/573

U.S. Cl. 435—7.4

6 Claims

1. A method useful in screening for insulin dependent diabetes mellitus in a patient, said method comprising:

obtaining a serum sample from the patient;

detecting in the sample the presence of autoantibodies to lower molecular weight glutamic acid decarboxylase (GAD) by exposing the sample to recombinantly produced lower molecular weight GAD and detecting specific binding between the recombinantly produced lower molecular weight GAD and autoantibodies in the sample; and

detecting in the sample the presence of autoantibodies to higher molecular weight glutamic acid decarboxylase (GAD) by exposing the sample to recombinantly produced higher molecular weight GAD and detecting specific binding between the recombinantly produced higher molecular weight GAD and autoantibodies in the sample, wherein the autoantibodies to each molecular weight form of GAD are detected separately by reaction with recombinantly produced lower and higher molecular weight GAD, each of which is free from the other molecular weight form so that the presence of each form is known and wherein the presence of autoantibodies that specifically bind at least one of the molecular weight forms of GAD indicates the onset or persistence of insulin dependent diabetes mellitus.

5,512,448

STABILIZATION OF PEROXIDASE CONJUGATES IN SOLUTION

Hiroshi Yamazaki, 22 Alderbrook Drive, Nepean, Ontario, Canada, and Cameron S. Boyd, 31 Silver Horse Crescent, Kanata, Ontario, Canada

Filed Apr. 28, 1994, Ser. No. 234,925

Int. Cl.⁶ G01N 33/53; C12N 9/08; 9/96

U.S. Cl. 435—7.9

8 Claims

1. A peroxidase conjugate composition consisting essentially of (i) said peroxidase which is conjugated to a member selected from the group consisting of an antibody, a lectin, protein A, protein G, streptavidin, and avidin, and (ii) a polymer selected from the group consisting of: up to about 2 % weight per volume (w/v) of polyethylene oxide having a molecular weight of about 100,000 to about 600,000; about 2% to about 10% weight per volume (w/v) of polyethylene oxide having a molecular weight of about 100,000; from about 2% to about 5% weight per volume (w/v) of polyethylene oxide having a molecular weight of about 900,000; about 1% weight per volume (w/v) of polyethylene oxide having a molecular weight of about 5,000,000; from about 0.5 to about 10% weight per volume (w/v) of polyvinyl alcohol of molecular weight of up to about 10,000; and from about 1 to about 5% weight per volume (w/v) of polyvinyl alcohol of molecular weight of about 124,000 to 186,000; wherein said amounts of said selected polymers are sufficient to stabilize the enzymatic activity of said peroxidase in said peroxidase conjugate.

5,512,450

TEST DEVICE FOR DETERMINING THE PRESENCE OF LEUKOCYTE CELLS, ESTERASE OR PROTEASE IN A TEST SAMPLE

Gary M. Johnson, Elkhart, and Robert J. Schaeper, South Bend, both of Ind., assignors to Bayer Corporation, Elkhart, Ind.

Division of Ser. No. 293,723, Aug. 22, 1994, Pat. No.

5,464,739. This application Mar. 30, 1995, Ser. No. 413,769

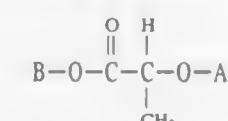
Int. Cl.⁶ C12Q 1/44; 1/37; C07C 69/74

U.S. Cl. 435—19

8 Claims

1. A test device for determining the presence or concentration of leukocyte cells, esterase or protease in a test sample, said test device comprising a test pad, wherein the test pad comprises a carrier matrix having a reagent composition homogeneously incorporated therein, said reagent composition comprising:

(a) a lactate ester having the structure



wherein A is an alcohol blocking group, and wherein B—O— is a residue of a compound B—OH and provides a detectable response when the lactate ester is hydrolyzed to generate the compound B—OH; and

(b) a buffer.

5,512,451

ENHANCEMENT OF CHEMILUMINESCENT REACTIONS

Larry J. Kricka, Berwyn, Pa., assignor to British Technology Group Limited, London, England

Continuation-in-part of Ser. No. 41,233, Apr. 1, 1993, abandoned. This application Mar. 25, 1994, Ser. No. 217,845

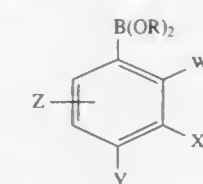
Claims priority, application United Kingdom, Apr. 1, 1993, 9306888

Int. Cl.⁶ C12Q 1/28; C07H 15/00

U.S. Cl. 435—28

30 Claims

1. A method of enhancing a chemiluminescent reaction between a fused aromatic diacyl cyclic hydrazide (FADCH), a peroxidase enzyme and an oxidant, said enhancing increasing the signal to background ratio thereof, "signal" being light output in the presence of the peroxidase enzyme, "background" in its absence, which method comprises the step of carrying out said chemiluminescent reaction in the presence of an organoboron enhancer together with a non-boron-containing organic enhancer, said organoboron enhancer being selected from the group consisting of the compounds of formula (I)



(I)

5,512,449

METHOD FOR THE FUNCTIONAL DETERMINATION OF PROTEIN C INHIBITOR

Thomas Stief, Norbert Heimbürger, and Klaus-Peter Radtke, all of Marburg, Germany, assignors to Behringwerke Aktiengesellschaft, Marburg, Germany

Continuation of Ser. No. 958,475, Oct. 8, 1992, abandoned, which is a continuation of Ser. No. 758,368, Sep. 10, 1991, abandoned, which is a continuation of Ser. No. 158,946, Feb. 19, 1988, abandoned. This application Nov. 30, 1994, Ser. No.

352,683

Claims priority, application Germany, Feb. 23, 1987, 37 05 744.8

Int. Cl.⁶ C12Q 1/56; 1/37; C12N 9/99

U.S. Cl. 435—13

9 Claims

1. A method for the functional determination of protein C inhibitor in a body fluid, which method comprises the steps of: (a) incubating a sample of said fluid with a urokinase comprising a mixture of a low-molecular-mass (LMM) form of about 33 kD molecular weight and a high-molecular-mass (HMM) form of

about 54 kD molecular weight, and having a potency of not less than 70,000 IU/mg, in a concentration of 0.1–5,000 IU/ml, in the presence of a sulfated carbohydrate in a concentration of 10^{-8} to 1 mg/ml, the amounts of said urokinase and said sulfated carbohydrate being sufficient to give a readable signal of activity of said urokinase after inhibition by said protein C inhibitor, (b) determining the residual activity of said urokinase, and (c) from this residual activity of said urokinase, determining the amount of protein C inhibitor in said fluid by comparing said residual activity of said urokinase with that activity obtained with a standard solution of known concentration of protein C inhibitor.

Z is selected from the group consisting of hydrogen, 5-chloro, 5-bromo, 5-(3-trifluoromethyl)phenylazo and 6-chloro; or W and X together may represent a fused benzene ring and X and Y together may represent a fused benzene ring substituted by hydroxy in the 6-position of the naphthalene ring numbering, provided that

- (1) when each R is hydrogen;
 - (a) W, X, Y, Z are each hydrogen; or
 - (b) W, X and Z are each hydrogen and Y is selected from the group consisting of iodo, bromo, chloro, trimethylsilyl, phenoxy, phenyl, 4'-chloroanilino, methyl, 4'-boronophenyl and 2'-carboxyphenyl; or
 - (c) W and Z are each hydrogen and
 - (i) X and Y together represent a fused benzene ring substituted by hydroxy in the 6-position of the naphthalene ring numbering; or
 - (ii) X is either nitro or chloro and Y is chloro; or
 - (iii) X is nitro and Y is carboxy;
 - (d) W, Y and Z are each hydrogen and X is amino, chloro or nitro; or
 - (e) W and X together represent a fused benzene ring and Y and Z are each hydrogen;
- (2) when each R is n-butyl, W, X and Z are each hydrogen and Y is bromo or 4'-bromophenyl;
- (3) when each R is 4'-chlorophenyl W, X and Z are each hydrogen and Y is chloro;
- (4) when each R is 3,5'-dichlorophenyl W and Y are each hydrogen, X is chloro and Z is 5-chloro; and
- (5) when the R's together represent 0,0-propylene, X, Y and Z are each hydrogen;

and the compounds bis(catechol)borate, boroglycine, pentaerythritol borate, 4-(3'-borono-4'-hydroxy-phenylazo) benzoic acid, diphenylisobutoxyborane, diphenylboronic anhydride and dimethylphenylboronic acids, said non-boron-containing organic enhancer being selected from the group consisting of phenolic enhancers and amine enhancers, said organoboron enhancer and said non-boron-containing enhancer being present in concentrations effective to increase the signal or signal to background ratio or to decrease the background, compared with carrying out said chemiluminescent reaction in the presence of each of said organoboron enhancer and said non-boron-containing organic enhancer alone.

5,512,452

SELECTION OF BACTERIAL GENES INDUCED IN HOST TISSUES

John J. Mekalanos, Cambridge, and Andrew Camilli, Chestnut Hill, both of Mass., assignors to President and Fellows of Harvard College, Cambridge, Mass.

Continuation-in-part of Ser. No. 58,299, May 6, 1993, Pat. No. 5,434,065. This application Sep. 28, 1993, Ser. No. 127,905

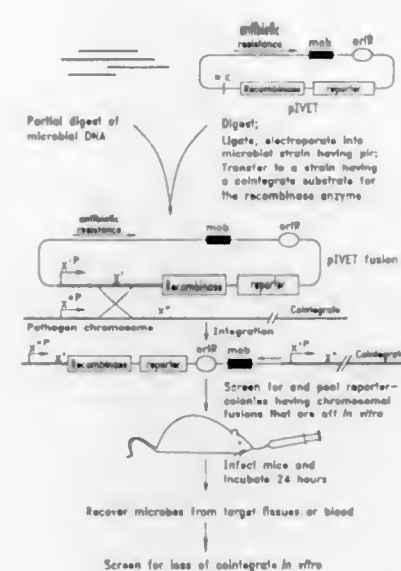
Int. Cl.⁶ C12Q 1/02; C12N 15/00

U.S. Cl. 435—25

16 Claims

1. A method of detecting induction of gene expression in a microorganism during in vivo infection of a host, comprising the steps of:

- (a) constructing a reporter strain or pool of reporter strains of said microorganism containing an artificial cointegrate comprising a reporter gene flanked by directly repeated recombination sequences and said microorganism further contains coding sequence under the control of a promoter sequence of said microorganism, wherein expression of said coding sequence produces a resolvase enzyme capable of resolving said cointegrate;



- (b) infecting said host with said pool of reporter strains;
- (c) harvesting from said host the reporter strains that survive and propagate in said host after step (b); and
- (d) detecting expression of said coding sequence by detecting resolution of said cointegrate thereby resulting in the loss of said reporter gene.

5,512,453

ACTIVATED KILLER MONOCYTES AND TUMORICIDAL ACTIVITY AND PHARMACEUTICAL COMPOSITIONS

Henry C. Stevenson, Kensington, Md., assignor to The United States of America as represented by the Secretary, Dept. of Health & Human Services, Bethesda, Md.

Continuation of Ser. No. 75,985, Aug. 29, 1991, abandoned, which is a division of Ser. No. 209,108, Jun. 20, 1988, Pat. No. 5,093,115, which is a continuation-in-part of Ser. No. 743,570, Jun. 11, 1985, abandoned. This application Apr. 22, 1994, Ser. No. 231,892

Int. Cl.⁶ C12Q 1/02; A61K 37/66

U.S. Cl. 435—29

8 Claims

1. Substantially pure, functional, human, clinical grade, activated killer monocytes (AKM), in suspension in a serum-free medium containing gamma interferon contained in polypropylene ware, said AKM having activation characteristics such that said AKM are activated in vitro.

5,512,454

ENZYMATIC ACYLATION OF 3-HYDROXYMETHYL CEPHALOSPORINS

John J. Usher; Guna Romancik, both of East Syracuse; Michael Politino, and David A. Lowe, both of Fayetteville, all of N.Y., assignors to Bristol-Myers Squibb Company, New York, N.Y.

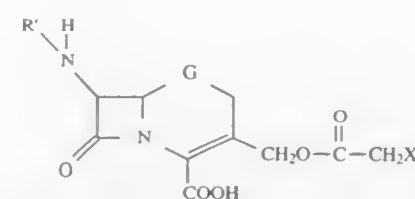
Filed Feb. 3, 1994, Ser. No. 191,304

Int. Cl.⁶ C12P 35/04; C12N 9/20

U.S. Cl. 435—47

20 Claims

1. An acylation process for the preparation of a cephalosporin compound of the formula

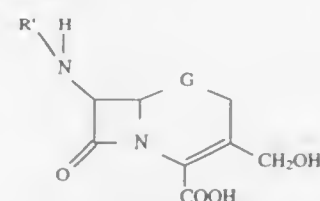


wherein

R' is hydrogen or an acyl group of the formula



wherein R is the residue of a carboxylic acid, X is hydrogen or halo, and G is sulphur, oxygen, sulphoxide, sulphone, or methylene; which comprises reacting in an aqueous medium a compound of the formula



with an acyl donor containing at least three carbon atoms and an enzyme selected from the group consisting of *Rhodospiridium toruloides* esterase, wheat germ lipase, *Aspergillus niger* lipase, orange peel acetyltransferase and *Bacillus subtilis* esterase whereby said cephalosporin compound is produced.

5,512,455

ATRIAL NATRIURETIC PEPTIDE RECEPTOR PROTEIN

Dale B. Schenk, Campbell, Calif., assignor to Scios Nova, Inc., Mountain View, Calif.

Continuation-in-part of Ser. No. 861,529, May 9, 1986, abandoned. This application May 11, 1987, Ser. No. 48,296

Int. Cl.⁶ C12P 21/02; C12N 1/21; 5/10; 15/12; 15/70

U.S. Cl. 435—69.1

10 Claims

1. A composition comprising a recombinant DNA molecule encoding the amino acid sequence of the 60.5 kd bovine or the human ANP receptor protein subunit, said composition being free of DNA molecules that do not encode said amino acid sequence.

5,512,456

METHOD FOR THE IMPROVED PRODUCTION AND RECOVERY OF POLY-β-HYDROXYBUTYRATE FROM TRANSFORMED *ESCHERICHIA COLI*

Douglas E. Dennis, Weyers Cave, Va., assignor to James Madison University, Harrisonburg, Va.

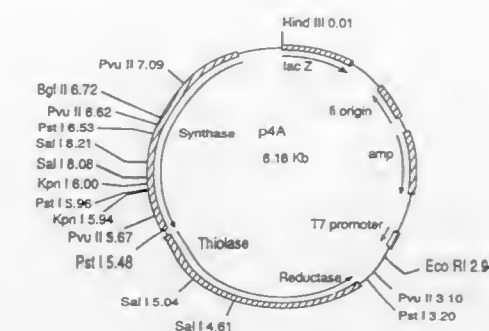
Continuation-in-part of Ser. No. 705,806, May 24, 1991, abandoned, which is a continuation-in-part of Ser. No. 528,549, May 25, 1990, abandoned. This application May 29, 1992, Ser. No. 890,925

Int. Cl.⁶ C12P 21/06; 7/52; 1/04

U.S. Cl. 435—69.1

20 Claims

1. A process for producing poly-β-hydroxybutyrate comprising: providing a culture of *Escherichia coli* bacterial host cells transformed by (1) a first vector containing a DNA sequence encoding the biosynthetic pathway of poly-β-hydroxybutyrate from *Alcaligenes eutrophus*, wherein the DNA sequence coding for poly-β-hydroxybutyrate comprises three p4A plasmid,



and (2) a second vector containing a DNA sequence of a T7 bacteriophage lysozyme gene; growing the culture in a suitable medium and obtaining expression of the poly-β-hydroxybutyrate biosynthetic pathway and the lysozyme gene in the *Escherichia coli* bacterial host cells to provide poly-β-hydroxybutyrate and lysozyme; lysing the *Escherichia coli* bacterial host cells; isolating the poly-β-hydroxybutyrate; and, collecting the poly-β-hydroxybutyrate.

5,512,457

CYTOKINE DESIGNATED ELK LIGAND

Stewart Lyman, Seattle; M. Patricia Beckmann, Poulsbo; Peter R. Baum, Seattle, and Melissa K. Carpenter, Issaquah, all of Wash., assignors to Immunex Corporation, Seattle, Wash.

Continuation-in-part of Ser. No. 977,693, Nov. 13, 1992, abandoned. This application Mar. 15, 1994, Ser. No. 213,403

Int. Cl.⁶ C07H 21/04; C12P 21/02; C12N 15/19; C07K 14/52

U.S. Cl. 435—69.5

13 Claims

1. An isolated DNA sequence encoding a human elk-L protein wherein said elk-L comprises an amino acid sequence selected from the group consisting of amino acids -24 to 322 of SEQ ID NO:2 and 1-322 of SEQ ID NO:2.

5,512,458

METHOD OF USING MOBILE PRIMING SITES FOR DNA SEQUENCING

Jack T. Leonard, Somerville, Mass., assignor to W. R. Grace & Co.-Conn., New York, N.Y.

Continuation-in-part of Ser. No. 202,400, Feb. 25, 1994. This application Jul. 14, 1994, Ser. No. 275,169

Int. Cl.⁶ C12P 19/34; C12Q 1/68; C07H 21/02; 21/04

U.S. Cl. 435—91.1

39 Claims

1. A double-stranded oligonucleotide molecule for use in providing enhanced sequencing of DNA, comprising:

- a first strand having 1) a priming site; 2) a labeling region contiguous with said priming site; and 3) a cohesive end contiguous with said labeling region, said cohesive end having a nucleotide sequence complementary to a nucleotide sequence generated by the action of a restriction enzyme; and
- a second strand annealed to said labeling region of said first strand, but not overlapping with said cohesive end.

5,512,459

ENZYMATIC METHOD FOR MODIFICATION OR RECOMBINANT POLYPEPTIDES

Fred W. Wagner, Walton; Jay Stout, Lincoln; Dennis Henriksen, Lincoln; Bruce Partridge, Lincoln, and Shane Manning, Lincoln, all of Nebr., assignors to BioNebraska, Inc., Lincoln, Nebr.

Filed Jul. 20, 1993, Ser. No. 95,162

Int. Cl.⁶ C12P 21/06; C12N 9/74; 9/76; 15/09

U.S. Cl. 435—68.1

24 Claims

1. A process for modifying a polypeptide by transpeptidation comprising: contacting (a) the polypeptide, which includes a leaving unit linked to a core by an enzyme cleavage site, and (b) an addition unit with (c) thrombin to cleave the leaving unit from the core at the enzyme cleavage site and produce a modified polypeptide having the addition unit attached to the core; wherein the enzyme cleavage site includes Gly-Ala-Arg.

5,512,460

GLIA ACTIVATING FACTOR AND ITS PRODUCTION
Ken-ichi Nairo, Sando; Chisaki Seko, Takatsuki; Tsutomu Kurokawa, Kawanishi, and Tatsuya Kondo, Tokyo, all of Japan, assignors to Takeda Chemical Industries, LTD, Osaka, Japan

Continuation of Ser. No. 835,713, Feb. 12, 1992, abandoned.

This application Nov. 17, 1994, Ser. No. 340,820

Claims priority, application Japan, Feb. 14, 1991, 3-020860; Sep. 4, 1991, 3-224454; Jan. 10, 1992, 4-003399

Int. Cl.⁶ C12N 15/12; 1/21; 5/10; C12P 21/06

U.S. Cl. 435—69.1

8 Claims

1. A recombinant DNA containing a polynucleotide coding for a glia activating factor (GAF), said GAF having the following characteristics:

- (i) Heparin affinity: said glia activating factor is eluted from a heparin-Sepharose column at a saline concentration of 0.4 to 0.9M;
 - (ii) Activity stability: the activity of said glia activating factor is lost by heat treatment at 100° C. for 5 minutes, and partially lost by treatment at pH 2 for 30 minutes;
 - (iii) Antigenicity: said glia activating factor does not exhibit the any immunological cross reaction with platelet-derived growth factor (PDGF), acidic fibroblast growth factor (aFGF) or basic fibroblast growth factor (bFGF); and
 - (iv) Biological activity: said glia activating factor displays growth promoting activity upon glial cells, fibroblasts and rat pheochromocytoma PC-12 cells;
- said glia activating factor having the following amino acid sequence or a fragment thereof possessing GAF biological activity;

(Met)-X₁-Leu Asp His Leu Lys Gly Ile Leu Arg Arg Arg Gln Leu Tyr Cys Arg Thr Gly Phe His Leu Glu Ile Phe Pro Asn Gly Thr Ile Gln Gly Thr Arg Lys Asp His Ser Arg Phe Gly Ile Leu Glu Phe Ile Ser Ile Ala Val Gly Leu Val Ser Ile Arg Gly Val Asp Ser Gly Leu Tyr Leu Gly Met Asn Glu Lys Gly Glu Leu Tyr Gly Ser Glu Lys Leu Thr Gln Glu Cys Val Phe Arg Glu Gln Phe Glu Glu Asn Trp Tyr Asn Thr Tyr Ser Ser Asn Leu Tyr Lys His Val Asp Thr Gly Arg Arg Tyr Tyr Val Ala Leu Asn Lys Asp Gly Thr Pro Arg Glu Gly Thr Arg Thr Lys Arg His Gln Lys Phe Thr His Phe Leu Pro Arg Pro Val Asp Pro Asp-X₂

wherein: n is 0 (SEQ ID NO:2) or 1 (SEQ ID NO:3);

X₁ represents Ala Pro Leu Gly Glu Val Gly Asn Tyr Phe Gly Val Gln Asp Ala Val Pro Phe Gly Asn Val Pro Val Leu Pro Val Asp Ser Pro Val Leu Leu Ser Asp His Leu Gly Gln Ser Glu Ala Gly Gly Leu Pro Arg Gly Pro Ala Val Thr Asp or a fragment thereof; and X₂ represents Lys Val Pro Glu Leu Tyr Lys Asp Ile Leu Ser Gln Ser or a fragment thereof.

5,512,461

Patent Not Issued For This Number

5,512,462

METHODS AND REAGENTS FOR THE POLYMERASE CHAIN REACTION AMPLIFICATION OF LONG DNA SEQUENCES

Suzanne Cheng, El Cerrito, Calif., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Feb. 25, 1994, Ser. No. 203,198

Int. Cl.⁶ C12P 19/34; C12N 9/00; 9/12

U.S. Cl. 435—91.2

6 Claims

1. A DNA polymerase composition for the polymerase chain reaction amplification of long nucleic acid sequences consisting of a combination of a first DNA polymerase and a lesser quantity, measured in units of polymerase activity, of a second DNA polymerase, wherein said first DNA polymerase is *Thermus thermophilus* DNA polymerase, and wherein said second DNA polymerase is selected from the group of DNA polymerases consisting of *Thermococcus litoralis* DNA polymerase, *Pyrococcus* species GB-D DNA polymerase, and *Thermotoga maritima* DNA polymerase.

5,512,463

ENZYMATIC INVERSE POLYMERASE CHAIN REACTION LIBRARY MUTAGENESIS

Willem P. C. Stemmer, Carlsbad, Calif., assignor to Eli Lilly and Company, Indianapolis, Ind.

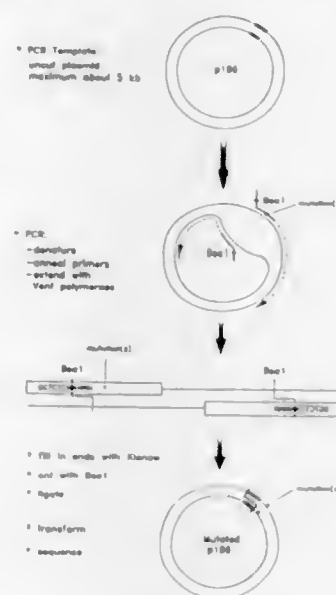
Continuation of Ser. No. 806,154, Dec. 12, 1991, abandoned, which is a continuation-in-part of Ser. No. 691,140, Apr. 26, 1991, abandoned. This application Jun. 1, 1994, Ser. No. 252,057

The portion of the term of this patent subsequent to Jan. 19, 2014, has been disclaimed.

Int. Cl.⁶ C12P 19/34; 21/00; C07H 21/04; C12Q 1/68

U.S. Cl. 435—91.2

27 Claims



1. A method for generating a recombinant mutagenesis library by introducing one or more changes within a predetermined region of a double stranded circular DNA sequence, comprising the steps of:

- (a) providing a first primer population and a second primer population, each of said primer populations comprising in a 5' to 3' orientation;
- (i) a class IIS recognition sequence, wherein said IIS recognition sequence is not complementary to the DNA sequence of the predetermined region of the double stranded circular DNA sequence to be mutagenized;
- (ii) a class IIS restriction enzyme cleavage site associated with said class IIS restriction enzyme recognition sequence;
- (iii) a region of variable base composition at predetermined positions in said primers; and

- (iv) a DNA sequence substantially complementary to said double stranded circular DNA sequence to allow hybridization thereto, wherein the DNA sequence immediately adjacent to said class IIS restriction enzyme cleavage site within said primer populations is not complementary to the DNA sequence of the predetermined region of the double stranded circular DNA sequence to be mutagenized;
- (b) denaturing said double stranded circular DNA sequence and hybridizing said first and second primer populations to opposite strands of said denatured double stranded circular DNA sequence to form a first pair of primer templates wherein said primers are oriented in opposite directions relative to one another and wherein said class IIS recognition sequence does not hybridize to the denatured double stranded circular DNA sequence;
- (c) performing extension, denaturing and hybridization steps of a polymerase chain reaction to generate at least one linear copy of said double stranded circular DNA sequence to incorporate said change directed by said primers;
- (d) cutting the linear copy of said double stranded circular DNA sequence of step (c) with a class IIS restriction enzyme to form a restricted linear DNA molecule containing said change to produce overhanging termini that are complementary to one another;
- (e) ligating intramolecularly said overhanging termini of said linear DNA molecule to recircularize said linear copy of said double stranded circular DNA sequence containing said change; and
- (f) introducing said recircularized copies of double stranded DNA sequence into compatible host cells, wherein a recombinant mutagenesis library is generated.

5,512,464

METHOD OF PRODUCING HIGH FRUCTOSE CORN SYRUP FROM GLUCOSE USING NOBLE GASES

Kevin C. Spencer, Riverside; Christine E. Boisrobert, Chicago; Steven A. Fisher, Berwyn; Patricia A. Rojak, Wheaton, and Karen S. Sabatini, Summit, all of Ill., assignors to American Air Liquide, New York, N.Y.

Continuation of Ser. No. 816,732, Jan. 3, 1992, abandoned.

This application Jul. 1, 1994, Ser. No. 270,224

Int. Cl.⁶ C12P 19/24; 19/02; C13K 11/00

U.S. Cl. 435—94

11 Claims

1. A process for producing high fructose corn syrup from glucose containing syrup, comprising isomerizing said glucose containing syrup through an enzymatic reaction to make high fructose corn syrup, wherein said enzymatic reaction occurs in a noble gas-containing solution, at a temperature of about 0° to 50° C.; said noble gas being selected from the group consisting of argon, xenon, krypton, neon and mixtures thereof, and being present in an amount effective to improve efficiency of the process.

5,512,465

PROCESS FOR PRODUCING OPTICALLY ACTIVE 1,3-BUTANEDIOL

Akinobu Matsuyama, and Yoshinori Kobayashi, both of Niigata, Japan, assignors to Daicel Chemical Industries, Ltd., Osaka, Japan

Division of Ser. No. 778,918, Dec. 31, 1991, Pat. No. 5,336,619. This application May 23, 1994, Ser. No. 247,849

Claims priority, application Japan, Oct. 15, 1990, 2-276100

Int. Cl.⁶ C12P 7/18

U.S. Cl. 435—158

13 Claims

1. A process for producing optically active 1,3-butanediol comprising contacting 4-hydroxy-2-butanone with viable cells of a microorganism or cells thereof which have been ground, acetone-treated, or lyophilized, selected from the group consisting of *Agrobacterium radiobacter*, *Azotobacter chroococcum*, *Bordetella bronchiseptica*, *Brettanomyces abstinens*, *Dekkera bruxellensis*, *Endomyces decipiens*, *Eremascus fertilis*, *Erwinia carotovora*

subsp. carotovora, *Fusarium oxysporum*, *Fusarium solani*, *Geotrichum fragrans*, *Gibberella fujikuroi*, *Gonatobotryum apiculatum*, *Klebsiella pneumoniae*, *Micrococcus luteus*, *Micrococcus roseus*, *Mycobacterium smegmatis*, *Neosartorya fischeri* var. *spinosus*, *Oospora astrigenes*, *Pachysolen tannophilus*, *Paecilomyces variotii*, *Paracoccus denitrificans*, *Preussia terricola*, *Saccharomycopsis fibuligera*, *Serratia marcescens*, *Syringospore clausenii*, *Sep-toria glycines*, *Sporopachydermia lactativora*, *Talaromyces flavus* var. *flavus*, *Westerdykella multispora*, *Zygoascus hellenicus*, and *Zygozoma oligophaga* capable of asymmetrically reducing 4-hydroxy-2-butanone into (R)-1,3-butanediol, and then recovering the (R)-1,3-butanediol thus formed.

5,512,466

CONTROL OF FRUIT RIPENING AND SENESCENCE IN PLANTS

Harry J. Klee, Ballwin, and Ganesh M. Kishore, Chesterfield, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 632,440, Dec. 26, 1990, abandoned. This application Dec. 17, 1991, Ser. No. 809,457

Int. Cl.⁶ A12N 15/31; 15/63; 15/82; C01H 5/08

U.S. Cl. 435—172.3

28 Claims

2. A method for producing tomatoes which exhibit a delayed-ripening phenotype which comprises:

- a) obtaining regenerable cells of a tomato plant;
- b) transforming said cells by inserting into the genome of said cells a recombinant, double-stranded DNA molecule which causes a reduction of ethylene biosynthesis, said molecule comprising in sequence in the 5' to 3' direction:
 - (i) a promoter region which functions in ripening tomato fruit to cause the production of an RNA sequence, said promoter region operably linked to;
 - (ii) a structural DNA sequence that causes the production of an RNA sequence that encodes a 1-aminocyclopropane-1-carboxylic acid deaminase enzyme, said structural sequence operably-linked to;
 - (iii) a 3' non-translated region that functions in plant cells to polyadenylate the 3' end of said RNA sequence,
 wherein said promoter is heterologous with respect to said structural DNA sequence;
- c) regenerating a tomato plant from the transformed tomato plant cell; and
- d) growing said transformed tomato plant to produce tomatoes which demonstrate delayed ripening.

5,512,467

ACYL-PEPTIDE HYDROLASE AND METHODS OF PRODUCTION AND USE

John A. Smith, Brookline, Mass., assignor to The General Hospital Corporation, Boston, Mass.

Division of Ser. No. 429,935, Nov. 1, 1989, Pat. No. 5,268,267, which is a continuation-in-part of Ser. No. 296,996, Jan. 13, 1989, abandoned, which is a continuation-in-part of Ser. No. 87,936, Aug. 21, 1987, abandoned. This application Jul. 15, 1993, Ser. No. 91,445

Int. Cl.⁶ C12N 15/57; 15/63; 1/21; 5/10

U.S. Cl. 435—172.3

13 Claims

11. A purified DNA molecule, wherein said molecule comprises a nucleic acid sequence, said nucleic acid sequence

- (1) encoding a naturally occurring mammalian acyl-peptide hydrolase protein, and
- (2) wherein said nucleotide sequence hybridizes to a cDNA probe complementary to the nucleotide sequence of FIG. 3 or FIG. 4 when the hybridization is performed at about 42° C. in a medium consisting essentially of 50% formamide, 5×SSC, 5×Denhardt's solution, 10 mM sodium phosphate, 0.1% SDS, 1 mM EDTA and 50 µg/ml of salmon sperm DNA, and wherein washing occurs in a medium consisting essentially of 0.2×SSC, 0.1% SDS, 1 mM sodium phosphate, pH 7.0 and 1 mM EDTA at about 55° C.

5,512,468

PROCESS OF PRODUCING HIGHLY TRANSFORMABLE BACTERIAL CELLS AND CELLS PRODUCED THEREBY
Alan L. Greener, San Diego, Calif., assignor to Stratagene, La Jolla, Calif.

Filed Nov. 22, 1993, Ser. No. 151,577

Int. Cl.⁶ C12N 15/64; 1/20; 1/21

U.S. Cl. 435—172.3

11 Claims

1. A method of preparing competent gram negative bacteria cells, said method comprising the steps of:
transferring a vector comprising a polynucleotide encoding the alpha-amylase gene present on plasmid FAM7 into gram negative bacteria cells, and
treating the cells with a competency inducing procedure, whereby competent cells are produced.

5,512,469

Patent Not Issued For This Number

5,512,470

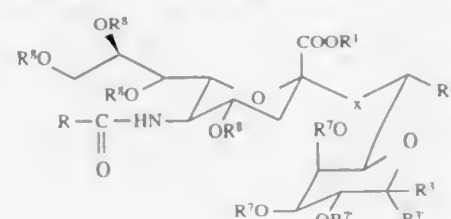
METHOD FOR INHIBITING SIALIDASE ACTIVITY
Sabesan Subramaniam, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.
Division of Ser. No. 147,198, Nov. 3, 1993, Pat. No. 5,489,675, which is a continuation-in-part of Ser. No. 904,233, Jun. 25, 1992, abandoned. This application May 19, 1995, Ser. No. 444,593

Int. Cl.⁶ C12N 9/24

U.S. Cl. 435—200

2 Claims

1. A method for inhibiting sialidase activity comprising contacting sialidase with a compound of Formula I



wherein

R is H or C₁ to C₂₀ hydrocarbyl or substituted hydrocarbyl;
R¹ is H, a C₁ to C₂₀ alkyl, a mono, di or polyvalent cation of an alkali metal, alkaline earth metal or transition metal, or an ammonium or substituted ammonium ion;

X is O, S, CR⁴R⁵ or NR⁶, wherein R⁴, R⁵, R⁶ are each independently H or a C₁ to C₂₀ hydrocarbyl or substituted hydrocarbyl;

R² is a C₁ to C₂₀ hydrocarbyl or substituted hydrocarbyl;

R³ and R³ are H, OH, a C₁ to C₂₀ alkoxy or substituted alkoxy, a mono, di or oligosaccharide, or a C₁ to C₂₀ alkylideneoxy taken together with R⁷ when R⁷ is not H; provided that one of R³ or R³ must be H but R³ and R³ may not both be H;
R⁷ and R⁷ are independently H, a C₁ to C₂₀ acyl, a C₁ to C₂₀ alkyl, or a C₁ to C₂₀ alkylidene taken together with an adjacent R³, R⁷ or R⁷; and
R⁸ is H, a C₁ to C₂₀ acyl, or a C₁ to C₂₀ alkyl.

5,512,471

PROCESS FOR PURIFYING AN α-D-GALACTOSIDASE ISOZYME FROM COFFEE BEANS

Daniel S. Smith, Columbia, Mo., assignor to The Curators of the University of Missouri, Columbia, Mich.

Filed Dec. 23, 1992, Ser. No. 996,029

Int. Cl.⁶ C12N 9/40

U.S. Cl. 435—208

19 Claims

1. A process for purifying a *Coffea canephora* α-D-galactosidase isozyme by 1) homogenizing coffee beans containing the isozyme with an extraction buffer and obtaining a supernatant containing the isozyme and tannin, 2) extracting tannin from the supernatant by exposing the supernatant to insoluble polyvinylpyrrolidone (PVPP) in an amount sufficient to remove tannin from the supernatant by forming hydrogen bonds with the tannin, and 3) isolating the isozyme from the supernatant from which tannin has been removed.

5,512,472

DNA SEQUENCE ENCODING STEROL Δ14 REDUCTASE
Margaret H. K. Lai, E. Brunswick; Donald R. Kirsch, Princeton, both of N.J., and Martin Bard, Carmel, Ind., assignors to American Cyanamid Company, Wayne, N.J.

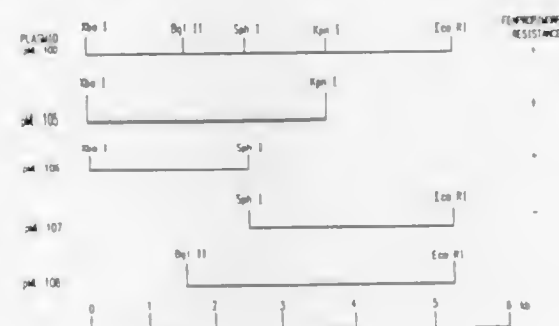
Continuation of Ser. No. 107,347, Aug. 16, 1993, abandoned.

This application May 11, 1995, Ser. No. 439,131

Int. Cl.⁶ C12N 9/02; 15/53; 15/81; 15/09

U.S. Cl. 435—240.1

13 Claims



1. A purified and isolated DNA fragment of *Saccharomyces cerevisiae* (*S. cerevisiae*) comprising a DNA sequence encoding *S. cerevisiae* sterol Δ14 reductase.

5,512,473

MAX-INTERACTING PROTEINS AND RELATED MOLECULES AND METHODS

Roger Brent, 27 Wendell St., Cambridge, Mass. 02138, and Antonis S. Zervos, 62 Phillips St., Boston, Mass. 02114

Filed Jan. 29, 1993, Ser. No. 11,398

Int. Cl.⁶ C12N 1/21; 5/10; 15/12; 15/63

U.S. Cl. 435—240.2

6 Claims

1. Purified DNA comprising a sequence encoding a human Mx1 polypeptide.

5,512,474

CELL CULTURE SUPPORT CONTAINING A CELL ADHESION FACTOR AND A POSITIVELY-CHARGED MOLECULE

David L. Clapper, Shorewood, and Wei-Shou Hu, Falcon Heights, both of Minn., assignors to BSI Corporation, Eden Prairie, Minn.

Continuation of Ser. No. 891,509, May 29, 1992, abandoned.

This application Mar. 9, 1994, Ser. No. 208,916

Int. Cl.⁶ C12N 5/00; 11/08; C12M 3/00

U.S. Cl. 435—240.243

12 Claims

1. A cell culture support comprising a support material in the form of a microcarrier and comprising a supporting surface for the attachment of cells, the surface bearing a combination comprising:
a positively-charged molecule selected from a group consisting of polylysine, chitosan, poly(ethyleneimine), and acrylics polymerized from acrylamide or methacrylamide and incorporating positively-charged groups in the form of primary, secondary, or tertiary amines, or quaternary salts, and
a cell adhesion factor selected from the group consisting of fibronectin, laminin, collagen, vitronectin and tenascin, and active fragments and synthetic analogs having a cell binding domain thereof,

wherein either (a) the positively-charged molecule and the cell adhesion factor are covalently bound to the supporting surface, or (b) the positively-charged molecule and the cell adhesion factor are covalently bound to one another and either the positively-charged molecule or the cell adhesion factor is covalently bound to the supporting surface, or (c) either the positively-charged molecule or the cell adhesion factor, or both, are provided in the form of a stable coating noncovalently bound around the surface of the supporting material.

5,512,475

THREE-DIMENSIONAL SKIN CELL AND TISSUE CULTURE SYSTEM

Gail K. Naughton, and Brian A. Naughton, both of Groton, Vt., assignors to Advanced Tissue Sciences, Inc., La Jolla, Calif.
Division of Ser. No. 131,361, Oct. 4, 1993, Pat. No. 5,443,950, which is a division of Ser. No. 575,518, Aug. 30, 1990, Pat. No. 5,266,480, which is a division of Ser. No. 402,104, Sep. 1, 1989, Pat. No. 5,032,508, which is a continuation-in-part of Ser. No. 242,096, Sep. 8, 1988, Pat. No. 4,963,489, which is a continuation-in-part of Ser. No. 38,110, Apr. 14, 1987, abandoned, which is a continuation-in-part of Ser. No. 36,154, Apr. 3, 1987, Pat. No. 4,721,096, which is a continuation of Ser. No. 853,569, Apr. 18, 1986, abandoned. This application Apr. 6, 1995, Ser. No. 418,230

Int. Cl.⁶ C12N 5/00; C12Q 1/02; A01N 1/02

U.S. Cl. 435—240.243

37 Claims

1. A method for transplantation or implantation of a three-dimensional skin cell culture comprising implanting a culture of melanocyte and keratinocyte cells cultured on a living stromal tissue prepared in vitro, said living stromal tissue comprising stromal cells and connective tissue proteins naturally secreted by the stromal cells attached to and substantially enveloping a framework composed of a biocompatible, non-living material formed into a three-dimensional structure having interstitial spaces bridged by the stromal cells so that a tissue equivalent is formed.

5,512,476

METHOD FOR IN VITRO FERTILIZATION OF OOCYTES USING MICROCHAMBERS

Jon W. Gordon, New York, N.Y., assignor to Mount Sinai School of Medicine of the City University of New York, New York, N.Y.

Continuation of Ser. No. 699,745, May 14, 1991, abandoned.

This application Sep. 22, 1993, Ser. No. 125,084

Int. Cl.⁶ A61D 19/00; C12N 5/00

U.S. Cl. 435—240.26

16 Claims

1. A method for achieving in vitro fertilization of an oocyte comprising the steps of
(a) placing a drop of fertilization medium in a container;
(b) causing said drop to be shaped such that a portion of the drop is contained within at least one oocyte chamber, the portion of the drop within said at least one chamber being less than the volume of the entire drop both inside and outside said at least one chamber, said chamber volume exceeding the volume of the oocyte by from 800% to 2000%;
(c) causing said oocyte chamber to be formed and positioned in relation to the remainder of said drop such that sperm of normal motility, when placed in said drop remote from said chamber, will tend to congregate in the vicinity of the oocyte chamber and permit contact between an oocyte contained in said chamber and said sperm;
(d) placing an oocyte to be fertilized in said at least one oocyte chamber;
(e) placing a sample of sperm into said drop at a location remote from said at least one oocyte chamber;
(f) allowing said sperm to remain in said drop for a period of time sufficient for sperm of normal motility to congregate in the vicinity of said at least one oocyte chamber; and
(g) allowing the oocyte to be fertilized by the sperm and recovering the fertilized oocyte from the oocyte chamber.

5,512,477

SERUM-FREE MEDIUM SUPPLEMENT

Jason C. Goodrick, Cambridge, and Nick C. Wan, Newton, both of Mass., assignors to Genzyme Corporation, Cambridge, Mass.

Continuation of Ser. No. 230,933, Apr. 21, 1994, abandoned.

This application Mar. 24, 1995, Ser. No. 410,657

Int. Cl.⁶ C12N 5/02

U.S. Cl. 435—240.31

1 Claim

1. A serum-free eukaryotic cell culture medium supplement, comprising:
a. a carbon source consisting of about 7.3 grams/liter (g/L) of L-glutamine and about 25 grams/liter (g/L) of D-glucose;
b. vitamins consisting of about 0.005 g/L of biotin, about 0.075 g/L of choline chloride, about 0.025 g/L of folic acid, about 0.875 g/L of inositol, about 0.025 g/L of niacinamide, about 0.025 g/L of benzoic acid, about 0.00625 g/L of pantothenic acid, about 0.025 g/L of pyridoxine HCl, about 0.005 g/L of riboflavin, about 0.025 g/L of thiamine HCl, and about 0.000125 g/L of vitamin B12;
c. inorganic salts consisting of about 0.05 g/L of potassium chloride, about 0.05 g/L of potassium phosphate, about 2.0 g/L of sodium chloride, and about 0.2875 g/L of sodium phosphate;
d. amino acids consisting of about 2.5 g/L of arginine, about 0.625 g/L of asparagine, about 0.25 g/L of aspartic acid, cystine, about 0.25 g/L of glutamic acid, about 0.125 g/L of glycine, about 0.1875 g/L of histidine, about 0.25 g/L of proline, about 0.625 g/L of isoleucine, about 0.5 g/L of lysine, about 0.1875 g/L of methionine, about 0.1875 g/L of phenylalanine, about 0.375 g/L of serine, about 0.25 g/L of threonine, about 0.0625 g/L of tryptophan, about 0.3604 g/L of tyrosine and about 0.25 g/L of valine; and
e. about 25 g/L of a meat digest.

5,512,478

GENES AND ENZYMES INVOLVED IN THE MICROBIAL DEGRADATION OF PENTACHLOROPHENOL

Cindy S. Orser, Boulder, Colo.; Luying Xun, Richland, Wash., and Cleston C. Lange, II, Minneapolis, Minn., assignors to Idaho Research Foundation, Inc., Moscow, Id.
Continuation-in-part of Ser. No. 914,282, Jul. 13, 1992, Pat. No. 5,364,787, which is a continuation-in-part of Ser. No. 856,015, Mar. 23, 1992, abandoned. This application Jul. 18, 1994, Ser. No. 276,887

Int. Cl.⁶ C12N 15/76; 15/53

U.S. Cl. 435—252.33

19 Claims

1. A purified DNA molecule encoding the protein tetrachloro-p-hydroquinone reductase (PcpC).

5,512,479

METHOD OF DEGRADING VOLATILE ORGANOCHLORIDES AND REMEDIATION THEREOF

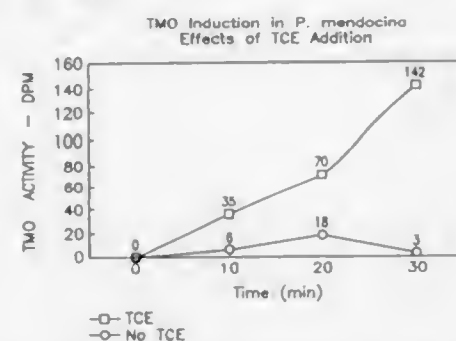
Robert J. Steffan, Newtown, Pa., assignor to Envirogen, Inc., Lawrenceville, N.J.

Filed Oct. 14, 1993, Ser. No. 136,792

Int. Cl.⁶ B09C 1/10; C12N 9/02; 1/38

U.S. Cl. 435—262.5

21 Claims



1. A method of degrading trichloroethylene in a medium contaminated with a 1 μ M or higher concentration of said trichloroethylene, said method comprising the steps of:

- introducing a degradation effective amount of *Pseudomonas mendocina* KR-1 ATCC 55706 into said medium under conditions sufficient to degrade said trichloroethylene;
- inducing, with said trichloroethylene, toluene monooxygenase genes naturally occurring within said *Pseudomonas mendocina* KR-1 ATCC 55706; and
- degrading with said *Pseudomonas mendocina* KR-1 ATCC 55706 and with said toluene monooxygenase genes induced by said trichloroethylene at least a portion of said trichloroethylene in said medium.

5,512,480

FLOW-THROUGH BIOREACTOR WITH GROOVES FOR CELL RETENTION

Craig Sandstrom, Deerfield; E. T. Papoutsakis; William M. Miller, both of Evanston, and James G. Bender, Lindenhurst, all of Ill., assignors to Baxter International Inc., Deerfield, and Northwestern Univ., Evanston, both of Ill.

Continuation of Ser. No. 209,660, Mar. 11, 1994. This application Jun. 1, 1995, Ser. No. 457,888

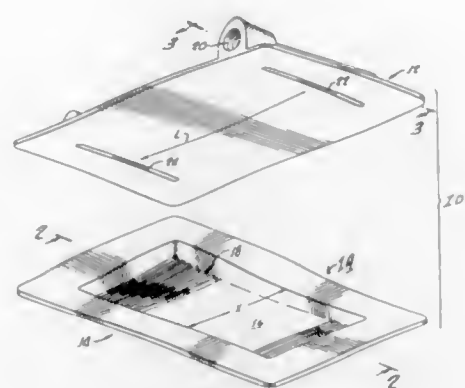
Int. Cl.⁶ C12M 3/00; 1/00; 1/24

U.S. Cl. 435—289.1

8 Claims

1. A flow through bioreactor for retention and culture of cells in a perfused media, said bioreactor comprising:

- a generally rectangular vessel having first and second opposite ends, said vessel formed by spatially separated top and bottom walls and four spaced apart side walls to define a generally rectangular chamber having a longitudinal axis running from said first to said second opposite ends,



said vessel provided at said first opposite end with an inlet port which opens into said chamber and at said second opposite end with an outlet port which opens into said chamber, said inlet and outlet ports being configured to provide generally even flow of a media through said chamber in a direction generally parallel to said chamber longitudinal axis,

said bottom wall provided with a plurality of generally rectangular grooves opening into said chamber, said grooves defined by a width, depth, and length, said length of said grooves running in a direction transverse to said chamber longitudinal axis allowing for media flowing in said direction generally parallel to said chamber longitudinal axis from said inlet to said outlet ports to traverse across said grooves, and said width and depth of said grooves being sufficient to maintain said cells in said grooves during the flow of said media.

5,512,481

Patent Not Issued For This Number

5,512,482

PLANT THIOESTERASES

Toni A. Voelker, and Huw M. Davies, both of Davis, Calif., assignors to Calgene, Inc., Davis, Calif.

Continuation-in-part of Ser. No. 782,263, Oct. 24, 1991, abandoned, which is a continuation-in-part of Ser. No. 773,096, Oct. 7, 1991, abandoned, which is a continuation-in-part of Ser. No. 704,861, May 21, 1991, abandoned, and a continuation-in-part of Ser. No. 2,960, Apr. 25, 1991, which is a continuation-in-part of Ser. No. 662,007, Feb. 27, 1991, Pat. No. 5,344,771, which is a continuation-in-part of Ser. No. 620,426, Nov. 30, 1990, Pat. No. 5,298,421, which is a continuation-in-part of Ser. No. 514,030, Apr. 26, 1990, abandoned. This application Jan. 22, 1992, Ser. No. 824,247

Int. Cl.⁶ C12N 15/29

U.S. Cl. 435—320.1

16 Claims

14. A recombinant DNA construct comprising a plant thioesterase encoding sequence, wherein said sequence comprises a nucleotide sequence encoding the amino acid sequence IRX-YEVG from position 105 to 111 of SEQ ID NO: 45, and from position 113 to 119 of SEQ ID NO: 42.

15. A recombinant DNA construct comprising a plant thioesterase encoding sequence, wherein said sequence comprises a nucleotide sequence encoding the amino acid sequence N₁H-VNN from position 279 to 284 of SEQ ID NO: 45, and from position 283 to 288 of SEQ ID NO: 42.

16. A recombinant DNA construct comprising a plant thioesterase encoding sequence, wherein said sequence comprises a nucleotide sequence encoding the amino acid sequence TLxYR-REC, from position 309 to 316 of SEQ ID NO: 45, and position 313 to 320 of SEQ ID NO: 42.

5,512,483

EXPRESSION VECTORS RESPONSIVE TO STEROID HORMONES

Sylvie Mader, and John H. White, both of Montreal, Canada, assignors to McGill University, Quebec, Canada

Filed May 21, 1993, Ser. No. 66,397

Int. Cl.⁶ C12N 15/63; 15/79

U.S. Cl. 435—320.1

10 Claims

1. An expression vector adapted for replication in an animal cell comprising a glucocorticoid responsive promoter, said promoter comprising a plurality of at least 5 glucocorticoid response elements (GREs), a viral or mammalian TATA box, and a viral or mammalian initiator element with a transcriptional initiator site located from 20 to 50 bases from said TATA box, said promoter lacking upstream elements which bind nuclear factor 1, and said vector further comprising a restriction endonuclease site downstream from said promoter for insertion of DNA to be expressed from said promoter; wherein said DNA is expressed from said vector in an animal cell.

5,512,484

CARROT 16 KD PROTEIN, GENE CODING FOR SAID PROTEIN AND PLASMID CONTAINING SAID GENE

Mika Yamamoto, Sakado, and Kenji Oheda, Kyoto, both of, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Dec. 23, 1994, Ser. No. 363,010

Claims priority, application Japan, Dec. 24, 1993, 5-327943

Int. Cl.⁶ C12N 15/63; C07H 21/04; C07K 14/415

U.S. Cl. 435—320.1

4 Claims

carrot 16kd protein
parsley PR protein 1-3
parsley PR protein 1-1

carrot 16kd protein
parsley PR protein 1-3
parsley PR protein 1-1

carrot 16kd protein
parsley PR protein 1-3
parsley PR protein 1-1

1. A protein corresponding to a molecular weight of approximately 16 kD and having the amino acid sequence as shown in Sequence Listing, SEQ ID NO: 1.

5,512,485

HEMATOLOGY CONTROL COMPOSITION INCLUDING LEUKOCYTE ANALOGS; AND METHODS FOR THEIR PREPARATION AND USE

Carole Young, Miami; Michael N. Elliott, Cooper City, both of Fla.; Timothy J. Fischer, Raleigh, N.C., and Nancy R. Naylor, Miramar, Fla., assignors to Coulter Corporation, Miami, Fla.

Continuation of Ser. No. 182,885, Jan. 14, 1994, abandoned, which is a continuation of Ser. No. 81,752, Jun. 23, 1993, Pat. No. 5,320,964, which is a continuation of Ser. No. 840,435, Feb. 24, 1992, abandoned. This application Nov. 21, 1994, Ser. No. 342,997

Int. Cl.⁶ G01N 19/00

U.S. Cl. 436—10

15 Claims

1. A hematology control product which contains a leukocyte subpopulation analog comprising a red blood cell that has been treated so that said red blood cell has an increase in volume greater than 50% of its original volume and is resistant to degradation by lytic reagents used in hematology test procedures, and wherein said control product has at least two physical properties of a subpopulation of a human leukocyte, said properties comprising:

- volume measured by D.C. current,
- high frequency (RF) size,
- opacity, and
- light scatter.

5,512,486

SINGLE STEP SIGNAL GROUP-IMIDAZOLE LABELING OF ORGANIC PHOSPHATE GROUPS UNDER AQUEOUS CONDITIONS

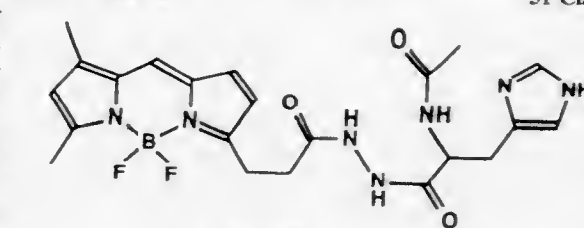
Roger W. Giese, Quincy, and Poguang Wang, Medford, both of Mass., assignors to Northeastern University, Boston, Mass.

Filed May 10, 1993, Ser. No. 60,569

Int. Cl.⁶ G01N 33/48

U.S. Cl. 436—63

31 Claims



BO-IMI

1. A method for labeling an organic substance containing a free phosphate moiety in aqueous solution comprising the steps of:

providing a signal group-imidazole labeling compound having the structure S—L—I, said labeling compound comprising:

an imidazole moiety (I) wherein I is imidazole or a substituted imidazole wherein one of the three carbon atoms of I is substituted with a C₁—C₆ alkyl substituent, which in turn is substituted with 0—2 of the following substituents: hydroxy, ether, cyano, amide, ester, vinyl, aryl, sulfate, sulfonate, halogen or sulfonamide; and

a signal group S, wherein said signal group S is connected to one of the carbon atoms on the imidazole ring of said imidazole moiety I by a linking group L, and wherein when I is said substituted imidazole, said carbon atom to which L is connected is one of the two non-substituted carbon atoms of I; and wherein further

the atoms of L that form a continuous chain between S and I, said atoms of L being denominated the L backbone, number no more than 12;

the L backbone comprises at least one saturated atom when S is a boron-containing fluorescent moiety; and

S and L are each devoid of sulfhydryl, primary amino, aryl-hydroxy and carboxyl group;

adding said compound to a solution containing an organic substance comprising a free phosphate moiety; and

covalently linking said labeling compound via the imidazole moiety, in the presence of an aqueous carbodiimide reagent, to free phosphate moiety on said organic substance.

5,512,487

Patent Not Issued For This Number

5,512,488

COLORIMETRIC ASSAY FOR BIOACTIVE POLYSACCHARIDE

Alexis N. R. Eberendu, Carrollton, and Bill H. McAnalley, Grand Prairie, both of Tex., assignors to Carrington Laboratories, Inc., Irving, Tex.

Filed May 5, 1994, Ser. No. 238,377

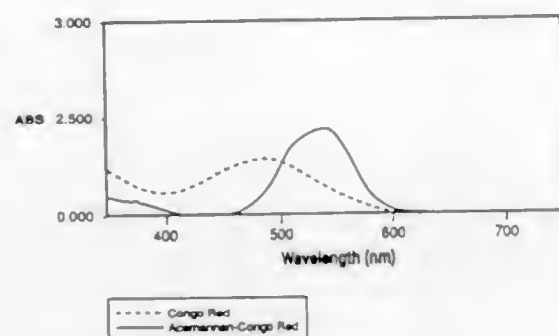
Int. Cl.⁶ G01N 33/00

U.S. Cl. 436—94

39 Claims

1. A method of determining and confirming the presence or amount of a bioactive polysaccharide in a product, said method comprising the steps of:

- bringing into contact a first aliquot of said product with a first calorimetric complexing agent in a first suitable medium to form a first reaction mixture;
- allowing a first color change to occur in said first reaction mixture;



detecting said first color change in said first reaction mixture; comparing the first detected color change with first standard color changes generated by reacting said first calorimetric complexing agent with different known amounts of said bioactive polysaccharide, wherein differences between said first color changes compared are dependent upon the presence or amount of said bioactive polysaccharide in said product; separately bringing into contact a second aliquot of said product with a second calorimetric complexing agent in a second suitable medium to form a second reaction mixture; allowing a second color change to occur in said second reaction mixture; detecting said second color change in said second reaction mixture; and comparing the detected second color change with second standard color changes generated by reacting said second calorimetric complexing agent with different known amounts of said bioactive polysaccharide, wherein differences between said second color changes compared are dependent upon the presence or amount of said bioactive polysaccharide in said sample and wherein said second color change confirms the determination of the presence or amount of said bioactive polysaccharide in said product by said first calorimetric complexing agent.

5,512,489

MICROELECTRODES AND AMPEROMETRIC ASSAYS
Hubert H. J. Girault, Edinburgh, and Brian J. Seddon, St. Helens, both of, United Kingdom, assignors to Ecosensors Limited, Edinburgh, United Kingdom
PCT No. PCT/GB90/01874, § 371 Date Feb. 8, 1993, § 102(e) Date Feb. 8, 1993, PCT Pub. No. WO91/08474, PCT Pub. Date Jun. 13, 1991

PCT Filed Dec. 3, 1990, Ser. No. 852,223

Claims priority, application United Kingdom, Dec. 4, 1989, 8927377

Int. Cl.⁶ G01N 27/04

U.S. Cl. 205—777.5

9 Claims



I. In a method of making a microelectrode comprising a layer of electrically insulating material having an array of apertures formed therein and electrically conductive material visible through the apertures, the improvement wherein the insulating layer is applied over a carbon-containing conducting material supported on an electrically insulating substrate, laser energy is then applied to selected portions of said insulating layer to form said apertures therein by laser photo-ablation and thereby expose the conducting material, and to vitrify carbon in areas of said carbon-containing conducting material exposed through said apertures.

5,512,490

OPTICAL SENSOR, OPTICAL SENSING APPARATUS, AND METHODS FOR DETECTING AN ANALYTE OF INTEREST USING SPECTRAL RECOGNITION PATTERNS

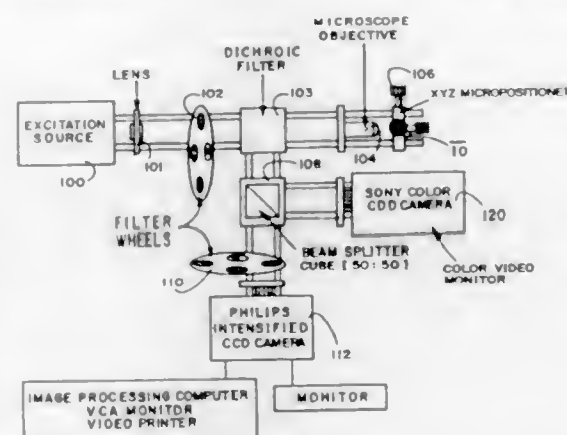
David R. Walt, Lexington, and John S. Kauer, Weston, both of Mass., assignors to Trustees of Tufts College, Medford, Mass.

Filed Aug. 11, 1994, Ser. No. 289,001

Int. Cl.⁶ G01N 21/77

U.S. Cl. 436—171

6 Claims



1. An optical sensor for detecting an analyte of interest in a fluid sample, said optical sensor comprising:

a supporting member; and

an optic array formed of multiple semi-selective sensing receptor units which differ in their constituent chemical formulations, which differ in their spectral characteristics, which are immobilized at different spatial positions on said supporting member for reactive contact with the fluid sample, and which react concurrently and semi-selectively but spectrally differently with an individual analyte of interest, each of said multiple semi-selective sensing receptor units of said optic array being comprised of

a polymeric substance of predetermined chemical composition, and

a semi-selective dye compound of predetermined chemical composition which has characteristic spectral properties, is disposed in admixture with said polymeric substance, and can react semi-selectively and spectrally differently over time with more than one analyte,

(a) wherein said admixed dye compound absorbs light energy of a predetermined wavelength and, in the presence of said polymeric substance without an analyte able to react semi-selectively, yields a baseline spectral response over time which is optically detectable and recognizable as showing an absence of analyte, and

(b) wherein said admixed dye compound absorbs light energy of a predetermined wavelength and, in the presence of said polymeric substance and at least one analyte of interest able to react semi-selectively, generates a modified spectral response over time which is optically detectable and recognizable as showing the spectral consequence of semi-selective reaction with the analyte of interest,

said multiple semi-selective sensing receptor units of said optic array presenting a plurality of differing and alternative modified spectral responses after concurrent semi-selective reaction with the analyte of interest in the fluid sample, the spectral pattern formed collectively by said plurality of differing and alternative modified spectral responses resulting in spectral recognition progression pattern means by which to detect and identify that analyte of interest.

5,512,491

METHOD FOR ULTRA-TRACE LEVEL ANALYSIS OF WATER

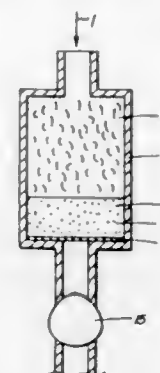
K. Anwer Mehkeri, Aylmer; Abdul Malek, Brossard; Bryan R. Hollebone, and Xinqiang Zhou, both of Ottawa, all of, Canada, assignors to Areco Canada Inc., Nepean, Canada
Filed Oct. 21, 1993, Ser. No. 139,107

Claims priority, application Canada, Apr. 8, 1993, 2093676

Int. Cl.⁶ G01N 1/00;33/20

U.S. Cl. 436—177

18 Claims



1. A method for analyzing water for the presence of an analyte in the presence of colloids, comprising the steps of:

(1) exposing microporous, inorganic trapping media having internal surfaces which bear active, hydrated hydroxyl groups thereon to a measured volume of continuously flowing non-saline water under alkaline conditions containing metal colloids and an analyte entrained therein at ultra trace levels being a concentration of less than one part per billion,

(2) allowing said, hydrated hydroxyl groups to immobilize said colloids on said surfaces to progressively accumulate a coating of colloids as a gel through the release of hydronium/hydrogen ions, until a measurable quantity of analytes is deposited within the trapping media; and

(3) analyzing said trapping media to determine the identity and quantity of analyte therein.

5,512,492

WAVEGUIDE IMMUNOSENSOR WITH COATING CHEMISTRY PROVIDING ENHANCED SENSITIVITY

James N. Uteron; Douglas A. Christensen; Karin D. Caldwell, all of Salt Lake City, Utah; Vera Janatová, Prague, Czechoslovakia; Shao-Chie Huang, and Hsu-Kun Wang, both of Salt Lake City, Utah, assignors to University of Utah Research Foundation, Salt Lake City, Utah

Filed May 18, 1993, Ser. No. 64,608

Int. Cl.⁶ G01N 33/543;33/544;33/552

U.S. Cl. 436—518

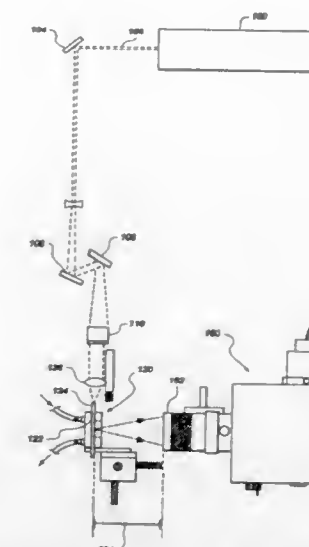
31 Claims

1. A fluorescence immunoassay, comprising the steps of: providing a solid substrate formed of a material selected from the group consisting of silica-based materials constructed for propagation of light by total internal reflectance, and having a surface with a plurality of capture molecules indirectly immobilized thereon via a coating comprising 3-aminopropyltriethoxy silane bonded to said substrate and a plurality of polymerized hydrophilic polymer chains selected from the group consisting of hydrogel formed of poly-methacryloyl and polyethyleneglycol, said hydrophilic polymer chains coupled to said 3-aminopropyltriethoxy silane, said capture molecules having a binding site which selectively binds a selected analyte;

providing a light source operable to emit a light beam in a desired wavelength range and positioned to send light into said substrate;

providing detection means operably disposed for detecting fluorescence emitted from the solid substrate;

providing a sample comprising a buffer and a plurality of molecules of a selected analyte;



providing a plurality of tracer molecules which are operable to emit fluorescence in response to stimulation by light from the light source, said binding sites on said capture molecules also selectively bind to the tracer molecules;

combining the sample with the tracer molecules to produce a test solution;

placing the test solution in contact with the solid substrate while operating said light source to direct light into the solid substrate;

selectively detecting fluorescent light emitted from bound tracer molecules; and measuring the level fluorescence emitted to determine the presence of analyte.

5,512,493

METHOD OF AMPLIFYING THE EMISSION SIGNAL OF A LUMINESCENT COMPOUND

Gérard Mathis, Bagnols-sur-Ceze; Christophe Dumont, Connaux; Daniel Aspe, Laudun; Muriel Foyentin, Avignon; Etienne J. Jolu, Bagnols-sur-Ceze, and Dominique Nuti, Avignon, all of, France, assignors to CIS Bio International, France

Continuation of Ser. No. 729,228, Jul. 12, 1991, abandoned.

This application May 26, 1993, Ser. No. 68,843

Claims priority, application France, Jul. 13, 1990, 90 08981

Int. Cl.⁶ G01N 33/542;33/533

U.S. Cl. 436—537

15 Claims

1. A homogenous luminescent method of detecting and/or determining an analyte in a medium in which it may be present, said method comprising the steps of:

1) adding to said medium a first reagent consisting of at least one receptor which specifically binds to said analyte,

2) adding a second reagent selected from the analyte or at least one receptor which specifically binds to the analyte; one of said first or second reagents being coupled with a luminescent donor compound consisting of a rare earth chelate or cryptate of terbium or europium, and the other reagent being coupled with a luminescent acceptor compound, wherein steps 1) and 2) may be reversed,

3) exciting the mixture with a light source at the excitation wavelength of the luminescent donor compound,

4) measuring the emission signal of the luminescent acceptor compound, wherein the rare earth chelate or cryptate of terbium or europium used as the donor compound possesses a low overall quantum yield and the yield of radiative deactivation of the emission level of the rare earth ion of terbium or europium in the chelate or cryptate is lower than the quantum yield of the acceptor and wherein the transfer efficiency between said luminescent donor compound and said luminescent acceptor compound times the quantum yield of the

acceptor compound is greater than the yield of radiative deactivation of the emission level of the rare earth ion in the chelate or cryptate, whereby the emission signal of the rare earth chelate or cryptate of terbium or europium is amplified, and

- 5) correlating the measured emission signal of the luminescent acceptor compound to the presence and/or amount of analyte.

5,512,494

METHOD FOR MANUFACTURING A THIN FILM TRANSISTOR HAVING A FORWARD STAGGERED STRUCTURE

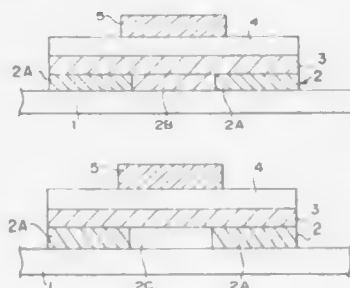
Hiroshi Tanabe, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Nov. 29, 1994, Ser. No. 349,993

Claims priority, application Japan, Nov. 29, 1993, 5-297141
Int. Cl.⁶ H01L 21/84

U.S. Cl. 437—21

13 Claims



1. A method for forming a semiconductor device, including the steps of:

forming on an insulating surface of a substrate a first semiconductor film including a source region and a drain region, said first semiconductor film having a substantially uniform thickness;

forming a second semiconductor film on said first semiconductor film without etching a region of said first semiconductor film between the source region and the drain region;

irradiating a laser beam onto said second semiconductor film to anneal said second semiconductor film; and

forming consecutively a gate insulating film and a gate electrode on said second semiconductor film after said irradiating by said laser beam.

5,512,495

METHOD OF MANUFACTURING EXTENDED DRAIN RESURF LATERAL DMOS DEVICES

Chia-Cu P. Mei, Plano, and Satwinder Malhi, Garland, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 224,914, Apr. 8, 1994, abandoned.
This application Feb. 16, 1995, Ser. No. 390,269

Int. Cl.⁶ H01L 21/336; 21/266

U.S. Cl. 437—28

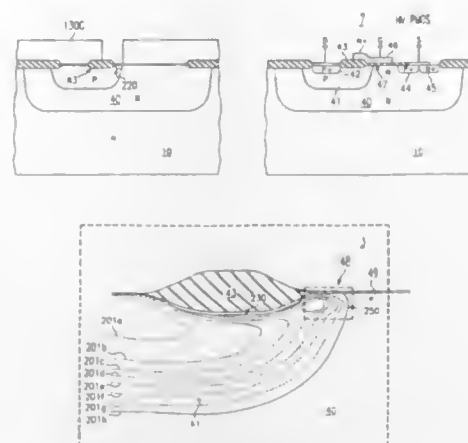
5 Claims

1. A method for making a high voltage P-channel Metal Oxide Semiconductor, PMOS, device, comprising the steps of:

forming a lightly doped high voltage drift region p-tank having a p-type impurity concentration, said drift region being adjacent to an n-type channel region;

forming a vertical PN junction in a portion of the drift region p-tank which is adjacent to said n-type channel region by impurity segregation resulting from the growth of a high voltage field oxide; and

forming a horizontal PN junction between said drift region and said channel region by implanting a drift region rim adjustment in a portion of the drift region adjacent to the channel



region and under a portion of the field oxide such that said vertical PN junction is cutoff and isolated from said channel region.

5,512,496

METHOD OF MAKING COLLECTOR-UP BIPOLAR TRANSISTOR HAVING IMPROVED EMITTER INJECTION EFFICIENCY

Hsin F. Chau, Plano, and Hua Q. Tserng, Dallas, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

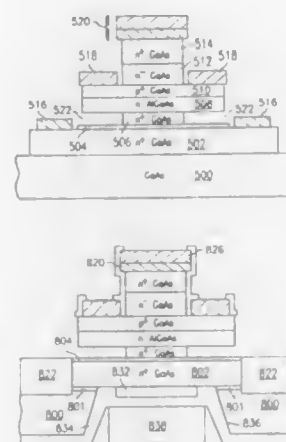
Division of Ser. No. 349,343, Dec. 2, 1994. This application

Jun. 7, 1995, Ser. No. 483,001

Int. Cl.⁶ H01L 21/265

U.S. Cl. 437—31

6 Claims



1. A method of forming a bipolar transistor, comprising the steps of:

forming a collector layer over a base layer;

forming said base layer over an emitter layer;

forming said emitter layer over an emitter cap layer;

removing a portion of said emitter cap layer so that said base and emitter layers extend beyond an edge of said emitter cap layer; and

forming a base contact on a portion of said base layer extending beyond said edge.

5,512,497

METHOD OF MANUFACTURING A SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE

Takahide Ikeda, Tokorozawa; Kouichirou Yamada, Mitaka; Osamu Saito, Tokyo; Masanori Odaka, Kodaira; Nobuo Tamba, Ohme; Katsumi Ogiue, Hinode; Atsushi Hiraishi, Hitachi; Atsuo Watanabe, Hitachiohta; Mitsuru Hirao, Tohkal; Akira Fukami, Hitachi; Masayuki Ohayashi, Hitachi, and Tadashi Kuramoto, Ohme, all of, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 964,824, Oct. 22, 1992, Pat. No. 5,354,699, which is a continuation of Ser. No. 755,340, Sep. 5, 1991, abandoned, which is a division of Ser. No. 526,696, May 23, 1990, Pat. No. 5,057,894, which is a continuation of Ser. No. 192,696, May 10, 1988, abandoned. This application Jul.

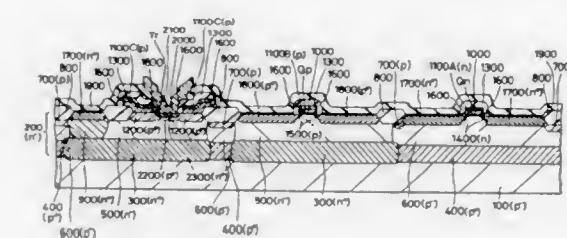
8, 1994, Ser. No. 272,312

Claims priority, application Japan, May 13, 1987, 62-116089; Aug. 13, 1987, 62-217095

Int. Cl.⁶ H01L 21/265; 21/8238

U.S. Cl. 437—34

26 Claims



1. A method of manufacturing a semiconductor integrated circuit device, comprising the steps of:

a) depositing silicon overlying a main surface of a semiconductor body, to form a silicon film overlying said main surface of said semiconductor body;

b) forming a first mask layer on said silicon film so as to cover said silicon film at a first selected surface area of said main surface;

c) introducing first impurities of a first conductivity type into said silicon film at a second selected surface area of said main surface, uncovered with first mask layer, by using said first mask layer as a mask, thereby to form a first portion, of the first conductivity type, of said silicon film;

d) forming a second mask layer on said silicon film so as to cover said silicon film at said second selected surface area;

e) introducing second impurities, of a second conductivity type which is opposite to said first conductivity type, into said silicon film at said first selected surface area, by using said second mask layer as a mask, thereby to form a second portion, of the second conductivity type, of said silicon film, said silicon film having a boundary at which the first and second portions contact each other;

f) forming a film including a refractory metal on said first portion of said silicon film and on said second portion of said silicon film, said film including the refractory metal having a space at said boundary of the first and second portions of the silicon film so that said film including the refractory metal on said first portion of said silicon film is spaced apart from said second portion of said silicon film and said film including the refractory metal layer on said second portion of said silicon film is spaced apart from said first portion of said silicon film, said silicon film being continuous at said boundary of said first portion and said second portion of said silicon film, and wherein said first portion of said silicon film is used as an electrode of a first active element and said second portion of said silicon film is used as an electrode of a second active element; and

g) after the step f), forming an insulating film over said main surface of said semiconductor body by chemical vapor deposition so as to cover said film including the refractory metal.

5,512,498

METHOD OF PRODUCING SEMICONDUCTOR DEVICE

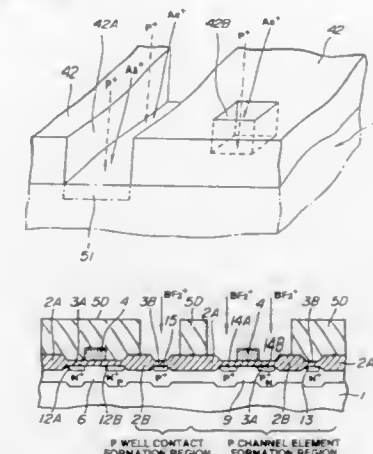
Yutaka Okamoto, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Jan. 25, 1995, Ser. No. 378,385

Claims priority, application Japan, Jan. 28, 1994, 6-007963
Int. Cl.⁶ H01L 21/265

U.S. Cl. 437—35

9 Claims



1. A method of producing a semiconductor device, comprising the following steps:

providing a patterned resist mask over a semiconductor substrate, said resist mask being formed with a first opening portion having a first aspect ratio, and a second opening portion having a second aspect ratio larger than said first aspect ratio, said second opening portion being an opening portion which defines an ion implanted region of a diffusion layer of a memory cell formed in said semiconductor substrate and said first opening portion being an opening portion which defines an ion implanted region of a diffusion layer to be connected to a storage node side of a stacked capacitor;

forming an impurity diffusion layer by an oblique ion-implantation of impurity ion into a surface of said semiconductor substrate through said second opening portion at an implantation angle to prevent the impurity ion from reaching a bottom surface of said first opening portion; and then ion-implanting impurity ion at a substantially vertical angle to said semiconductor substrate by using said resist mask.

5,512,499

METHOD OF MAKING SYMMETRICAL AND ASYMMETRICAL MESFETS

Bertrand F. Cambou, Mesa; James G. Gilbert, Chandler, and Gregory L. Hansell, Tempe, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

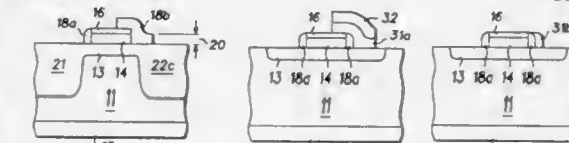
Continuation of Ser. No. 662,653, Mar. 1, 1991, abandoned.

This application Mar. 15, 1993, Ser. No. 32,760

Int. Cl.⁶ H01L 21/265

U.S. Cl. 437—39

7 Claims



2. A method of fabricating a semiconductor device comprising the steps of:

providing a semiconductor material, having a first channel region formed therein;

forming a first gate on the semiconductor material over only a portion of the first channel region;

forming a first conformal layer over the semiconductor material and over the first gate; etching the first conformal layer to form a first spacer adjacent the first gate disposed on the semiconductor material;

forming a second conformal layer over the semiconductor material, the first spacer and over the first gate; etching the second conformal layer to form a first hard mask disposed only on a portion of the first gate, a portion of the first spacer and on a portion of the semiconductor material adjacent the portion of the first gate; etching the first hard mask to form a second spacer disposed on the semiconductor material adjacent a portion of the first spacer; and forming a first source and a first drain region in a portion of the semiconductor material after etching the first hard mask to form a second spacer.

5,512,500 METHOD OF FABRICATING SEMICONDUCTOR DEVICE

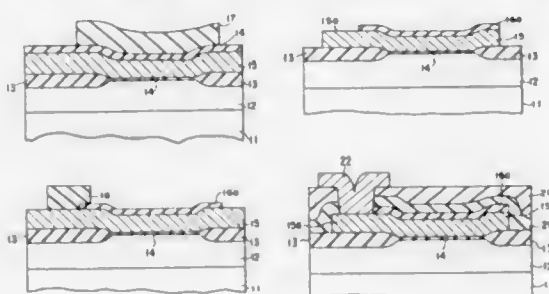
Hisato Oyamatsu, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 14, 1995, Ser. No. 404,626

Claims priority, application Japan, Mar. 17, 1994, 6-046750
Int. Cl.⁶ H01L 21/8234; 21/441

U.S. Cl. 437—40

4 Claims



1. A method of fabricating a semiconductor device comprises the steps of:

- forming a gate oxide film on a gate substrate;
- forming a polycrystalline silicon layer on said gate oxide film;
- forming an insulating film as an etching mask on said polycrystalline silicon layer;
- forming a first resist pattern on said insulating film by an electron beam lithography;
- selectively removing said insulating film with said first resist pattern used as a mask;
- forming a second resist pattern on said polycrystalline silicon layer, excluding a portion corresponding to said first resist pattern, by an optical lithography; and
- selectively removing said polycrystalline silicon layer with said insulating film and said second resist pattern used as a mask.

5,512,501 METHOD OF MANUFACTURING A SEMICONDUCTOR DEVICE HAVING AN SOI STRUCTURE

Hideto Hidaka, Takahiro Tsuruda, and Katsuhiro Suma, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 16, 1994, Ser. No. 342,024

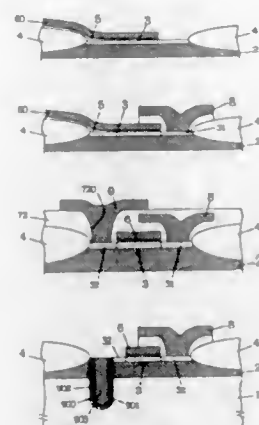
Claims priority, application Japan, Dec. 1, 1993, 5-301899
Int. Cl.⁶ H01L 21/86

U.S. Cl. 437—41

15 Claims

1. A method of manufacturing a semiconductor device comprising the steps of:

- forming a semiconductor layer of a first conductivity type on a main surface of a semiconductor substrate with a first insulating layer therebetween,
- forming a gate electrode layer on a surface of said semiconductor layer with a gate insulating layer therebetween,



etching a portion of said gate electrode layer and said gate insulating layer to expose a first partial surface of said semiconductor layer,

- forming a first impurity region of a second conductivity type in said semiconductor layer beneath said first partial surface,
- forming a second insulating layer covering a remaining portion of said gate electrode layer, and having a first contact hole reaching said first partial surface,
- forming a first conductive layer covering a surface of said second insulating layer, and connected to said first partial surface via said first contact hole,
- etching a portion of said first conductive layer and said second insulating layer to expose partially a surface of said gate electrode layer,
- etching a portion of the remaining portion of said gate electrode layer and said gate insulating layer to expose a second partial surface of said semiconductor layer,
- forming a third insulating layer covering said gate electrode layer and said first conductive layer, and having a second contact hole reaching said second partial surface,
- forming a second conductive layer covering a surface of said third insulating layer, and connected to said second partial surface via said second contact hole, and
- forming a second impurity region of the second conductivity type in said semiconductor layer beneath said second partial surface.

5,512,502 MANUFACTURING METHOD FOR SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE

Fumio Ootsuka, Tokorozawa; Yusuke Nonaka, Ohme, and Atsumi Aoki, Hamura, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

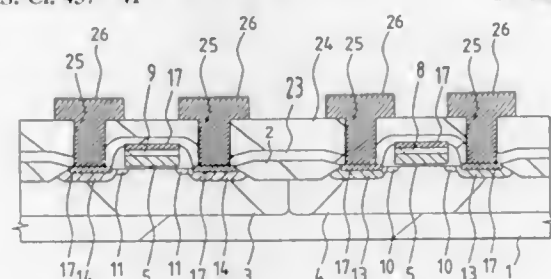
Filed Mar. 1, 1995, Ser. No. 396,786

Claims priority, application Japan, Mar. 1, 1994, 6-031066;
Dec. 16, 1994, 6-313838

Int. Cl.⁶ H01L 21/265

U.S. Cl. 437—41

24 Claims



1. A method of manufacturing a semiconductor device, comprising the steps of:

- (a) providing a semiconductor substrate with both a first silicon layer formed over a main surface of said substrate and a

second silicon layer formed on said first silicon layer, said

- first silicon layer having an impurity concentration of n-type conductivity higher than that of said second silicon layer;
- (b) patterning said first silicon layer and said second silicon layer to form a gate electrode pattern in a MISFET;
- (c) depositing a first insulating film over said main surface after said step (b);
- (d) etching said first insulating film to form a side wall spacer on a side wall of said gate electrode pattern;
- (e) depositing a high-melting point metal film over said main surface, said gate electrode pattern, and said side wall spacer after said step (d);
- (f) performing first annealing to cause a silicide reaction between said second silicon layer having a shape of said gate electrode pattern and said high-melting point metal film and thereby form a first silicide layer in said second silicon layer;
- (g) removing an unreacted portion of said high-melting point metal film left on said main surface and said side wall spacer after said step (f); and
- (h) performing second annealing at a temperature higher than that of said first annealing after said step (g) to convert said first silicide layer into a second silicide layer having a resistance lower than that of said first silicide layer, said first silicon layer having an impurity concentration of 2×10^{20} atoms/cm³ or more, said second silicon layer having an impurity concentration of 1×10^{20} atoms/cm³ or less, an impurity concentration in an interface between said second silicide layer and said second silicon layer being 1×10^{20} atoms/cm³ or less.

5,512,503 METHOD OF MANUFACTURE OF A SPLIT GATE FLASH EEPROM MEMORY CELL

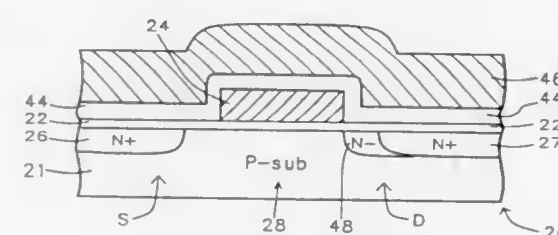
Gary Hong, Hsin-chu, Taiwan, assignor to United Microelectronics Corporation, Hsinchu, Taiwan

Filed Nov. 23, 1994, Ser. No. 344,008

Int. Cl.⁶ H01L 21/8247

U.S. Cl. 437—43

21 Claims



1. A method of fabricating an EEPROM device on a lightly doped semiconductor substrate comprising,

- forming a first dielectric layer on said substrate,
- forming a floating gate layer over said first dielectric layer,
- forming a sacrificial layer on said floating gate layer,
- forming a split-gate channel mask with a pattern of openings over said sacrificial layer,
- etching said sacrificial layer and etching said floating gate layer using said split-gate channel mask to form a self-aligned channel mask for source/drain regions of said device,
- isotropically overetching said floating gate layer to form a floating gate therefrom,
- ion implanting to form a doped source region and a doped drain region in said substrate defining the channel of said device,
- removing said channel mask,
- removing the remainder of said sacrificial layer,
- forming a drain side mask over said floating gate and said source region,
- ion implanting to form a drain side N- region in said substrate, removing said drain side mask,

forming a blanket interpolysilicon dielectric layer over said said

- floating gate and said first dielectric layer,
- forming a blanket deposit of a control gate layer over said interpolysilicon layer,
- forming a control gate mask with a pattern of openings on said device,
- patterning said control gate layer by etching away material from said control gate layer through said openings in said control gate mask, and
- removing said control gate mask.

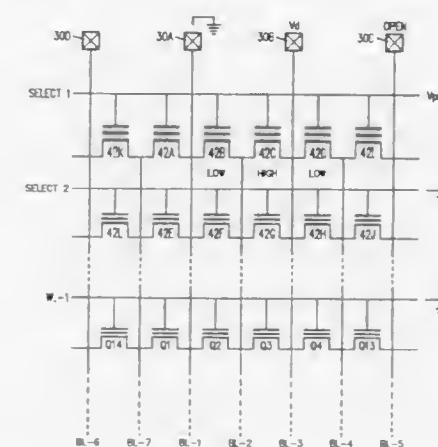
5,512,504 METHOD OF MAKING A MEMORY ARRAY WITH FIELD OXIDE ISLANDS ELIMINATED

Graham Wolstenholme, Boise, Id.; Albert Bergemont, San Jose, and Etan Shacham, Cupertino, both of Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif. Division of Ser. No. 126,506, Sep. 24, 1993, Pat. No. 5,422,824, which is a continuation-in-part of Ser. No. 994,120, Dec. 21, 1992, Pat. No. 5,319,593. This application Jan. 9, 1995, Ser. No. 370,487

Int. Cl.⁶ H01L 21/8747

U.S. Cl. 437—43

10 Claims



1. A method of forming a memory array that includes a plurality of bit lines formed in a substrate, a plurality of rows of memory cells arranged so that, in each row, one memory cell is formed between each pair of adjacent bit lines, and a plurality of rows of select cells arranged so that, in each row, one select cell is formed between each pair of adjacent bit lines, each row of select cells having alternating first and second select cells, the method comprising the steps of:

- forming a layer of sacrificial oxide on the substrate;
- forming an implant mask on the layer of sacrificial oxide, the implant mask defining a plurality of channel regions for the second select cells; and
- implanting the channel regions with a material that increases the threshold voltage of the second select cells so that when a first select cell in a row is biased to conduct a current, the second select cells in the row remain non-conductive.

5,512,505

METHOD OF MAKING DENSE VERTICAL PROGRAMMABLE READ ONLY MEMORY CELL STRUCTURE

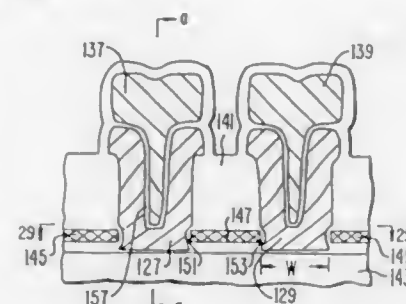
Jack H. Yuan, Cupertino; Gheorghe Samachisa, San Jose; Daniel C. Guterman, Fremont, and Eliyahou Harari, Los Gatos, all of Calif., assignors to SanDisk Corporation, Santa Clara, Calif.

Division of Ser. No. 341,411, Nov. 17, 1994, which is a division of Ser. No. 117,219, Sep. 3, 1993, Pat. No. 5,380,672, which is a division of Ser. No. 629,250, Dec. 18, 1990, Pat. No. 5,343,063. This application Apr. 17, 1995, Ser. No. 423,218

Int. Cl.⁶ H01L 21/8247

U.S. Cl. 437—43

6 Claims



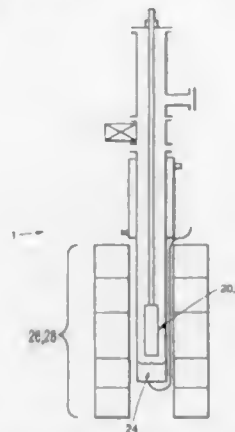
5,512,511

PROCESS FOR GROWING HgCdTe BASE AND CONTACT LAYER IN ONE OPERATION
Murray H. Kalisher, Goleta, Calif., assignor to Santa Barbara Research Center, Goleta, Calif.

Filed May 24, 1994, Ser. No. 248,135
Int. Cl.⁶ H01L 21/20

U.S. Cl. 437—130

16 Claims



1. A method for fabricating a structure comprised of a semiconductor material, comprising the steps of: providing a growth chamber that contains a molten semiconductor material, the molten semiconductor material having a first temperature; growing, at the first temperature, a first layer of the structure from the molten semiconductor material, the first layer being grown to have a first bandgap energy; reducing the first temperature of the molten semiconductor material to a second temperature without removing the first layer from the growth chamber and without intentionally adding any material to the molten semiconductor material; and growing from the same molten semiconductor material as was used to grow the first layer, at the second temperature, a second layer upon a surface of the first layer, the second layer being grown to have a second bandgap energy that is narrower than the first bandgap energy.

5,512,512

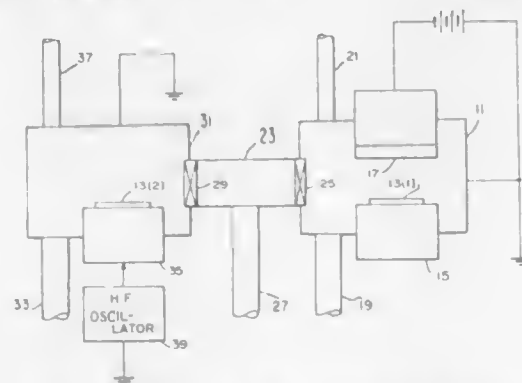
CONTACT HOLE FILLING IN A SEMICONDUCTOR DEVICE BY IRRADIATION WITH PLASMA OF INERT GAS IONS

Akira Isobe, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Nov. 30, 1993, Ser. No. 159,227
Claims priority, application Japan, Nov. 30, 1992, 4-319551
Int. Cl.⁶ H01L 21/44

U.S. Cl. 437—187

12 Claims



1. A hole fill method of filling contact holes formed in an interlayer isolation layer laid on a substrate of a semiconductor

device having a principal surface and sidewalls defining said contact holes, said hole fill method including steps of laying on said principal surface and on said sidewalls a covering film of a covering material consisting essentially of aluminum and of heating said covering film for reflow of aluminum of said covering material into said contact holes to spread a conductor film covering said principal surface and filling said contact holes, wherein said hole fill method comprises a step of irradiating, after said film laying step, said covering film with plasma of inert gas ions to remove an aluminum oxide film formed on said covering film, and wherein said inert gas ions have an energy below 100 electron volts and a density calculated to cause removal of said aluminum oxide film while avoiding incorporation of said inert gas ions into said covering film.

5,512,513

METHOD OF FABRICATING SEMICONDUCTOR DEVICE WITH WATER PROTECTIVE FILM

Katsuyuki Machida; Katsumi Murase; Nobuhiro Shimoyama; Toshiaki Tsuchiya; Junichi Takahashi; Kazushige Minegishi; Yasuo Takahashi; Hideo Namatsu, and Kazuo Imai, all of Kanagawa, Japan, assignors to Nippon Telegraph and Telephone Corporation, Tokyo, Japan

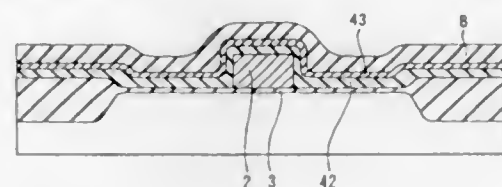
Division of Ser. No. 5,670, Jan. 19, 1993, Pat. No. 5,376,590.
This application Aug. 25, 1994, Ser. No. 296,025

Claims priority, application Japan, Jan. 20, 1992, 4-027516;
Apr. 6, 1992, 4-113042; Jun. 10, 1992, 4-150444; Nov. 17, 1992, 4-329912; Nov. 17, 1992, 4-329913; Nov. 17, 1992, 4-329914

Int. Cl.⁶ H01L 21/44

U.S. Cl. 437—195

15 Claims



1. A method of fabricating a semiconductor device, comprising the steps of: forming a first dielectrics film capable of suppressing penetration of water on a semiconductor substrate; forming a second dielectrics film by spin on glass or chemical vapor deposition; heating said semiconductor substrate to desorb all or part of water from said second dielectrics film; and forming a third dielectrics film in an atmosphere substantially free of water, thereby forming an interlevel film constituted by said dielectrics films.

5,512,514

SELF-ALIGNED VIA AND CONTACT INTERCONNECT MANUFACTURING METHOD

Chong E. Lee, Milpitas, Calif., assignor to Spider Systems, Inc., Austin, Tex.

Filed Nov. 8, 1994, Ser. No. 336,382

Int. Cl.⁶ H01L 21/283;21/308

U.S. Cl. 437—195

52 Claims

1. A method of creating a vertical via interconnect between conductive layers in a semiconductor device comprising the following steps:
 - a. depositing a first conductive layer;
 - b. masking the first conductive layer with a topological etch mask having a mask pattern portion and a mask via portion, the mask via portion being situated above the mask pattern portion;
 - c. etching the first conductive layer to generate a first conductive pattern having integral via portions, the via portions having

5,512,516

CONTACT STRUCTURE FOR CONNECTING AN ELECTRODE TO A SEMICONDUCTOR DEVICE AND A METHOD OF FORMING THE SAME

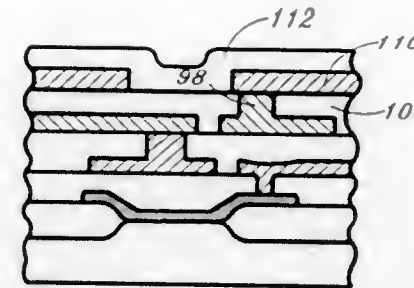
Kenji Nishida, Inagi, and Noriaki Sato, Machida, both of Japan, assignors to Fujitsu Limited, Kanagawa, Japan
Division of Ser. No. 115,242, Aug. 18, 1993, Pat. No. 5,384,485, which is a continuation of Ser. No. 948,622, Sep. 22, 1992, abandoned, which is a continuation of Ser. No. 697,748, May 6, 1991, abandoned, which is a continuation of Ser. No. 354,609, May 22, 1989, abandoned. This application

Sep. 30, 1994, Ser. No. 315,576

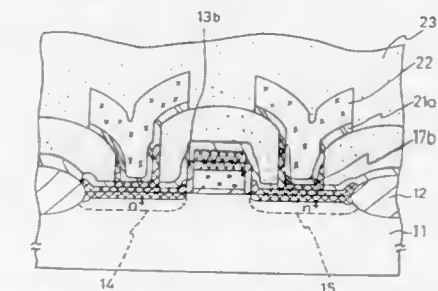
Claims priority, application Japan, May 27, 1988, 63-129832
Int. Cl.⁶ H01L 21/283

U.S. Cl. 437—200

7 Claims



1. A method of forming a contact structure for connecting a semiconductor device to a wiring electrode, comprising the steps of:
 - a. depositing a first conductive pattern and via portions corresponding to the mask pattern portion and mask via portion, respectively;
 - d. depositing a dielectric layer over the first conductive pattern;
 - e. exposing the top surfaces of the via portions;
 - f. depositing a second conductive layer over said dielectric layer and the top surfaces of the via portions;
 - g. patterning said second conductive layer to create a second conductive pattern electrically connected to the first conductive pattern by the via portions.



1. A method of forming a contact structure for connecting a semiconductor device to a wiring electrode, comprising the steps of:

- a. depositing a first metal on a surface of a semiconductor layer constituting a part of the semiconductor device to form a first metal layer in contact with the semiconductor layer, said first metal being chosen such that it reacts with the semiconductor layer when annealed;
- b. annealing the first metal layer at a first temperature to form a first contact layer as a result of reaction between the semiconductor layer and the first metal;
- c. depositing an insulator material on the first contact layer to form an insulator layer such that the first contact layer is buried under the insulator layer;
- d. providing a penetrating hole through the insulator layer so as to expose a part of the first contact layer;
- e. depositing said first metal on the insulator layer in correspondence to the penetrating hole so as to cover at least said part of the first contact layer exposed by the penetrating hole to form a second metal layer;
- f. annealing at a second temperature higher than the first temperature to form a second contact layer as a result of reaction due to the second temperature between the first metal of the second metal layer and the semiconductor layer through the first contact layer; and depositing the wiring electrode on the second metal layer.

5,512,515

PROCESS FOR FORMING ALUMINUM ALLOY THIN FILM

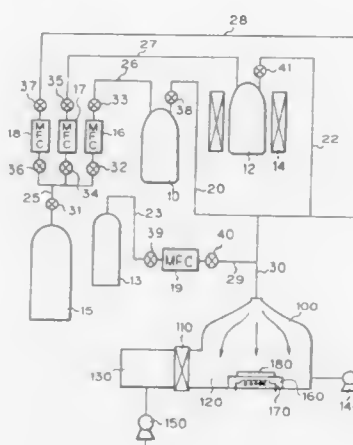
Hideki Takeuchi, and Koichiro Kawamura, both of Sagami-hara, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Jul. 9, 1992, Ser. No. 910,876

Claims priority, application Japan, Jul. 10, 1991, 3-170142
Int. Cl.⁶ H01L 21/44

U.S. Cl. 437—196

12 Claims



1. A process for forming an aluminum alloy thin film comprising the steps of:
 - a. introducing an organic aluminum compound including at least one of trialkylaluminum and dialkylhydriroaluminum, a copper chelate compound and a silane compound having one to three silicon atoms, in the form of a gas mixture into a reactor holding a substrate heated to 250° to 400° C.;
 - b. forming an aluminum alloy thin film containing 0 to 5% copper and 0.1 to 2% silicon on said substrate; and
 - c. heat-treating the substrate having the aluminum thin film thereon in a hydrogen atmosphere at 400° to 450° C.

5,512,517

SELF-ALIGNED GATE SIDEWALL SPACER IN A CORRUGATED FET AND METHOD OF MAKING SAME
Andres Bryant, Chittenden County, Vt., assignor to International Business Machines Corporation, Armonk, N.Y.

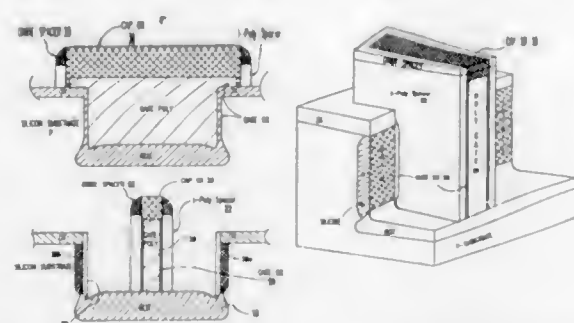
Filed Apr. 25, 1995, Ser. No. 428,739

Int. Cl.⁶ H01L 21/44;21/48

U.S. Cl. 437—203

13 Claims

1. A method of forming a self-aligned gate sidewall spacer in a corrugated field effect transistor (FET) structure, comprising the steps of:
 - a. depositing a first oxide layer on a substrate;
 - b. forming a substrate trench in the substrate, thereby defining a substrate trench bottom and substrate trench sidewalls;
 - c. forming a gate electrode trench intersecting the substrate trench and filling the gate electrode trench with gate polysilicon for forming a gate electrode, said gate electrode defining first and second gate sidewalls;



depositing a second oxide layer over the gate electrode trench and said substrate trench; and etching the second oxide layer for forming a sidewall spacer on each of said first and second gate sidewalls.

5,512,518

METHOD OF MANUFACTURE OF MULTILAYER DIELECTRIC ON A III-V SUBSTRATE

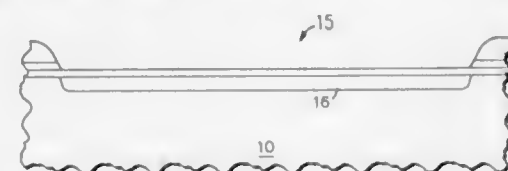
Jaeshin Cho, Gilbert, Kelly W. Kyler, Chandler; Wayne A. Cronin, Tempe; Mark Durlum, Chandler, and Jonathan K. Abrokwha, Tempe, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 6, 1994, Ser. No. 254,209

Int. Cl.⁶ H01L 21/265

U.S. Cl. 437—235

13 Claims



1. A method of making a III-V semiconductor structure, comprising the steps of: providing a III-V semiconductor material having a major surface;

forming a first silicon nitride layer over the major surface of the III-V semiconductor material;

forming a first dielectric layer comprised of aluminum over the silicon nitride layer;

forming a second dielectric layer comprised of silicon and oxygen over the first dielectric layer; and

removing a portion of the second dielectric layer and a portion of the first dielectric layer over an active area of the III-V semiconductor material.

5,512,519

METHOD OF FORMING A SILICON INSULATING LAYER IN A SEMICONDUCTOR DEVICE

Hyunsang Hwang, Seoul, Rep. of Korea, assignor to Goldstar Electron Co., Ltd., Cheongju, Rep. of Korea

Filed Jan. 23, 1995, Ser. No. 376,716

Claims priority, application Rep. of Korea, Jan. 22, 1994, 94-1148

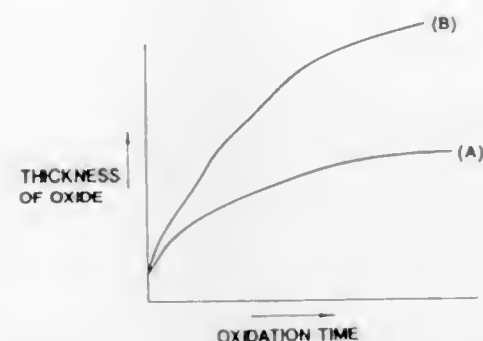
Int. Cl.⁶ H01L 21/265

U.S. Cl. 437—242

18 Claims

1. A method of forming an insulating layer in a semiconductor device, comprising the steps of:

positioning a silicon wafer in a reaction chamber of a CVD apparatus, purging the reaction chamber, and maintaining a reaction chamber temperature of about 750° C. to 1050° C.; carrying out an oxidation process on the silicon wafer by supplying a gas containing essentially NO and an O₂-containing gas to the reaction chamber and independently regulating the flow rate of the NO- and O₂-containing gases, while maintaining the reaction chamber temperature to about 750° C. to



1050° C. for a predetermined time, wherein the insulating layer including nitrogen in a Si/SiO₂ interface is formed.

5,512,520

IVORY COLOR IN OPAQUE GLASS-CERAMIC

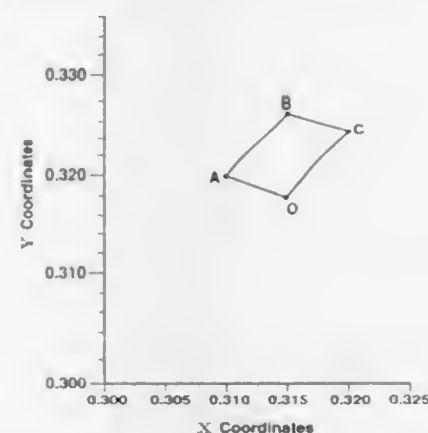
Robert W. Pfizenmaier, Canisteo, N.Y., assignor to Corning Incorporated, Corning, N.Y.

Filed Nov. 14, 1994, Ser. No. 338,440

Int. Cl.⁶ C03C 10/12; 10/14; 3/085

U.S. Cl. 501—7

9 Claims



1. An ivory-colored, opaque, Li₂O—Al₂O₃—SiO₂ glass-ceramic having beta-spodumene as its primary crystal phase, having a CeO₂ content of 1000–2000 ppm, and having color coordinates, based on the CIE system (Illuminant C) of x=0.3100–0.3200, y=0.3180–0.3270 and Y=65–90.

5,512,521

COBALT-FREE, BLACK, DUAL PURPOSE PORCELAIN ENAMEL GLASS

Dechun Fu, Columbia, and Vernon J. Grebe, Baltimore, both of Md., assignors to Bayer Corporation, Pittsburgh, Pa.

Filed Mar. 9, 1995, Ser. No. 401,597

Int. Cl.⁶ C03C 3/085; 8/02

U.S. Cl. 501—65

8 Claims

3. A cobalt-free, black porcelain enamel glass frit composition comprising

Na ₂ O	9–13.5
K ₂ O	0.5–14.2
B ₂ O ₃	6.6–14.8
Fe ₂ O ₃	6.6–10.5
SiO ₂	49.1–56.2
NiO	2.4–4.4
Li ₂ O	0–1.8

with the proviso that the total of Li₂O+Na₂O+K₂O is 13.9–25.3, said glass frit prepared by (i) melting a mixture of raw materials to form a molten mixture and (ii) quenching said molten mixture, said enamel having a CIELab "L" value of about 4 to 10, "a" value of about –0.5 to 2.1, and "b" value of about 0 to 3.5 as determined by spectrophotometry, illuminant type C, and a 2 degree observer angle, of a panel fired at 800° C. to 850° C.

5,512,522

SILICON NITRIDE CERAMIC COMPRISING SAMARIA AND YTTERBIA

Russell L. Yeckley, Oakham, Mass., assignor to Saint Gobain/Norton Industrial Ceramic Corporation, Worcester, Mass.

Division of Ser. No. 136,691, Oct. 14, 1993. This application Mar. 13, 1995, Ser. No. 402,742

Int. Cl.⁶ C04B 35/58

U.S. Cl. 501—97

2 Claims

1. A sintered silicon nitride ceramic comprising between about 0.6 mol % and about 3.2 mol % rare earth as rare earth oxide, said ceramic having a first rare earth disilicate phase and a second rare earth disilicate phase, wherein the first rare earth disilicate phase comprises samaria and the second rare earth disilicate phase comprises ytterbia.

5,512,523

MONOLITHIC REFRACTORY POWDER MIXTURE

Yasushi Ono, Satoshi Sakamoto, both of Takasago; Yutaka Murata, Kobe; Tetsuo Kaji, Takasago, and Yasuhiko Endo, Tokyo, all of Japan, assignors to Asahi Glass Company Ltd., Tokyo, Japan

Continuation of Ser. No. 187,485, Jan. 28, 1994, abandoned.

This application Jan. 13, 1995, Ser. No. 372,835

Claims priority, application Japan, Feb. 3, 1993, 5-039425

Int. Cl.⁶ C04B 35/66

U.S. Cl. 501—127

11 Claims

1. A monolithic refractory powder mixture containing a refractory aggregate and from 2 to 30 wt % of spheroidized refractory particles having a mean particle size of 1 μm to 30 μm of at least one member selected from the group consisting of alumina cement, alumina, titania, bauxite, diaspore, mullite, aluminous shale, chamotte, pyrophyllite, sillimanite, andrewsite, silica rock, chromite, spinel, magnesite, zirconia, zircon, chromia, silicon nitride, aluminum nitride, silicon carbide, boron carbide, zirconium boride and titanium boride, said spheroidized refractory particles are those spheroidized by mechanical impact treatment in a high speed air stream, and having a cone flow value of at least 180 mm when a refractory mixture having the powder mixture kneaded by an addition of 6 parts by weight of water per 100 parts by weight of the powder mixture, is cast into a cone-shaped mold with a dimension of 70 mmφ–100 mmφ×60 mm and left to stand for 60 seconds without exerting vibration after removing the cone-shaped mold.

5,512,524

DIELECTRIC CERAMIC COMPOSITIONS

Taki Negas, Frederick, and Glenn J. Yeager, Walkersville, both of Md., assignors to Trans-Tech, Inc., Adamstown, Md.

Continuation of Ser. No. 134,818, Oct. 12, 1993, abandoned, which is a continuation-in-part of Ser. No. 864,730, Apr. 7, 1992, Pat. No. 5,262,370. This application Dec. 29, 1994, Ser. No. 366,396

Int. Cl.⁶ C04B 35/46

U.S. Cl. 501—138

9 Claims

1. A ceramic composition comprising at least three of the four phases BaTi₄O₉, Ba₂Ti₃, BaZn₂Ti₄O₁₁ and Ba₃Nb₄Ti₄O₂₁.

5,512,525

REGENERATION OF SPENT MULTIMETAL OXIDE OXIDATION CATALYSTS FROM THE CATALYTIC GAS-PHASE OXIDATION OF LOWER ORGANIC COMPOUNDS

Andreas Tenten, Neustadt; Ulrich Hammon; Peter Weidlich, both of Mannheim, and Walter Doerflinger, Oestringen, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Filed Feb. 1, 1994, Ser. No. 189,734

Claims priority, application Germany, Feb. 3, 1993, 43 02 992.2

Int. Cl.⁶ B01J 20/34

U.S. Cl. 502—26

2 Claims

1. In a process for regenerating a spent multimetal oxide oxidation catalyst from the catalytic gas-phase oxidation of lower organic compounds in which the catalyst contains as basic constituents the elements Mo, W, V and Cu in oxide form and initially contains said elements in a particular stoichiometric relationship, defined by empirical formula I



where

X¹ is one or more alkali metals,

X² is one or more alkaline earth metals,

X³ is chromium, manganese, cerium and/or niobium,

X⁴ is antimony, and/or bismuth,

X⁵ is silicon, aluminum, titanium, and/or zirconium,

a is from 1 to 6,

b is from 0.2 to 4,

c is from 0.5 to 6,

d is from 0 to 6,

e is from 0 to 2,

f is from 0 to 3,

g is from 0 to 5,

h is from 0 to 40,

i is from 0 to 40 and

n is a number which is determined by the valency and frequency of the elements in I other than oxygen,

which comprises oxidizing the spent catalyst, solubilizing in an aqueous ammonia solution to which acetic acid and/or the ammonium salt thereof has been added, followed by drying and calcination, the improvement which comprises analyzing the contents of said elements to determine the presence of any element in less than the original stoichiometric amounts, and replenishing said catalyst with the element or elements found to be present in less than the original stoichiometric amounts in amounts sufficient to restore the original stoichiometric relationship.

5,512,526

HEAVY METAL REMOVAL SYSTEM CONTAINING CLAY, QUATERNARY AMMONIUM COMPOUND, AND MERCAPTAN

Carl C. Greco, Garnerville, N.Y., assignor to Akzo Nobel NV, Arnhem, Netherlands

Filed Jan. 6, 1995, Ser. No. 369,605

Int. Cl.⁶ B01J 21/16

U.S. Cl. 502—80

13 Claims

1. A heavy metal removal system which comprises an expanded organophilic clay, a fatty alkyl-containing quaternary ammonium compound, and a fatty alkyl-containing mercaptan wherein the fatty alkyl-containing compounds contain from about twelve to about twenty-two carbon atoms.

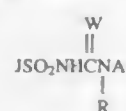
5,512,535

HERBICIDAL PYRIDINESULFONYLUREAS

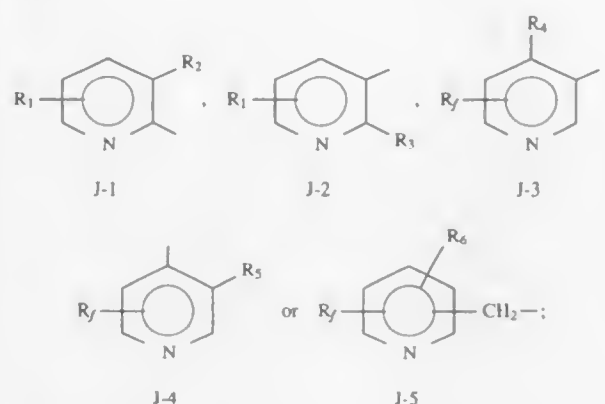
Paul Hsiao-Tsang Liang, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.
Division of Ser. No. 52,970, Apr. 27, 1993, Pat. No. 5,393,733, which is a division of Ser. No. 806,749, Dec. 13, 1991, Pat. No. 5,209,770, which is a division of Ser. No. 507,926, Apr. 12, 1990, Pat. No. 5,102,444, which is a continuation-in-part of Ser. No. 399,485, May 26, 1989, abandoned, which is a continuation-in-part of Ser. No. 39,491, Apr. 16, 1987, abandoned, which is a continuation-in-part of Ser. No. 939,428, Dec. 8, 1986, abandoned. This application Dec. 8, 1994, Ser. No. 352,020

Int. Cl. A01N 43/66; C07D 401/12; 251/54; 251/48
U.S. Cl. 504-213 14 Claims

1. A compound selected from



wherein
J is



R is H or CH₃;

W is O or S;

R₁ is R₇ or R₈;

R₇ is H, C₁-C₃ alkyl, C₁-C₃ haloalkyl, halogen, NO₂, C₁-C₃ alkoxy, C₁-C₃ alkylthio or CN;

R₈ is C₁-C₃ haloalkyl, C₂-C₃ alkyl, cyclopropyl, C₁-C₃ alkyl substituted by C₁-C₃ alkoxy, OH, C₁-C₂ alkylthio or CN, CN, W₂R₁₁, amino, C₁-C₃ alkylamino or C₁-C₃ dialkylamino;

R₂ is C₁-C₄ alkylsulfinyl, C₁-C₄ alkylsulfonyl, C₃-C₅ cycloalkylthio, C₃-C₅ cycloalkylsulfinyl, C₃-C₅ cycloalkylsulfonyl, SO₂NH₂, SO₂NR₆, SO₂NR₇R₈, SO₂NR₇R₈, OSO₂R₆, SO₂OR₆, N₃, P(W₁)(OC₁-C₂ alkyl)₂, CN, CO₂R₆, CO₂R₆, CH₂F, CF₃H, CH₂Cl, CCl₂H or C₂-C₄ haloalkyl;

R₃ is C₁-C₄ alkylsulfinyl, C₃-C₅ cycloalkylthio, C₃-C₅ cycloalkylsulfinyl, C₃-C₅ cycloalkylsulfonyl, SO₂NH₂, SO₂NR₆, SO₂NR₇R₈, OSO₂R₆, SO₂OR₆, N₃, P(W₁)(OC₁-C₂ alkyl)₂, CN, CO₂R₆, CO₂R₆, or C₁-C₄ haloalkyl;

R₄ is C₁-C₄ alkylsulfinyl, C₃-C₅ cycloalkylthio, C₃-C₅ cycloalkylsulfinyl, C₃-C₅ cycloalkylsulfonyl, SO₂NH₂, SO₂NR₆, SO₂NR₇R₈, OSO₂R₆, SO₂OR₆, N₃, P(W₁)(OC₁-C₂ alkyl)₂, CN, CO₂R₆, or C₁-C₄ haloalkyl;

R₅ is C₁-C₄ alkylsulfinyl, C₃-C₅ cycloalkylthio, C₃-C₅ cycloalkylsulfinyl, C₃-C₅ cycloalkylsulfonyl, SO₂NH₂, SO₂NR₆, SO₂NR₇R₈, OSO₂R₆, SO₂OR₆, N₃, P(W₁)(OC₁-C₂ alkyl)₂, CN, CO₂R₆, or C₁-C₄ haloalkyl;

R₆ is C₁-C₄ alkylthio, C₁-C₄ alkylsulfinyl, C₁-C₄ haloalkylthio, C₁-C₄ haloalkylsulfinyl, C₁-C₄ haloalkylsulfonyl, C₃-C₄ alkenylthio, C₃-C₄ alkenylsulfinyl, C₃-C₄ alkenylsulfonyl, C₃-C₄ alkynylthio, C₃-C₄ alkynylsulfinyl, C₃-C₄ alkynylsulfonyl, C₃-C₅ cycloalkylthio, C₃-C₅ cycloalkylsulfinyl, C₃-C₅ cycloalkylsulfonyl, C₃-C₅

cycloalkylsulfonyl, SO₂NR₆R₈, SO₂NR₇R₈, OSO₂R₆, OSO₂R₆, SO₂OR₆, N₃, P(W₁)(OC₁-C₂ alkyl)₂, CN, CO₂R₆, or C₁-C₄ haloalkyl;

R₇ is H, C₂-C₃ cyanoalkyl, C₃-C₄ alkenyl or C₃-C₄ alkynyl;

R₈ is C₁-C₄ alkyl;

R₉ is C₁-C₄ alkyl, C₁-C₄ haloalkyl, C₃-C₄ alkenyl, C₃-C₄ alkynyl, C₂-C₄ alkoxyalkyl or cyclopropyl; or

R₇ and R₈ may be taken together as -(CH₂)₃-, -(CH₂)₄-, -(CH₂)₅- or -CH₂CH₂OCH₂CH₂-;

R₉ is CH₂CH₂R₁₀, CH₂CF₃, C₃-C₄ haloalkyl, C₃-C₄ alkyl, C₂-C₄ alkylthioalkyl, C₃-C₅ cycloalkyl or C₄-C₇ cycloalkylalkyl;

R₁₀ is C₁-C₄ alkyl, C₃-C₄ alkenyl, CH₂CH₂Cl, CH₂CH₂Br, CH₂CH₂OCH₃ or CH₂CH₂OC₂H₅;

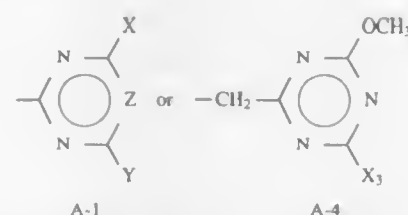
R₁₁ is OH, F, CN, OSO₂(C₁-C₃ alkyl) or OSO₂(C₁-C₃ haloalkyl);

R₁₁ is C₁-C₃ alkyl, C₁-C₃ haloalkyl, C₃-C₄ alkenyl or C₃-C₄ alkynyl;

W₁ is O or S;

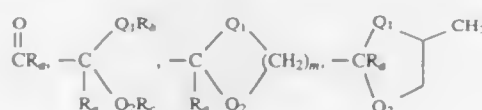
W₂ is O or S;

A is



X is H, C₁-C₄ alkyl, C₁-C₄ alkoxy, C₂-C₄ haloalkoxy, C₁-C₄ haloalkyl, C₂-C₄ haloalkylthio, C₁-C₄ alkylthio, C₃-C₅ alkoxyalkyl, C₂-C₃ alkoxyalkoxy, amino, C₁-C₃ alkylamino or di (C₁-C₃ alkyl) amino;

Y is H, C₁-C₄ alkyl, C₁-C₄ alkoxy, C₂-C₄ haloalkoxy, C₂-C₄ haloalkylthio, C₁-C₄ alkylthio, C₂-C₃ alkoxyalkyl, C₂-C₃ alkoxyalkoxy, amino, C₁-C₃ alkylamino, di (C₁-C₃ alkyl)amino, C₃-C₄ alkenyloxy, C₃-C₄ alkynyloxy, C₂-C₃ alkylthioalkyl, C₂-C₃ alkylsulfinylalkyl, C₂-C₃ alkylsulfonylalkyl, C₁-C₄ haloalkyl, C₂-C₄ alkynyl, C₃-C₅ cycloalkyl, azido,



m is 2 or 3;

Q₁ and Q₂ are independently O or S;

R₄ is H or C₁-C₃ alkyl;

R₅ and R₆ are independently C₁-C₃ alkyl;

R₇ is H or C₁-C₂ alkyl;

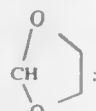
R₈ is C₁-C₂ alkoxy;

Z is N;

X₃ is CH₃ or OCH₃;

and their agriculturally suitable salts; provided that

1) when W is S, then R is H, A is A-1, and Y is CH₃, OCH₃, OC₂H₅, CH₂OCH₃, C₂H₅, CF₃, SCH₃, OCH₂CH=CH₂, OCH₂C≡CH, OCH₂CH₂OCH₃, CH(OCH₃)₂ or



2) when the total number of carbon atoms of X and Y is greater than four, then the combined number of carbons of R₁, R₂, R₃, R₄, R₅ or R₆ is less than or equal to six;

3) when J is J-1 and R₂ is C₁-C₄ alkylsulfinyl, C₁-C₄ alkylsulfonyl, SO₂NR₆R₈, SO₂NR₇R₈, OSO₂R₆, SO₂OR₆, or when J is J-2 and R₃ is C₁-C₄ alkylsulfinyl, CF₃, SO₂NR₆R₈, SO₂NR₇R₈ or CO₂R₆, then Y is other than (C₂-C₃ alkoxy) alkoxy, C₂-C₃

5,512,537

2-BENZOYL PYRROLE AND BENZOYL IMIDAZOLE

HERBICIDES

Tsze H. Tsang, El Cerrito, Calif., assignor to Zeneca Limited, London, England

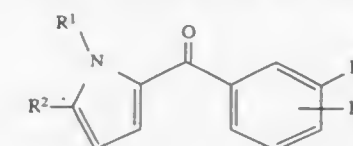
Filed Mar. 2, 1994, Ser. No. 205,213

Int. Cl. A01N 43/36

U.S. Cl. 504-287

10 Claims

1. A method of controlling undesirable vegetation comprising applying to said vegetation or the locus thereof a herbicidally effective amount of a compound having the formula



in which

R₁ is hydrogen, methyl or ethyl;

R₂ is hydrogen, methyl or ethyl;

R₃ is C₁-C₄ alkyl, C₁-C₄ alkoxy, C₁-C₄ haloalkyl or nitro;

R₄ is hydrogen or a methyl, methoxy, or trifluoromethoxy group at the 2-4- or 5-position;

provided that:

(a) when R₁ is methyl, and

(i) R₃ is methyl, then R₄ is 4-methyl or 4-methoxy;

(ii) R₃ is nitro, then R₄ is methoxy;

(b) when R₁ is ethyl, R₃ is methyl or methoxy;

(c) when R₂ is methyl or ethyl, R₁ is hydrogen;

(d) if R₁, R₂ and R₄ are hydrogen, then R₃ is not methoxy; and

(e) if R₁ is methyl, R₂ and R₄ are hydrogen, then R₃ is not CF₃.

5,512,536

SUBSTITUTED PYRIDINE COMPOUNDS

Donald E. Korte, St. Louis, and Len F. Lee, St. Charles, both of Mo., assignors to Rohm and Haas Company, Philadelphia, Pa.

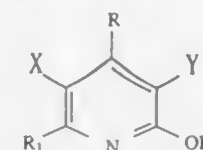
Division of Ser. No. 45,154, Apr. 12, 1993, Pat. No. 5,391,540, which is a division of Ser. No. 871,525, Apr. 20, 1992, Pat. No. 5,228,897, which is a division of Ser. No. 660,480, Feb. 25, 1991, Pat. No. 5,125,956. This application Nov. 15, 1994, Ser. No. 339,994

Int. Cl. C07D 213/62; A01N 43/40

U.S. Cl. 504-254

18 Claims

1. A compound represented by the formula



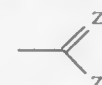
wherein:

R₁ is fluorinated methyl, chlorofluorinated methyl or fluorinated ethyl;

R₂ is hydrogen, C₁-C₇ alkyl, trichloromethyl, C₂-C₈ cyanoalkyl, C₃-C₇ alkenyl, or C₃-C₇ alkynyl;

R is C₁-C₆ straight or branched alkyl, C₁-C₇ haloalkyl, C₂-C₁₄ alkylthioalkyl, C₂-C₁₄ alkoxyalkyl, C₂-C₈ carboxyalkyl, C₃-C₄ cycloalkyl, or cyclopropylmethyl;

one of X and Y is selected from



where Z₁ is oxygen or NR₃ where R₃ is lower alkyl and where

Z is hydrogen; halogen; hydroxy; C₁-C₇ alkoxy; C₁-C₇ haloalkoxy; C₃-C₇ alkynyloxy; C₁-C₇ alkylthio; NR₄R₅ where R₄ and R₅ are independently hydrogen or lower alkyl; acetyl amino; C₁-C₇ hydroxyalkyl; C₁-C₇ haloalkyl; C₂-C₈ alkoxyethyleneamino; and C₂-C₈ alkoxyethyleneamino; and the other of X and Y is selected from cyano; NR₆R₇ where R₆ and R₇ are independently hydrogen or hydroxyalkyl; C₂-C₈ alkoxyethyleneamino; dialkylaminomethyleneamino; alkylthiomethyleneamino; (2-hydroxyalkyl) iminomethyl; halo-2-(haloalkyl)iminomethyl; hydroxyalkyl; and halo-1-oxoalkylamino.

5,512,538

METAL OXIDE MATERIAL WITH LN, SR, CU, RE, O, AND OPTIONALLY CA

Tohru Den, Tokyo, and Tamaki Kobayashi, Atsugi, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 47,618, Apr. 16, 1993, abandoned, which is a continuation of Ser. No. 854,401, Mar. 19, 1992, abandoned. This application Jun. 27, 1994, Ser. No. 266,319

Claims priority, application Japan, Mar. 22, 1991, 3-083285; Sep. 24, 1991, 3-270467; Feb. 26, 1992, 4-072994

Int. Cl. H01B 12/00; C04B 35/45; 35/50; 35/505

U.S. Cl. 505-126

10 Claims

1. A metal oxide material represented by the formula of Ln_aSR_bCu_{3-x}M₂O_c, where 2.7≤a+b≤3.3; 0.8≤a≤1.2; 6≤c≤9; and 0.05≤x≤0.7, Ln is at least one element selected from the group consisting of Y and lanthanoids, and M is Re.

5,512,539

MICROWAVE COMPONENT OF COMPOUND OXIDE SUPERCONDUCTOR MATERIAL HAVING CRYSTAL ORIENTATION FOR REDUCING ELECTROMAGNETIC FIELD PENETRATION

Takashi Matsuura, Kenjiro Higaki, and Hideo Itozaki, all of Hyogo, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Apr. 22, 1993, Ser. No. 51,099

Claims priority, application Japan, Apr. 22, 1992, 4-129525

Int. Cl. H01B 12/02; H01P 1/203; 7/08

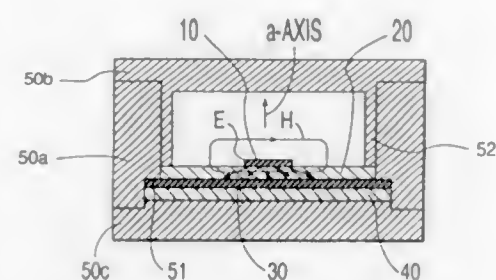
U.S. Cl. 505-210

14 Claims

1. A microwave component, comprising:

a first dielectric substrate;

a patterned superconducting signal conductor provided at a first surface of said first dielectric substrate; and



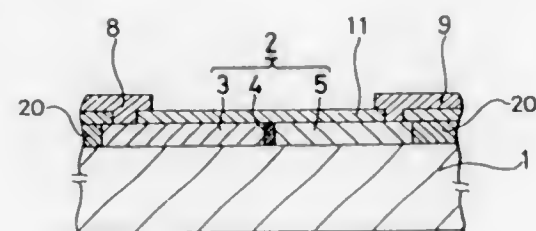
a superconducting ground conductor provided at a second surface of said first dielectric substrate, wherein a microwave signal applied to and launched on the superconducting signal conductor generates an electromagnetic field which penetrates into the superconducting signal conductor, and said superconducting signal conductor and said superconducting ground conductor are respectively comprised of either the same oxide superconductor film or different oxide superconductor films having corresponding crystals which are orientated in such a manner that the respective c-axis of the crystals are parallel to the first surface of the first dielectric substrate such that penetration of the electromagnetic field into the superconducting signal conductor is reduced.

5,512,540

METHOD OF MANUFACTURING SUPERCONDUCTING PATTERNS

Shunpei Yamazaki, Tokyo, Japan, assignor to Semiconductor Energy Laboratory Co., Ltd., Kanagawa, Japan
Division of Ser. No. 829,531, Feb. 3, 1992, Pat. No. 5,401,716, which is a continuation of Ser. No. 239,288, Sep. 1, 1988, abandoned. This application Oct. 14, 1994, Ser. No. 323,088
Claims priority, application Japan, Apr. 15, 1987, 62-93732; Sep. 7, 1987, 62-223675; Sep. 16, 1987, 62-231888

Int. Cl.⁶ H01L 39/24; B05D 5/12
U.S. Cl. 505—325 28 Claims



1. A method of forming an electrical device comprising:
forming an oxide superconducting film on a surface of a substrate;
treating said superconducting film to establish a superconducting crystalline structure having a C-plane thereof oriented parallel to the surface of the substrate;
doping a selected portion of the superconducting film with a metal or semiconductor dopant in order to decrease the superconductivity of said selected portion; and
forming a control electrode, wherein said control electrode overlies said selected portion of the superconducting structure.

5,512,541

METHOD OF PRODUCING AN OXIDE

SUPERCONDUCTOR SINGLE CRYSTAL FILM

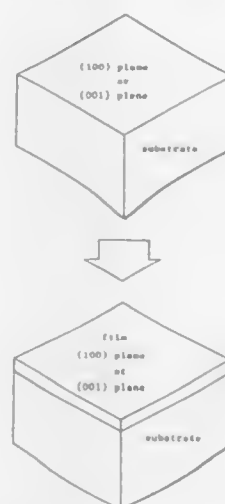
Masaya Konishi; Kunihiko Hayashi; Yooichi Enomoto; Shoji Tanaka; Yasuji Yamada; Kanshi Ohtsu; Yasuo Kanamori, and Yuh Shiohara, all of Tokyo, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, and International Superconductivity Technology Center, Tokyo, both of Japan
Filed Sep. 12, 1994, Ser. No. 304,770

Claims priority, application Japan, Sep. 13, 1993, 5-252200

Int. Cl.⁶ H01L 39/24; C30B 23/00

U.S. Cl. 505—474

10 Claims



1. A method of producing an oxide superconductor film comprising the steps of:
providing an oxide superconductor single crystal substrate consisting essentially of an oxide superconductor material with an orientation containing a rare earth metal, an alkali earth metal and a copper metal; and
growing the oxide superconductor film homoepitaxially on the substrate in the same orientation as the substrate.

5,512,542

METALLIC OXIDE WITH BORON AND PROCESS FOR MANUFACTURING THE SAME

Tohru Den, Tokyo; Norio Kaneko, Atsugi, and Tamaki Kobayashi, Isehara, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 30, 1994, Ser. No. 297,767

Claims priority, application Japan, Sep. 2, 1993, 5-218627

Int. Cl.⁶ H01B 12/00; C04B 35/45; C04B 35/50; C01B 35/12
U.S. Cl. 505—125 8 Claims

1. A metallic oxide composition of formula (I):
$$(Ln_{1-a}Ca_a)(Sr_{2-b}Ba_b)(Cu_{3-c}B_c)O_d$$
 (I)
wherein Ln is one or more elements selected from the group consisting of Y, La, Pr, Nd, Sm, Eu, Gd, Dy, Ho, Er, Tm, Yb and Lu; and
wherein the following conditions are met:
 $0.1 \leq a \leq 0.5$, $0.7 \leq b \leq 1.7$, $0.1 \leq c \leq 0.5$ and $6.5 \leq d \leq 7.5$; provided that $c \geq 0.4$ only when $a \geq 0.3$.

5,512,543

USE OF OPTICALLY ACTIVE ISOMERS OF (E)-3,3-DIMETHYL-5-(2,2,3-TRIMETHYL-3-CYCLOPENTEN-1-YL)-4-PENTEN-2-OL AS PERFUMING INGREDIENTS
Christian Chapuis, Mies, Switzerland; Antoine Gautier, Lawrenceville, N.J., and Pierre-Alain Blanc, Crassier, Switzerland, assignors to Firmenich S.A., Geneva, Switzerland
Filed Aug. 2, 1994, Ser. No. 284,322

Claims priority, application Switzerland, Aug. 17, 1993, 2445-93

Int. Cl.⁶ A61K 7/46

U.S. Cl. 512—18

15 Claims

1. A compound chosen in the group consisting of:
a. (+)-(1'S,2R,E)-3,3-dimethyl-5-(2',2',3'-trimethyl-3'-cyclopenten-1'-yl)-4-penten-2-ol;
b. (+)-(1'S,2S,E)-3,3-dimethyl-5-(2',2',3'-trimethyl-3'-cyclopenten-1'-yl)-4-penten-2-ol;
c. (-)-(1'R,2R,E)-3,3-dimethyl-5-(2',2',3'-trimethyl-3'-cyclopenten-1'-yl)-4-penten-2-ol;
d. (-)-(1'R,2S,E)-3,3-dimethyl-5-(2',2',3'-trimethyl-3'-cyclopenten-1'-yl)-4-penten-2-ol;
e. (+)-(2S,E)-3,3-dimethyl-5-(2',2',3'-trimethyl-3'-cyclopenten-1'-yl)-4-penten-2-ol; and
f. (-)-(2R,E)-3,3-dimethyl-5-(2',2',3'-trimethyl-3'-cyclopenten-1'-yl)-4-penten-2-ol.
2. A method to confer, enhance, improve or modify the odor properties of a perfuming composition or a perfumed article, which method comprises adding to said composition or article a fragrance effective amount of a compound according to claim 1.

5,512,545

PDGF-B ANALOGUES

David Brown, Canterbury; Richard M. Edwards, Oxford; Stewart Craig, Oxford; Anne L. Cook, Oxford, and John M. Clements, Oxford, all of England, assignors to British Biotech Pharmaceuticals Limited/Pfizer Limited, United Kingdom

PCT No. PCT/GB92/00141, § 371 Date Aug. 31, 1993, § 102(e) Date Aug. 31, 1993, PCT Pub. No. WO92/13073, PCT Pub. Date Aug. 6, 1992

PCT Filed Jan. 24, 1992, Ser. No. 94,079

Claims priority, application United Kingdom, Jan. 25, 1991, 9101645

Int. Cl.⁶ A61K 38/18; C12N 15/18; C07K 14/475
U.S. Cl. 514—12 26 Claims

1. A PDGF-B analogue wherein Arg 28 and/or Arg 32 of a naturally occurring PDGF-B chain is replaced with an amino acid residue which reduces or prevents protease cleavage of said analogue on expression in yeast.

5,512,546

Patent Not Issued For This Number

5,512,547

PHARMACEUTICAL COMPOSITION OF BOTULINUM NEUROTOXIN AND METHOD OF PREPARATION

Eric A. Johnson, and Michael C. Goodnough, both of Madison, Wis., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Filed Oct. 13, 1994, Ser. No. 322,624

Int. Cl.⁶ A61K 38/00; C07K 1/00

U.S. Cl. 514—21 3 Claims

1. A pharmaceutical composition consisting essentially of:
(a) isolated, essentially pure type A botulinum neurotoxin;
(b) serum albumin; and
(c) an effective amount of trehalose which stabilizes the neurotoxin and improves the shelf life of composition so that it is stable at temperatures up to about 37° C.

5,512,548

CETP INHIBITOR POLYPEPTIDE, ANTIBODIES AGAINST THE SYNTHETIC POLYPEPTIDE AND PROPHYLACTIC AND THERAPEUTIC ANTATHEROSCLEROSIS TREATMENTS

Rampratap Kushwaha; Kathleen Born; Henry C. McGill, Jr.; Patrick Kanda, and Raymond G. Dunham, all of San Antonio, Tex., assignors to Southwest Foundation for Biomedical Research, San Antonio, Tex.

Continuation of Ser. No. 811,049, Dec. 19, 1991, abandoned.

This application Feb. 8, 1994, Ser. No. 193,515

Int. Cl.⁶ A61K 35/14; C07K 1/00

U.S. Cl. 514—12 10 Claims

1. A method of preventing atherosclerosis in a mammal being predisposed to that condition, comprising a cholesteryl ester transfer protein inhibitory polypeptide of sequence

Asp-Val-Ser-Ser-Ala-Leu-Asp-Lys-Leu-Lys-Glu-Phe-Gly-Asn-Thr-Leu-Glu-Asp-Lys-Ala-Trp-Glu-Val-Ile-Asn-Arg-Ile-Lys-Gln-Ser-Glu-Phe-Pro-Ala-Lys-Thr
(SEQ. ID. NO: 1)

wherein the cholesteryl ester transfer protein inhibitory polypeptide has at least one substitute amino acid or amino bond; the substitute amino acid for Asp being selected from the group consisting of Glu, C_α-methylVal; the substitute amino acid for Val being selected from the group consisting of isoVal, nor Val, Leu, and C_α-methylVal; the substitute amino acid for Ala being selected from the group consisting of Gly, β-Ala, C_α-methylAla, and 2-amino butyric acid; the substitute amino acid for Leu being selected from the group consisting of norLeu, isoLeu, and C_α-methylLeu; the substitute amino acid for Lys being selected from the group consisting of ornithine, Arg, citrulline and C_α-methylLys; the substitute amino acid for Gly being selected from the group consisting of Ala and 2-amino isobutyric acid; the substitute amino acid for Asn being selected from the group consisting of Gln, citrulline, and C_α-methyl Asn; the substitute amino acid for Trp being selected from the group consisting of p-benzoylPhe, Arg and C_α-methyl Trp; the substitute amino acid for Glu being selected from the group consisting of 2-amino adipic acid, Asp, and C_α-methylGlu; the substitute amino acid for Ile being selected from the group consisting of Leu, norLeu, and C_α-methylLeu; the substitute amino acid for Arg being selected from the group consisting of Lys, homoArg, citrulline and C_α-methylArg; the substitute amino acid for Gln being selected from the group consisting of Ash, citrulline, and C_α-methylGln; the substitute amino acid for Phe being selected from the group consisting of 2-amino-4-phenylbutyric acid, Leu and C_α-methylPhe; the substitute amino acid for Thr being selected from the group consisting of Ser, Met and C_α-methylThr; the substitute amino acid for Ser being selected from the group consisting of Thr and C_α-methylSer; the substitute amino acid for Pro being selected from the group consisting of 3,4-dehydroPro, Ser and C_α-methylPro; and the substitute amino acid bond being selected from the group consisting of thioether, alkyl, alkyl amino, and combinations of thioether, alkyl and alkyl amino bonds

5,512,549

GLUCAGON-LIKE INSULINOTROPIC PEPTIDE ANALOGS, COMPOSITIONS, AND METHODS OF USE
Victor J. Chen, Indianapolis; Richard D. DiMarchi, Carmel; David L. Smiley, Greenfield; Russell D. Stucky, and Aldas V. Kriauciunas, Indianapolis, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Oct. 18, 1994, Ser. No. 324,960

Int. Cl.⁶ A61K 38/00; 38/26; C07K 14/605

U.S. Cl. 514—12

28 Claims

1. A compound of the formula:

(SEQ. ID. NO:1) (Formula 1)

R¹—Ala—Glu—Gly—Thr—Phe—Thr—Ser—Asp—Val—

Ser—Ser—Tyr—Leu—Glu—Gly—Gln—Ala—Ala—Xaa—

Glu—Phe—Ile—Ala—Trp—Leu—Val—Lys—Gly—Arg—R³
R²

wherein R¹ is selected from the group consisting of 4-imidazopropionyl, 4-imidazoacetyl, or 4-imidazo-α,α-dimethylacetyl; R² is selected from the group consisting of C₆–C₁₀ unbranched acyl, or is absent; R³ is selected from the group consisting of Gly-OH or NH₂; and Xaa is Lys or Arg.

5,512,550

METHOD FOR INHIBITING ANGIOGENESIS WITH MODIFIED PLATELET FACTOR-4 AND CLEAVED PLATELET FACTOR-4

Shalley K. Gupta, Indianapolis, and Jai P. Singh, Carmel, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 952,797, Sep. 25, 1992, abandoned. This application May 11, 1995, Ser. No. 439,546

Int. Cl.⁶ A61K 38/36; C07K 14/745; C12P 21/06

U.S. Cl. 514—12

2 Claims

1. A method of inhibiting angiogenesis which comprises administering an effective amount of the a composition consisting essentially of modified platelet factor-4 (SEQ ID NO: 1).

5,512,551

BENZOHYDROXYMOYLAZOLE DERIVATIVES AND INSECTICIDE INCLUDING THE SAME

Keiji Toriyabe; Takayoshi Takehi, both of Shizuoka; Yukio Nezu, Fueda; Yukl Nakano, Shizuoka, and Tomonori Shimazu, Hamamatsu, all of Japan, assignors to Kumiai Chemical Industry Co., Ltd., and Ihara Chemical Industry Co., Ltd., both of Tokyo, Japan

Division of Ser. No. 915,817, Jul. 28, 1992, Pat. No. 5,366,988.

This application Jul. 27, 1994, Ser. No. 281,039

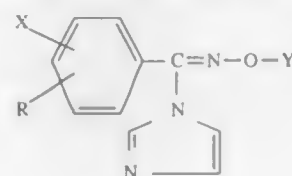
Claims priority, application Japan, Nov. 29, 1990, 2-331896; Jun. 5, 1991, 3-159834

Int. Cl.⁶ A01N 43/50; C07F 7/10; C07D 233/61

U.S. Cl. 514—63

9 Claims

1. A benzohydroxymoylazole compound having the formula:



wherein

R is a branched C₃₋₈ alkyl group; a fluorine-substituted C₂₋₆ alkyl group; a branched C₃₋₇ alkoxy group; a halogen-substituted C₃₋₇ alkoxy group; a C₄₋₇ cycloalkyl group; a C₃₋₇ cycloalkylmethyl group which may be substituted with one or two methyl groups; a trimethylsilyl group; a silyl C₁₋₂ alkyloxy group which is substituted with, independently, a C₁₋₂ alkyl group, a vinyl group or a chloromethyl group; a C₃₋₆ cycloalkyloxy group which may be substituted with one or two methyl groups; a butylthio group; a halogen-substituted C₄₋₅ alkoxy group; a C₃₋₆ alkenyl group; a C₆ alkynyl group; or a halogen-substituted vinyloxy group; X is hydrogen, chlorine or fluorine; and Y is a C₁₋₄ alkyl group.

5,512,552 BISPHOSPHONIC ACID DERIVATIVES, AND PHARMACEUTICAL USE

Takashi Sohma, Takatsuki; Iwao Yamazaki, Takarazuka; Noriaki Kawamura, Suita, and Shigehisa Taketomi, Ikeda, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

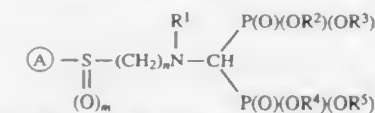
Division of Ser. No. 3,955, Jan. 19, 1993, Pat. No. 5,376,647, which is a continuation of Ser. No. 718,648, Jun. 21, 1991, abandoned. This application Sep. 9, 1994, Ser. No. 303,665 Claims priority, application Japan, Jun. 25, 1990, 2-167600; Dec. 12, 1990, 2-410501; Apr. 23, 1991, 3-092080

Int. Cl.⁶ C07F 9/38; 9/40; A61K 31/66

U.S. Cl. 514—102

9 Claims

1. A bisphosphonic acid derivative of formula (I):



wherein A is an optionally substituted C₆₋₁₄ aromatic hydrocarbon group; R¹ is a hydrogen atom or a lower alkanoyl group; R², R³, R⁴ and R⁵ are the same or different and are a hydrogen atom or a lower alkyl group; m is 0, 1 or 2; and n is an integer from 2 to 10, or a pharmaceutically acceptable salt thereof.

5,512,553

7-(SUBSTITUTED)-8-(SUBSTITUTED)-9-(SUBSTITUTED)AMINO-6-DEMETHYL-6-DEOXYTETRACYCLINES

Phaik-Eng Sum, Pomona; Ving J. Lee, Monsey; Joseph J. Hlavka, Tuxedo Park, all of N.Y., and Raymond T. Testa, Cedar Grove, N.J., assignors to American Cyanamid Company, Wayne, N.J.

Division of Ser. No. 214,992, Mar. 21, 1994, Pat. No.

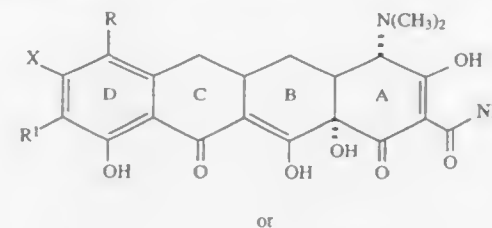
5,430,162, which is a continuation of Ser. No. 928,598, Aug. 13, 1992. This application May 31, 1995, Ser. No. 454,966

Int. Cl.⁶ A61K 31/65

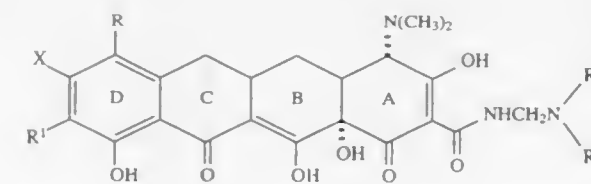
U.S. Cl. 514—152

1 Claim

1. A method for the prevention or treatment of bacterial infections in warm-blooded animals which comprises administering to said animal a pharmacologically effective amount of a compound of the formula:



or

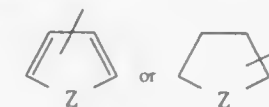


wherein:

X is selected from halogen or trifluoromethylsulfonyloxy; the halogen is selected from bromine, chlorine, or fluorine; R and R¹ are the same or different and are selected from halogen selected from chlorine, bromine, fluorine or iodine; or —NR²R³; R² is selected from hydrogen, methyl, or ethyl and R³ is selected from hydrogen, methyl, ethyl, R⁴(CH₂)_nCO— or R⁴(CH₂)_nSO₂—, n is 0–4, with the proviso that when R or R¹=NR²R³ and R²=methyl or ethyl; R³=methyl or ethyl, and when R or R¹=NR²R³ and R²=hydrogen, R³ is selected from

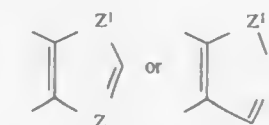
hydrogen, R⁴(CH₂)_nCO— or R⁴(CH₂)_nSO₂—; and when R³=R⁴(CH₂)_nCO— and n=0,

R₄ is selected from hydrogen; (C₁–C₂)alkyl group selected from methyl or ethyl; a heterocycle group selected from a five membered aromatic or saturated ring with one N, O, or S heteroatom optionally having a benzo or pyrido ring fused thereto selected from



wherein Z = N, O or S

wherein Z=N, O or S
(I) or a five membered aromatic ring with two N, O or S heteroatoms optionally having a benzo or pyrido ring fused thereto selected from



wherein Z or Z¹=N, O, or S; (C₁–C₄)alkoxy group; C₆-aryloxy group selected from phenoxy or substituted phenoxy with substitution selected from halo, (C₁–C₄)alkyl; (C₇–C₁₀)aryloxy; α-aminomethoxycarbonyl; or halomethoxycarbonyl; and when R³=R⁴(CH₂)_nCO— and n=1–4,

R⁴ is selected from hydrogen; (C₁–C₂)alkyl group selected from methyl or ethyl (C₆–C₁₀)aryl group selected from phenyl, α-naphthyl or β-naphthyl; and when R³=R⁴(CH₂)_nSO₂— and n=0,

R⁴ is selected from (C₁–C₂)alkyl group selected from methyl or ethyl; (C₆–C₁₀)aryl group selected from phenyl, α-naphthyl or β-naphthyl; R⁵ is selected from hydrogen; straight or branched (C₁–C₃)alkyl group selected from methyl, ethyl, n-propyl or 1-methylethyl;

R⁶ is selected from hydrogen; straight or branched (C₁–C₃)alkyl group selected from methyl, ethyl, n-propyl or 1-methylethyl; with the proviso that R⁵ and R⁶ cannot both be hydrogen;

or R⁵ and R⁶ taken together are —(CH₂)₂W(CH₂)₂—, wherein W is selected from (CH₂)_m where m=0–1, —NH—, —N(C₁–C₃)alkyl straight or branched, —N(C₁–C₄)alkoxy, oxygen, sulfur or substituted congeners selected from (L or D)proline, ethyl (L or D)proline, morpholine, pyrrolidine or piperidine; and the pharmacologically acceptable organic and inorganic salts or metal complexes.

5,512,554

METHOD OF TREATING HYPERPROLIFERATIVE SKIN DISEASES WITH FLUORINATED VITAMIN D₃ ANALOGS

Enrico G. Baggiolini, deceased, late of North Caldwell; Shian-Jan Shuey, Nutley, and Milan R. Uskokovic, Upper Montclair, all of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 184,082, Jan. 18, 1994, Pat. No. 5,451,574,

which is a continuation of Ser. No. 971,788, Nov. 5, 1992,

abandoned, which is a continuation-in-part of Ser. No.

957,500, Oct. 7, 1992, abandoned. This application Apr. 11,

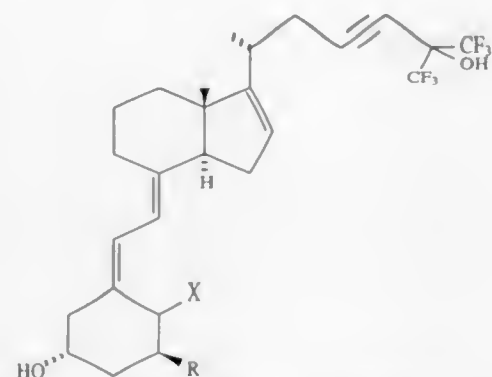
1995, Ser. No. 419,796

Int. Cl.⁶ A61K 31/59; C07C 401/00

U.S. Cl. 514—167

10 Claims

1. A method for the treatment of hyperproliferative diseases of the skin which comprises administering to a warm blooded animal in need of such treatment an effective amount of a compound of the formula



wherein R is hydrogen, hydroxy, or fluorine and X is H₂.

5,512,555

METHOD OF TREATING SWEAT-RELATED CONDITIONS USING FINASTERIDE, EPRISTERIDE AND A CHOLESTAN-3-ONE

Joanne Waldstreichler, Scotch Plains, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

Filed Jul. 21, 1994, Ser. No. 278,434

Int. Cl.⁶ A61K 31/59; 31/44; 7/34

U.S. Cl. 514—168

14 Claims

1. A pharmaceutical composition comprising
 - (a) a pharmaceutically acceptable carrier,
 - (b) a therapeutically effective amount of a 5 α -reductase inhibitor selected from finasteride, epristeride or 4,7 β -dimethyl-4-aza-5 α -cholestan-3-one, and
 - (c) a therapeutically effective amount of an antiperspirant.

5,512,556

USE OF A PREGNANE DERIVATIVE

Godefridus H. J. Deckers, HW Oss, and Helenius J. Kloosterboer, AV Oss, both of, Netherlands, assignors to Akzo Nobel N.V., Arnhem, Netherlands

Continuation of Ser. No. 206,994, Mar. 7, 1994, abandoned.

This application Dec. 19, 1994, Ser. No. 358,639

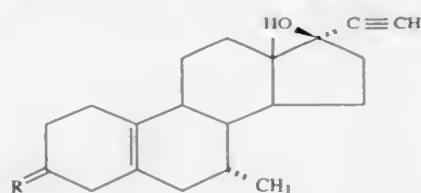
Claims priority, application European Pat. Off., Mar. 5, 1993, 93200631

Int. Cl.⁶ A61K 31/56

U.S. Cl. 514—177

5 Claims

1. A method of inhibiting growth of mammary tumors comprising administering to a mammal a mammary tumor-inhibiting effective amount of a pregnane derivative of the general formula



wherein R=H₂, (H.OH), (H.OAcyl), or O.

5,512,557

CORONARY HEART DISEASE TREATED WITH 17 β OESTRADIOL

Peter Collins, Richmond, England, assignor to National Heart and Lung Institute, London, England

Filed Oct. 7, 1993, Ser. No. 132,369

Int. Cl.⁶ A61K 31/56

U.S. Cl. 514—182

3 Claims

1. A method for the treatment of myocardial ischaemia which results from coronary heart disease, which comprises administration to a patient of an effective amount of 17 β -oestradiol.

5,512,558

NOR-BILE ACID DERIVATIVES, PROCESSES FOR THEIR PREPARATION AND THE USE OF THESE COMPOUNDS AS MEDICAMENTS

Alfons Enhnen, Büttelborn; Heiner Glombik, Hofheim; Werner Kramer, Mainz, and Günther Wess, Erlensee, all of, Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed May 5, 1994, Ser. No. 238,514

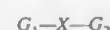
Claims priority, application Germany, May 8, 1993, 43 15 370.4

Int. Cl.⁶ A61K 31/56; C07J 53/00

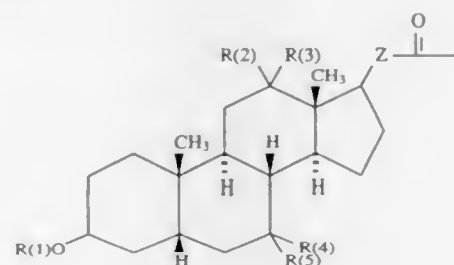
U.S. Cl. 514—182

5 Claims

1. A bile acid derivative of the formula I

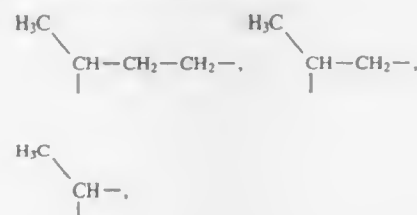


wherein G₁ is linked via the side chain on atom No. 17 with the bonding member X to atom No. 3 of G₂, and G₁ is a radical of the formula II



in which

Z is one of the following radicals



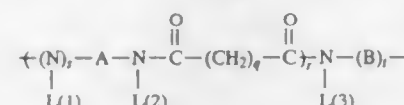
or a single bond,

R(1) is H, an alkyl radical having 1 to 10 carbon atoms or an alkenyl radical having 2 to 10 carbon atoms,

R(2), R(3), R(4), R(5) are independently H, OH or

R(2) and R(3), or R(4) and R(5) together form the oxygen of a carbonyl group,

X is a single bond or a bridge member of the formula III



in which

A is an alkylene chain, which is branched or unbranched, and which is optionally interrupted by —O—, —S—, or phenylene, the linkage of the phenyl ring being in the ortho-, meta- or para-position and the chain comprising 2 to 12 chain members,

B is an alkylene chain which is branched or unbranched, and which is optionally interrupted by —O—, —S—, or phenylene, the linkage of the phenyl ring being in the ortho-, meta- or para-position and the chain comprising 2 to 12 chain members,

L(1), L(2) and L(3) are identical or different and are selected from H, an alkyl radical or alkenyl radical having up to 10 carbon atoms, a cycloalkyl radical having 3 to 8 carbon atoms, a phenyl radical, which is unsubstituted or mono- to trisubstituted by F, Cl, Br, (C₁—C₄)-alkyl or (C₁—C₄)-alkoxy, or a benzyl radical, which is unsubstituted or mono- to trisubstituted by F, Cl, Br, (C₁—C₄)-alkyl or (C₁—C₄)-alkoxy,

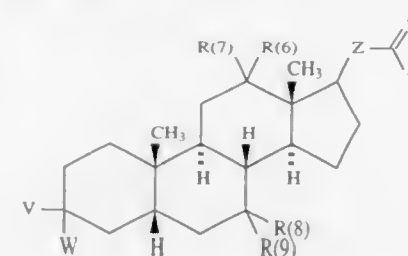
q is 0 to 5;

r is 0 or 1;

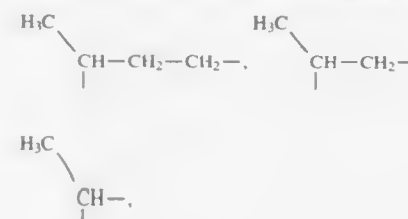
s is 0 or 1; and

t is 0 or 1,

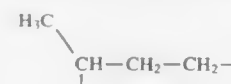
G₂ is a radical of the formula IV



in which Z is one of the following radicals



or a single bond, with the proviso that Z may be



in only one of formulas II and IV;

V is —O— or

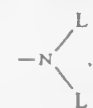


when

W is H or,

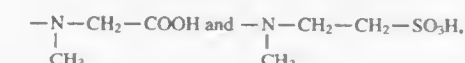
V is —CH₂— or —CH₂—CH₂— when W is H or OH,

Y is —OL, NHL,



or an amino acid or amino-sulfonic acid bonded via the amino group, selected from the group consisting of —NH—CH₂—

COOH, —NH—CH₂—CH₂—, SO₃H,



in which L is H, an alkyl radical or alkenyl radical having up to 10 carbon atoms, a cycloalkyl radical having 3 to 8 carbon atoms, a phenyl radical, which is unsubstituted or mono- to trisubstituted by F, Cl, Br, (C₁—C₄)-alkyl or (C₁—C₄)-alkoxy, or a benzyl radical, which is unsubstituted or mono- to trisubstituted by F, Cl, Br, (C₁—C₄)-alkyl or (C₁—C₄)-alkoxy, and R(6), R(7), R(8), R(9) are independently H, OH or R(6) and R(7) or R(8) and R(9) together form the oxygen of a carbonyl group.

5,512,559

METHOD OF TREATING CANCER TUMORS WITH IMINE PORPHYRIN COMPOUNDS

Dimitris Skatkos; Steven H. Sclman, both of Toledo, and James A. Hampton, Waterville, all of Ohio, assignors to The University of Toledo and Medical College of Ohio, Toledo, Ohio

Continuation of Ser. No. 158,020, Nov. 24, 1993, which is a continuation of Ser. No. 901,597, Jun. 19, 1992, abandoned.

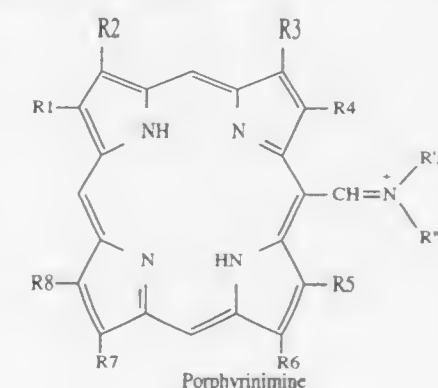
This application Jan. 19, 1995, Ser. No. 375,629

Int. Cl.⁶ A61K 31/40; C07D 487/22

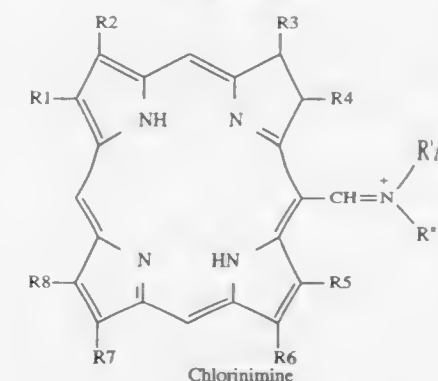
U.S. Cl. 514—185

12 Claims

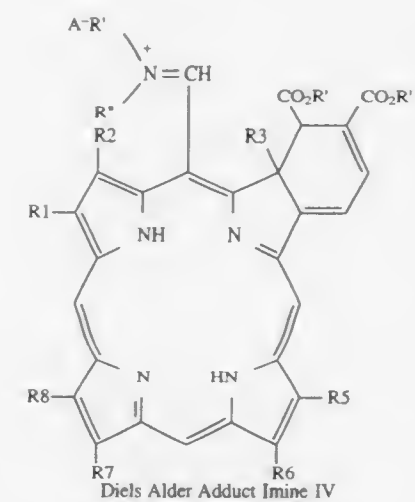
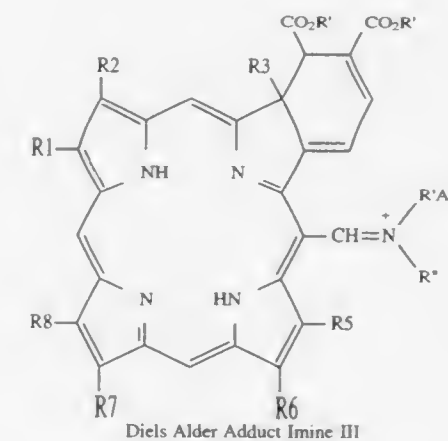
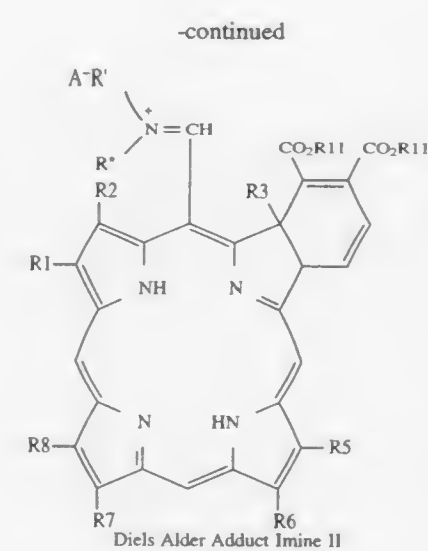
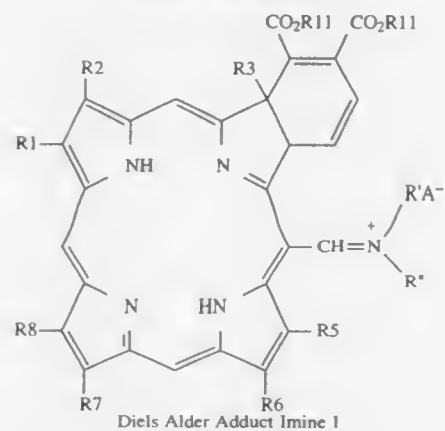
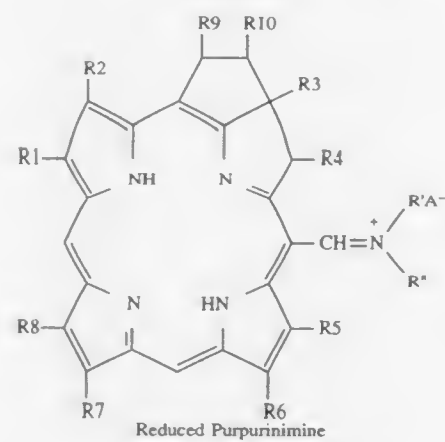
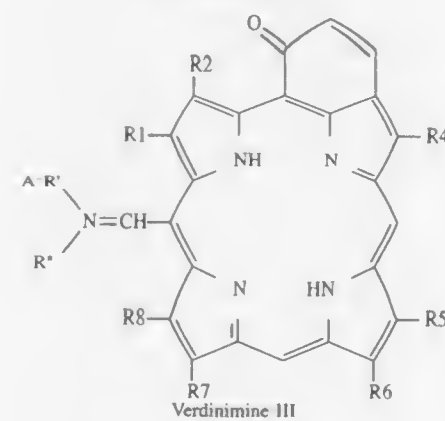
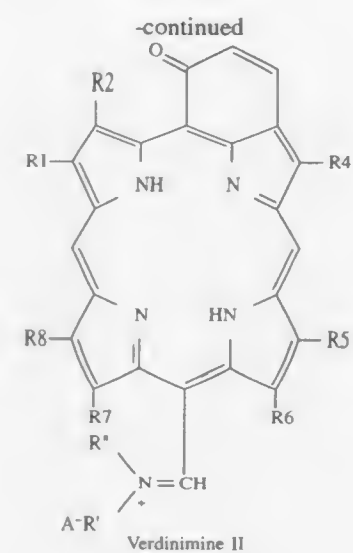
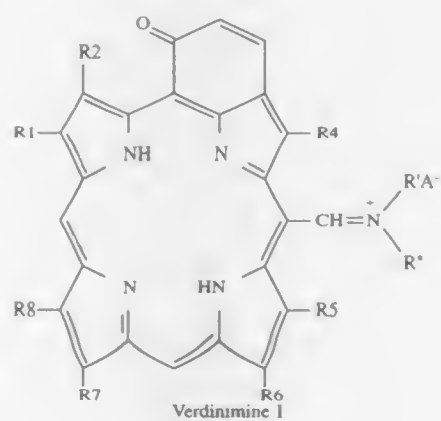
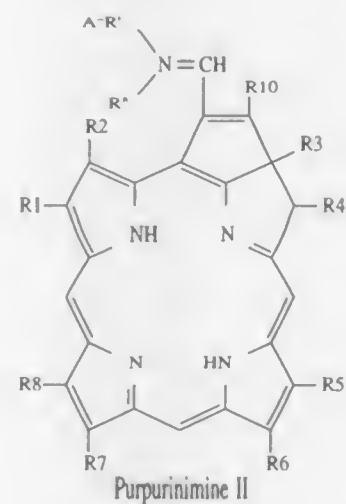
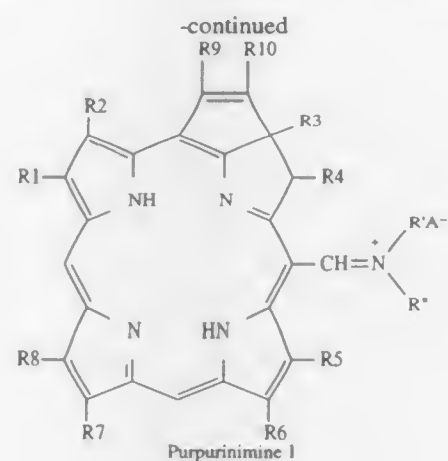
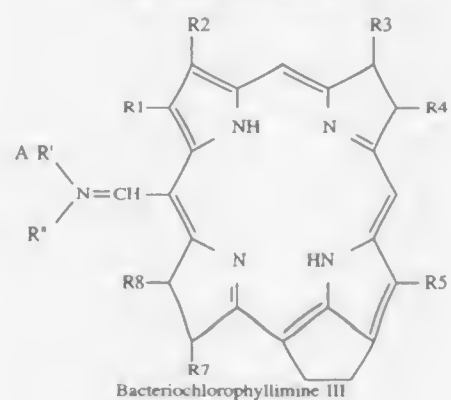
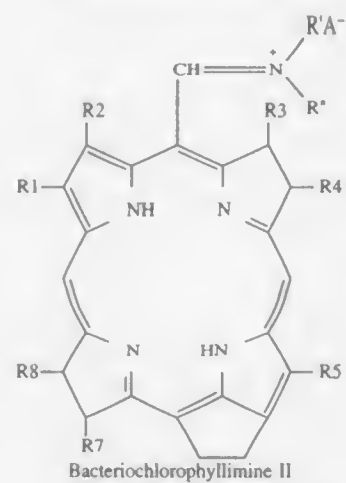
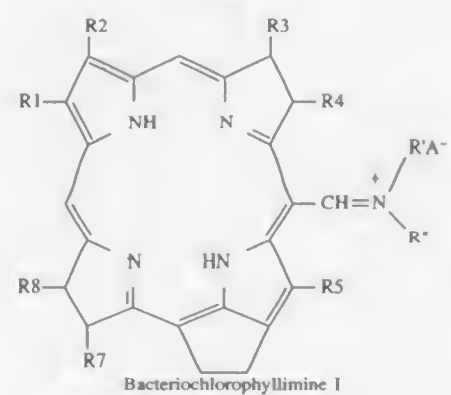
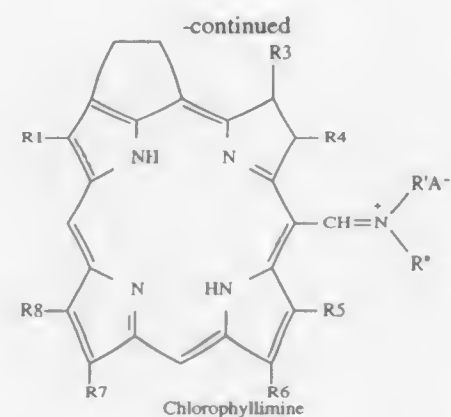
1. As a cancer tumor treating method by means of photodynamic therapy with composition of matter, a purified imine of a porphyrin, a chlorin, a bacteriochlorin, a chlorophyll, a bacteriochlorophyll, a purpurin, a reduced purpurin, a verdin, a Diels Alder adduct, an isobacteriochlorin, a benzochlorin or a metal complex of one of the foregoing imines having one of the structures set forth below, and identified by legend:

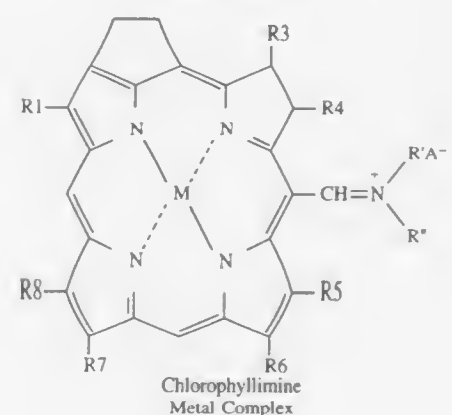
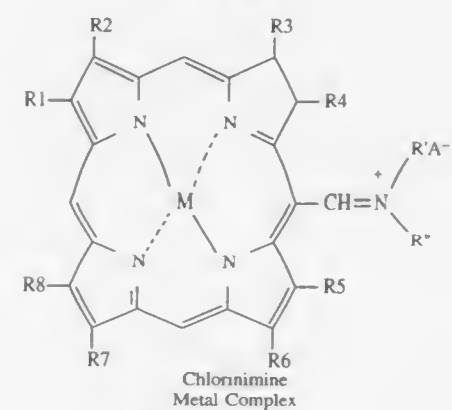
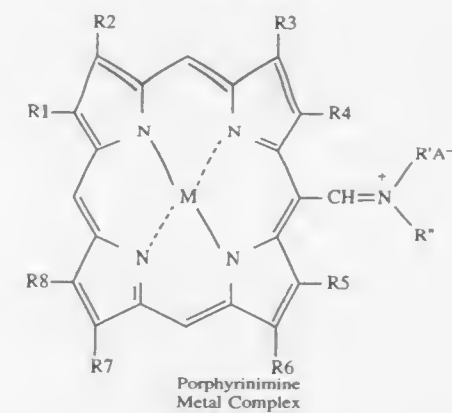
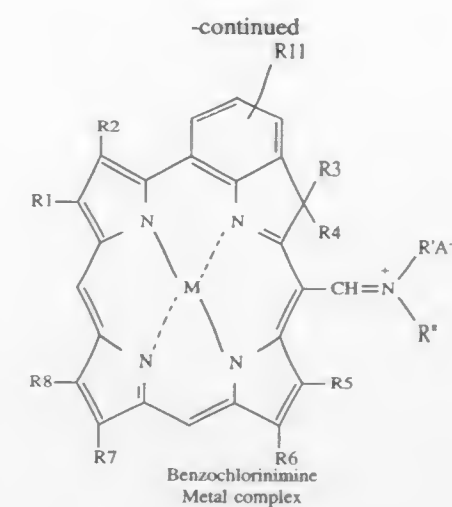
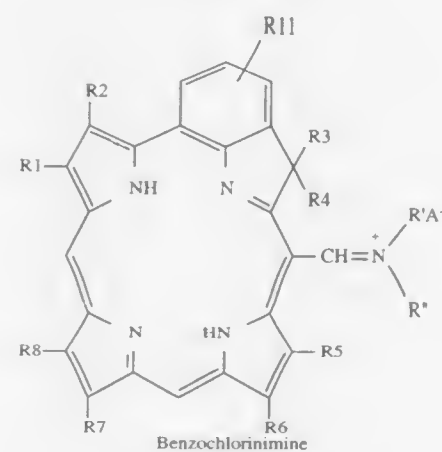
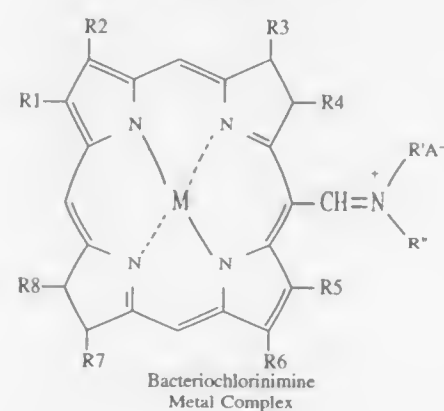
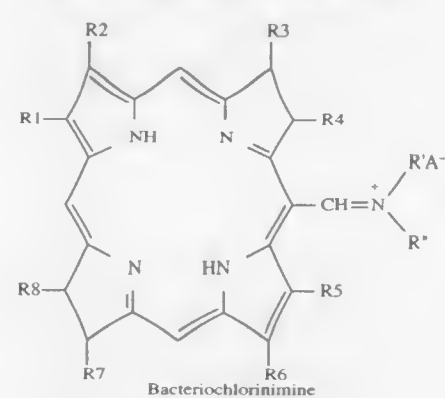
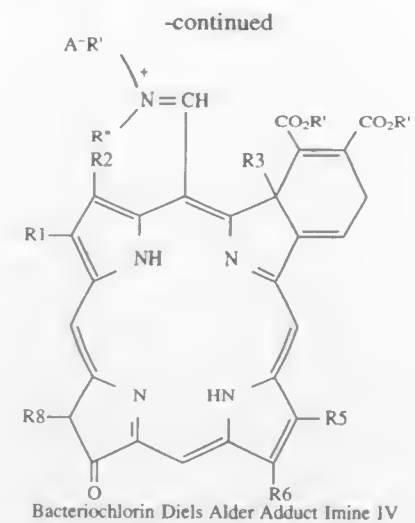
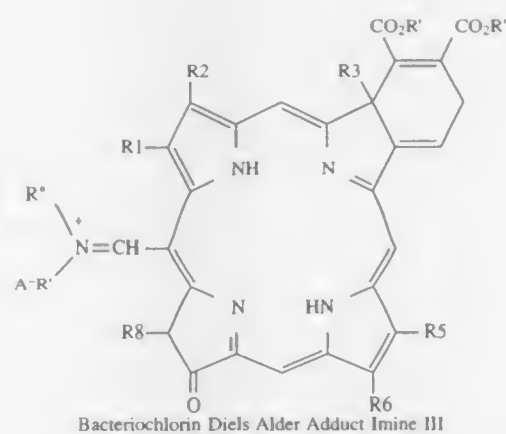
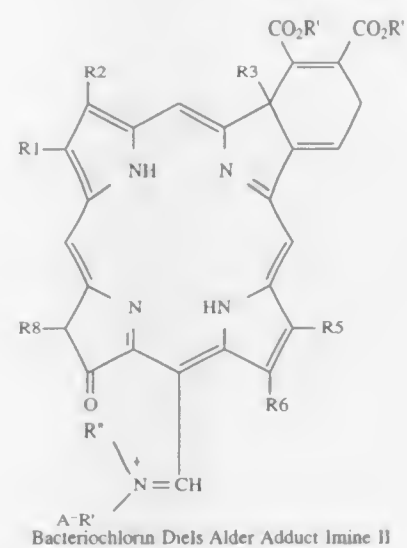
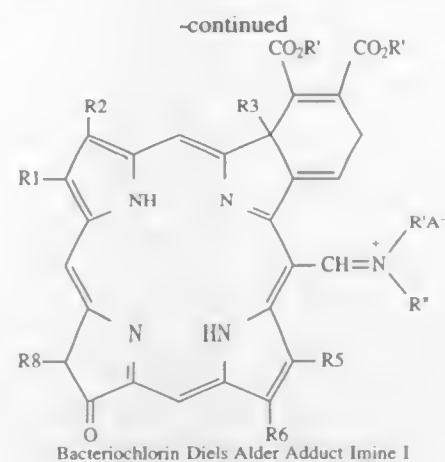
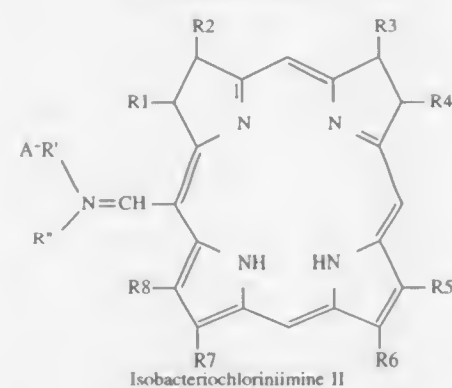
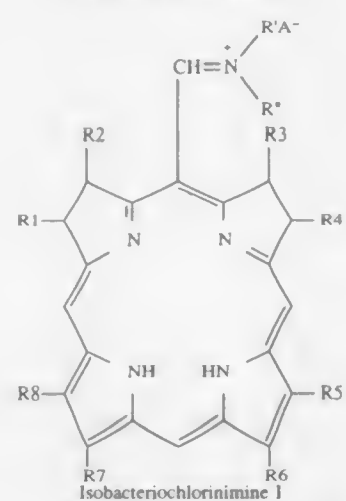
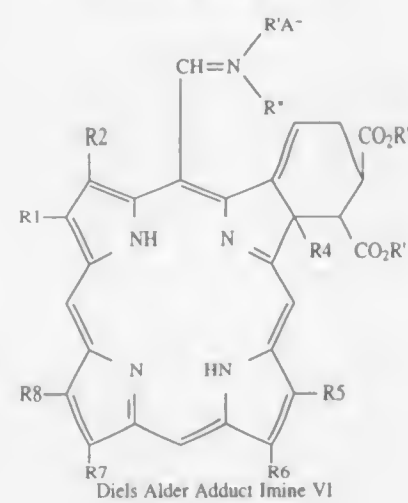
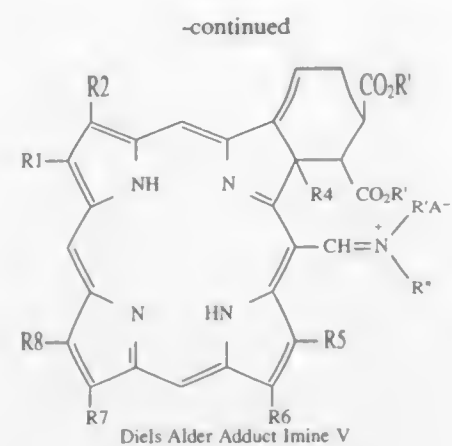


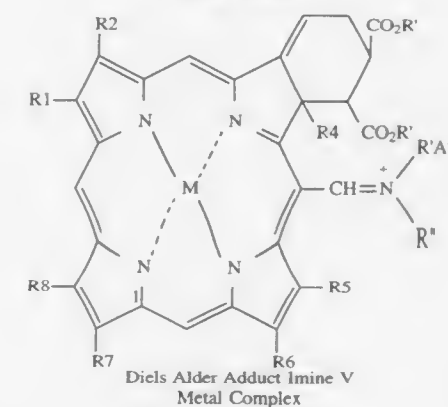
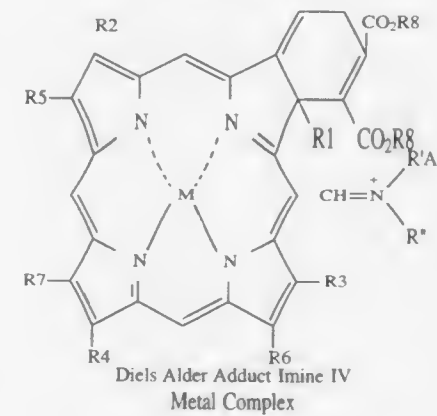
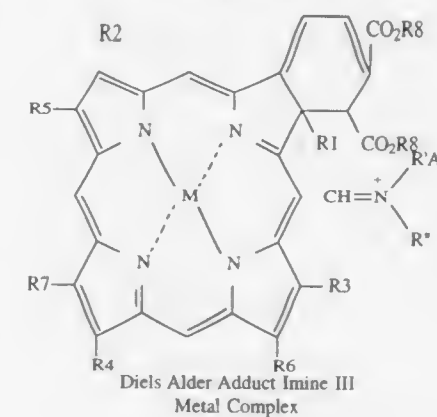
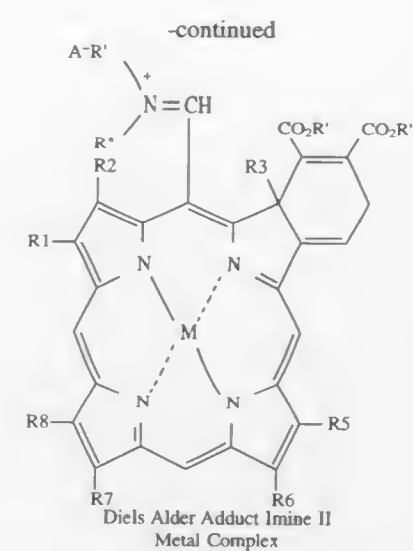
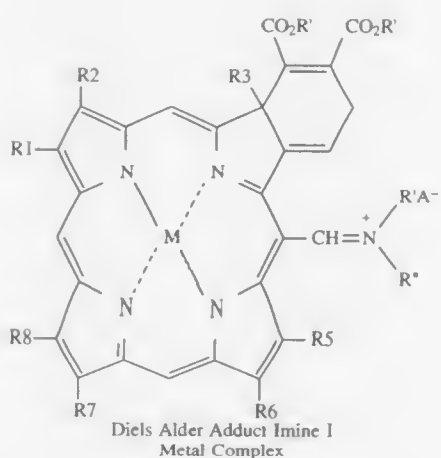
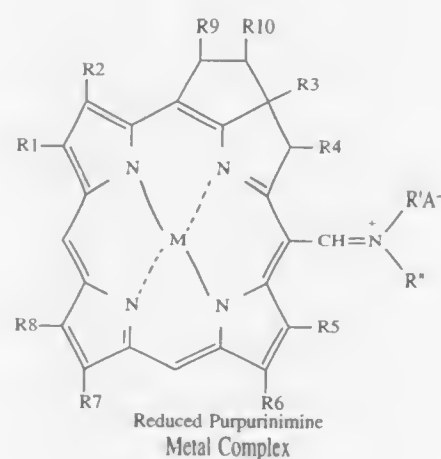
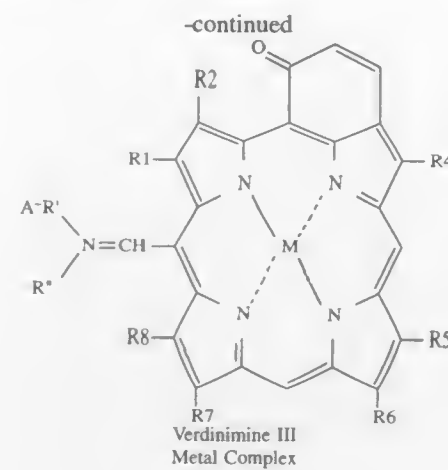
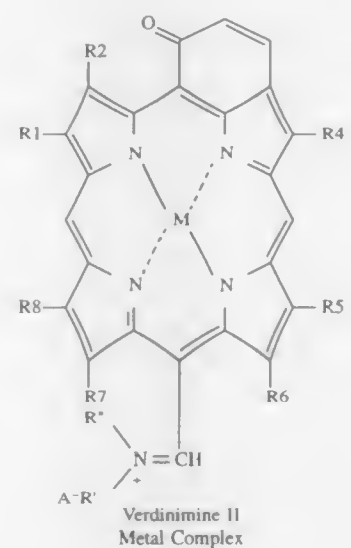
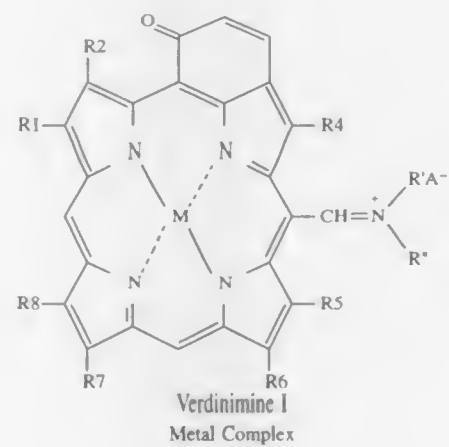
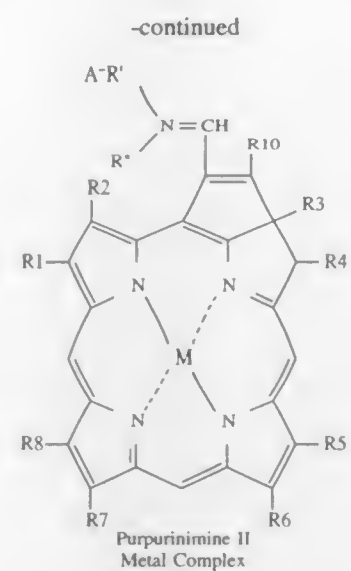
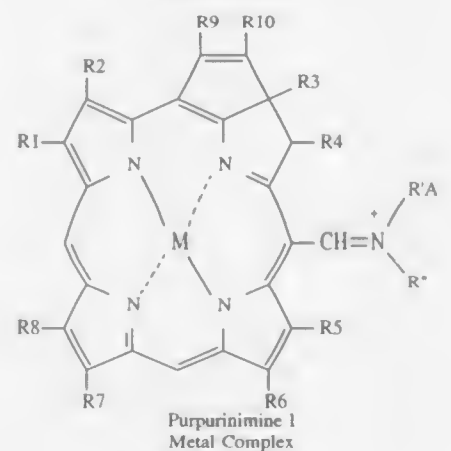
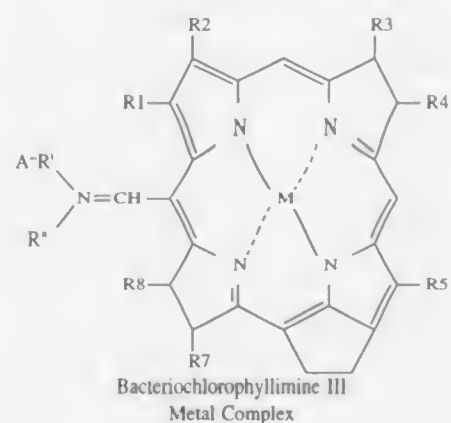
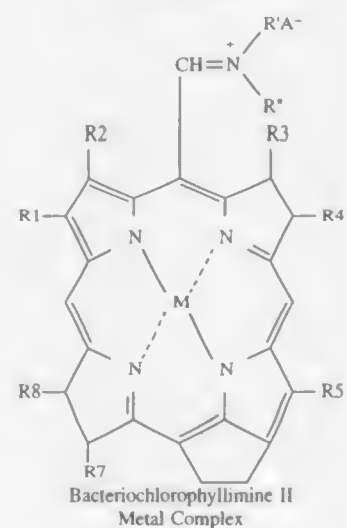
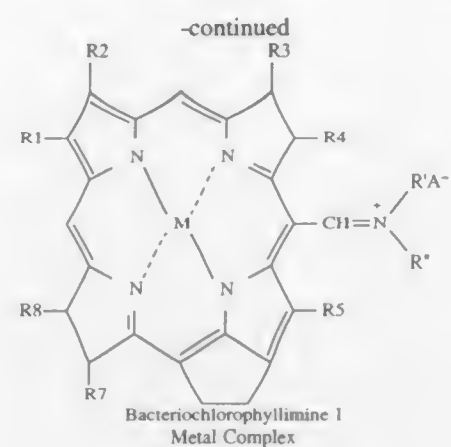
Porphyrinimine

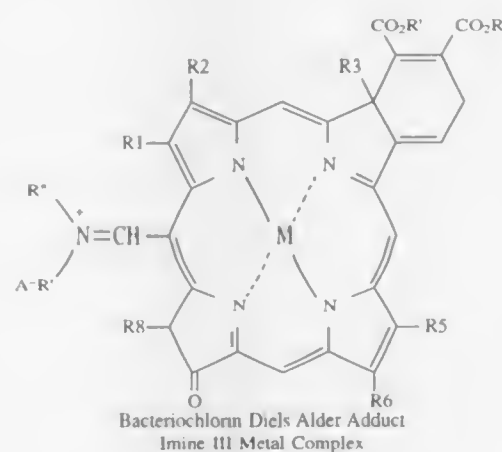
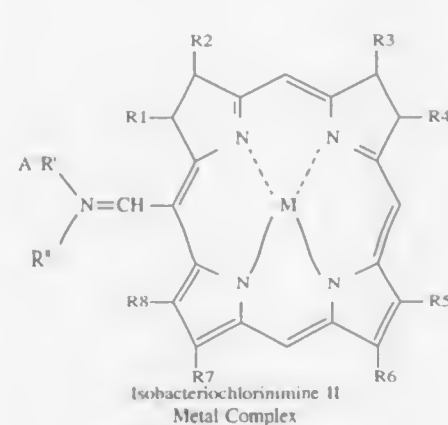
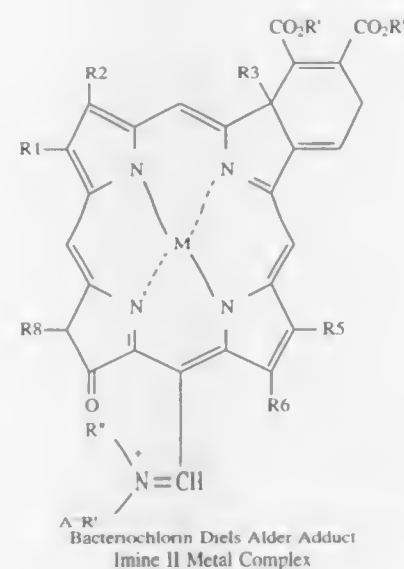
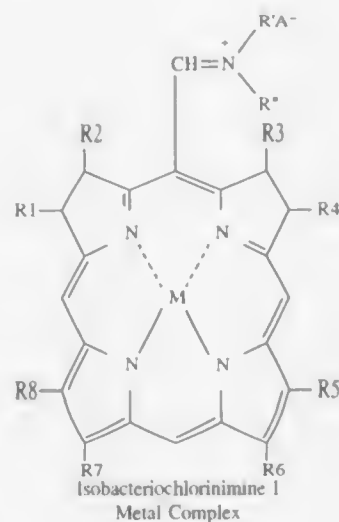
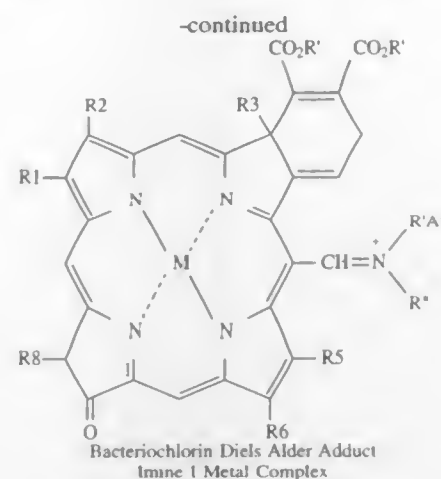
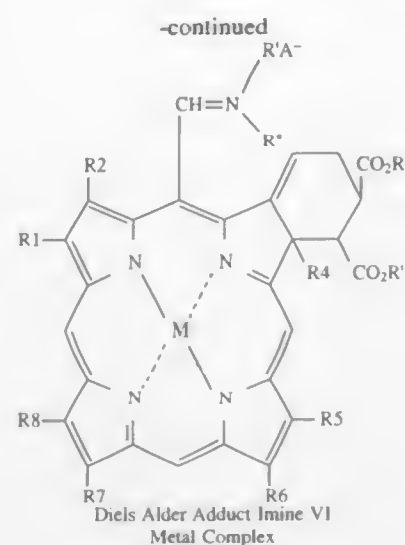


Chlorinimine









5,512,560
CONFORMATIONALLY RESTRICTED HIV-1 PROTEASE
INHIBITORS

Byeong M. Kim, Hatfield, and Joseph P. Vacca, Telford, both of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

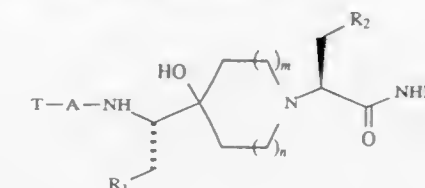
Filed Mar. 29, 1994, Ser. No. 219,572

Int. Cl.⁶ A61K 31/445;31/47; C07D 211/40;207/273

U.S. Cl. 514-210

16 Claims

I. A compound of the Formula I



wherein

M comprises a metal cation that is complexed with two of the nitrogens of the benzochlorin and is Ag, Al, Ce, Co, Cr, Cu, Dy, Er, Eu, Fe, Ga, Gd, Hf, Ho, In, La, Lu, Mn, Mo, Nd, Pb, Pd, Pt, Rh, Rb, Sb, Sc, Sm, Sn, Tb, ^{99m}Tc, Th, Ti, Tl, Tm, U, V, Y, Yb, Zn or Zr.

A is a physiologically acceptable anion,

R' and R'' can be the same or different, and each is hydrogen or an alkyl group having from one to four carbon atoms, and each of R1 through R11 is

H or CHO,

an alkyl group other than t-butyl having from 1 to 4 atoms, an alkylene group having from 2 to 4 carbon atoms,

a group having the formula R₃N (R₄)₃ A where R₃ is a bivalent aliphatic hydrocarbon radical having from 1 to 4 carbon atoms, wherein any carbon to carbon bond is either a single or a double bond, and not more than one is a double bond; R₄ is hydrogen or an alkyl radical having 1 to 2 carbon atoms and the two R₄ groups can be the same or different,

a group having the formula R₃N (R₅)₃ A where R₃ is a bivalent aliphatic hydrocarbon radical having from 1 to 4 carbon atoms, wherein any carbon to carbon bond is either a single or a double bond, and not more than one is a double bond; A is a physiologically acceptable anion and R₅ is an alkyl group having from 1 to 2 carbon atoms and the three R₅ groups can be the same or different,

a group having the formula R₃OH where R₃ is a bivalent aliphatic hydrocarbon radical having from 1 to 4 carbon atoms, wherein any carbon to carbon bond is either a single or a double bond, and not more than one is a double bond, or CO₂R', CH₂CO₂R' or CH₂CH₂CO₂R' where R' is H, or an alkyl group other than t-butyl having from one to four carbon atoms, with the provisos that R11 can be SO₃H or a salt thereof, that, in the foregoing chlorinimines and metal complexes, either R3 or R4 can be a CH₂ group or O which, in either case, is bonded to the carbon of the pyrrole ring by a double bond, that, in the foregoing families of compounds which are designated Isobacteriochlorinimines I and Isobacteriochlorinimines II and their metal complexes, either R1 or R2 can be a CH₂ group or O which, in either case, is bonded to the carbon of the pyrrole ring by a double bond and, when either R1 or R2 is a CH₂ group or O, either R3 or R4 is also a CH₂ group or O which is bonded to the carbon of the pyrrole ring by and double bond, and that in the foregoing families of compounds which are designated bacteriochlorinimines and metal complexes, either R3 or R4 can be a CH₂ group or O which, in either case, is bonded to the carbon of the pyrrole ring by a double bond and, when either R3 or R4 is a CH₂ group or O, either R7 or R8 is also a CH₂ group or O which is bonded to the carbon of the pyrrole ring by and double bond.

m=0,1;

n=0,1;

R₁ and R₂ are independently

- aryl unsubstituted or substituted with one or more of C₁₋₄ lower alkyl, hydroxy, C₁₋₃ alkoxy or halo;
- C₅₋₇ cycloalkyl; or
- heterocycle unsubstituted or substituted with one or more of C₁₋₄ lower alkyl, hydroxy, C₁₋₃ alkoxy or halo;

R₃ is

- hydrogen;
- C₁₋₆ alkyl, unsubstituted or substituted with one or more of hydroxy, C₁₋₃ alkoxy, aryl, heterocycle or halo;
- aryl unsubstituted or substituted with one or more of C₁₋₄ lower alkyl, hydroxy, C₁₋₃ alkoxy or halo;
- heterocycle unsubstituted or substituted with one or more of C₁₋₄ lower alkyl, hydroxy, C₁₋₃ alkoxy or halo; or
- a 5 to 7 membered carbocyclic or 7-10 membered bicyclic carbocyclic ring, the carbocyclic ring being unsubstituted or substituted with one or more of C₁₋₄ lower alkyl, hydroxy, C₁₋₃ alkoxy or halo; and

T is R₄OC(O), R₄C(O) or R₄NR₅C(O) wherein R₄ is

- C₁₋₅ alkyl unsubstituted or substituted with one or more of aryl, heterocycle, hydroxy, halo or C₁₋₃ alkoxy;
- a 5- to 7-membered carbocycle or carbocycle-C₁₋₄ alkyl wherein the carbocycle is either saturated, partially saturated or unsaturated, any of which carbocycle is unsubstituted or substituted with one or more of C₁₋₄ alkyl, C₂₋₄ alkenyl, C₁₋₃ alkoxy, halo-C₁₋₃ alkyl, aryl-C₁₋₃ alkyl, or C₃₋₅ cycloalkyl;
- a 5- to 7-membered heterocycle or heterocycle-C₁₋₄ alkyl wherein the heterocycle has one or two heteroatoms selected from O, N or S, any of which heterocycle is unsubstituted or substituted with one or more of C₁₋₄ alkyl, C₂₋₄ alkenyl, oxo, C₃₋₅ cycloalkyl, or C₁₋₃ alkoxy;
- aryl unsubstituted or substituted with one or more of C₁₋₄ lower alkyl, hydroxy, C₁₋₃ alkoxy or halo; or
- heterocycle; and

R₅ is

- hydrogen, or
- C₁₋₄ alkyl unsubstituted or substituted with one or more of C₂₋₄ alkenyl, C₁₋₃ alkoxy, halo-C₁₋₃ alkyl, hydroxy-C₂₋₄ alkyl, aryl-C₁₋₃ alkyl, or C₃₋₅ cycloalkyl; and

A is absent or

- an L-amino acid residue chosen from valine, isoleucine, leucine, alanine, asparagine or serine; or
- 5- to 7-membered heterocycle or heterocycle-C₁₋₄ alkyl wherein the heterocycle has one or two heteroatoms selected from O, N or S, any of which heterocycle is unsubstituted or substituted with one or more of C₁₋₄ alkyl, C₂₋₄ alkenyl, oxo, C₃₋₅ cycloalkyl, or C₁₋₃ alkoxy, or pharmaceutically acceptable salt thereof.

5,512,561

ARYL SUBSTITUTED DIBENZOXAZEPINE
COMPOUNDS, PHARMACEUTICAL COMPOSITIONS

AND METHODS OF USE

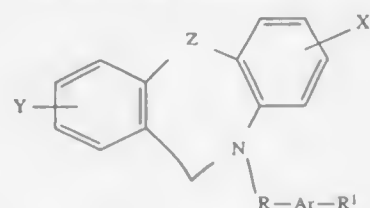
Nizal S. Chandrakumar, Vernon Hills, Ill.; Horng-Chih Huang, Chesterfield, Mo., and Richard A. Mueller, Glencoe, Ill., assignors to G. D. Searle & Co., Chicago, Ill.
Division of Ser. No. 133,681, Oct. 7, 1993, Pat. No. 5,420,270.
This application Mar. 10, 1995, Ser. No. 402,257

Int. Cl.⁶ A61K 31/55; C07D 281/14

U.S. Cl. 514—11

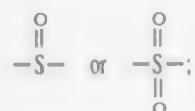
6 Claims

1. A pharmaceutical composition comprising a pharmaceutically-acceptable carrier and a therapeutically-effective amount of a compound having a structure:

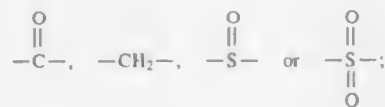


or a pharmaceutically-acceptable salt thereof, wherein:

X is hydrogen, halogen or —CF₃;
Y is hydrogen or halogen;
Z is oxygen, sulfur,



R is



Ar is aryl; and

R¹ is hydrogen, halogen, aryl, alkylaryl, alkenylaryl, alkynylaryl, carboxy, carbonylalkoxy or carbonylaminoalkylaryl, with the proviso that R is not —CH₂— when R¹ is carboxy, phenyl or alkylphenyl.

5,512,562

TRICYCLIC 2,3,4,5-TETRAHYDRO-1H-3-BENZAPINES

Rolf Hohlweg, Kvistgaard, and Erik B. Nielsen, Værløse, both of, Denmark, assignors to Novo Nordisk A/S, Bagsvaerd, Denmark

Filed Feb. 24, 1994, Ser. No. 202,401

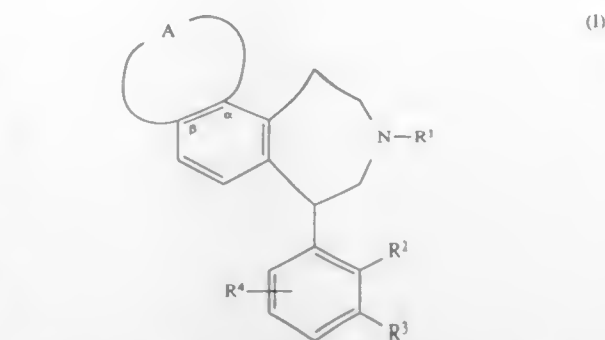
Claims priority, application Denmark, Mar. 10, 1993, 0267/93

Int. Cl.⁶ C07D 223/14; 491/048; 495/04; A01K 31/55

U.S. Cl. 514—215

7 Claims

1. Tricyclic 2,3,4,5-tetrahydro-1H-3-benzapines of the formula I



wherein A together with the α- and β-marked carbon atoms is a cyclopentene, cyclohexene, furan, dihydrofuran, pyran, dihydropyran, thiophene, oxazole, pyrrole, pyrroline, tetrahydropyridine or dioxole ring.

R¹ is hydrogen or C₁₋₆-alkyl, R² and R³ independently are hydrogen, C₁₋₆-alkoxy, halogen, nitro, cyano or hydroxy, or R² and R³ together may form a furan, dihydrofuran, cyclopentene or dioxole ring.

R⁴ is hydrogen, C₁₋₆-alkoxy, nitro, cyano, hydroxy, or halogen or a pharmaceutically acceptable salt thereof.

6. A method of treating a central nervous system ailment related to dysfunction of Dopamine D1 receptor in a person in need of such treatment characterized in administering to said person an amount of a compound according to claim 1 effective in alleviation of such an ailment.

5,512,563

TRICYCLIC BENZAZEPINE VASOPRESSIN
ANTAGONISTS

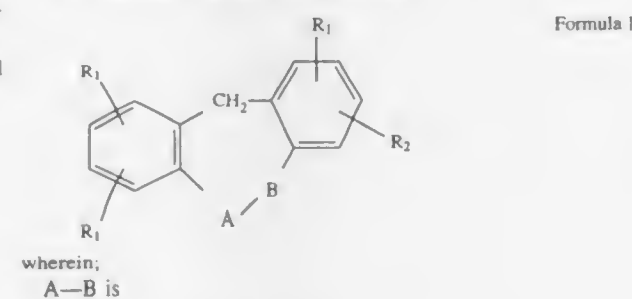
Jay D. Albright, Nanuet; Fuk-Wah Sum, Pomona, and Xuemei Du, Pearl River, all of N.Y., assignors to American Cyanamid Company, Madison, N.J.

Continuation-in-part of Ser. No. 100,003, Jul. 29, 1993, abandoned. This application Jun. 13, 1994, Ser. No. 254,823
Int. Cl.⁶ C07D 223/20; A61K 31/55

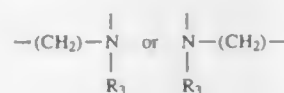
U.S. Cl. 514—217

14 Claims

1. A compound selected from Formula I:



wherein:
A—B is



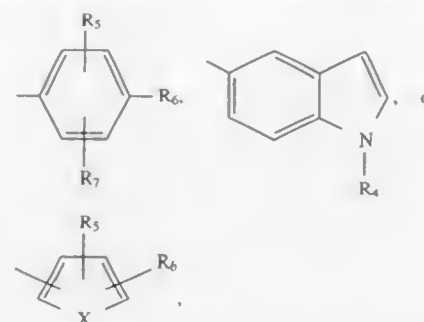
R₁ is H, halogen (chlorine, fluorine, bromine, iodine), OH, —S-lower alkyl (C₁—C₃), —SH, —SO lower alkyl (C₁—C₃), —SO₂ lower alkyl (C₁—C₃), —CO lower alkyl (C₁—C₃), —CF₃, lower alkyl (C₁—C₃), —O lower alkyl (C₁—C₃), —NO₂, —NH₂, —NHCO lower alkyl (C₁—C₃), —N—[lower alkyl (C₁—C₃)]₂, SO₂NH lower alkyl (C₁—C₃), or —SO₂N[lower alkyl (C₁—C₃)]₂;

R₂ is H, Cl, Br, I, F, —OH, lower alkyl (C₁—C₃), —O lower alkyl (C₁—C₃); or

R₁ and R₂ taken together are methylenedioxy or ethylenedioxy;

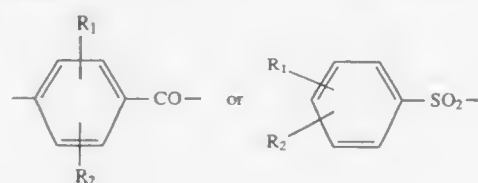
R₃ is the moiety

wherein Ar is a moiety selected from the group



and X is selected from O, S, —NCH₃, or —N—COCH₃;

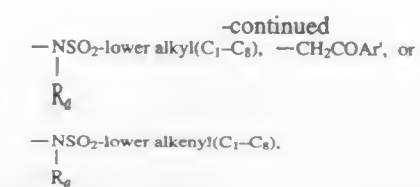
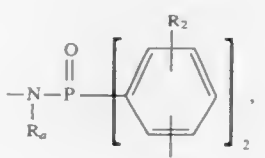
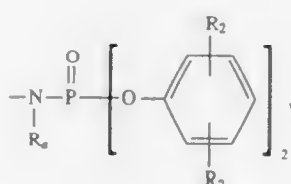
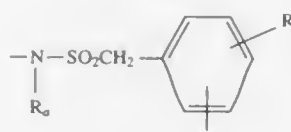
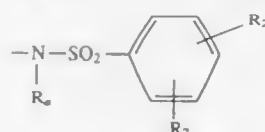
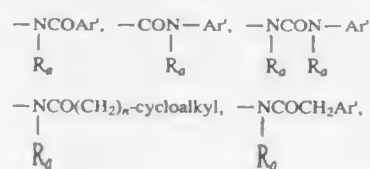
R₄ is selected from H, lower alkyl (C₁—C₃), —CO-lower alkyl (C₁—C₃), SO₂ lower alkyl (C₁—C₃), and the moieties of the formulae:



R₅ is H, —CH₃, —C₂H₅, Cl, Br, F, —O—CH₃, or —O—C₂H₅;

R₆ is selected from:

(a) moieties of the formula:



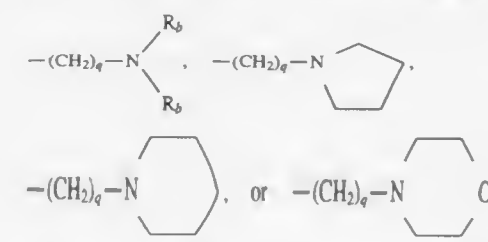
wherein

cycloalkyl is defined as C₃—C₆ cycloalkyl, cyclohexenyl or cyclopentenyl;

R₂ is as hereinbefore defined;

n is 0—2;

R₇ is H, —CH₃, —C₂H₅, Cl, Br, F, —OCH₃, —OC₂H₅, or —CF₃;

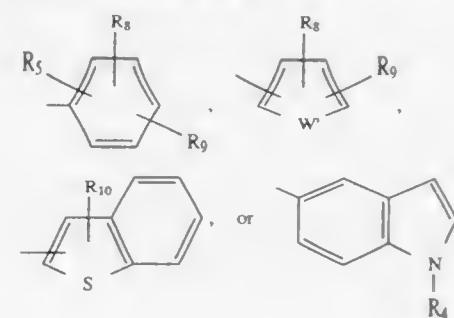
R_a is hydrogen, CH₃, C₂H₅, moieties of the formulae:

—(CH₂)₂—O-lower alkyl (C₁—C₃) or —CH₂CH₂OH;

q is one or two;

R_b is hydrogen, —CH₃ or —C₂H₅;

Ar' is selected from the group:



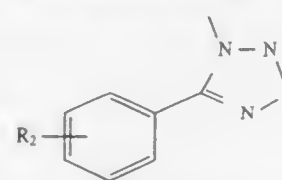
wherein

R₄, R₅ are as hereinbefore defined;

R₈ and R₉ are independently hydrogen, lower alkyl (C₁—C₃), O-lower alkyl (C₁—C₃), S-lower alkyl (C₁—C₃), —CF₃, —CN, —OH, —SCF₃, —OCF₃, halogen, NO₂, amino, or —NH-lower alkyl (C₁—C₃);

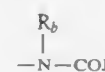
R₁₀ is selected from halogen, hydrogen, or lower alkyl (C₁—C₃); W' is selected from O, S, NH, N-lower alkyl (C₁—C₃), —NCO-lower alkyl (C₁—C₃), or NSO₂-lower alkyl (C₁—C₃); and

(b) a moiety of the formula:



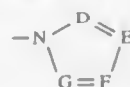
where R₂ is as hereinbefore defined;

(c) a moiety of the formula:



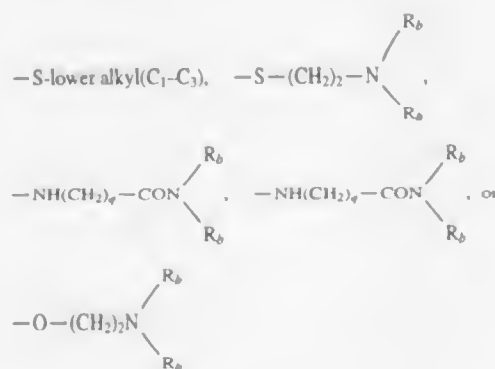
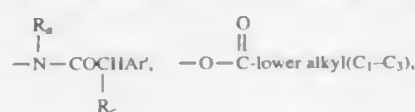
wherein J is R_a, lower alkyl (C₁—C₈) branched or unbranched, lower alkenyl (C₂—C₈) branched or unbranched, —O-lower alkyl (C₁—C₈) branched or unbranched, —O-lower alkenyl (C₂—C₈)

branched or unbranched, tetrahydrofuran, tetrahydrothiophene, or $-\text{CH}_2-\text{K}$ wherein K is halogen, $-\text{OH}$, tetrahydrofuran, tetrahydrothiophene or the heterocyclic ring moiety:



wherein D, E, F and G are selected from carbon or nitrogen and wherein the carbon atoms may be optionally substituted with halogen, (C_1-C_3) lower alkyl, hydroxy, $-\text{CO}-$ lower alkyl (C_1-C_3) , CHO , (C_1-C_3) lower alkoxy, or $-\text{CO}_2-$ lower alkyl (C_1-C_3) , and R_a and R_b are as hereinbefore defined;

(d) a moiety selected from those of the formulae:



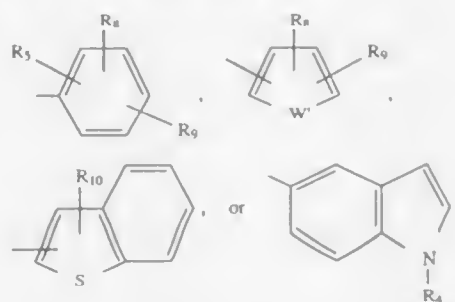
wherein

R_c is selected from halogen, (C_1-C_3) lower alkyl, $-\text{O}-$ lower alkyl (C_1-C_3) or OH ;

R_a is as hereinbefore defined;

q is 1 or 2;

wherein Ar is selected from the group:



R_a and R_b are independently hydrogen, lower alkyl (C_1-C_3) , $\text{O}-$ lower alkyl (C_1-C_3) , $\text{S}-$ lower alkyl (C_1-C_3) , $-\text{CF}_3$, $-\text{CN}$, $-\text{OH}$, $-\text{SCF}_3$, $-\text{OCF}_3$, halogen, NO_2 , amino, or $-\text{NH}-$ lower alkyl (C_1-C_3) ;

R_{10} is selected from the group of halogen, hydrogen, or lower alkyl (C_1-C_3) ;

W is selected from O , S , NH , $\text{N}-$ lower alkyl (C_1-C_3) , $-\text{NCO}-$ lower alkyl (C_1-C_3) , or NSO_2- lower alkyl (C_1-C_3) ;

or a pharmaceutically acceptable salt, ester or prodrug thereof.

13. A method for treating disease in a mammal characterized by excess renal reabsorption of water, the method comprising administering to a mammal in need thereof an effective amount of a compound of claim 1, or a pharmaceutically acceptable salt, ester or prodrug form thereof, and a suitable pharmaceutical carrier.

5,512,564

TRICYCLIC THIAZOLE AND OXAZOLE DERIVATIVES AND PHARMACEUTICAL AGENTS CONTAINING THEM

Harald Zilch, Mannheim; Herbert Leinert, Heppenheim, and Alfred Mertens, Schriesheim, all of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Germany

PCT No. PCT/EP92/02015, § 371 Date Mar. 4, 1994, § 102(e) Date Mar. 4, 1994, PCT Pub. No. WO93/05047, PCT Pub. Date Mar. 18, 1993

PCT Filed Sep. 2, 1992, Ser. No. 193,056

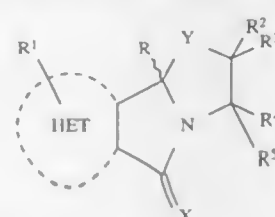
Claims priority, application Germany, Sep. 7, 1991, 41 29 779.2

Int. Cl.⁶ C07D 498/14; A61K 31/425

U.S. Cl. 514—224.5

19 Claims

1. Pyrrole compounds of the formula



wherein

HET is a heterocyclic ring which is a member selected from the group consisting of aziridine, furan, tetrahydrofuran, thiophene, thiolan, sulfonal, pyrrole, pyrrolidine, oxazole, oxazoline, isoxazole, thiazole, thiazolidine, pyrazole, pyrazoline, imidazole, imidazoline, oxadiazole, furan, thiazole, pyridine, piperidine, morpholine, thiazine, pyridazine, pyrimidine, pyrazine, piperazine and azepine, and N-oxide, dihydro and tetrahydro hydrogenated rings of said member, wherein said member are substituted by at least one R^1 moiety;

R^1 is hydrogen, C_1-C_6 alkyl, C_2-C_7 alkenyl, C_2-C_7 alkynyl, C_1-C_6 alkoxy, C_1-C_6 alkylmercapto, C_1-C_6 alkylsulfinyl, C_1-C_6 alkylsulfonyl, amino, C_1-C_6 alkylamino di- C_1-C_6 alkylamino, sulfonamido, C_1-C_6 alkoxycarbonyl, carboxy, halogen, hydroxy, nitro, cyano, azido, phenyl or benzyloxy;

Y is oxygen, sulphur, SO or SO_2 ;

X is an oxygen or sulphur atom;

R is (a) C_1-C_9 alkyl, C_2-C_7 alkenyl or C_2-C_7 alkynyl, wherein said alkyl, alkenyl and alkynyl radicals, which can be straight-chained or branched, are unsubstituted or substituted by phenyl,

b) phenyl or a mono, bi or tricyclic carbocyclic ring containing 7–15 ring carbon atoms, or

c) a heterocyclic ring selected from the group consisting of the pyridine, pyrimidine, pyridazine, pyrazine, triazine, pyrrole, pyrazole, imidazole, triazole, thiazole, oxazole, isoxazole, oxadiazole, furan, thiophene, indole, quinoline, isoquinoline, coumarone, thionaphthene, benzoxazole, benzthiazole, indazole, benzimidazole, benztriazole, chromene, phthalazine, quinazoline, quinoxaline, methylenedioxybenzol, carbazole, acridine, phenoxazine, phenothiazine, phenazine and purine, and N-oxide, partially hydrogenated and completely hydrogenated Ring systems thereof, wherein the carbocyclic rings and the heterocyclic rings are unsubstituted or substituted by at least one substituent selected from the group consisting of C_1-C_6 alkyl, C_1-C_6 alkoxy, C_1-C_6 alkylmercapto, C_1-C_6 alkylsulfinyl, C_1-C_6 alkylsulfonyl, C_2-C_7 alkenyl, C_2-C_7 alkynyl, C_2-C_7 alkenyloxy, C_2-C_7 alkenylmercapto, C_2-C_7 alkynyloxy, C_2-C_7 alkynylmercapto, amino, C_1-C_6 alkylamino, di- C_1-C_6 alkylamino, C_1-C_6 alkylcarbonylamino, C_1-C_6 alkylaminocarbonyl, C_1-C_6 alkoxycarbonyl, hydroxy, benzyloxy, phenylmercapto, phenyloxy, nitro, cyano, halogen, trifluoromethyl, azido, formylamino, carboxy and phenyl.

R^2 is hydrogen, C_1-C_6 alkyl, C_1-C_6 alkoxy, C_1-C_6 alkylmercapto, amino, C_1-C_6 alkylamino, di- C_1-C_6 alkylamino, halogen, cyano, hydroxy, carboxy, C_1-C_6 alkoxycarbonyl, aminocarbonyl or C_1-C_6 alkylaminocarbonyl,

R^3 , R^4 and R^5 , which are the same or different, have the same meanings as R^2 , or R^3 and R^4 together represent a double bond;

or tautomers, enantiomers, diastereomers or a physiologically acceptable salt thereof.

5,512,565

CHOLESTEROL ESTER HYDROLASE INHIBITORS

Richard E. Mewshaw, Plainsboro, N.J.; Thomas J. Commons, Wayne, and Donald P. Strike, St. Davids, both of Pa., assignors to American Home Products Corporation, Madison, N.J.

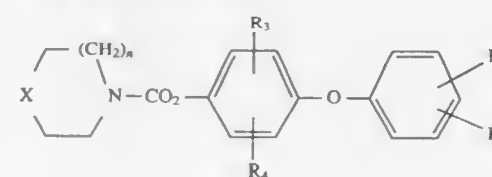
Division of Ser. No. 277,396, Jul. 19, 1994, which is a division of Ser. No. 62,026, May 13, 1993, Pat. No. 5,391,571, which is a continuation of Ser. No. 771,580, Oct. 4, 1991, abandoned, which is a continuation of Ser. No. 594,241, Oct. 9, 1990, abandoned, which is a continuation-in-part of Ser. No. 436,841, Nov. 15, 1989, abandoned. This application Mar. 30, 1995, Ser. No. 413,559

Int. Cl.⁶ A61K 31/54; C07D 279/12

U.S. Cl. 514—227.5

4 Claims

1. A compound of the formula:



in which

X is sulfur;

n is 1; and R^3 , R^4 , R^5 and R^6 are, independently, hydrogen, branched, or straight chain alkyl of 1 to 6 carbon atoms, alkoxy of 1 to 6 carbon atoms, halo, nitro, cyano or perhaloalkyl of 1 to 6 carbon atoms, alkoxycarbonyl of 2 to 16 carbon atoms or hydroxycarbonyl.

5,512,566

TRICYCLIC COMPOUNDS HAVING AFFINITY FOR THE 5-HT1A RECEPTOR

Ellen W. Baxter, Glenside, and Allen B. Reitz, Lansdale, both of Pa., assignors to Ortho Pharmaceutical Corporation, Raritan, N.J.

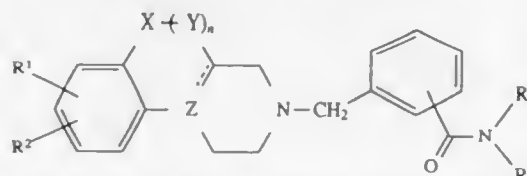
Filed Oct. 25, 1993, Ser. No. 142,748

Int. Cl.⁶ C07D 471/04; 498/04; A61K 31/435; 31/535

U.S. Cl. 514—230.2

10 Claims

1. A compound represented by the formula I:



wherein R^1 and R^2 are independently selected from any of H, halogen, C_1-C_6 alkoxy, C_1-C_6 alkyl or trifluoromethyl;

X is O when n is 1 and X is NH when n is 0;

wherein Y is CH_2 ;

wherein n is 0 or 1;

wherein Z is N when X is O and Z is C when X is NH;

wherein R^3 and R^4 are independently selected from any of H, C_1-C_6 alkyl, C_1-C_6 acyl, provided that R^3 and R^4 can not both be C_1-C_6 acyl at the same time or may be taken together to form with the N a monocyclic 5–7 membered saturated ring or a 5 membered ring fused to an aromatic ring; or the racemates, individual isomers, hydrates, solvates or acid addition salts thereof.

9. A method of treating a disease of the central nervous system responsive to 5-HT_{1A} receptor antagonism comprising administering to an animal afflicted with such a disease the compound of claim 1 in an amount sufficient to treat such disease.

5,512,567

ANALGESIC COMPOUNDS, THEIR PREPARATION, AND PHARMACEUTICAL COMPOSITIONS CONTAINING THEM

Atsuke Terada; Yoshio Iizuka; Kazuyuki Wachi, and Kenji Fujibayashi, all of Tokyo, Japan, assignors to Sankyo Company, Limited, Tokyo, Japan

Continuation of Ser. No. 140,602, Oct. 21, 1993, abandoned, which is a division of Ser. No. 943,386, Sep. 10, 1992, Pat. No. 5,270,327, which is a continuation of Ser. No. 627,736, Dec. 14, 1990, abandoned, which is a division of Ser. No. 397,105, Aug. 22, 1989, Pat. No. 5,021,413. This application Jan. 17, 1995, Ser. No. 373,469

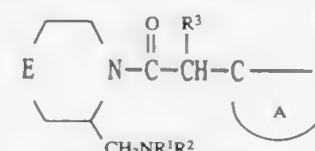
Claims priority, application Japan, Aug. 24, 1988, 63-210074

Int. Cl.⁶ C07D 265/30; 413/06; A61K 31/495; 31/50

U.S. Cl. 514—231.8

16 Claims

1. A compound of the formula (I);



and stereoisomeric forms thereof

in which,

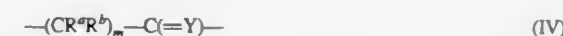
R^1 and R^2 are the same or different and each is selected from the group consisting of a hydrogen atom and C_1-C_6 alkyl groups, or R^1 and R^2 together with the nitrogen atom to which they are attached form a heterocyclic ring;

E is an oxygen atom;

ring A is selected from the group consisting of unsubstituted aryl rings; unsubstituted heteroaryl rings; aryl rings substituted with at least one substituent of Group (i); and heteroaryl rings substituted with at least one substituent of Group (i);

said at least one substituent of Group (i) is selected from the group consisting of halogen atoms, C_1-C_6 alkyl groups, halogenated C_1-C_6 alkyl groups, C_1-C_6 alkoxy groups, halogenated C_1-C_6 alkoxy groups, C_1-C_6 alkylthio groups, aryl groups, acyl groups, nitro groups, and hydroxy groups;

R^3 and R^4 together represent a group of formula (IV):



wherein each of R^5 and R^6 represents hydrogen or a C_1-C_3 alkyl group, m represents 1, 2, or 3, and Y represents two hydrogen atoms or an oxygen atom; and pharmaceutically acceptable salts thereof.

5,512,568
METHOD OF USING 4-AMINO DERIVATIVES OF
5-SUBSTITUTED MYCOPHENOLIC ACID

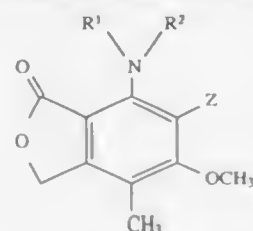
David Morgans, Jr., Sunnyvale; Eric B. Sjogren, Mountain View; David B. Smith, San Bruno, all of Calif.; Francisco X. Talamás, Cuernavaca, Mexico; Dean R. Artis, Menlo Park, Calif.; Alicia Cervantes, Col. Campeste Churubusco, Mexico; Todd R. Elworthy, Palo Alto, Calif.; Mario Fernández, Cuernavaca; Fidencio Franco, San Pedro Xalpa, both of, Mexico; Ronald C. Hawley, Woodside, Calif.; Teresa Lara, Toluca, Mexico; David G. Loughhead, Belmont, Calif.; Peter H. Nelson, Los Altos, Calif.; John W. Patterson, Mountain View, Calif.; Alejandra Trejo, Col. Reforma, Mexico; Ann M. Waltos, San Ramon, and Robert J. Weikert, Woodside, both of Calif., assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Filed Feb. 18, 1994, Ser. No. 198,732
Int. Cl.⁶ A61K 31/38; 31/365; 31/535

U.S. Cl. 514—233.5

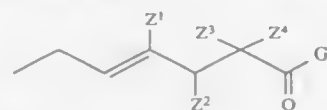
4 Claims

1. A method for treating a mammal having a disease state that is alleviated by treatment with an IMPDH inhibitor, which comprises administering to a mammal in need thereof a therapeutically effective amount of a compound represented by the formula:



wherein:

- R¹ is hydrogen or lower alkyl;
R² is hydrogen, lower alkyl, —C(O)R³, —C(O)NR⁴R⁵, —CO₂R⁶, or —SO₂R³ where:
R³ is hydrogen, lower alkyl, halo lower alkyl or optionally substituted phenyl;
R⁴ is hydrogen, lower alkyl or optionally substituted phenyl;
R⁵ is hydrogen, lower alkyl or optionally substituted phenyl;
R⁶ is lower alkyl or optionally substituted phenyl; and
Z is a side chain selected from Formulae ZA, ZB, ZC, ZD, ZE, ZF, ZG, and ZH:

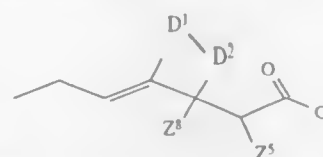


Formula ZA

wherein:

- Z¹ is H, lower alkyl, halo or CF₃;
Z² is H, lower alkyl, lower alkoxy, aryl, or —CH₂Z¹³, where Z¹³ is aryl or heteroaryl;
Z³ is H, lower alkyl, lower alkenyl, lower alkoxy, phenyl, —P(O)(OCH₃)₂, —P(O)(OH)(OCH₃), or —S(O)_mZ¹², where Z¹² is lower alkyl, and m is 0, 1 or 2;
Z⁴ is H, lower alkyl, or phenyl.
or Z³ and Z⁴ taken together with the carbon to which they are attached form cycloalkyl of three to five carbon atoms; and
G is OH, lower alkoxy, lower thioalkyl, —NG¹G², —O(CH₂)_nNG¹G², or —O(CH₂)_nN=G³, where n is an integer from 1 to 6,
G¹ is H or lower alkyl,
G² is H or lower alkyl, and
=G³ is lower alkylene of four to six carbon atoms, or lower alkylene of three to five carbon atoms plus one member that is —O—, —S—, or —N(G⁴)— where G⁴ is H or lower alkyl;

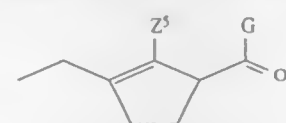
provided that when Z¹ is methyl, Z², Z³ and Z⁴ are not all H; or



Formula ZB

wherein:

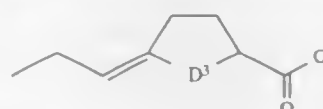
- Z⁵ is H or lower alkyl;
Z⁶ is H or lower alkyl;
D¹ and D² together with their adjacent carbon atoms form an optionally substituted, saturated or unsaturated carbocyclic or heterocyclic ring of 3 to 7 atoms; and
G is as defined above; or



Formula ZC

wherein:

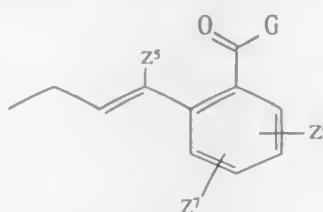
- Z⁵, Z⁶ and G are as defined above; or



Formula ZD

wherein:

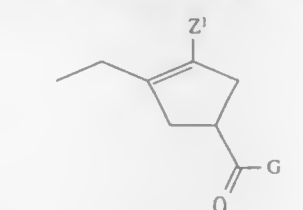
- D³ is —CH₂— or —CH₂CH₂—; and
G is as defined above; or



Formula ZE

wherein:

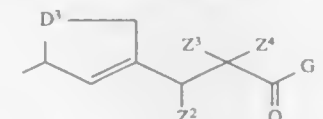
- Z⁶ is H, lower alkyl, lower alkoxy, —COOH, —NH₂ or halo;
Z⁷ is H, lower alkyl, lower alkoxy or halo; and
Z⁵ and G are as defined above; or



Formula ZF

wherein:

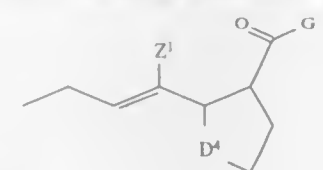
- Z¹ and G are as defined above; or



Formula ZG

wherein:

- D¹, Z², Z³, Z⁴ and G are as defined above; or



Formula ZH

wherein:

5,512,570
TREATMENT OF EMESIS WITH MORPHOLINE
TACHYKININ RECEPTOR ANTAGONISTS

Conrad P. Dorn, Plainfield; Malcolm MacCoss, Freehold; Jeffrey J. Hale, Westfield, and Sander G. Mills, Woodbridge, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.
Division of Ser. No. 206,771, Mar. 4, 1994. This application

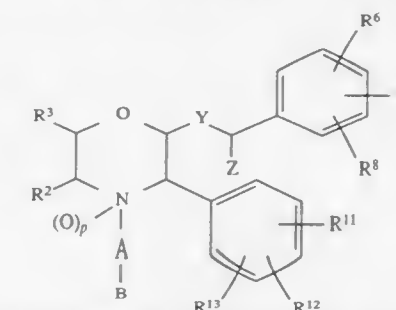
May 25, 1995, Ser. No. 450,507

Int. Cl.⁶ A61K 31/535; C07D 413/00

U.S. Cl. 514—236.2

15 Claims

1. A method for the treatment or prevention of emesis in a mammal in need thereof which comprises the administration to the mammal of an effective amount of a compound of the formula I:



5,512,569
AMINOALKYL BENZOTHAZOLINONES

Hamid A. Mansour, Roubaix; Thierry Taverne, Saint Martin Les Boulogne; Raymond Houssin, Marq-En-Baroeul; Isabelle Lesieur, Gondecourt; Patrick Depreux, Armentieres; Géard Adam, Le Mesnil Le Roi; Daniel-Henri Caignard, Paris; Pierre Renard, Versailles, and Marie-Claire Rettori, Courbevoie, all of, France, assignors to Adir et Compagnie, Courbevoie, France

Filed Mar. 21, 1995, Ser. No. 408,069

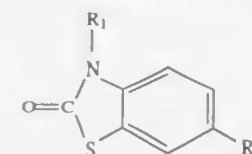
Claims priority, application France, Mar. 22, 1994, 94 03299; Mar. 22, 1994, 94 03300

Int. Cl.⁶ A61K 31/495; 31/535; C07D 417/02

U.S. Cl. 514—233.8

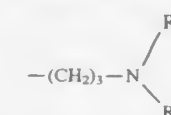
10 Claims

I. A compound selected from those of formula (I):



in which:

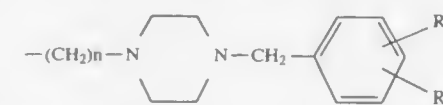
- R₁ represents hydrogen or alkyl or substituted alkyl, and R₂ represents a group of formula R₂₁:



(R₂₁)

in which:

- R₃ and R₄ together form a saturated 5- to 9-membered heterocycle which may contain other hetero atoms chosen from oxygen and sulfur and which may be unsubstituted or substituted or 4-(methoxyphenyl)-piperazin-1-yl, or a group of formula R₂₂:



(R₂₂)

in which

- n represents 2, 3 or 4, and R₅ and R₆, which are identical, represent hydrogen or halogen,

it being understood that in the formula (I), the term "substituted" associated with the heterocycle formed by —NR₁R₄ means that the substitution may be made by one or more alkyl,

the terms "alkyl" and "alkoxy" denote linear or branched groups containing 1 to 6 carbon atoms inclusive, an optical isomer thereof, and an addition salt thereof with a pharmaceutically-acceptable acid or, when R₁ represents hydrogen, an addition salt thereof with a pharmaceutically-acceptable base.

or a pharmaceutically acceptable salt thereof, wherein: R² and R³ are independently selected from the group consisting of:

- (1) hydrogen,
- (2) C₁₋₆ alkyl, unsubstituted or substituted with one or ed from:
 - (a) hydroxy,
 - (b) oxo,
 - (c) C₁₋₆ alkoxy,
 - (d) phenyl —C₁₋₃ alkoxy,
 - (e) phenyl,
 - (f) —CN,
 - (g) halo,
 - (h) —NR⁹R¹⁰, wherein R⁹ and R¹⁰ are independently selected from:
 - (i) hydrogen,
 - (ii) C₁₋₆ alkyl,
 - (iii) hydroxy —C₁₋₆ alkyl, and
 - (iv) phenyl,
 - (i) —NR⁹COR¹⁰, wherein R⁹ and R¹⁰ are as defined above,
 - (j) —NR⁹CO₂R¹⁰, wherein R⁹ and R¹⁰ are as defined above,
 - (k) —CONR⁹R¹⁰, wherein R⁹ and R¹⁰ are as defined above,
 - (l) —COR⁹, wherein R⁹ is as defined above, and
 - (m) —CO₂R⁹, wherein R⁹ is as defined above;
- (3) C₂₋₆ alkenyl, unsubstituted or substituted with one or more of the substituent(s) selected from:
 - (a) hydroxy,
 - (b) oxo,
 - (c) C₁₋₆ alkoxy,
 - (d) phenyl —C₁₋₃ alkoxy,
 - (e) phenyl,
 - (f) —CN,
 - (g) halo,
 - (h) —CONR⁹R¹⁰ wherein R⁹ and R¹⁰ are as defined above,
 - (i) —COR⁹ wherein R⁹ is as defined above,
 - (j) —CO₂R⁹, wherein R⁹ is as defined above;
- (4) C₂₋₆ alkynyl;
- (5) phenyl, unsubstituted or substituted with one or more of the substituent(s) selected from:
 - (a) hydroxy,
 - (b) C₁₋₆ alkoxy,
 - (c) C₁₋₆ alkyl,
 - (d) C₂₋₅ alkenyl,
 - (e) halo,
 - (f) —CN,
 - (g) —NO₂,
 - (h) —CF₃,
 - (i) —(CH₂)_m—NR⁹R¹⁰, wherein m, R⁹ and R¹⁰ are as defined above,
 - (j) —NR⁹COR¹⁰, wherein R⁹ and R¹⁰ are as defined above,

- (k) $-\text{NR}^9\text{CO}_2\text{R}^{10}$, wherein R^9 and R^{10} are as defined above,
 (l) $-\text{CONR}^9\text{R}^{10}$, wherein R^9 and R^{10} are as defined above,
 (m) $-\text{CO}_2\text{NR}^9\text{R}^{10}$, wherein R^9 and R^{10} are as defined above,
 (n) $-\text{COR}^9$, wherein R^9 is as defined above;
 (o) $-\text{CO}_2\text{R}^9$, wherein R^9 is as defined above;

and, alternatively, the groups R^2 and R^3 are joined together to form a carbocyclic ring selected from the group consisting of:

- (a) cyclopentyl,
 (b) cyclohexyl,
 (c) phenyl,

and wherein the carbocyclic ring is unsubstituted or substituted with one or more substituents selected from:

- (i) C_{1-6} alkyl,
 (ii) C_{1-6} alkoxy,
 (iii) $-\text{NR}^9\text{R}^{10}$, wherein R^9 and R^{10} are as defined above,
 (iv) halo, and
 (v) trifluoromethyl;

and, alternatively, the groups R^2 and R^3 are joined together to form a heterocyclic ring selected from the group consisting of:

- (a) pyrrolidinyl,
 (b) piperidinyl,
 (c) pyrrolyl,
 (d) pyridinyl,
 (e) imidazolyl,

and wherein the heterocyclic ring is unsubstituted or substituted with one or more substituent(s) selected from:

- (i) C_{1-6} alkyl,
 (ii) oxo,
 (iii) C_{1-6} alkoxy,
 (iv) $-\text{NR}^9\text{R}^{10}$, wherein R^9 and R^{10} are as defined above,
 (v) halo, and
 (vi) trifluoromethyl;

R^6 , R^7 and R^8 are independently selected from the group consisting of:

- (1) hydrogen;
 (2) C_{1-6} alkyl unsubstituted or substituted with one or more of the substituents selected from:

- (a) hydroxy,
 (b) oxo,
 (c) C_{1-6} alkoxy,
 (d) phenyl- C_{1-3} alkoxy,
 (e) phenyl,
 (f) -CN,
 (g) halo,

- (h) $-\text{NR}^9\text{R}^{10}$, wherein R^9 and R^{10} are as defined above,
 (i) $-\text{NR}^9\text{COR}^{10}$, wherein R^9 and R^{10} are as defined above,
 (j) $-\text{NR}^9\text{CO}_2\text{R}^{10}$, wherein R^9 and R^{10} are as defined above,
 (k) $-\text{CONR}^9\text{R}^{10}$, wherein R^9 and R^{10} are as defined above,
 (l) $-\text{COR}^9$, wherein R^9 is as defined above, and
 (m) $-\text{CO}_2\text{R}^9$, wherein R^9 is as defined above;

- (3) C_{2-6} alkenyl, unsubstituted or substituted with one or more of the substituent(s) selected from:

- (a) hydroxy,
 (b) oxo,
 (c) C_{1-6} alkoxy,
 (d) phenyl- C_{1-3} alkoxy,
 (e) phenyl,
 (f) -CN,
 (g) halo,
 (h) $-\text{CONR}^9\text{R}^{10}$ wherein R^9 and R^{10} are as defined above,
 (i) $-\text{COR}^9$ wherein R^9 is as defined above,
 (j) $-\text{CO}_2\text{R}^9$, wherein R^9 is as defined above;

- (4) C_{2-6} alkynyl;
 (5) phenyl, unsubstituted or substituted with one or more of the substituent(s) selected from:

- (a) hydroxy,
 (b) C_{1-6} alkoxy,
 (c) C_{1-6} alkyl,
 (d) C_{2-5} alkenyl,
 (e) halo,
 (f) -CN,

- (g) $-\text{NO}_2$,

- (h) $-\text{CF}_3$,

- (i) $-(\text{CH}_2)_m-\text{NR}^9\text{R}^{10}$, wherein m , R^9 and R^{10} are as defined above,

- (j) $-\text{NR}^9\text{COR}^{10}$, wherein R^9 and R^{10} are as defined above,

- (k) $-\text{NR}^9\text{CO}_2\text{R}^{10}$, wherein R^9 and R^{10} are as defined above,

- (l) $-\text{CONR}^9\text{R}^{10}$, wherein R^9 and R^{10} are as defined above,

- (m) $-\text{CO}_2\text{NR}^9\text{R}^{10}$, wherein R^9 and R^{10} are as defined above,

- (n) $-\text{COR}^9$, wherein R^9 is as defined above;

- (o) $-\text{CO}_2\text{R}^9$, wherein R^9 is as defined above;

- (6) halo,

- (7) -CN,

- (8) $-\text{CF}_3$,

- (9) $-\text{NO}_2$,

- (10) $-\text{SR}^{14}$, wherein R^{14} is hydrogen or C_{1-3} alkyl,

- (11) $-\text{SOR}^{14}$, wherein R^{14} is as defined above,

- (12) $-\text{SO}_2\text{R}^{14}$, wherein R^{14} is as defined above,

- (13) $\text{NR}^9\text{COR}^{10}$, wherein R^9 and R^{10} are as defined above,

- (14) $\text{CONR}^9\text{COR}^{10}$, wherein R^9 and R^{10} are as defined above,

- (15) NR^9R^{10} , wherein R^9 and R^{10} are as defined above,

- (16) $\text{NR}^9\text{CO}_2\text{R}^{10}$, wherein R^9 and R^{10} are as defined above,

- (17) hydroxy,

- (18) C_{1-6} alkoxy,

- (19) COR^9 , wherein R^9 is as defined above,

- (20) CO_2R^9 , wherein R^9 is as defined above,

- (21) 2-pyridyl,

- (22) 3-pyridyl,

- (23) 4-pyridyl,

- (24) 5-tetrazolyl,

- (25) 2-oxazolyl, and

- (26) 2-thiazolyl;

R^{11} , R^{12} and R^{13} are independently selected from the definitions of R^6 , R^7 and R^8 , or -OX;

A is selected from the group consisting of:

- (1) C_{1-6} alkyl, unsubstituted or substituted with one or more of the substituents selected from:

- (a) hydroxy,
 (b) oxo,
 (c) C_{1-6} alkoxy,
 (d) phenyl- C_{1-3} alkoxy,
 (e) phenyl,
 (f) -CN,
 (g) halo, wherein halo is fluoro, chloro, bromo or iodo,

- (h) $-\text{NR}^9\text{R}^{10}$, wherein R^9 and R^{10} are as defined above,

- (i) $-\text{NR}^9\text{COR}^{10}$, wherein R^9 and R^{10} are as defined above,

- (j) $-\text{NR}^9\text{CO}_2\text{R}^{10}$, wherein R^9 and R^{10} are as defined above,

- (k) $-\text{CONR}^9\text{R}^{10}$, wherein R^9 and R^{10} are as defined above,

- (l) $-\text{COR}^9$, wherein R^9 is as defined above, and

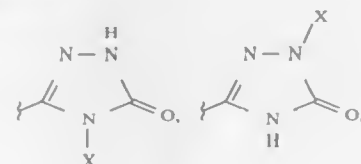
- (m) $-\text{CO}_2\text{R}^9$, wherein R^9 is as defined above;

- (2) C_{2-6} alkenyl, unsubstituted or substituted with one or more of the substituent(s) selected from:

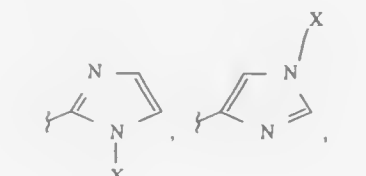
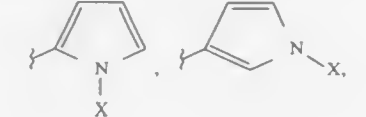
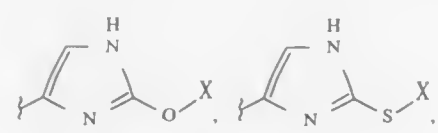
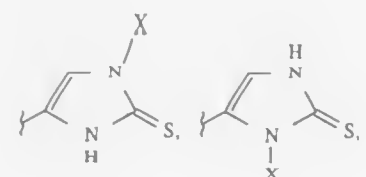
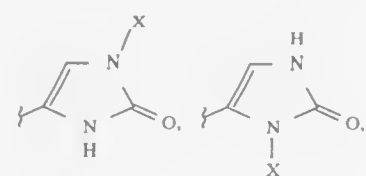
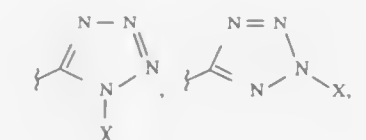
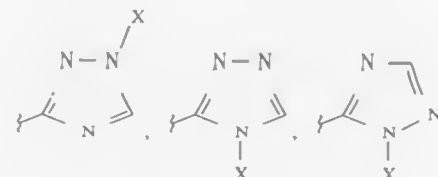
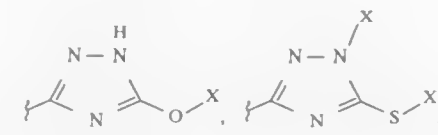
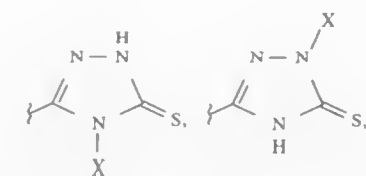
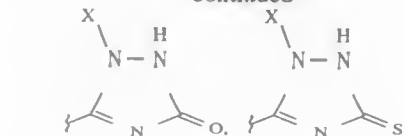
- (a) hydroxy,
 (b) oxo,
 (c) C_{1-6} alkoxy,
 (d) phenyl- C_{1-3} alkoxy,
 (e) phenyl,
 (f) -CN,
 (g) halo,
 (h) $-\text{CONR}^9\text{R}^{10}$ wherein R^9 and R^{10} are as defined above,
 (i) $-\text{COR}^9$ wherein R^9 is as defined above, and
 (j) $-\text{CO}_2\text{R}^9$, wherein R^9 is as defined above; and

- (3) C_{2-6} alkynyl;

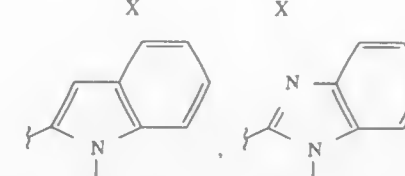
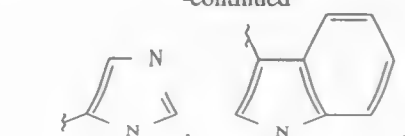
B is a heterocycle, wherein the heterocycle is selected from the group consisting of:



-continued



-continued



and wherein the heterocycle is substituted in addition to -X with one or more substituent(s) selected from:

- (i) hydrogen;
 (ii) C_{1-6} alkyl, unsubstituted or substituted with halo, $-\text{CF}_3$, $-\text{OCH}_3$, or phenyl,
 (iii) C_{1-6} alkoxy,
 (iv) OXO,
 (v) hydroxy,
 (vi) thioxo,
 (vii) $-\text{SR}^9$, wherein R^9 is as defined above,
 (viii) halo,
 (ix) cyano,
 (x) phenyl,
 (xi) trifluoromethyl,
 (xii) $-(\text{CH}_2)_m-\text{NR}^9\text{R}^{10}$, wherein m is 0, 1 or 2, and R^9 and R^{10} are as defined above,
 (xiii) $-\text{NR}^9\text{COR}^{10}$, wherein R^9 and R^{10} are as defined above,
 (xiv) $-\text{CONR}^9\text{R}^{10}$, wherein R^9 and R^{10} are as defined above,
 (xv) $-\text{CO}_2\text{R}^9$, wherein R^9 is as defined above, and
 (xvi) $-(\text{CH}_2)_m-\text{OR}^9$, wherein m and R^9 are as defined above;

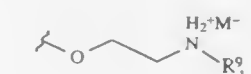
p is 0 or 1;

X is selected from:

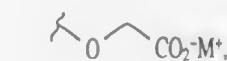
- (a) $-\text{PO}(\text{OH})\text{O}^-$, M^+ , wherein M^+ is a pharmaceutically acceptable monovalent counterion,
 (b) $-\text{PO}(\text{O}^-)_2\text{M}^+$,
 (c) $-\text{PO}(\text{O}^-)_2\text{D}^{2+}$, wherein D^{2+} is a pharmaceutically acceptable divalent counterion,
 (d) $-\text{CH}(\text{R}^4)-\text{PO}(\text{OH})\text{O}^-$, M^+ , wherein R^4 is hydrogen or C_{1-3} alkyl,
 (e) $-\text{CH}(\text{R}^4)-\text{PO}(\text{O}^-)_2\text{M}^+$,
 (f) $-\text{CH}(\text{R}^4)-\text{PO}(\text{O}^-)_2\text{D}^{2+}$,
 (g) $-\text{SO}_3^- \cdot \text{M}^+$,
 (h) $-\text{CH}(\text{R}^4)-\text{SO}_3^- \cdot \text{M}^{30}$,
 (i) $-\text{CO}-\text{CH}_2\text{CH}_2-\text{CO}_2^- \cdot \text{M}^+$,
 (j) $-\text{CH}(\text{CH}_3)-\text{O}-\text{CO}-\text{R}^5$, wherein R^5 is selected from the group consisting of:



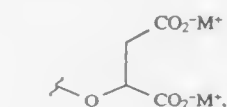
(i)



(ii)



(iii)



(iv)

5,512,576

2-SUBSTITUTED 1,2,5-THIADIAZOLIDIN-3-ONE 1,1-DIOXIDES AND COMPOSITIONS AND METHOD OF USE THEREOF

Ranjit C. Desai, Towamencin Township, Montgomery County, and Dennis J. Hlasta, Lower Salford Township, Montgomery County, both of Pa., assignors to Sterling Winthrop Inc., New York, N.Y.

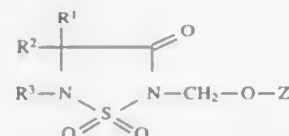
Filed Dec. 2, 1994, Ser. No. 348,440

Int. Cl.⁶ C07D 417/12; A61K 31/41

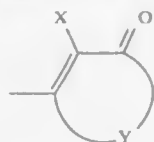
U.S. Cl. 514—258

17 Claims

1. A compound of the formula:



wherein R¹ is hydrogen, lower-alkyl, or phenyl-lower-alkyl; R² is hydrogen, lower-alkyl, or phenyl-lower-alkyl; R³ is hydrogen, or lower-alkyl; and —Z is a group of the formula:



wherein X is hydrogen, halogen, lower-alkoxycarbonyl, lower-alkyl, phenyl, phenyl-lower-alkyl, phenylcarbonyl, lower-alkanoyl, 1-piperidyl, 4-morpholinyl-lower-alkyl, or phenoxy; and —Y— is —(CH₂)_m—O—, —CHR—O—, —C(R)₂—O—, —(CH₂)_m—N(R')—, —CH(R)—N(R')—, —C(R)₂—N(R')—, —C(R')=C(R')—O—, —C(R')=C(R')—N(R')—, —C(=O)—C(R')=C(R')—, —C(Z')=C(Z')—O—, —C(Z')=C(Z')—N(R')—, —N(Z')—C(Z')=N— or —N=C(Z')—N(Z')— wherein m is 1, 2, 3, or 4, R is the same or different lower-alkyl, phenyl or phenyl-lower-alkyl, R' is H or R, R' is H or R or the R' groups taken together with the carbon atoms to which they are bonded are furano, the Z' groups taken together with the carbon atoms to which they are bonded are benzo, furano, pyrido, pyrimidino or pyridazino, and the Z' groups taken together with the carbon or nitrogen atoms to which they are bonded are pyrido, pyrimidino or pyridazino.

5,512,577

BICYCLIC HEXAHYDROAPORPHINE AND 1-BENZYLOCTAHYDROISOQUINOLINE THERAPEUTIC COMPOSITIONS AND PROCESSES FOR UTILIZING SAID COMPOSITIONS

Victoria F. Roche, Bellevue; S. Edet Ohia, Omaha, and Edward B. Roche, Bellevue, all of Nebr., assignors to Creighton University, Omaha, Nebr.

Filed Jun. 2, 1994, Ser. No. 252,775

Int. Cl.⁶ A01N 43/42; A61K 31/44

U.S. Cl. 514—281

8 Claims

1. A pharmaceutical composition for controlling intraocular pressure, comprising:

- an intraocular pressure lowering amount of a bicyclic hexahydroaporphine, or an ophthalmologically acceptable derivative form thereof; and
- an ophthalmologically acceptable vehicle thereof, wherein said vehicle is selected from the group consisting of a preservative, an antioxidant and a buffer.

5,512,578

METHOD OF SIMULTANEOUSLY ENHANCING ANALGESIC POTENCY AND ATTENUATING

DEPENDENCE LIABILITY CAUSED BY EXOGENOUS AND ENDOGENOUS OPIOID AGONISTS

Stanley M. Crain, Leonia, N.J., and Ke-Fel Shen, Flushing, N.Y., assignors to Albert Einstein College of Medicine of Yeshiva University, a Division of Yeshiva University, Bronx, N.Y.

Continuation-in-part of Ser. No. 97,460, Jul. 27, 1993, which is a continuation-in-part of Ser. No. 947,690, Sep. 19, 1992, abandoned. This application Jul. 19, 1994, Ser. No. 276,966

Int. Cl.⁶ A61K 31/14

U.S. Cl. 514—282

32 Claims

1. A method for selectively enhancing the analgesic potency of a bimodally-acting opioid agonist and simultaneously attenuating anti-analgesia, hyperalgesia, hyperexcitability, physical dependence and/or tolerance effects associated with the administration of said bimodally-acting opioid agonist, comprising administering to a subject an analgesic or sub-analgesic amount of said bimodally-acting opioid agonist and an amount of an excitatory opioid receptor antagonist effective to enhance the analgesic potency of said bimodally-acting opioid agonist and attenuate the anti-analgesia, hyperalgesia, hyperexcitability, physical dependence and/or tolerance effects of said bimodally-acting opioid agonist.

5,512,579

AMINO BENZOIC ACID DERIVATIVES

Shuhei Miyazawa; Yoshihisa Hoshino; Hisashi Shibata; Kazuo Hirota; Takaaki Kameyama; Shinya Abe, and Takashi Yamanaka, all of Ibaraki, Japan, assignors to Eisai Co., Ltd., Tokyo, Japan

Filed Jul. 18, 1994, Ser. No. 275,704

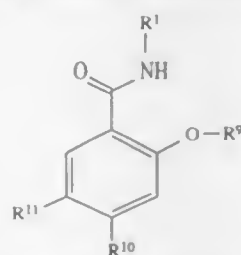
Claims priority, application Japan, Jul. 30, 1993, 5-189693

Int. Cl.⁶ A61K 31/445; C07D 295/04; 221/22; 211/58

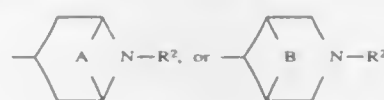
U.S. Cl. 514—299

6 Claims

1. An aminobenzoic acid derivative represented by the following general formula (I) or a pharmacologically acceptable salt thereof:



wherein R¹ represents a group represented by the formula:



wherein A and B each represents a group represented by formula —CH₂—X—CH₂ (wherein X represents O, >N—R⁶ or >CHR⁷ (wherein R⁶ represents lower alkyl; and R⁷ represents hydrogen or lower alkoxy)

R² represents hydrogen, lower alkyl or arylalkyl;
R⁹ represents alkynyl;
R¹⁰ represents amino, acylamino or alkylamino; and
R¹¹ represents halogen.

5,512,580

METHOD AND COMPOSITIONS FOR MAINTAINING GLOMERULAR FILTRATION RATE WHILE INHIBITING EXTRACELLULAR MATRIX ACCUMULATION

Valentina Kon, Nashville; Agnes Fogo, Mount Juliet, and Iekuni Ichikawa, Nashville, all of Tenn., assignors to Vanderbilt University, Nashville, Tenn.

Continuation of Ser. No. 942,756, Sep. 9, 1992, abandoned.

This application Jul. 25, 1994, Ser. No. 279,901

Int. Cl.⁶ A61K 31/44

U.S. Cl. 514—303

10 Claims

1. A method of maintaining or increasing glomerular filtration rate while inhibiting mesangial matrix accumulation in a patient comprising administering a matrix accumulation inhibiting amount of 5,7-dimethyl-2-ethyl-3-[(2'-(1H-tetrazol-5-yl)[1,1']-biphenyl-4-yl)-methyl]-3H-imidazo[4,5-b] pyridine to the patient.

5,512,581

IMINOXYCARBOXYLATES AND DERIVATIVES AS INHIBITORS OF LEUKOTRIENE BIOSYNTHESIS

Dee W. Brooks; Pramila Bhatia, both of Libertyville, and Teodozyi Kolasa, Lake Villa, all of Ill., assignors to Abbott Laboratories, Abbott park, Ill.

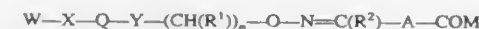
Division of Ser. No. 276,148, Jul. 18, 1994, abandoned. This application May 1, 1995, Ser. No. 432,491

Int. Cl.⁶ A61K 31/47; C07D 215/227; 215/36; 215/12

U.S. Cl. 514—311

5 Claims

1. A compound of formula



or a pharmaceutically acceptable salt thereof wherein n is zero or 1 with the proviso that n is zero when Y is tetrahydro-naphthyl;

W is selected from the group consisting of

- quinolyl, and
- quinolyl substituted with halogen, alkyl of one to six carbon atoms, or alkoxy of one to six carbon atoms;

X is selected from the group consisting of

- alkylene of one to six carbon atoms, alkenylene of two to six carbon atoms, alkynylene of two to six carbon atoms, alkoxy of one to six carbon atoms, thioalkoxy of one to six carbon atoms, and alkylsulfonyl of one to six carbon atoms.

Q is a valence bond or is selected from the group consisting of

- O—, —S—, >NR⁴ where R⁴ is hydrogen, or alkyl of one to six carbon atoms, and
- >NCOR⁵ where R⁵ is alkyl of one to six carbon atoms, amino, or alkylamino of one to six carbon atoms;

Y is selected from the group consisting of

- phenyl,
- phenyl substituted with halogen, alkyl of one to six carbon atoms, or alkoxy of one to six carbon atoms,
- biphenyl,
- biphenyl substituted with halogen, alkyl of one to six carbon atoms, or

alkoxy of one to six carbon atoms,

(e) naphthyl,

(f) naphthyl substituted with

halogen,

alkyl of one to six carbon atoms, or

alkoxy of one to six carbon atoms,

(g) tetrahydronaphthyl,

(h) tetrahydronaphthyl substituted with

halogen,

alkyl of one to six carbon atoms, or

alkoxy of one to six carbon atoms;

R¹ is selected from the group consisting of

- alkyl of one to twelve carbon atoms,
- cycloalkyl of three to ten carbon atoms,
- cycloalkyl of three to ten carbon atoms containing one atom selected from

—O—,

—S—,

>NR⁴ where R⁴ is hydrogen, or alkyl of one to six carbon atoms, and

>NCOR⁵ where R⁵ is alkyl of one to six carbon atoms, amino, or aminoalkyl of one to six carbon atoms,

(d) alkoxyalkyl in which the alkoxy and alkyl portions independently are of one to twelve carbon atoms,

(e) phenyl,

(f) phenyl substituted with

halogen,

alkyl of one to six carbon atoms,

haloalkyl of one to six carbon atoms, or

alkoxy of one to six carbon atoms,

(g) phenylalkyl in which the alkyl portion is of one to six carbon atoms,

(h) phenylalkyl in which the alkyl portion is of one to six carbon atoms, and the phenyl ring is substituted with

halogen,

alkyl of one to six carbon atoms,

haloalkyl of one to six carbon atoms, or

alkoxy of one to six carbon atoms;

R² is selected from the group consisting of

hydrogen,

alkyl of one to six carbon atoms, and

hydroxyalkyl of one to six carbon atoms;

A is a valence bond or is selected from the group consisting of:

- alkylene of one to six carbon atoms,
- cycloalkylene of three to eight carbon atoms,
- phenyl,

(d) phenyl substituted with

halogen,

alkyl of one to six carbon atoms,

haloalkyl of one to six carbon atoms, or

alkoxy of one to six carbon atoms,

(e) phenylalkyl in which the alkyl portion is of one to six carbon atoms,

(f) phenylalkyl in which the alkyl portion is of one to six carbon atoms, and the phenyl ring is substituted with

halogen,

alkyl of one to six carbon atoms,

haloalkyl of one to six carbon atoms, or

alkoxy of one to six carbon atoms;

M is selected from the group consisting of

a pharmaceutically acceptable, metabolically cleavable group, —OR⁶ where R⁶ is selected from hydrogen or alkyl of one to six carbon atoms,

—NR⁶R⁷ wherein R⁷ is selected from

hydrogen,

alkyl of one to six carbon atoms,

hydroxy,

alkoxy or one to six carbon atoms.

5,512,582

FUNGICIDAL MIXTURES

Horst Wingert; Hubert Sauter, both of Mannheim; Eberhard

Ammermann, Heppenheim; Gisela Lorenz, Neustadt; Reinhold Saur, Böhl-Ingelheim; Klaus Schelberger, Gönheim, and Manfred Hampel, Neustadt, all of, Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Division of Ser. No. 311,320, Sep. 23, 1994, Pat. No. 5,472,963. This application Jun. 7, 1995, Ser. No. 479,200

Claims priority, application Germany, Sep. 24, 1993, 43 32 579.3

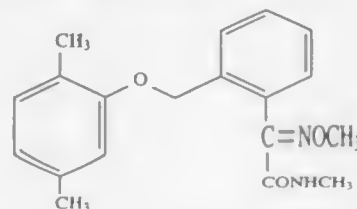
Int. Cl.⁶ A01N 37/18; 43/40

U.S. Cl. 514—317

7 Claims

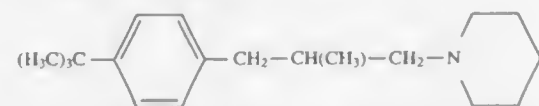
1. A fungicidal mixture containing synergistic fungicidally effective amounts of

a) the oxime ether carboxamide of formula I



and

b) a piperidine compound of formula II



wherein compounds a) and b) are present in a weight ratio of 20:1 to 0.1:2.

5,512,583

METHODS OF DECREASING SERUM CALCIUM LEVELS

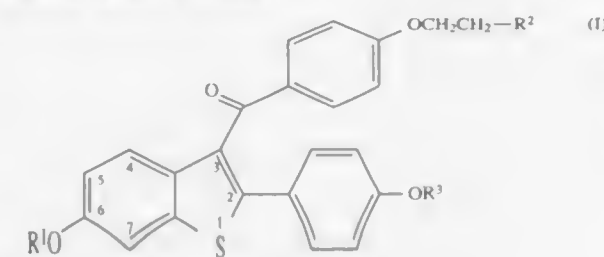
Susan M. Boss, Indianapolis, and Willard H. Dere, Carmel, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Jan. 30, 1995, Ser. No. 380,881
Int. Cl.⁶ A61K 31/445; 31/40; 31/38

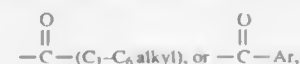
U.S. Cl. 514—324

5 Claims

1. A method of lowering serum calcium levels comprising administering to a human in need thereof an effective amount of a compound having the formula



wherein

R¹ and R³ are independently hydrogen, —CH₃,

wherein Ar is optionally substituted phenyl;

R² is selected from the group consisting of pyrrolidine, hexamethylenemino, and piperidino; or a pharmaceutically acceptable salt of solvate thereof.

5,512,584

1,3,4-TRISUBSTITUTED PIPERIDINE DERIVATIVES, THE PREPARATION AND USE THEREOF

Gerd Steiner, Kirchheim; Liliane Unger, Ludwigshafen; Hans P. Hofmann, Limburgerhof; Hans-Juergen Teschendorf, Dudenhofen; Berthold Behl, Ludwigshafen, and Rudolf Binder, Worms, all of, Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Continuation of Ser. No. 133,123, Oct. 13, 1993. This application Nov. 1, 1994, Ser. No. 331,872

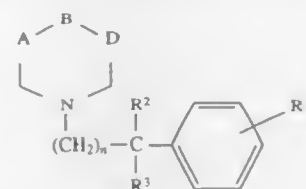
Claims priority, application Germany, Apr. 16, 1991, 41 12 353.0

Int. Cl.⁶ A61K 31/445; C07D 211/22

U.S. Cl. 514—330

9 Claims

1. A 1,3,4-trisubstituted piperidine compound selected from formula I

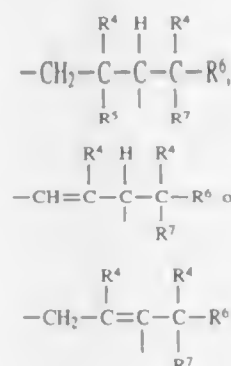


where

R¹ is hydrogen, fluorine or chlorine,R² is hydroxyl or p-fluorophenyl,R³ is hydrogen, orR² and R³ together are oxygen,

n is 1, 2 or 3, and

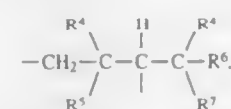
A-B-D is



where

R⁴ is methyl, ethyl, phenyl, p-fluorophenyl or 2-thienyl,R⁵ is hydrogen or hydroxyl,R⁶ is hydrogen,R⁷ is hydroxyl, orR⁶ and R⁷ together are oxygen with the proviso that when

A-B-D is

R⁴ is methyl ethyl or 2-thienyl, and its salt with physiologically tolerated acid.

5,512,585

DIAMINOCYCLOBUTENE-3,4-DIONES

Madelene M. Antane, Lawrenceville; John A. Butera, Clarksburg; Bradford H. Hirth, Monmouth Junction, and Schuyler

A. Antane, Lawrenceville, all of N.J., assignors to American Home Products Corporation, Madison, N.J.

Continuation-in-part of Ser. No. 340,697, Nov. 16, 1994, Pat.

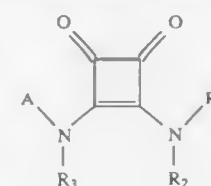
No. 5,464,867. This application Jun. 2, 1995, Ser. No. 459,598

Int. Cl.⁶ A61K 31/44; C07D 213/36

U.S. Cl. 514—352

15 Claims

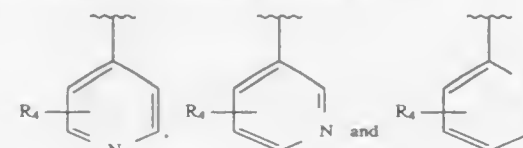
1. A compound of the formula:



wherein:

R₁ and R₂ are, independent from each other, hydrogen, C₁₋₁₀ straight chain alkyl, C₁₋₁₀ branched alkyl, or C₃₋₁₀ cyclic or bicyclic alkyl;R₃ is an acyl substituent selected from the group consisting of formyl, alkanoyl of 2 to 7 carbon atoms, alkenoyl of 3 to 7 carbon atoms, alkylsulfonyl of 1 to 7 carbon atoms, aryl of 7 to 12 carbon atoms, arylalkenoyl of 9 to 20 carbon atoms, arylsulfonyl of 6 to 12 carbon atoms, arylalkanoyl of 8 to 12 carbon atoms or arylalkylsulfonyl of 7 to 12 carbon atoms;

A is selected from the group consisting of:



wherein:

R₄ is hydrogen, C₁₋₆ alkyl, C₁₋₆ perfluoroalkyl, C₁₋₆ alkoxy, C₁₋₆ perfluoroalkoxy, amino, C₁₋₆ alkylamino, C₂₋₁₂ dialkylamino, C₁₋₆ alkylsulfonamido, alkylcarboxamido containing 2 to 7 carbon atoms, nitro, cyano or carboxyl;

or a pharmaceutically acceptable salt thereof.

5,512,586

MEDICAMENTS BASED ON PYRIDINE-2,4- AND 2,5-DICARBOXYLIC ACID AMIDES

Martin Bickel, Bad Homburg; Dietrich Brocks, Wiesbaden; Harald Burghard, Schmitten; Volkmar Günzler, Marburg-Cappel; Stephan Henke, Bad Soden am Taunus; Hartmut Hanauske Abel, Dexheim; Jürgen Mohr, Grünstadt, and Georg Tschank, Mainz, all of, Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany
Continuation of Ser. No. 66,922, May 25, 1993, abandoned, which is a continuation of Ser. No. 906,676, Jun. 30, 1992, abandoned, which is a division of Ser. No. 726,727, Jul. 1, 1991, Pat. No. 5,153,208, which is a continuation of Ser. No. 434,309, Nov. 13, 1989, abandoned, which is a continuation of Ser. No. 153,087, Feb. 8, 1988, abandoned. This application Jan. 3, 1995, Ser. No. 367,770

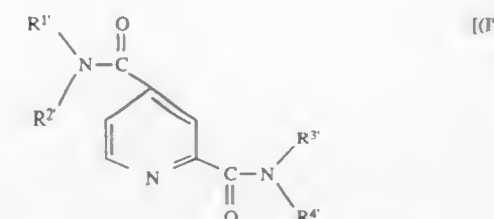
Claims priority, application Germany, Feb. 10, 1987, 37 03 959.8

Int. Cl.⁶ A61K 31/455; 31/445

U.S. Cl. 514—354

5 Claims

1. A pharmaceutical composition for the inhibition of proline hydroxylase and lysine hydroxylase in a mammal which comprises an effective amount for said inhibition of a pyridine-2,4-dicarboxylic acid diamide of the formula



in which

R¹ and R³ denote hydroxyethyl or methyl; andR² and R⁴ denote hydrogen; together with a pharmaceutically tolerated vehicle.

5,512,587

METHOD FOR TREATING OPIATE WITHDRAWAL

Sydney Spector, 600 Green Park, Nashville, Tenn. 37215

Filed Dec. 19, 1994, Ser. No. 359,060

Int. Cl.⁶ A61K 31/425

U.S. Cl. 514—368

3 Claims

1. A method for treating opiate withdrawal comprising the step of administering to an opiate-addicted individual a treatment comprising levamisole in an amount sufficient to attenuate at least one manifestation of the withdrawal syndrome.

5,512,588

FURYLTHIAZOLES AND THEIR USE AS H₂-RECEPTOR ANTAGONISTS AND ANTIMICROBIALS

Hisashi Takasugi, Sakai; Yousuke Katsura, Toyonaka; Yoshikazu Inoue, Amagasaki, and Tetsuo Tomishi, Miooo, all of, Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

PCT No. PCT/JP92/00986, § 371 Date Jan. 28, 1994, § 102(e) Date Jan. 28, 1994, PCT Pub. No. WO93/03028, PCT Pub. Date Feb. 18, 1993

PCT Filed Aug. 3, 1992, Ser. No. 182,119

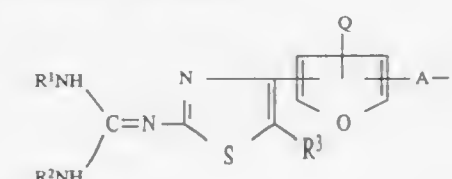
Claims priority, application United Kingdom, Aug. 2, 1991, 9116736; Apr. 22, 1992, 9208734

Int. Cl.⁶ G07D 417/04; A61K 31/425

U.S. Cl. 514—370

8 Claims

1. A compound of the formula:



wherein

R¹ is ethyl, propyl, butyl, hexyl, lower alkoxy(lower)alkyl, lower alkenyl, lower alkynyl, cyclo(lower) alkyl, heterocyclic(lower)alkyl selected from the group consisting of pyrrolyl-, (lower)alkyl, imidazolyl(lower)alkyl, pyrazolyl(lower)alkyl,

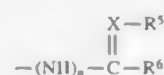
triazolyl(lower)alkyl, tetrazolyl(lower)alkyl, pyridyl(lower)alkyl, pyrazinyl(lower)alkyl, pyrimidinyl(lower)alkyl, pyridazinyl(lower)alkyl, thiazolyl(lower)alkyl, thiadiazolyl(lower)alkyl, morpholinyl(lower)alkyl, pyrrolidinyl(lower)alkyl, imidazolidinyl(lower)alkyl, pyrazolidinyl(lower)alkyl, piperidyl(lower)alkyl, piperazinyl(lower)alkyl, benzothiazolyl(lower)alkyl, benzoisothiazolyl(lower)alkyl and benzothiadiazolyl(lower)alkyl or hydroxy(lower)alkyl.

R² is hydrogen,

R³ is hydrogen or lower alkyl,

R⁴ is amino, acyl selected from the group consisting of carbamoyl, thiocarbamoyl, sulfamoyl, lower alkanoyl, lower alkane-sulfonyl, lower alkoxy-carbonyl, lower alkenoyl, (C₃-C₇) cycloalkane-carbonyl, lower alkoxalyl, lower alkanoyl-carbonyl, lower alkanoyloxy(lower)alkanoyl, aroyl, arenesulfonyl, furyl, thenoyl, nicotinoyl, 1-oxonicotinoyl, isonicotinoyl, thiazolyl-carbonyl, thiadiazolyl-carbonyl, tetrazolyl-carbonyl, morpholinocarbonyl, phenyl(lower)alkanoyl, phenyl(lower)alkoxy-carbonyl, phenoxy(lower) alkanoyl, thienylacetyl, imidazolylacetyl, furylacetyl, tetrazolylacetyl, thiadiazolylacetyl, thienylpropionyl, and thiadiazolylpropionyl, acylamino selected from the group consisting of carbamoylamino, thiocarbamoylamino, sulfamoylamino, lower alkanoylamino, lower alkanesulfonylamino, lower alkoxy-carbonylamino, lower alkenoylamino, (C₃-C₇) cycloalkane-carbonylamino, lower alkoxalylamino, lower alkanoyl-carbonylamino, lower alkanoyloxy(lower)alkanoylamino, aroylamino, arenesulfonylamino, furylamino, thenoylamino, nicotinoylamino, 1-oxonicotinoylamino, isonicotinoylamino, thiazolyl-carbonylamino, thiadiazolyl-carbonylamino, tetrazolyl-carbonylamino, morpholinocarbonylamino,

phenyl(lower)alkanoylamino, phenyl(lower)alkoxy-carbonylamino, phenoxy(lower)alkanoylamino, thienylacetyl-amino, imidazolylacetyl-amino, furylacetyl-amino, tetrazolylacetyl-amino, thiadiazolylacetyl-amino, thienylpropionyl-amino and thiadiazolylpropionyl-amino, lower alkylisothioureido, heterocyclic amino selected from the group consisting of pyrrolidylamino, imidazolylamino, pyrazolylamino, triazolylamino, tetrazolylamino, pyridylamino, pyrazinylamino, pyrimidinylamino, pyridazinylamino, thiazolylamino, thiadiazolylamino, morpholinylamino, pyrrolidinylamino, imidazolidinylamino, pyrazolidinylamino, piperidinylamino, piperazinylamino, benzothiazolylamino, benzoisothiazolylamino and benzothiadiazolylamino, a heterocyclic group selected from the group consisting of pyrrolidyl, imidazolyl, pyrazolyl, triazolyl, tetrazolyl, pyridyl, pyrazinyl, pyrimidinyl, pyridazinyl, thiazolyl, thiadiazolyl, morpholinyl, pyrrolidinyl, imidazolidinyl, pyrazolidinyl, piperidyl, piperazinyl, benzothiazolyl, benzoisothiazolyl and benzothiadiazolyl, or a group of the formula:



in which

n is 0 or 1,

X is =CH— or =N—,

R⁵ is hydrogen, cyano, nitro or acyl, and

R⁶ is hydrogen, lower alkyl, lower alkylthio, lower alkoxy or amino which may have suitable substituent(s), and

A is lower alkylene or —CONH—; or

A—R⁴ is a heterocyclic group as defined above, and

Q is hydrogen or lower alkyl,

and pharmaceutically acceptable salt thereof.

5,512,589

2-SACCHARINYL METHYL ARYL CARBOXYLATES USEFUL AS PROTEOLYTIC ENZYME INHIBITORS AND COMPOSITIONS AND METHOD OF USE THEREOF

Richard P. Dunlap, Penfield; Neil W. Boaz, Waterloo; Albert J. Mura, Rochester, all of N.Y.; Virendra Kumar, Tredyffrin Township, Chester County, Pa.; Chakrapani Suhrmamyam; Ranjit C. Desai, both of Towamencin Township, Montgomery County, Pa.; Dennis J. Hlasta, Lower Salford Township, Montgomery County, Pa.; Manohar T. Saindane, Upper Providence Township, Montgomery County, Pa.; Malcolm R. Bell, East Greenbush, Rensselaer County, N.Y.; John J. Court, West Norriton, Montgomery County, Pa., and Robert P. Farrell, East Vincent, Chester County, Pa., assignors to Sterling Winthrop Inc., New York, N.Y.

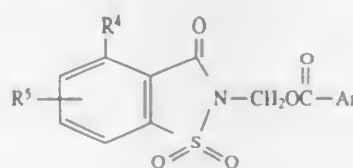
Continuation-in-part of Ser. No. 965,593, Oct. 23, 1992, Pat. No. 5,306,818, which is a continuation-in-part of Ser. No. 860,340, Mar. 30, 1992, Pat. No. 5,250,696, which is a division of Ser. No. 782,016, Oct. 24, 1991, Pat. No. 5,128,339, which is a continuation-in-part of Ser. No. 608,068, Nov. 1, 1990, abandoned. This application Sep. 3, 1993, Ser. No. 116,416

Int. Cl.⁶ A61K 31/425; 31/445; 31/535; 31/495

U.S. Cl. 514—373

33 Claims

1. A compound having the formula:



wherein:

Ar is phenyl, naphthyl or anthryl or such groups substituted by from one to three, the same or different, members of the group consisting of lower-alkyl, perfluorolower-alkyl, perchlorolower-alkyl, lower-alkoxy, halogen, nitro, cyano, carboxy, PO(lower-alkoxy), amino, lower-alkylamino, dilower-alkylamino, lower-alkanoylamino, lower-alkoxy-carbonyl, hydroxy, benzyloxy, carboxylower-alkoxy, —O-(alkylene)-1-lower-alkyl-4-piperidinyl, —O-(alkylene)-1-lower-alkyl-2- or 3-pyrrolidinyl, —SO₂—N=B, —CO—N=B, —(alkylene)-N=B, —COO(alkylene)-N=B, —NH(alkylene)-N=B; —N(lower-alkyl)-(alkylene)-N=B or —O-(alkylene)-N=B, where N=B in each instance is amino, lower-alkylamino, dilower-alkylamino, 1-azetidyl, 1-pyrrolidinyl, 1-piperidinyl, 4-morpholinyl, 1-piperazinyl, 4-lower-alkyl-1-piperazinyl, 4-benzyl-1-piperazinyl, 1-imidazolyl, carboxy-lower-alkylamino or —NR(alkylene)-N(alkyl)₂, where R is lower alkyl;

R⁴ is hydrogen, halogen, lower-alkyl, perfluorolower-alkyl, perchlorolower-alkyl, polyfluorolower-alkyl, polychlorolower-alkyl, lower-alkenyl, lower-alkynyl, cyano, amino, lower-alkylamino, dilower-alkylamino, lower-alkoxy, benzyloxy, lower-alkoxy-carbonyl, phenyl or carboxamido; and

R⁵ is hydrogen or from one to two the same or different substituents in any of the 5-, 6- or 7-positions selected from halogen, cyano, nitro, N=B, 1-lower-alkyl-2-pyrrolyl, lower-alkylsulfonylamino, polyfluorolower-alkylsulfonylamino, polychlorolower-alkylsulfonylamino, aminosulfonyl, lower-alkyl, polyfluorolower-alkyl, polychlorolower-alkyl, cycloalkyl, lower-alkoxy, hydroxy, carboxy, carboxamido, hydroxylower-alkyl, methylenedioxy, cycloalkoxy, formyl, aminomethyl, lower-alkylsulfonyl, polyfluorolower-alkylsulfonyl, polychlorolower-alkylsulfonyl, lower-alkylsulfonylamino, lower-alkoxy-poly-lower-alkyleneoxy, benzyloxy-poly-lower-alkyleneoxy, hydroxypoly-lower-alkyleneoxy, benzyloxy-lower-alkoxy, hydroxylower-alkoxy, polyhydroxylower-alkoxy or said hydroxy groups of polyhydroxylower-alkoxy substituted by benzyl; poly(lower-alkoxy) lower-alkoxy, —SR, —SOR, —SO₂R, —OCOR, —O-(alkylene)-COOR, —O-(alkylene)-COOH, —O-(alkylene)-N=B, —O-C(R')₂COOH, —O-C(R')₂—

5,512,591

TREATMENTS FOR DISEASES CHARACTERIZED BY NEOVASCULARIZATION

Jose Halperin, Brookline, and Carlo Brugnara, Newton Highlands, both of Mass., assignors to President and Fellows of Harvard College, Cambridge, Mass.

Filed Feb. 18, 1993, Ser. No. 18,840

Int. Cl.⁶ A61K 31/415

U.S. Cl. 514—399

24 Claims

1. A method for treating an angiogenic condition comprising: administering to a subject having a nonprostate nonhormone dependent solid tumor and in need of such treatment an imidazole that inhibits the Ca⁺⁺ activated potassium channel of erythrocytes of the subject and that inhibits the vascular smooth muscle cell proliferation, wherein the imidazole is administered in amount effective to inhibit angiogenesis associated with said tumor and is selected from the group consisting of clotrimazole, miconazole and econazole of clotrimazole, miconazole and econazole.

5,512,592

METHOD OF PRODUCING CARDIOTONIC EFFECT AND IMPROVING CARDIAC CONTRACTILE FUNCTION BY ADMINISTRATION OF CARNOSINE

Gary P. Zaloga, and Pamela Roberts, both of Winston-Salem, N.C., assignors to Wake Forest University, Winston-Salem, N.C.

Filed Sep. 9, 1994, Ser. No. 303,455

Int. Cl.⁶ A61K 31/415

U.S. Cl. 514—400

12 Claims

1. A method of producing a cardiotonic effect in a patient in need thereof, which comprises administering to said patient the compound carnosine or a pharmaceutically acceptable salt thereof in an amount effective to produce said cardiotonic effect.

5,512,590

5,6-DIHYDRO-4H-IMIDAZO[2',1':2,3]IMIDAZO-[4,5,1-L]QUINOLINE AND 4,5-DIHYDROIMIDAZO-[1,2-A]PYROLO[1,2,3-CD]BENZIMIDAZOLE DERIVATIVES, THEIR PREPARATION AND APPLICATION IN THERAPEUTICS

Pascal George, St Arnould en Yvelines; Mireille Sevrin, Paris, and Michel Peynot, L'Hay les Roses, all of France, assignors to Synthelabo, Le Plessis Robinson, France

Filed May 9, 1995, Ser. No. 437,053

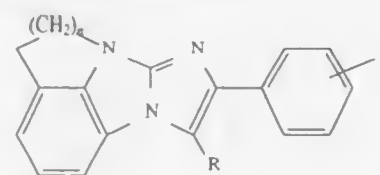
Claims priority, application France, May 10, 1994, 94 05715

Int. Cl.⁶ C07D 471/16; 487/16; A61K 31/415; 31/435

U.S. Cl. 514—394

5 Claims

1. A compound of formula (I)



in which

n represents the number 1 or 2,

X represents a hydrogen atom or indicates that the phenyl ring to which it is attached is substituted by one or two substituents independently chosen from halogen, C₁-C₃ alkyl, C₁-C₃ alkoxy and hydroxyl, and R represents a hydrogen atom, a group of formula —CH₂—CO₂—R₁, in which R₁ represents a hydrogen atom or a C₁-C₆ alkyl group; or a group of formula —CH₂—CO—NR₂R₃, in which each of R₂ and R₃ is independently a hydrogen atom or a C₁-C₃ alkyl group, or a pharmaceutically acceptable salt thereof.

5,512,593

COMPOSITION AND METHOD OF TREATING DEPRESSION USING NATOXONE OR NALTREXONE IN COMBINATION WITH A SEROTONIN REUPTAKE INHIBITOR

Lee G. Dante, Merion Station, Pa., assignor to John S. Nagle, Riverdale, Md.

Filed Mar. 2, 1993, Ser. No. 31,096

Int. Cl.⁶ A01N 43/38

U.S. Cl. 514—410

11 Claims

1. A method of treating depression comprising administering to a patient a pharmacologically effective dose of an opioid antagonist selected from the group consisting of naltrexone, naloxone, their pharmacologically effective salts and esters, or combinations thereof, and a pharmacologically effective dose of a compound selected from the group consisting of one or more nontricyclic antidepressants exhibiting serotonin reuptake inhibition in the synapses of the central nervous system, their pharmacologically effective salts and esters, or combinations thereof.

5,512,594

ETHER DERIVATIVES HAVING 5-LIPOXYGENASE INHIBITORY ACTIVITY

Thomas G. C. Bird, Wiltry-Les Reims, France; Graham C. Crawley, Macclesfield; Michael S. Large, Stoke-on-Trent, both of, United Kingdom, and Patrick Pie, Reims, France, assignors to Zeneca Limited, London, United Kingdom, and Zeneca Pharma S.A., Cergy Cedex, France

Continuation of Ser. No. 234,148, Apr. 19, 1994, Pat. No. 5,478,842. This application May 12, 1995, Ser. No. 440,132

Claims priority, application European Pat. Off., Apr. 29, 1993, 93401120; Aug. 2, 1993, 93401991; Jan. 28, 1994, 94400190

Int. Cl.⁶ A61K 31/405; C07D 409/12

U.S. Cl. 514—414

3 Claims

1. The ether derivative
(2S,4R)-4-hydroxy-2-methyl-4-[2-(1-methyl-2-oxindolin-5-ylthio)thien-4-yl]tetrahydropyran,
or a pharmaceutically-acceptable salt thereof.

5,512,595

SUBSTITUTED PHENOXYISOBUTYRIC ACIDS AND ESTERS

Gilbert Regnier, Chateaux Malabry; Claude Gullonneau, Clamart; Jean-Paul Vilaine, Chateaux Malabry; Albert Lenaers, Triel sur Seine, and Christine Breugnot, Paris, all of, France, assignors to Adir et Compagnie, Courbevoie, France

Filed Apr. 19, 1994, Ser. No. 230,143

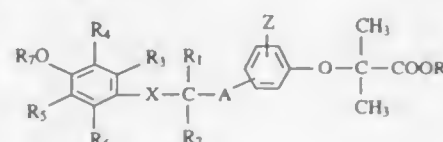
Claims priority, application France, Apr. 20, 1993, 93 04606

Int. Cl.⁶ A61K 31/215; 31/39; C07C 69/612; 59/11

U.S. Cl. 514—543

9 Claims

1. A substituted phenoxyisobutyric acid or ester selected from those of formula I:



wherein:

X represents oxygen or sulphur,

A represents a single bond or an alkylene radical having 1 to 9 carbon atoms inclusive in a straight or branched chain optionally including a double bond, a cyclopropyl radical, an oxygen atom or a carbonyl radical, or optionally substituted by halogen or hydroxy;

R represents hydrogen or alkyl having 1 to 6 carbon atoms inclusive in a straight or branched chain and optionally substituted by one or two hydroxy;

R₁ and R₂:

each simultaneously represents hydrogen, or

R₁ represents:

methyl, or

a single bond forming a double bond with the group A when that group is an alkylene radical, and in each of which two cases, R₂ simultaneously represents hydrogen;

each of R₂ and R₆, which may be identical or different, represents hydrogen or methyl;

each of R₄ and R₅, which may be identical or different, represents alkyl having 1 to 6 carbon atoms inclusive in a straight or branched chain;

R₇ represents hydrogen or CH₃CO—, C₂H₅O—CH₂—, or benzyl; and

Z represents hydrogen, halogen, or alkyl or alkoxy, each containing 1 to 5 carbon atoms inclusive in a straight or branched chain; and, when they exist, its corresponding enantiomers and diastereoisomers,

and also its physiologically-tolerable salts with suitable bases.

5,512,596

AROMATIC COMPOUNDS

Choung U. Kim, and Matthew A. Williams, both of Foster City, Calif., assignors to Gilead Sciences, Inc., Foster City, Calif.

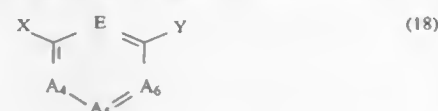
Filed Sep. 2, 1994, Ser. No. 300,607

Int. Cl.⁶ A61K 31/19; C07C 63/06

U.S. Cl. 514—568

12 Claims

1. A composition comprising a compound of the formula:



wherein:

X is H or OH;

Y is a group capable of hydrogen bonding to amino, guanidino or a group comprising an acidic hydrogen atom, a protected acidic group, or an anion;

E is CR₁, wherein R₁ is H, OH, CN, F, Cl, Br, or I;

A₄ is CR₄₀, A₆ is CH and A₅ is CZ wherein R₄₀ is NR₄₁R₄₄ wherein R₄₁ is an alkyl of 1 to 3 carbon atoms, an acyl of 2 to 3 carbon atoms, or an alkyl of 1 to 3 carbon atoms substituted with an acyl of 2 to 3 carbon atoms, and R₄₄ is H or an alkyl of 1 to 2 carbon atoms, and Z is substituted or unsubstituted amidino or guanidino groups salts and solvates thereof and a pharmaceutically acceptable carrier.

5,512,597

POLYMERIC QUATERNARY AMMONIUM COMPOUNDS AND THEIR USE AS OPHTHALMIC ANTIMICROBIALS

Evan P. Kyba, and Joon S. Park, both of Arlington, Tex., assignors to Alcon Laboratories, Inc., Fort Worth, Tex.

Continuation of Ser. No. 126,354, Sep. 24, 1993, abandoned, which is a continuation-in-part of Ser. No. 790,319, Nov. 8, 1991, abandoned. This application Jan. 13, 1995, Ser. No.

372,696

Int. Cl.⁶ A61K 31/14

U.S. Cl. 514—642

13 Claims

1. A method of disinfecting a contact lens, comprising contacting a contact lens with a composition comprising an ophthalmically acceptable vehicle and a disinfecting amount of a substantially pure form of a polymeric quaternary ammonium compound of structure:



wherein:

W=N(CH₃)₂;

X is a pharmaceutically acceptable anion; and

n is an integer from 16 to 32.

5,512,598

DIETARY VACCINE FOR INHIBITING METABOLISM OF METHANOL

Woodrow C. Monte, 542 W. 16th St., Tempe, Ariz. 85281

Continuation-in-part of Ser. No. 290,364, Dec. 29, 1988, Pat. No. 4,931,432, which is a continuation of Ser. No. 47,673, May 6, 1987, Pat. No. 4,834,981. This application Mar. 28, 1990, Ser. No. 500,129

Int. Cl.⁶ A61K 31/045; 49/00; 31/715

U.S. Cl. 514—724

17 Claims

1. A method for inhibiting the metabolism by the human body of methanol to form formaldehyde and formic acid, said method including the steps of

(a) providing a metabolic dietary vaccine, said dietary vaccine including

(i) at least one source of ethanol selected from the group class consisting of ethyl alcohol vapor and a polyethyl compound vapor, said polyethyl compound being obtained by refluxing polygalacturonide and absolute ethyl alcohol, and

- (ii) fluid carrier means for said source of ethanol; and
(b) introducing said dietary vaccine in the respiratory tract of an individual, said carrier means, when introduced in and moving along at least a selected portion of said respiratory tract, permitting the continuous absorption of ethanol into the respiratory tract and the blood stream of the individual in minor effective amounts sufficient to establish a concentration of ethanol in the blood stream, inhibit the metabolism of methanol by the individual's body, and avoid intoxication of the individual by said ethanol.

5,512,599

PROCESS FOR THE PRODUCTION OF METHANOL

Yasushi Hiramatsu; Osamu Hashimoto; Shoji Uematsu, all of Niigata, and Toshio Koseki, Tokyo, all of, Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

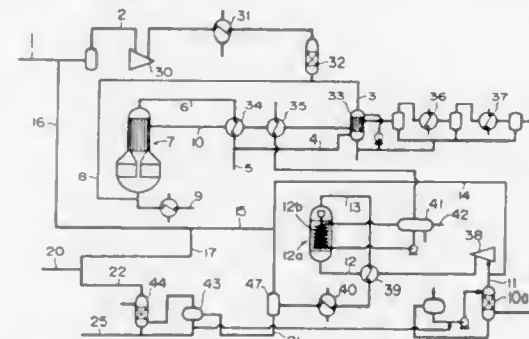
Filed Oct. 27, 1994, Ser. No. 329,828

Claims priority, application Japan, Oct. 27, 1993, 5-269117

Int. Cl.⁶ C07C 27/00

U.S. Cl. 518—703

9 Claims



1. A process for the production of methanol, comprising a primary reforming step of catalytically reacting a hydrocarbon as a raw material with steam, a partial oxidation step of gas fed from said primary reforming step by adding an oxygen gas, a secondary reforming step of catalytically reacting a gas fed from said partial oxidation step with steam, a step of using a high-temperature gas obtained from the secondary reforming reaction step as a heat source for the primary reforming step, a synthesis gas preparation step of condensing the gas used as said heat source and separating steam from the gas used as said heat source to prepare a synthesis gas, and a methanol synthesis step of introducing the synthesis gas into a methanol synthesis reactor, wherein,

the hydrocarbon as a raw material is at least one member selected from the group consisting of natural gas, liquefied propane gas and naphtha; and

part of a gas from the methanol synthesis reactor is fed as circulating gas to the methanol synthesis reactor together with the synthesis gas, a remaining part of the gas from the methanol synthesis reactor is fed as purge gas to said primary reforming step together with the hydrocarbon as a raw material, and at least one step selected from the following steps (a), (b), (c) and (d) is carried out to bring the molar ratio of hydrogen to carbon oxides in a feed gas to be introduced into the methanol synthesis reactor, represented by {H₂/(2CO+3CO₂)}, into a range of from 1.0 to 2.7 and to bring the molar ratio of CO₂/CO in the feed gas into a range of from 0.6 to 1.2:

- (a) a step of feeding the synthesis gas from which carbon dioxide gas is removed to the methanol synthesis reactor together with the circulating gas;
(b) a step of removing carbon dioxide gas from part of the purge gas, and feeding the purge gas from which the carbon dioxide is removed into the methanol synthesis reactor together with the synthesis gas and the circulating gas;
(c) a step of cooling the gas from the methanol synthesis reactor to separate it into a crude methanol in which carbon dioxide gas is dissolved and a gas, and feeding the gas to

- the methanol synthesis reactor as the circulating gas together with the synthesis gas; and
(d) a step of recovering hydrogen from part of the purge gas, and feeding the hydrogen to the methanol synthesis reactor together with the synthesis gas and the circulating gas.

5,512,600

PREPARATION OF BONDED FIBER STRUCTURES FOR CELL IMPLANTATION

Antonios G. Mikos, Houston, Tex., and Robert S. Langer, Newton, Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Jan. 15, 1993, Ser. No. 5,910

Int. Cl.⁶ C08K 9/00

5 Claims

1. A method for making a polymeric matrix suitable for culturing cells comprising providing fibers formed of a first polymer, placing the fibers in a solution of a second polymer, wherein the polymers are synthetic, biocompatible polymers, the second polymer is dissolved in a solvent that is a non-solvent for the first polymer and the melting point of the first polymer is less than the melting point of the second polymer, solidifying the second polymer by removing the solvent to form a matrix of the second polymer around the fibers formed of the first polymer, heating the fiber-matrix to a temperature at which the first polymer melts and maintaining the temperature until the first polymer at the fiber interfaces melts, cooling the first polymer until it solidifies, and dissolving the second polymer and removing the dissolved polymer to leave fibers formed of the first polymer immobilized and bonded at the fiber interfaces.

5,512,601

PROCESS AND APPARATUS FOR EXTRUDING A LOW DENSITY ELASTOMERIC THERMOPLASTIC FOAM

Louis Halberstadt, Andover; Peter E. Martinook, Amesbury, both of Mass.; Joseph V. Perry, Chester, N.H., and Dan C. Muessel, Danvers, Mass., assignors to Amesbury Group Inc., Amesbury, Mass.

Division of Ser. No. 394,597, Feb. 27, 1995, which is a division of Ser. No. 255,324, Jun. 7, 1994, Pat. No. 5,393,796, which is a continuation of Ser. No. 924,405, Aug. 3, 1992, which is a continuation of Ser. No. 378,003, Jul. 11, 1989, which is a division of Ser. No. 121,805, Nov. 17, 1987, Pat. No. 4,898,760. This application Jun. 2, 1995, Ser. No. 460,386

Int. Cl.⁶ C08J 9/04

U.S. Cl. 521—79

10 Claims

1. A method of extruding a soft, low density elastomeric thermoplastic foam in a single screw extruder having a screw disposed in an extruder barrel, the method comprising the steps of:
a) selecting a foamable thermoplastic elastomer having a Shore A hardness of approximately 65 or less and comprising a blend of a polyolefin resin and a vulcanized monoolefin copolymer rubber;
b) feeding said thermoplastic elastomer into the extruder barrel;
c) compressing and melting said thermoplastic elastomer within said extruder barrel;
d) introducing a blowing agent into the melted resin early enough to permit extended mixing;
e) preventing the backflow of said blowing agent;
f) mixing the melted thermoplastic elastomer and the blowing agent for an extended period to obtain a uniform mixture;
g) cooling the uniform mixture to a predetermined temperature; and
h) forcing the uniform mixture through a die to form an extruded foam profile having a density of less than approximately 20 lbs/ft³.

5,512,602

PREPARATION OF POLYURETHANE FOAMS

Peter Horn, Heidelberg; Werner Ilitz, Frankenthal, and Ludwig Jung, Mammendorf/Obb., all of, Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany
 Filed Mar. 11, 1994, Ser. No. 212,403
 Int. Cl.⁶ C08J 9/06; C08K 5/16

U.S. Cl. 521—114

43 Claims

1. A process for the preparation of polyurethane foams by reacting

- organic polyisocyanates with
- polyhydroxyl compounds containing at least 2 reactive hydrogen atoms and
- crosslinking agents, in the presence of
- blowing agents,
- optionally catalysts,
- additives and
- optionally auxiliaries,

wherein the crosslinking agents (c) comprise at least one polyoxyalkylene-polyol having a functionality of from 3 to 8, a hydroxyl number of from 200 to 1300 and a content of alkali metal ions of from 150 to 1200 ppm, and the additive (f) comprises an inorganic and/or organic acid.

5,512,603

HYDROXY AND AMINO FUNCTIONAL PYRROLIZIDINE CATALYST COMPOSITIONS FOR THE PRODUCTION OF POLYURETHANES

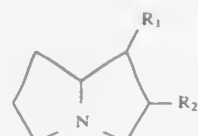
Richard V. C. Carr; Kevin R. Lassila, both of Allentown; Mark L. Listemann, Whitehall; Lisa A. Mercado, Pennsburg; Kristen E. Minnich, Allentown; Ann C. L. Savoca, Bernville, and Amy L. Wressell, Allentown, all of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.
 Filed Feb. 22, 1994, Ser. No. 199,396

Int. Cl.⁶ C08J 9/04; C08G 18/20; 18/30; 18/32; C07D 251/34; C07C 269/02; 273/02

U.S. Cl. 521—118

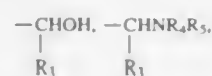
20 Claims

1. In a method for catalyzing the trimerization reaction of a polyisocyanate or the reaction of a polyisocyanate with an active hydrogen containing compound, the improvement which comprises using a catalytically effective amount of a compound of the formula:



where

R₁ and R₂ independently are —H, —OH,



or —NR₄R₅.

R₃ is hydrogen, a C₁–C₁₂ alkyl, C₅–C₆ cycloalkyl, C₆–C₁₀ aryl, or C₇–C₁₁ arylalkyl group, and

R₄ and R₅ independently represent H, a C₁–C₁₂ alkyl group, C₅–C₆ cycloalkyl, C₆–C₁₀ aryl, or C₇–C₁₁ arylalkyl group, provided that at least one of R₁ and R₂ is not hydrogen.

5,512,604

POROUS COPOLYMERS HAVING A CELLULAR POLYMERIC STRUCTURE SUITABLE FOR PREPARING ION-EXCHANGE RESINS AND ADSORBENTS

Tom N. Demopolis, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.
 Filed Aug. 28, 1992, Ser. No. 937,800
 Int. Cl.⁶ C08F 14/00; C08J 5/20

U.S. Cl. 521—142

18 Claims

1. A suspension polymerization process for preparing porous copolymer beads having a cellular polymeric pore structure wherein a macroporous void phase is dispersed within a continuous copolymer phase, the void phase comprising a plurality of cellular void spaces having diameters of from about 100 to about 2000 angstroms (Å) which are at least partially enclosed by walls of the continuous copolymer phase which comprises contacting in the polymerizable monomer phase at least one monovinylidene monomer a crosslinking monomer in an amount of from about 0.3 to about 5 weight percent based on total monomer weight, at least one free-radical polymerization initiator in an amount of from about 0.025 to about 2 weight percent based on the monomer weight, and a phase-separating diluent present in an amount of from about 30 to about 80 weight percent based on weight of monomer and diluent at a temperature from about 95° to about 140° C.

5,512,605

ONE-PART UV-CURABLE EPOXY SILICONE COMPOSITIONS

Richard P. Eckberg, Saratoga Springs, and Michael J. O'Brien, Clifton Park, both of N.Y., assignors to General Electric Company, Waterford, N.Y.

Division of Ser. No. 904,347, Jun. 25, 1992, Pat. No. 5,411,996.
 This application Dec. 28, 1994, Ser. No. 365,717
 Int. Cl.⁶ C08F 2/50; C08G 59/62; 59/00; C08L 83/12

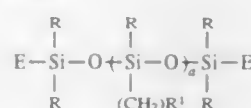
U.S. Cl. 522—31

9 Claims

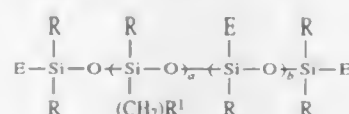
1. An ultraviolet radiation-curable epoxy-functional silicone composition comprising:

(A) an epoxy-functional silicone selected from the group consisting of:

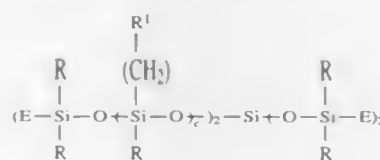
(I) linear epoxy-functional silicones having the general formula:



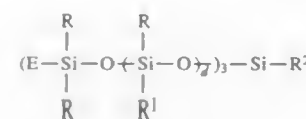
(II) linear epoxy-functional silicones having the general formula:



(III) resinous epoxy-functional silicones having the general formula:



(IV) resinous epoxy-functional silicones having the general formula:



wherein E represents an epoxy-functional group of from about 2 to 20 carbon atoms, R represents an alkyl radical having from 1 to about 10 carbon atoms, R¹ represents a hydrogen atom or an alkyl or perfluoroalkyl radical having from 1 to about 8 carbon atoms, R² represents an alkyl radical having from 1 to about 10 carbon atoms, "a" represents a number from 0 to about 400, "b" represents a number from 1 to about 100, "c" represents a number from 0 to about 100, and "d" represents a number from 0 to about 100;

(D) a co-curable fluoro-containing organic molecule wherein said fluoro containing organic molecule is miscible with both said epoxy-functional silicone (A) and a sulfonium salt photocatalyst; and

(E) a catalytic amount of a sulfonium salt photocatalyst whereby said composition is curable upon exposure to ultraviolet radiation; whereby said composition has a shelf stability of at least seven weeks at room temperature.

5,512,606

PHOTO-CROSSLINKABLE POLYAMIDE MATERIALS

Norman S. Allen, Halliwell, and John P. Hurley, Didsbury, both of, Great Britain

PCT No. PCT/GB92/01889, § 371 Date Aug. 16, 1994, § 102(e)
 Date Aug. 16, 1994, PCT Pub. No. WO93/09471, PCT Pub. Date May 13, 1993

PCT Filed Oct. 15, 1992, Ser. No. 232,138

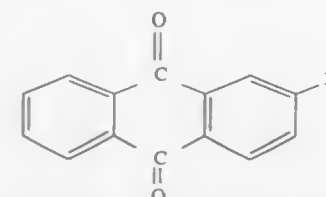
Claims priority, application United Kingdom, Oct. 30, 1991, 9122989

Int. Cl.⁶ C08F 2/50; C08L 77/02; 77/06

U.S. Cl. 522—048

3 Claims

1. A photo-crosslinkable material comprising a linear polyamide selected from the group consisting of polyhexamethylene adipamide and polycaprolactam and a 2-substituted anthraquinone as a photo-crosslinking agent, said 2-substituted anthraquinone having the formula:



where X is selected from a group consisting of NHC(O)CH=CH₂, OC(O)CH=CH₂, OC(O)C(CH₃)=CH₂ and NHC(O)C₆H₅.

5,512,607

UNSATURATED EPOXY ESTER WITH QUATERNARY AMMONIUM AND PHOSPHATE GROUPS

Keiichi Kinashi, Hiroshi Samukawa, and Reiko Chiba, all of Kanagawa, Japan, assignors to W. R. Grace & Co.-Conn., New York, N.Y.

Filed Jun. 6, 1995, Ser. No. 469,308

Int. Cl.⁶ G03F 7/004

U.S. Cl. 522—100

3 Claims

1. A photosensitive resin composition which comprises a photosensitive unsaturated ester compound containing unsaturated ester groups and quaternary ammonium salt groups having phosphate anions, and a photopolymerization initiator, the photosensitive unsaturated ester compound being prepared by reacting an epoxy compound having at least two epoxy side groups in its molecule

with a polymerizable monocarboxylic acid having one carboxyl group and one ethylenically unsaturated bond in its molecule, thereby esterifying some of the epoxy side groups to prepare an unsaturated epoxyester compound having unsaturated ester groups and unreacted epoxy side groups, and then reacting the unreacted epoxy groups of the epoxyester compound with a tertiary amine as well as phosphoric acid, a monoester of phosphoric acid or a diester of phosphoric acid or a combination thereof.

5,512,608

METHOD FOR PRODUCING AN ADHERENT DEPOSIT USING A CHEMICALLY ACTIVATED MULTI-PART, SOLVENT-FREE COMPOSITION

Andrew G. Bachmann, Harwinton, and Stephen E. Cantor, Cheshire, both of Conn., assignors to Dymax Corporation, Torrington, Conn.

Division of Ser. No. 26,814, Mar. 5, 1993, Pat. No. 5,385,958.
 This application Jan. 27, 1995, Ser. No. 379,746

Int. Cl.⁶ C09J 5/00; 161/32; 175/14

U.S. Cl. 522—170

23 Claims

1. A method of using a multi-part composition for bonding surfaces to one another, the steps comprising:

- (1) providing a multi-part composition that cures by chemical activation to an adhesive solid, comprising: a polymerizable formulation including at least one polymerizable liquid acrylate ingredient; and an activating formulation including about 2 to 80 percent by weight of a free radical-initiating ingredient that is capable of generating free radicals when reacted with an active oxygen compound and, conversely, about 20 to 98 percent by weight of a reactive diluent, 20 to 100 weight percent of said diluent being a liquid vinyl ether compound and any remaining weight percentage thereof being a liquid epoxy compound, said composition further including an active oxygen compound that is reactive with said initiating ingredient to generate free radicals; and
- (2) applying said formulations to at least one surface that is to be bonded; and
- (3) bringing another surface that is to be bonded into substantial contact with said one surface under such conditions as to effect admixture of said formulations between said surfaces.

5,512,609

REINFORCED COMPOSITIONS AND LENS BODIES MADE FROM SAME

Shih-Liang S. Yang, Laguna Hills, Calif., assignor to Allergan, Inc., Irvine, Calif.

Continuation-in-part of Ser. No. 48,092, Apr. 15, 1993, abandoned, which is a division of Ser. No. 868,412, Apr. 14, 1992, Pat. No. 5,233,007. This application Feb. 9, 1994, Ser. No. 193,966

Int. Cl.⁶ G02C 7/04; C08L 83/05; 83/07

U.S. Cl. 523—107

20 Claims

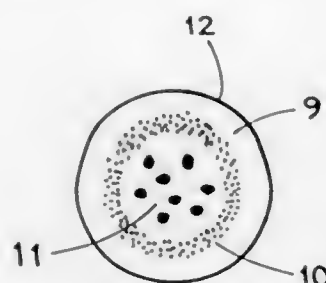
1. A lens body for use in or on a mammalian eye comprising: in elastomeric composition including a major amount by weight of a cross-linked copolymer component derived from monomers comprising (1) at least one polysiloxane including aryl-containing substituents and (2) a cross-linker component selected from the group consisting of polyorganosiloxanes and mixtures thereof; and

a polymeric resin component selected from the group consisting of silicon-based resins including organic groups and mixtures thereof in an amount effective to increase the strength of said elastomeric composition relative to an identical composition without said polymeric resin component, said lens body being optically clear, said cross-linked copolymer component and said polymeric resin component each having an index of refraction of at least about 1.46, and said lens body being silica-free.

5,512,610

BONE CEMENT COMPOSITION

Steve T. Lin, Fort Wayne, Ind., assignor to Zimmer, Inc., Warsaw, Ind.
Continuation-in-part of Ser. No. 921,030, Jul. 28, 1992, Pat. No. 5,334,626. This application Jul. 27, 1994, Ser. No. 281,326
Int. Cl.⁶ A61K 6/08; A61F 2/00; B05D 1/36; 7/00
U.S. Cl. 523—116 11 Claims



1. A bone cement having a dry component and a liquid component, the dry component comprising:

polymer beads, at least some of the beads containing a first additive and at least some of the beads containing a second additive;

means for selectively retaining the first additive within beads containing the first additive; and
means for selectively releasing the second additive from beads containing the second additive.

5,512,611

CEMENTS FROM β -DICARBONYL POLYMERS

Sumita B. Mitra, West St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Continuation of Ser. No. 29,124, Mar. 10, 1993, Pat. No. 5,378,785, which is a division of Ser. No. 843,420, Feb. 27, 1992, Pat. No. 5,227,413. This application Aug. 30, 1994, Ser. No. 298,469
Int. Cl.⁶ A61K 6/087 16 Claims

U.S. Cl. 523—116

1. A dental inomer cement system, comprising: a polymer having a weight average molecular weight of at least 1,000 and comprising one or more pendent β -dicarbonyl groups capable of undergoing a setting reaction in the presence of water and a reactive powder, and one or more polymerizable groups capable of crosslinking said polymer; and a reactive powder.

5,512,612

PRESSURE SENSITIVE ADHESIVE EMPLOYING A WATER-DISPERSIBLE POLYMER AND ARTICLES MADE THEREFROM

Mary L. Brown, St. Paul; Richard J. Goetz, Woodbury; Cheryl L. Moore, Afton, and Donald R. Battles, Arden Hills, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Apr. 4, 1994, Ser. No. 222,458
Int. Cl.⁶ C08K 7/22; C08F 265/06; 20/10; 267/06

U.S. Cl. 523—218

1. A water dispersible, normally tacky pressure sensitive adhesive composition comprising a blend of:

A) a polymeric, elastomeric, solvent insoluble but solvent dispersible microparticle component, and

B) a water-dispersible polymeric component, wherein said adhesive composition is repulpable when tested according to TAPPI test UM-213.

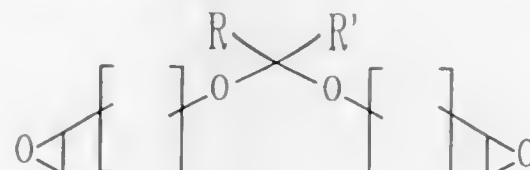
5,512,613

CLEAVABLE DIEPOXIDE FOR REMOVABLE EPOXY COMPOSITIONS

All Afzali-Ardakani, Yorktown Heights; Stephen L. Buchwalter, Hopewell Junction, both of N.Y.; Jeffrey D. Gelorme, Plainville, Conn.; Laura L. Kosbar, Mohegan Lake, N.Y.; Bert H. Newman, Carmel, N.Y., and Frank L. Pompeo, Walden, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Continuation-in-part of Ser. No. 755,253, Sep. 5, 1991, abandoned. This application Mar. 18, 1994, Ser. No. 210,879
Int. Cl.⁶ C08G 59/00; 63/00

U.S. Cl. 523—443

11 Claims



1. A cured diepoxide composition which is capable of being readily cleaved and removed in acidic solvents, comprising the reaction product of: a diepoxide in which the organic linking moiety which is the connection between the two epoxy groups of the diepoxide includes an acyclic acetal group; a cyclic dicarboxylic anhydride curing agent or mixture of cyclic dicarboxylic acid anhydride curing agents present at a concentration such that the anhydride/diepoxide ratio of equivalents is less than or equal to 0.90; a 1,3-diaza compound having two nitrogen atoms present with one nitrogen atom doubly bonded to a central carbon and singly bonded to one other carbon, and the other nitrogen atom singly bonded to the central carbon and singly bonded to two other carbons, said 1,3-diaza compound serving either as the sole catalyst or in combination with a tertiary amine catalyst which is different from said diaza compound; and a hydroxy functional initiator.

5,512,614

BINDER MIXTURES FOR STOVING LACQUERS

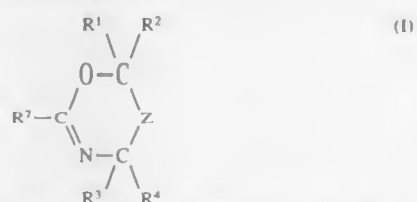
Ulrich Elcken, Korschbroich; Herbert Fischer, Duesseldorf; Wolfgang Gress, Wuppertal; Ulrich Nagorny, Hilden, and Norbert Stork, Duesseldorf, all of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Germany
Filed Feb. 13, 1995, Ser. No. 381,899
Claims priority, application Germany, Aug. 13, 1992, 42 26 805.2

Int. Cl.⁶ C09D 167/08; 179/02
U.S. Cl. 523—501 18 Claims

1. A stoving lacquer comprising
I) an effective quantity of a crosslinking agent containing methylol and/or blocked methylol groups; and
II) an effective quantity of a binder mixture comprising

A) at least one alkyd resin; and
B) at least one poly-N-acyl alkyleneimine prepared by cationic polymerization of a monomer mixture of

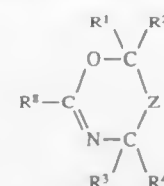
a) from 10 to 90% by weight of at least one monomer corresponding to formula (I):



in which Z is a direct bond or the group CR⁵R⁶, R¹ to R⁴ can be the same or different and represent H or a C₁₋₈ alkyl group, R⁵ and

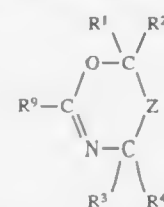
R⁶ can be the same or different and R⁷ is a hydroxyl-containing alkyl or alkylene group of a hydroxycarboxylic acid containing 2 to 32 carbon atoms.

b) from 90 to 10% by weight of at least one monomer corresponding to formula (II):



in which Z and R¹ to R⁶ are as defined above and R⁸ is the radical of an aromatic monocarboxylic acid, and

c) from 0 to 80% by weight of at least one monomer corresponding to formula (III):



in which Z and R¹ to R⁶ are as defined for formula (I), and R⁹ represents a non-hydroxy-substituted aliphatic radical of a carboxylic acid wherein the above percentages by weight are based on the weight of the monomer mixture.

5,512,615

SILICONE BINDER MATERIAL AND PRODUCTS FORMED THEREFROM

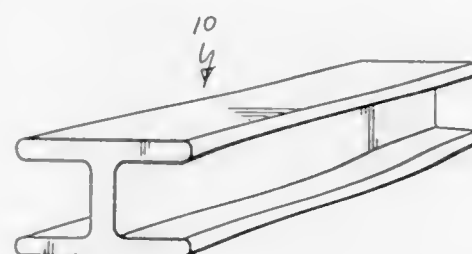
Thomas O. Olsen, Wichita, Kans., assignor to Tamko Roofing Products, Inc., Joplin, Mo.
Division of Ser. No. 804,963, Dec. 11, 1991, Pat. No. 5,338,783.

This application Aug. 12, 1994, Ser. No. 289,658

Int. Cl.⁶ C08K 3/00

U.S. Cl. 524—3

8 Claims



1. A composition comprising:

a RTV silicone rubber in an amount of between 2 and 20% by weight of the total weight of the composition;

a solvent capable of solubilizing said RTV silicone rubber, said solvent being present in an amount of between 0 and 50% by weight of the total weight of the composition;

silicon dioxide in an amount of between 5 and 35% by weight of the total weight of the composition; and

a quantity of cellulosic fibers in an amount of between 40 and 90% by weight of the total weight of the composition.

5,512,616

TAPE JOINT COMPOUND COMPOSITION USING UNBORATED HYDROXYPROPYL GUAR

Thomas J. Podlas, Hockessin, Del., assignor to Aqualon Company, Wilmington, Del.

Filed May 31, 1994, Ser. No. 251,160

Int. Cl.⁶ C08L 3/02

U.S. Cl. 524—18

22 Claims

1. In an improved joint compound composition having limestone, clay, binder, water, and a thickener as the main ingredients, the improvement comprising using from about 0.2 to about 0.9%, by weight based on the dry ingredients, of a thickener system selected from the group consisting of (i) an unbored hydroxypropylguar having less than 200 ppm of borate present and (ii) a blend of an unbored hydroxypropylguar and 1–3% of a cellulose ether.

5,512,617

THERMOPLASTICALLY PROCESSABLE STARCH-BASED MATERIALS, SHAPED ARTICLES MANUFACTURED THEREFROM AND PROCESS FOR PRODUCING SAID MATERIALS

Wolfgang Ritter, Haan, and Michael Beck, Duesseldorf, both of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Germany

PCT No. PCT/EP93/00673, § 371 Date Sep. 16, 1994, § 102(e) Date Sep. 16, 1994, PCT Pub. No. WO93/19124, PCT Pub. Date Sep. 30, 1993

PCT Filed Mar. 19, 1993, Ser. No. 307,597

Claims priority, application Germany, Mar. 20, 1992, 42 09 095.4

Int. Cl.⁶ C08L 3/00; B29B 7/00; B29C 47/36; B28B 3/20
U.S. Cl. 524—47 44 Claims

1. A thermoplastically deformable composition comprising a mixture of a thermomechanically digested starch and an oxidatively reactive cross-linking alkyd resin said mixture being the product of a process comprising: thermomechanically digesting starch at a temperature from above 100° C. to about 170° C. and at least the intrinsic pressure of the mixture in admixture with a first material selected from the group consisting of water, lower molecular weight plasticizer, and mixtures thereof, and a second material comprised of an oxidatively reactive cross-linking alkyd resin.

5,512,618

SUSPENSION-ENHANCING ADHESIVE ADDITIVE FOR PAPER MANUFACTURING, LIQUID ADHESIVE COMPOSITION USING SAME, AND METHOD OF PREPARING LIQUID ADHESIVE COMPOSITION

Frederick G. Duerr, Walla Walla, Wash., assignor to Enviro-Chem, Inc., Walla Walla, Wash.

Continuation of Ser. No. 58,448, May 7, 1993, abandoned.

This application Dec. 27, 1994, Ser. No. 369,119

Int. Cl.⁶ C08L 3/00; 89/00; C08K 5/06; B32B 7/12

U.S. Cl. 524—47

4 Claims

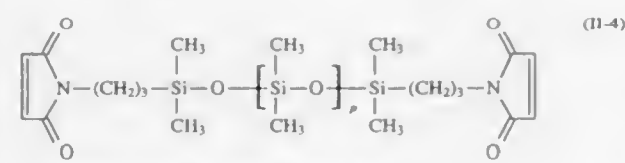
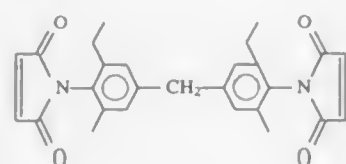
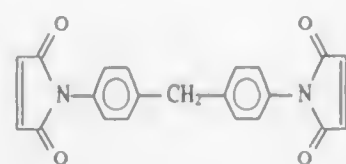
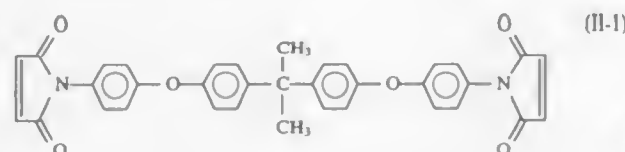
1. A liquid adhesive composition for manufacturing corrugated paperboard, consisting essentially of:

an effective amount of a starch whose chemical composition is characterized by having a substantially straight-chain configuration;

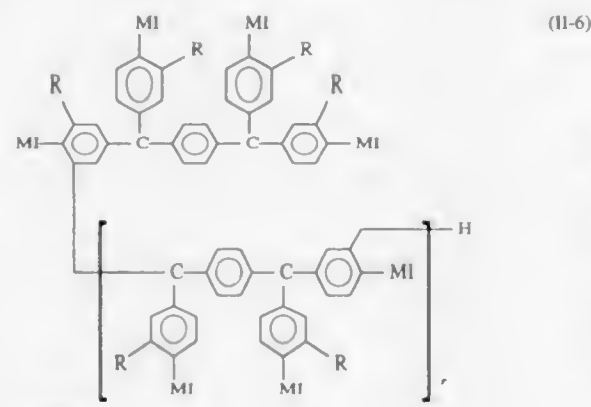
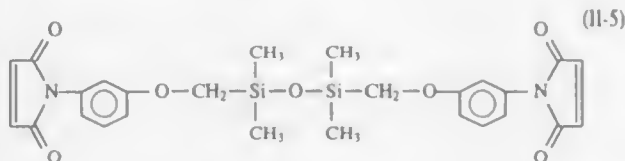
a suspension-enhancing agent which includes a synthetic liquid polymer component that is a copolymer based upon an acrylic-acid monomer and an aromatic monomer substituted with an acrylate compound, and includes an effective amount of the alcohol-ester coalescing agent 2,2,4-trimethyl-1,3-pentanediol mono(2-methylpropanoate), and which polymer component is emulsifiable in the composition, and is capable of enhancing suspension of such starch;

water; and
with the overall composition including between 0.5%–1.0% by weight of the suspension-enhancing agent, between

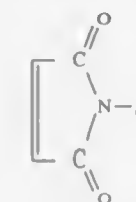
(b) a compound having at least two maleimide groups selected from the compounds represented by the following formulae (II-1) to (II-6):



wherein p is an integer of from 0 to 7



wherein



R=H or CH₃, and n=1-5, in an organic solvent, the ratio of component (b) based on 100 parts by weight of component (a) being in the range of 10 to 900 parts by weight.

5,512,629

AQUEOUS POLYMER DISPERSIONS

Wilhelm F. Beckerle, Bobenheim-Roxheim; Rolf Petri, Frankfurt; Bernhard Dotzauer, Maxdorf; Manfred Schwartz, Ludwigshafen, and Maximilian Angel, Schifferstadt, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Filed May 20, 1994, Ser. No. 246,828

Claims priority, application Germany, May 21, 1993, 43 17 035.8

Int. Cl.⁶ C08L 35/06

U.S. Cl. 524-819

16 Claims

(II-2) 1. A mineral building material comprising: a cement-containing mineral binder, and a polymer dispersion in aqueous or dried form, wherein

said polymer dispersion is obtained by polymerizing a monomer mixture comprising

(a) from 70 to 85% by weight of at least one monomer selected from the group consisting of styrene, vinyltoluene, nitriles of α,β -monoethylenically unsaturated carboxylic acids of 3 to 6 carbon atoms and esters of α,β -monoethylenically unsaturated carboxylic acids of 3 to 6 carbon atoms and alkanols of 1 to 12 carbon atoms

(b) from 15 to 25% by weight of at least one α,β -monoethylenically unsaturated carboxylic acid of 3 to 6 carbon atoms of amides thereof and

(c) from 0 to 5% by weight of other copolymerizable monomers

by aqueous free radical emulsion polymerization with the proviso that

component (b) comprises at least 50% by weight, based on the total amount of component (b), of methacrylic acid;

and that components (a), (b) and (c) chosen so that a glass transition temperature of the resulting polymer is from 80° to 160° C. according to the Fox relationship for an emulsion polymer composed of these components;

and that the K value of the resulting emulsion polymer, determined in its fully acidic form in dimethylformamide at 23° C. and an emulsion polymer content of 0.1% by weight, being from 15 to 40, and wherein said aqueous polymer dispersion is optionally dried.

5,512,630

MACROMONOMERS HAVING REACTIVE SIDE GROUPS

Robert R. Gagné, Pasadena; Matthew L. Marrocco, III, Santa Ana; Mark S. Trimmer, Pasadena, and Neil H. Hendricks, Brea, all of Calif., assignors to Maxdem Incorporated, San Dimas, Calif.

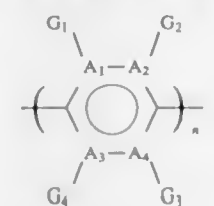
Division of Ser. No. 746,883, Aug. 19, 1991. This application Jun. 2, 1995, Ser. No. 458,976

Int. Cl.⁶ C08G 61/00

U.S. Cl. 525-50

12 Claims

1. A method of producing reinforced polymers, comprising copolymerizing macromonomers having the structure:



wherein each A₁, A₂, A₃, and A₄, on each monomer unit, independently, is C or N; each G₁, G₂, G₃, and G₄, on each monomer unit, independently, is selected from the group consisting of H, solubilizing side groups, reactive side groups, and reactive solubilizing side groups, provided that (1) at least one monomer unit has at least one solubilizing side group and at least one reactive side group, or (2) at least one monomer unit has at least one reactive

solubilizing side group, and provided that when any of A₁, A₂, A₃, and A₄ is N, the corresponding G₁, G₂, G₃, or G₄ is nil; the macromonomer has a degree of polymerization, DP_n, greater than about 6; and adjacent monomer units are oriented head-to-head, head-to-tail, or randomly; with one or more monomers.

5,512,631

TRANSPARENT BLEND COMPOSITIONS CONTAINING GRAFT COPOLYMERS OF (THIOAROMATIC) ALKYLATE RUBBER SUBSTRATES

Ronald L. Jalbert, Parkersburg, W. Va.; David V. Howe, Glen Ellyn, Ill.; Robert E. Harris, Washington, W. Va., and Robert R. Gallucci, Mt. Vernon, Ind., assignors to General Electric Company, Pittsfield, Mass.

Division of Ser. No. 920,695, Jul. 28, 1992, Pat. No. 5,274,044. This application Nov. 12, 1993, Ser. No. 152,801

Int. Cl.⁶ C08L 69/00; 77/00

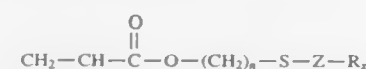
U.S. Cl. 525-66

15 Claims

1. A composition comprising:

(a) a thermoplastic polymer selected from the group consisting of polycarbonates, copolycarbonates, amorphous polyamides, and mixtures thereof, wherein the thermoplastic polymer has a refractive index greater than 1.55; and

(b) a graft copolymer comprising a rubber substrate and a grafted portion, the rubber substrate being formed from a least one monomer of Formula I



wherein Z is an aromatic group, each R is individually selected from the group consisting of alkyl groups of from 1 to about 12 carbon atoms, thioalkyl groups of from 1 to about 12 carbon atoms, and halogen atoms, n is from 1 to about 6, and x is from 0 to 7, and optionally at least one monomer selected from the group consisting of butadiene and C₃-C₈ alkyl acrylates, and the grafted portion being formed from at least one monomer selected from the group consisting of styrene, halogen-substituted styrene, alkyl-substituted styrene, and mixtures thereof; and wherein the rubber substrate has a glass transition temperature (T_g) of not greater than 0° C. and a refractive index of greater than 1.55, and the graft portion has a refractive index of greater than 1.5; and

wherein the refractive index differs between component (a) and component (b) is not greater than about 0.025.

5,512,632

THERMOPLASTIC BLENDS CONTAINING POLYESTERS AND POLYESTER CARBONATES BASED ON SUBSTITUTED CYCLOALKYLIDENE BISPHENOLS

Volker Serini; Dieter Freitag, both of Krefeld, and Ulrich Grign, Kempen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Continuation of Ser. No. 584,564, Sep. 18, 1990, abandoned.

This application Mar. 3, 1993, Ser. No. 25,702

Claims priority, application Germany, Sep. 23, 1989, 39 31 771.4

Int. Cl.⁶ C08L 67/03

U.S. Cl. 525-67

2 Claims

1. A thermoplastic molding composition comprising a blend of A) 1 to 99% by weight of a polyester carbonate derived from

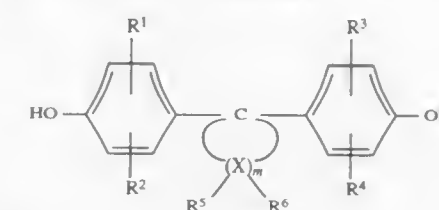
a) aromatic diphenols,

b1) at least one member selected from the group consisting of aliphatic acid, cycloaliphatic acid and aromatic dicarboxylic acid, and

b2) carbonic acid

wherein said b1) is present in an amount of more than about 0.1 mol-percent and wherein said b2) is present in an amount of up to 99.9 mol-percent, said percent being relative to the total molar

amount b1) and b2) and wherein 0.1 to 100 mol-% of said a) consists of diphenols corresponding to



in which

R¹, R², R³ and R⁴ independently represent a hydrogen atom, a C₁₋₂ hydrocarbon radical or a halogen atom,

m is an integer of 4 to 5,

R⁵ and R⁶ are individually selected for each X and, independently of one another, represent a hydrogen atom or a C₁₋₆ alkyl radical and

X is carbon,

with the proviso that at least one atom X, R⁵ and R⁶ are both alkyl radicals, and at least one member selected from the group consisting of

B) 0 to 99% by weight of an amorphous thermoplastic resin

which is different from (A) and which has a glass transition temperature of 40° to 300° C.,

C) 0 to 99% by weight of a crystalline thermoplastic resin having a melting temperature of 60° to 400° C.,

D) 0 to 99% by weight of a rubber, and

E) 0 to 99% by weight of a graft polymer of at least one rubber with at least one grafted-on polymer of at least one monomer from the group consisting of vinyl compounds, acrylic and methacrylic compounds and maleic acid derivatives,

in which the sum of A), B), C), D) and E) is 100% by weight.

5,512,633

UNSATURATED POLYESTER RESINS FROM COPOLYMERS OF ALLYL ALCOHOL PROPOXYLATES AND VINYL AROMATIC MONOMERS

Shao-Hua Guo, West Chester, Pa., assignor to Arco Chemical Technology, L.P., Greenville, Del.

Division of Ser. No. 249,106, May 26, 1994, Pat. No. 5,451,631, which is a division of Ser. No. 98,114, Jul. 28, 1993, Pat. No. 5,382,642. This application Apr. 12, 1995, Ser. No. 420,387

Int. Cl.⁶ C08F 8/00

U.S. Cl. 525-170

6 Claims

1. An unsaturated polyester resin composition which comprises the reaction product of:

(a) an anhydride;

(b) optionally, a glycol; and

(c) a copolymer which comprises recurring units of:

(i) a vinyl aromatic monomer; and

(ii) a propoxylated allyl alcohol of the formula:



in which A is an oxypropylene group, and n, which is the average number of oxypropylene groups in the propoxylated allyl alcohol, has a value less than or equal to 2; and wherein the copolymer has a hydroxyl number within the range of about 80 mg KOH/g to about 260 mg KOH/g, and a number average molecular weight within the range of about 500 to about 3500, and wherein the mole ratio of vinyl aromatic monomer to propoxylated allyl alcohol recurring units in the copolymer is within the range of about 50:50 to about 75:25.

5,512,634
RESIN COMPOSITION

Toru Dol, Mle, Japan, assignor to Tosoh Corporation, Yamaguchi, Japan

Division of Ser. No. 967,879, Oct. 29, 1992, Pat. No. 5,424,830.

This application Jun. 21, 1994, Ser. No. 262,830

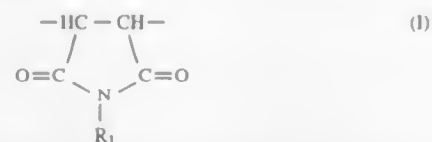
Claims priority, application Japan, Oct. 31, 1991, 3-311355; Oct. 31, 1991, 3-311356; Oct. 31, 1991, 3-311357; Nov. 22, 1991, 3-332947

Int. Cl.⁶ C08L 79/00; 39/00

U.S. Cl. 525—182

5 Claims

1. A heat-resistant resin composition consisting essentially of:
(a) 1 to 99% by weight of a resin containing 30 to 98 mole % of the component (I):



wherein R₁ is an alkyl group having 1 to 18 carbon atoms or a cycloalkyl group having 3 to 12 carbon atoms and 70 to 2 mole % of component II:



wherein R₂ is hydrogen or an alkyl group having 1 to 8 carbon atoms, and R₃ and R₄ are independently alkyl groups having 1 to 8 carbon atoms,

where both I and II are each contained in the whole polymer, its weight-average molecular weight converted into that of polystyrene being 1×10³ to 5×10⁶,

(b) 0 to 40% by weight of an elastomer; and

(c) 1 to 99% by weight of a polyamide resin.

5,512,635
PROCESS FOR PREPARING LINEAR
MONOFUNCTIONAL AND TELECHELIC
DIFUNCTIONAL POLYMERS AND COMPOSITIONS
OBTAINED THEREBY

Philip O. Nubel; Howard B. Yokelson; Steven A. Cohen, all of Naperville; Raymond T. Behrends, Lombard; William G. Bouslog, and James P. Nelson, both of Naperville, all of Ill., assignors to Amoco Corporation, Chicago, Ill.

Continuation-in-part of Ser. No. 68,236, May 27, 1993, Pat. No. 5,403,904, and a continuation-in-part of Ser. No. 68,240, May 27, 1993. This application Dec. 15, 1993, Ser. No. 167,668

The portion of the term of this patent subsequent to Apr. 4, 2012, has been disclaimed.

Int. Cl.⁶ C08F 4/69

U.S. Cl. 525—247

10 Claims

1. A process for the preparation of a linear telechelic difunctional unsaturated polymer having at least one internal carbon-to-carbon double bond and containing terminal functional reactive groups other than vinyl groups, from olefinic compound reactants in a process comprising:

(i) reaction (A) comprising an olefin metathesis reaction of acyclic linear olefinic compound reactants comprising at least one of said acyclic olefinic compounds containing up to 30 carbon atoms and containing at least one functional reactive group selected from reactive moieties consisting of a nitrile, ester, acyl halide, ketone, aldehyde, borane, amide, acid anhydride, ether, imide, and halogen atom moieties, and a substituted aryl group containing up to an additional 30 carbon atoms, the substituents of said substituted aryl group comprising at least one reactive substituent of said functional reactive group of moieties, and combinations of said reactive moieties, to prepare a linear functional olefinic compound product

having at least one functional terminal reactive moiety, and an olefinic compound co-product of lower molecular weight than said one of acyclic linear olefinic compound reactants, and to (ii) reaction (B) comprising a ring-opening polymerization of a cyclic olefin in the presence of a linear functional olefinic compound having at least one functional terminal reactive moiety consisting of the linear functional olefinic compound product or reaction (A), prepare a polymer comprising a linear telechelic difunctional unsaturated polymer, and,

wherein said reactions (A) and (B) are metathesis reactions in the presence of a catalyst composition comprising a metathesis catalyst (a) comprising a transition metal compound selected from the group consisting of halides, oxyhalides, oxides and organic ammonium salts; an activator (b) selected from the group consisting of organic tin compounds, alkylaluminum halides, alkoxyalkylaluminum halides and aryloxy-alkylaluminum halides, and an organic Lewis base (c), said metathesis catalyst (a) is present in an amount of from about 0.01 to about 50 millimoles per mole of said reactants, activator (b) is present in a molar ratio to metathesis catalyst (a) of from about 0.001:1 to about 200:1, and organic Lewis base (c) is present in a molar ratio to metathesis catalyst (a) of from about 0.1:1 to about 10,000:1, said reactions (A) and (B) conducted at a reaction temperature of from about 0° C. to about 200° C. and conducted at a reaction pressure of from about 1×10⁻⁶ mm Hg to about 30 atmospheres.

5,512,636
CATIONIC GRAFT POLYMER AGGLOMERATION
AGENTS FOR MINERAL BEARING ORES

David M. Pollizzotti, North Yardley; Wen P. Liao, Warminster, both of Pa., and Donald C. Roe, Burlington, N.J., assignors to Betz Laboratories, Inc., Trevose, Pa.

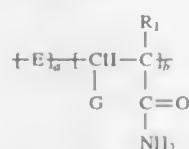
Filed Sep. 6, 1994, Ser. No. 301,454

Int. Cl.⁶ C08F 265/10; C22B 3/16

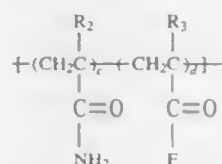
U.S. Cl. 525—285

12 Claims

1. In a process for percolation leaching of minerals from a mineral bearing ore wherein the ore is first agglomerated with an agglomeration agent, formed into a heap and then leached by percolating a leaching solution through the heap which extracts the minerals from the agglomerated ore for subsequent recovery, the improvement in which the agglomerating agent comprises a cationic copolymer selected from the group consisting of: graft copolymers of the general structure:



wherein E is the repeat unit obtained after polymerization of an α, β ethylenically unsaturated compound, the molar percentage of a:b is from about 95:5 to 5:95, with the proviso that the sum of a and b equals 100%, G comprises the structure:



wherein R₁, R₂ and R₃ are the same or different and are hydrogen or a lower alkyl group having C₁ to C₃, F is the salt of an ammonium cation and the molar percentage of c:d is from 95:5 to 5:95 with the proviso that the sum of c and d equals 100%.

5,512,637

Patent Not Issued For This Number

5,512,638
CURING SYSTEMS FOR COMPOSITIONS CONTAINING
HALOGENATED COPOLYMERS OF ISOBUTYLENE AND
PARA-METHYLSTYRENE

Kevin O'Donnell, Victoria, Australia, assignor to Exxon Chemical Patents Inc., Wilmington, Del.

Division of Ser. No. 237,093, May 3, 1994, abandoned. This application Apr. 4, 1995, Ser. No. 416,409

Int. Cl.⁶ C08F 212/06; C08C 19/20

U.S. Cl. 525—333.4

5 Claims

1. A sulfur curable composition comprising a mixture of:
a) a chlorinated or brominated elastomeric interpolymers of a C₄ to C₇ isomonoolefin and a para-alkylstyrene,
b) from 0 to about 90% by weight based on the elastomer content of said composition of at least one unsaturated elastomer,
c) a vulcanization promoter comprising an unsaturated fatty acid glyceride oil containing from about 18 to 22 carbon atoms and having an iodine value in excess of about 100, said glyceride being present in said composition in an amount effective to promote the vulcanization of said composition, and
d) sulfur and/or a sulfur-containing curative in an amount effective to cure said composition.

5,512,639

CURABLE COMPOSITIONS CONTAINING
CARBAMATE-MODIFIED POLYISOCYANATES

John W. Rehffuss, West Bloomfield, and Walter H. Ohrbom, Southfield, both of Mich., assignors to BASF Corporation, Southfield, Mich.

Filed Jul. 28, 1993, Ser. No. 98,176

Int. Cl.⁶ C08F 283/04

U.S. Cl. 525—456

9 Claims

1. A curable coating composition comprising:
(A) a monomeric carbamate-functional compound that is the reaction product of a mixture comprising:
(1) a monomeric polyisocyanate, and
(2) a compound having a group that is reactive with said monomeric polyisocyanate and a carbamate group or group that can be converted to carbamate, and
(B) a compound having a plurality of functional groups that are reactive with carbamate groups on said carbamate-functional compound.

urated group-containing epoxide with (B) from 50 to 40,000 parts by weight of an organohydrogenpolysiloxane in the presence of (C) from 0.0001 to 0.5 parts by weight, on a platinum basis, of a platinum compound as catalyst and (D) from 0.1 to 1,000 parts by weight of monohydric aliphatic alcohol having from 1 to 10 carbon atoms.

5,512,641

AROMATIC POLYIMINE AND PROCESS FOR
PREPARING THE SAME, AND AROMATIC OLIGOIMINE
USED FOR AROMATIC POLYIMINE AND PROCESS FOR
PREPARING THE SAME

Yoichiro Ezaki, Tsukuba, Japan, assignor to Arakawa Kagaku Kogyo Kaishiki Kaisha, Osaka, Japan

Filed Mar. 24, 1995, Ser. No. 403,773

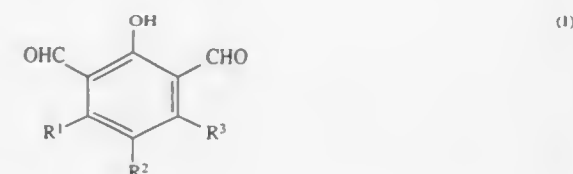
Claims priority, application Japan, Jul. 27, 1993, 5-185046

Int. Cl.⁶ C08G 12/08

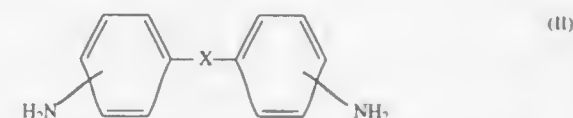
U.S. Cl. 525—504

10 Claims

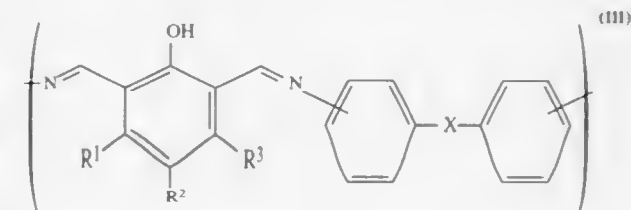
1. An aromatic oligoimine composed of a reaction product of an aromatic dialdehyde having a phenolic hydroxyl group, represented by the general formula (I):



wherein each of R¹, R² and R³ is independently a hydrogen atom, an alkyl group or an aryl group, the total number of carbon atoms contained in R¹, R² and R³ is at most 10, and an aromatic diamine represented by the general formula (II):



wherein X is a single bond, a linear or branched alkylene group having at most 6 carbon atoms, an arylene group, oxygen atom, sulphur atom, —SO₂—, a group represented by the general formula: —Y¹—Ar—Y¹— in which Ar is phenylene group, Y¹ is a single bond, a linear or branched alkylene group having at most 6 carbon atoms, an arylene group, oxygen atom, sulphur atom or —SO₂—, or a group represented by the general formula: —Y¹—Ar—Y¹—Ar—Y¹— in which Ar and Y¹ are the same as defined above, having a recurring unit represented by the general formula (III):



wherein R¹, R², R³ and X are the same as defined above and a degree of polymerization of 2 to 20.

5,512,640

METHOD OF PRODUCING EPOXY-MODIFIED
SILICONES USING ALIPHATIC ALCOHOL GELATION
INHIBITORS

Yoshihito Osawa, and Hiroshi Ohashi, both of Gunma, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Nov. 7, 1994, Ser. No. 337,001

Claims priority, application Japan, Nov. 8, 1993, 5-303524

Int. Cl.⁶ C08G 77/06

U.S. Cl. 525—476

13 Claims

1. A method of producing an epoxy-modified silicone, which comprises reacting (A) 100 parts by weight of an ethylenic unsat-

5,512,642

PROCESS FOR MAKING VINYL AROMATIC/ALKOXYLATED ALLYL ALCOHOL COPOLYMERS

Shao-Hua Guo, West Goshen, Pa., assignor to Arco Chemical Technology, Greenville, Del.

Division of Ser. No. 271,306, Jul. 6, 1994, Pat. No. 5,444,141.

This application Apr. 7, 1995, Ser. No. 418,312

Int. Cl.⁶ C08F 216/08; 216/12; 212/08

U.S. Cl. 526—79

12 Claims

1. A process for making a vinyl aromatic/alkoxylated allyl alcohol copolymer, said process comprising:

(a) charging a reactor with:

(i) an alkoxylated allyl alcohol of the formula:



in which R' is selected from the group consisting of hydrogen and methyl, A is a C₂-C₄ oxyalkylene group, and n, which is the average number of oxyalkylene groups in the alkoxylated allyl alcohol, has a value less than or equal to 5;

(ii) 10–30% of the total amount to be used of a vinyl aromatic monomer; and

(iii) 45–75% of the total amount to be used of a free-radical initiator;

(b) heating the reaction mixture at a temperature within the range of about 125° C. to about 185° C.; and

(c) gradually adding to the reaction mixture, at a decreasing rate, the remaining 70–90% of vinyl aromatic monomer and 25–55% of free-radical initiator, to produce a vinyl aromatic/alkoxylated allyl alcohol copolymer having a number average molecular weight within the range of about 800 to about 2000 and a hydroxyl number within the range of about 180 to about 280 mg KOH/g;

wherein the mole ratio of vinyl aromatic monomer to alkoxylated allyl alcohol used in the process is within the range of about 0.1 to about 0.5, and the yield of copolymer is enhanced as a result of gradual addition of the free-radical initiator.

5,512,643

PROCESS FOR PREPARATION OF SYNDIOTACTIC VINYLIDENE AROMATIC POLYMERS USING REDUCED METAL CATALYSTS

Thomas H. Newman, Midland, Mich., and Karen K. Borodichuk, Mt. Pleasant, both of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 133,356, Oct. 8, 1993, abandoned.

This application Aug. 11, 1995, Ser. No. 514,060

Int. Cl.⁶ C08F 4/64; 12/08

U.S. Cl. 526—160

7 Claims

1. A process for preparing syndiotactic polymers of vinylidene aromatic monomers comprising contacting one or more vinylidene aromatic monomers under polymerization conditions with a catalytically effective amount of a catalyst comprising a metal complex corresponding to the formula:



wherein:

Cp is a single η⁵-cyclopentadienyl or η⁵-substituted cyclopentadienyl group;

R is C₁₋₁₀ hydrocarbyl;

X' is an inert, neutral donor ligand; and

p is 0 or 1;

and a polyalkylaluminumoxane activating cocatalyst,

the molar ratio of monovinylidene aromatic monomer: Ti being from 100:1 to 1×10¹⁰:1 and the molar ratio of metal complex:polyalkylaluminumoxane being from 1:100 to 1:500.

5,512,644

AMPHOLYTIC POLYMER CAPABLE OF ABSORBING AQUEOUS ELECTROLYTE SOLUTION

Kunlyoshi Ogura, Okayama, and Kouji Sakaki, Suita, both of Japan, assignors to Toyo Boseki Kabushiki Kaisha, Osaka, Japan

Filed Sep. 8, 1994, Ser. No. 302,428

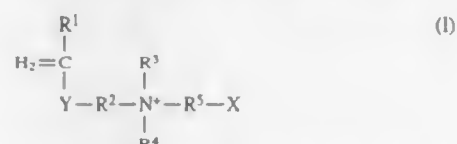
Claims priority, application Japan, Sep. 8, 1993, 5-223532; Mar. 8, 1994, 6-037115; Jul. 12, 1994, 6-160245

Int. Cl.⁶ C08F 226/06; 228/02; 20/58

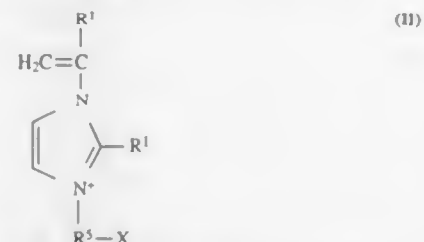
U.S. Cl. 526—258

6 Claims

1. An ampholytic polymer capable of absorbing an aqueous electrolyte solution, which is obtainable by polymerization of a monomer mixture comprising (A) 10 mol % or more of an ampholytic vinyl monomer selected from the group consisting of:



wherein R¹ is hydrogen or methyl; R² is a straight-chain or branched C₁-C₆ alkylene or hydroxyalkylene; R³ and R⁴ are independently methyl or ethyl; R⁵ is straight-chain or branched C₁-C₁₀ alkylene or hydroxyalkylene; X is —COO⁻ or —SO₃⁻; and Y is an ester or amido linkage; and



wherein R¹ and R⁵ are each as defined above and X is —COO⁻ (B) 90 mol % or less of a non-ampholytic vinyl monomer comprising at least one selected from the group consisting of acrylic acid and its alkali salt and (C) 1 mol % or less of a cross-linkable monomer with the proviso that the total amount of monomers (A), (B) and (C) is 100 mol % and when the monomer (A) has no self-crosslinkability, the amount of monomer (A) is in the range of 10 to 99.995 mol % and the amount of monomer (C) is in the range of 0.005 to 0.1 mol %; the absorption capacity for synthetic seawater of said polymer being at least 25.

5,512,645

LACTAM RING CONTAINING POLYMER

Shigeru Sawayama; Yasuhiro Mori, and Yukino Nagai, all of Yokohama, Japan, assignors to Mitsubishi Chemical Corporation, Tokyo, Japan

Filed Nov. 22, 1994, Ser. No. 343,640

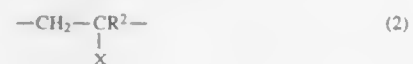
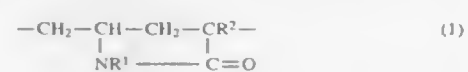
Claims priority, application Japan, Nov. 25, 1993, 5-295297

Int. Cl.⁶ C08F 226/06; 220/06; 220/10; 220/56; 226/02; 228/02

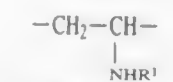
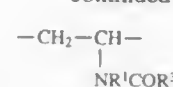
U.S. Cl. 526—264

15 Claims

1. A lactam ring-containing polymer comprising: 20 to 100 molar % of a structural unit represented by the general formula (1); 0 to 70 molar % of a structural unit represented by the general formula (2); and 0 to 70 molar % of a structural unit represented by the general formula (3) and/or a structural unit represented by the general formula (4):



—continued



wherein R¹, R² and R³ each represents a hydrogen atom or a methyl group, and X represents COOR⁴ and/or CONR⁵R⁶ in which R⁴, R⁵ and R⁶ each represents a hydrogen atom or a C1–C4 alkyl.

5,512,646

WATER SOLUBLE POWDERED CATIONIC POLYELECTROLYTE COMPRISING A COPOLYMER OF ACRYLAMIDE AND DIMETHYLAMINOPROPYLACRYLAMIDE ESSENTIALLY FREE OF BIFUNCTIONAL COMPOUNDS

Hans-Georg Hartan, Kevelaer, and Alfons Landscheidt, Krefeld, both of Germany, assignors to Chemische Fabrik Stockhausen GmbH, Krefeld, Germany

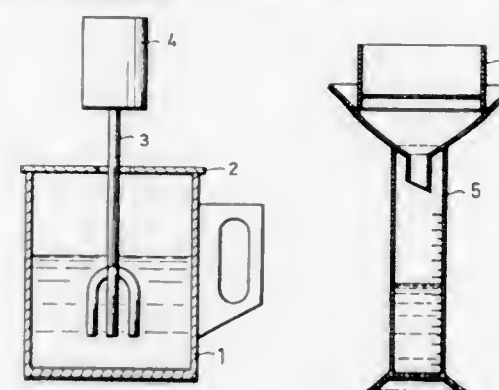
Continuation of Ser. No. 942,475, Sep. 9, 1992, abandoned, which is a continuation of Ser. No. 631,200, Dec. 20, 1990, abandoned, which is a continuation of Ser. No. 942,329, Dec. 16, 1986, abandoned. This application Sep. 13, 1993, Ser. No. 120,707

Claims priority, application Germany, Dec. 19, 1985, 35 44 909.8

Int. Cl.⁶ C08L 33/26

U.S. Cl. 526—292.95

1 Claim



1. A water-soluble, powdered, cationic polyelectrolyte comprising a copolymer of acrylamide and dimethylaminopropylacrylamide in which

- the dimethylaminopropylacrylamide is neutralized with mineral acids;
- the quotient of the intrinsic viscosity of the copolymers divided by the molar ratio of acrylamide to dimethylaminopropylacrylamide is greater than 200; and
- the proportion of the cationic monomers in the polymer is between 4 and 80 mol-%,

the copolymer having been obtained by copolymerization of acrylamide and dimethylaminopropylacrylamide that is essentially free of bifunctional compounds.

5,512,647

COPOLYMER RUBBER AND METHOD FOR ITS PRODUCTION

Shinji Ozoe; Seiji Matsumoto, both of Shinnanyo, and Kazumi Furuta, Kudamatsu, all of Japan, assignors to Tosoh Corporation, Yamaguchi, Japan

Filed May 31, 1994, Ser. No. 251,264

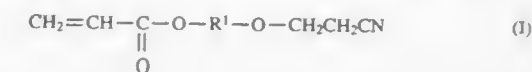
Int. Cl.⁶ C08F 220/50; 220/42; 224/00; 214/00; 220/10; 236/04

U.S. Cl. 526—298

16 Claims

1. A copolymer rubber which consists essentially of

(A) from 70 to 99 wt % of a cyano group-containing acrylate of the formula (I):



wherein R¹ is a C₂₋₆ alkylene group or —CH₂CH₂OCH₂CH₂—, (B) from 1 to 30 wt % of an α,β-unsaturated nitrile, (C) from 0.5 wt % to 10 wt % of at least one monomer selected from the following monomers:

- an active halogen group-containing monomer
- an epoxy group-containing monomer
- a carboxyl group-containing monomer
- a diene compound
- a (meth)acrylate having an ethylenically unsaturated bond in its side chain, and

(D) from 0 to 15 wt % of other ethylenically unsaturated monomer which is copolymerizable with each of the above components (A), (B) and (C), and which has a Mooney viscosity (ML₁₊₄ (100° C.)) of at least 5.

5,512,648

POLYAMIDE RESIN-PROTIDE CONJUGATE, PREPARATION AND USES

James T. Sparrow, 12119 Atwell, Houston, Tex. 77035; Nancy Kneib-Cordonier, Houston; Patrick Kanda, and Robert E. Lanford, both of San Antonio, all of Tex., assignors to James Sparrow, Houston; Patrick Kanda, San Antonio, and Baylor College of Medicine, Houston, all of Tex.

Division of Ser. No. 693,960, Apr. 29, 1991, Pat. No. 5,296,572, which is a continuation-in-part of Ser. No. 309,914, Feb. 10, 1989, Pat. No. 5,028,675, which is a continuation-in-part of Ser. No. 858,216, Apr. 30, 1986, abandoned. This application Dec. 16, 1993, Ser. No. 169,718

Int. Cl.⁶ C08F 226/02

U.S. Cl. 526—307.3

21 Claims

1. A method of preparing a resin/large MW protide conjugate, comprising

preparing a large pore polyamide resin by mixing an unsaturated or alkenyl amine monomer with a dimethylacrylamide monomer, a cross-linker and water in a proportion of monomer and cross-linker to water of about 1:2 to 1:50 (w/v); adding an emulsifier in a proportion to the aqueous mixture of about 1:100 to 1:400, adding an organic phase to the aqueous mixture;

agitating the aqueous mixture in the presence of the organic phase, adding an initiator; adjusting the pH of the aqueous mixture to about 6.0 to 7.5; adding a promoter to start polymerization to obtain polyamide resin beads of a pore size capable of lodging a protide of up to about 250,000 dalton MW; isolating the thus formed polyamide resin beads; and synthesizing an up to about 250 Kdalton MW protide on the resin.

5,512,649

TRANSPARENT, STRETCHED POLYPROPYLENE FILM Hermann Hendrickson-Benkhoff, Rotenburg; Dietrich Stockmeier, Walsrode, and Ulrich Reiners, Neuenkirchen, all of Germany, assignors to Wolff Walsrode Aktiengesellschaft, Walsrode, Germany

Filed Feb. 10, 1995, Ser. No. 386,789

Claims priority, application Germany, Feb. 17, 1994, 44 05 062.3

Int. Cl.⁶ C08K 7/00; C08L 23/12

U.S. Cl. 526—348.1

11 Claims

1. At least monoaxially stretched polypropylene film containing an antiblocking agent, the antiblocking agent having bevelled edges, being X-ray amorphous, and having a geometry which is at least one of cuboid and cubic.

5,512,650

BLOCK COPOLYMER, METHOD OF MAKING THE SAME, DIAMINE PRECURSORS OF THE SAME, METHOD OF MAKING SUCH DIAMINES AND END PRODUCTS COMPRISING THE BLOCK COPOLYMER
Charles M. Leir, Falcon Heights; Jerome J. Hoffman, Hastings; Leonard A. Tushaus, White Bear Lake; Gary T. Wiederholt, West St. Paul; Mieczyslaw H. Mazurek, Roseville; Audrey A. Sherman, St. Paul, and William R. Bronn, Maplewood, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

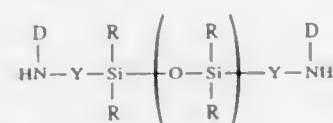
Continuation-in-part of Ser. No. 65,805, May 21, 1993, abandoned, which is a division of Ser. No. 616,753, Nov. 16, 1990, Pat. No. 5,214,119, which is a continuation of Ser. No. 273,977, Nov. 21, 1988, abandoned, which is a continuation-in-part of Ser. No. 57,570, Jun. 15, 1987, which is a continuation-in-part of Ser. No. 876,918, Jun. 20, 1986, abandoned. This application Jul. 21, 1993, Ser. No. 95,284
Int. Cl.⁶ C08G 77/08

U.S. Cl. 528—14

16 Claims

1. A method of making an organopolysiloxane diamine having a number average molecular weight greater than 2000 and having less than or equal to about 0.010 weight % silanol impurities, comprising the steps of:

- forming a mixture consisting essentially of
- (i) an amine functional endblocker represented by the formula IX



wherein:

Y is selected from the group consisting of alkylene radicals comprising about 1 to about 10 carbon atoms, aralkyl radicals, and aryl radicals;

D is selected from the group consisting of hydrogen, an alkyl radical of about 1 to about 10 carbon atoms, and phenyl;

R is at least 50% methyl with a balance of the 100% of all R radicals being selected from the group consisting of a monovalent alkyl radical having 2 to 12 carbon atoms, substituted alkyl radical having from 1 to 12 carbon atoms, a vinyl radical, a phenyl radical, and a substituted phenyl radical; and

x represents an integer of about 1 to about 150; and

(ii) sufficient cyclic siloxane to obtain said organopolysiloxane diamine having a number average molecular weight greater than about 2000;

(b) removing any volatile contaminants from the mixture;

(c) heating the mixture to about 100° to about 160° C. under an inert atmosphere;

(d) adding a catalytic amount of a compound selected from the group consisting of cesium hydroxide, rubidium hydroxide, cesium silanolate, rubidium silanolate, cesium polysiloxanolate, rubidium polysiloxanolate, and mixtures thereof, to the mixture which has been heated;

(e) continuing the reaction until substantially all of said amine functional endblocker is consumed;

(f) terminating the reaction by the addition of a volatile organic acid to form a mixture of an organopolysiloxane diamine having greater than about 0.010 weight % silanol impurities and one or more of the following: a cesium salt of the organic acid, a rubidium salt of the organic acid, both a cesium salt of the organic acid and a rubidium salt of the organic acid; wherein a molar excess of organic acid is added in relation to the compound of element (d);

(g) condensing under reaction conditions a sufficient amount of said silanol impurities to form an organopolysiloxane diamine having less than or equal to about 0.010 weight % of silanol impurities; and

(h) optionally removing said salt.

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STRONG CARBOXYLIC ACID FUNCTIONAL POLYURETHANE POLYMERS AND BLENDS THEREOF USED IN MAGNETIC RECORDING MEDIA

James G. Carlson; Jeffery T. Anderson, both of Lake Elmo, and Nelson T. Rotto, North St. Paul, all of Minn., assignors to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed Jul. 29, 1994, Ser. No. 283,244

Int. Cl.⁶ C08G 18/28; G11B 5/70

U.S. Cl. 528—73

41 Claims

1. A carboxylic acid and hydroxyl functional polyurethane polymer comprising the reaction product of:

- one or more polyisocyanates;
- one or more polyols;
- one or more compounds selected from the group consisting of cyclic dicarboxylic acid anhydrides derived from carboxylic acids having a pKa of less than 1.5; wherein the acid content of the polyurethane is about 0.01 to about 0.3 meq/g; wherein the hydroxyl content of the polyurethane is at least about 0.01 meq/g; and wherein the molar ratio of hydroxyl groups to the sum of the isocyanate groups plus anhydride groups of reactants from which the polyurethane is formed is greater than 1:1.

5,512,652

FLUORINATED ALDEHYDE CONTAINING POLYMERS

William B. Faraham, Hockessin, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 823,211, Jan. 21, 1992, Pat. No. 5,414,140.

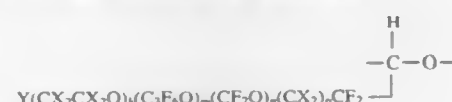
This application Feb. 14, 1995, Ser. No. 388,017

Int. Cl.⁶ C08G 10/02

U.S. Cl. 528—244

1 Claim

1. A polymer, comprising, the repeat unit



wherein:

Y is fluorine, aryloxy or —OCF=CF₂;

each X is independently hydrogen or fluorine;

p is 0 or 1; and

k, m and n are each independently zero or an integer of 1 to 50; provided that k+m+n is 2 or more.

5,512,653

LACTIC ACID CONTAINING HYDROXYCARBOXYLIC ACID FOR THE PREPARATION OF POLYHYDROXYCARBOXYLIC ACID

Masahiro Ohta; Shoji Obuchi, and Yasunori Yoshida, all of Fukuoka, Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

Division of Ser. No. 170,873, Dec. 21, 1993, Pat. No.

5,444,143. This application Jun. 7, 1995, Ser. No. 488,091

Claims priority, application Japan, Dec. 25, 1992, 4-346329; Dec. 25, 1992, 4-346330; Apr. 2, 1993, 5-077002; Apr. 6, 1993, 5-079219; Apr. 9, 1993, 5-082867; Sep. 16, 1993, 5-229796; Sep. 17, 1993, 5-231526; Sep. 17, 1993, 5-231527

Int. Cl.⁶ C08G 63/06

U.S. Cl. 528—361

16 Claims

1. Lactic acid containing hydroxycarboxylic acid for use in the preparation of polyhydroxycarboxylic acid having an inherent viscosity of 0.3 dl/g or more, comprising one or more impurities selected from the group consisting of methanol, ethanol, acetic acid, pyruvic acid, fumaric acid, methyl lactate, ethyl lactate and butyl lactate in a total amount of 0.3% by mole or less for the amount of said lactic acid containing hydroxycarboxylic acid.

5,512,654

SEMICONDUCTIVE COPOLYMERS FOR USE IN LUMINESCENT DEVICES

Andrew Holmes; Donal D. Bradley; Richard H. Friend; Arno Kraft; Paul Burn, and Adam Brown, all of Cambridge, United Kingdom, assignors to Cambridge Display Technology Limited, Cambridge, United Kingdom

Division of Ser. No. 748,777, Aug. 22, 1991, Pat. No.

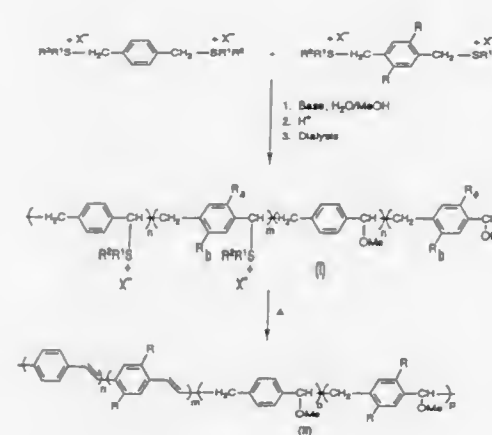
5,401,827. This application May 19, 1994, Ser. No. 246,269

Claims priority, application United Kingdom, Aug. 24, 1990, 9018698

Int. Cl.⁶ C08G 75/00

U.S. Cl. 528—373

48 Claims



1. An optical device which comprises a substrate and at least one semiconductive conjugated copolymer layer supported by the substrate, wherein the copolymer comprises an amount of poly(p-phenylene vinylene) in the range of about 90–95% and an amount of poly(2,5-dimethyl-phenylene vinylene) in the range of about 5–10%.

5,512,655

DIHYDROXYFATTY ACIDS AS STRUCTURAL ELEMENTS FOR POLYURETHANES

Wolfgang Klauk, Meerbusch, and Peter Daute, Essen, both of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Germany

PCT No. PCT/EP92/01308, § 371 Date Dec. 7, 1993, § 102(e)

Date Dec. 7, 1993, PCT Pub. No. WO93/00378, PCT Pub.

Date Jan. 7, 1993

PCT Filed Jun. 11, 1992, Ser. No. 157,179

Claims priority, application Germany, Jun. 20, 1991, 41 20 432.8

Int. Cl.⁶ C08G 18/36

U.S. Cl. 528—74.5

21 Claims

1. A process for the production of carboxyfunctional polyurethanes, said process comprising: reacting a mixture comprising:

- an isocyanate component that is on average polyfunctional;
- a polyol component that is on average polyfunctional;
- a dihydroxyfatty acid component formed by ring opening of an epoxidized fatty acid containing 8 to 36 carbon atoms, for introducing ionizable carboxy function, said dihydroxyfatty acid component comprised of at least one dihydroxyfatty acid compound selected from the group consisting of dihydroxyfatty acids and dihydroxypolyfatty acids, wherein said dihydroxyfatty acid compound is free of substitution for a hydrogen on a carbon atom alpha to the carboxyl group and forms a homogenous single phase system with the polyol component.

5,512,656

THYMOSIN ALPHA-1 DERIVATIVES

Su-Sun Wang, Belmont, Calif., assignor to Alpha 1 Biomedicals, Inc., Bethesda, Md.

Continuation of Ser. No. 13,087, Feb. 3, 1993, abandoned.

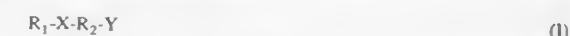
This application May 20, 1994, Ser. No. 246,572

Int. Cl.⁶ A61K 38/00; C07K 5/00; 7/00; 16/00

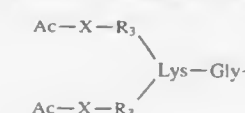
U.S. Cl. 530—324

12 Claims

1. A compound of the formula:



wherein X is Ser-Asp-Ala-Ala-Val-Asp-Thr-Ser-Ser-Glu-Ile-Thr-Thr-Lys-Asp-Leu-Lys-Glu-Lys-Lys-Glu-Val-Val-Glu-Glu-Ala-Glu, R₁ is Ac or Z, wherein Ac is an acetyl group and Z is



wherein Ac and X are as defined above; R₂ is Asp or R₃; R₃ is Asn; and Y is —OH; with the proviso that only when R₃ is present does R₂ equal R₃.

5,512,657

DETECTION OF COMPLEXES WHICH INCLUDE BASEMENT MEMBRANE COMPONENTS AS DIAGNOSTIC OF CANCER AND OTHER DISEASES

Morgan Van Aken, and Stefan L. Paskell, both of Bainbridge Island, Wash., assignors to Bainbridge Sciences, Inc., Redmond, Wash.

Continuation of Ser. No. 96,490, Jul. 23, 1993, abandoned,

which is a continuation-in-part of Ser. No. 721,756, Jun. 26,

1991, Pat. No. 5,264,370, which is a continuation-in-part of

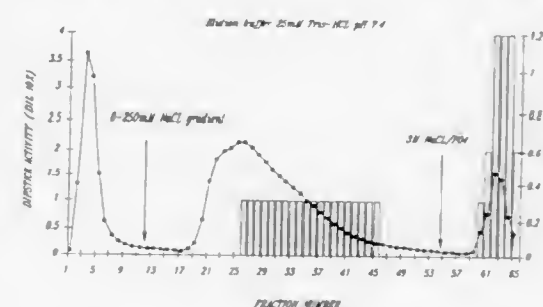
Ser. No. 283,397, Dec. 12, 1988, abandoned. This application

Jan. 6, 1994, Ser. No. 178,219

Int. Cl.⁶ C07K 14/435; 1/22; G01N 33/483; 33/493

U.S. Cl. 530—350

2 Claims



1. An isolated complex including basement membrane components, said complex consisting of polypeptides with molecular weights of 165,000; 140,000; 125,000; 98,000; 82,000; 74,000; 55,000; 43,000; 35,000; 26,000; and 16,000 as determined by sodium dodecyl sulfate-polyacrylamide gel electrophoresis, and said complex binds to heparin agarose and is reactive with antibody 1B4 (ATCC No. 11389).

5,512,658

PSEUDOMONAS EXOTOXINS (PE) AND CONJUGATES THEREOF HAVING LOWER ANIMAL TOXICITY WITH HIGH CYTOTOXIC ACTIVITY THROUGH SUBSTITUTION OF POSITIVELY CHARGED AMINO ACIDS

Ira Pastan, Potomac; David Fitzgerald, Silver Spring, and Vijay K. Chaudhary, Rockville, all of Md., assignors to The United States of America as represented by the Secretary of the Department of Health and Human Services, Washington, D.C.

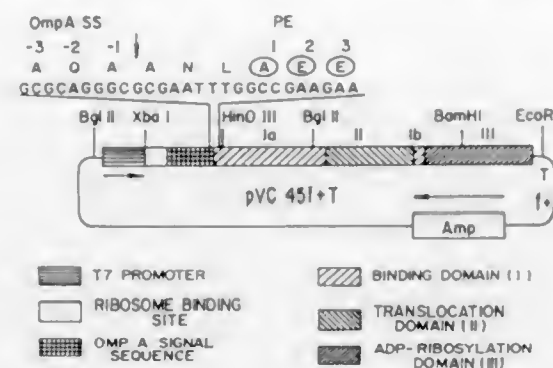
Continuation of Ser. No. 522,182, May 11, 1990, abandoned.

This application Oct. 1, 1993, Ser. No. 130,322

Int. Cl.⁶ C12N 15/31; C07K 14/21; A61K 39/04

U.S. Cl. 530—350

9 Claims



1. A recombinant mutant Pseudomonas exotoxin (PE) having a positively charged amino acid residue in domain Ia substituted by an amino acid residue without a positive charge, so that the mutant PE has a lower animal toxicity compared to the unsubstituted molecule, said mutant PE being selected from the group consisting of a PE in which amino acids 57, 246, 247 and 249 are glutamic acid (PE-Glu-57,246,247,249), a PE in which amino acid 57 is a glutamic acid and amino acids 241-250 are deleted (PE-Glu-57Δ241-250) and a PE in which amino acid 57 is a glutamic acid and amino acids 246, 247, and 249 are glycine (PE-Glu-57-Gly246,247,249).

5,512,659

COMPOSITIONS USEFUL IN HETEROGENEOUS IMMUNOASSAYS

Edwin F. Ullman, Atherton; Hriar Kirakossian, San Jose; Mary C. Ericson, Santa Cruz, and Richard P. Watts, Brisbane, all of Calif., assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Filed Aug. 4, 1989, Ser. No. 389,659

Int. Cl.⁶ C07K 16/00; G01N 33/533; 33/53

U.S. Cl. 530—391.1

12 Claims

1. A composition of matter consisting of a conjugate of a monoepitopic antigen covalently bound to a small molecule, said conjugate being bound in a ternary complex with antibody for said monoepitopic antigen and an antibody for said small molecule, wherein said small molecule is an organic or organometallic group having a molecular weight of from 100 to 2000 and for which a receptor exists or can be prepared.

5,512,660

PURIFIED ICAM-2 AND FRAGMENT THEREOF

Timothy A. Springer, Newton; Donald E. Staunton, Chestnut Hill, and Michael L. Dustin, Boston, all of Mass., assignors to Dana Farber Cancer Institute, Boston, Mass.

Division of Ser. No. 89,307, Jul. 12, 1993, abandoned, which is a continuation of Ser. No. 454,294, Dec. 22, 1989, abandoned, which is a continuation-in-part of Ser. No. 45,963, May 4, 1987, abandoned, Ser. No. 115,798, Nov. 2, 1987, abandoned, Ser. No. 155,943, Feb. 16, 1988, abandoned, Ser. No. 189,815, May 3, 1988, abandoned, and Ser. No. 250,446, Sep. 28, 1988, abandoned. This application Feb. 10, 1994, Ser. No. 194,613

Int. Cl.⁶ C07K 14/47; A61K 38/17

U.S. Cl. 530—395

2 Claims

1. Purified human ICAM-2, wherein said human ICAM-2 consists of the amino acid sequence depicted in FIG. 2 which has two IG-like domains, binds LFA-1, and is not induced by cytokines.

5,512,661

MULTITROPHIC AND MULTIFUNCTIONAL CHIMERIC NEUROTROPHIC FACTORS

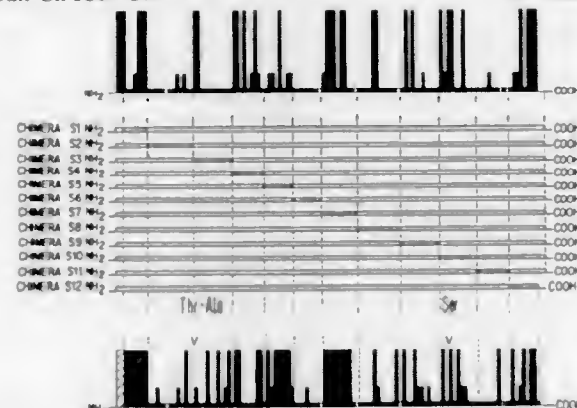
Eric M. Shooter, Portola Valley; Ulrich Suter, Menlo Park, both of Calif.; Nancy P. Ip, Hong Kong, Hong Kong; Stephen P. Squinto, Irvington, N.Y.; Mark E. Furth, Chapel Hill, N.C., and Ronald M. Lindsay, Briarcliff Manor, N.Y., assignors to Regeneron Pharmaceuticals, Inc., Tarrytown, N.Y.

Continuation of Ser. No. 923,334, Jul. 31, 1992, abandoned, which is a division of Ser. No. 564,929, Aug. 8, 1990, Pat. No. 5,169,764. This application Sep. 19, 1994, Ser. No. 308,625

Int. Cl.⁶ C07K 14/475; 14/48; 19/00

U.S. Cl. 530—399

32 Claims



1. A chimeric protein which has neurotrophic activity and which consists essentially of a first neurotrophic factor, wherein about 3 to about 13 consecutive amino acids of said first neurotrophic factor are replaced by a similarly sized amino acid sequence of a second neurotrophic factor such that the resulting chimeric protein differs in sequence by at least 3 amino acids from the first neurotrophic factor.

5,512,662

PROCESS FOR PREPARING METHYLCHLOROSILANES

Wilfried Kalchauer; Bernd Pachaly, both of Burghausen; Herbert Straussberger, and Willi Streckel, both of Mehring, all of Germany, assignors to Wacker-Chemie GmbH, Munich, Germany

Filed Feb. 6, 1995, Ser. No. 384,051

Claims priority, application Germany, Mar. 10, 1994, 44 08 113.8

Int. Cl.⁶ C07F 7/16

U.S. Cl. 512—472

4 Claims

1. A process for preparing methylchlorosilanes by reacting methyl chloride with silicon in the presence of a catalyst combina-

tion consisting of copper in the form of copper oxide mixtures of the formula CuO_x, where x has a value of 0.6 to 1 or copper (II) oxide, zinc oxide and metallic antimony.

X denotes a reactive system from the series consisting of 2,3-dichloroquinoxalines, pyrimidines or triazines.

5,512,663

DISAZO REACTIVE DYESTUFFS

Klaus Kunde, Neunkirchen-Seelscheid, Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Apr. 22, 1994, Ser. No. 231,527

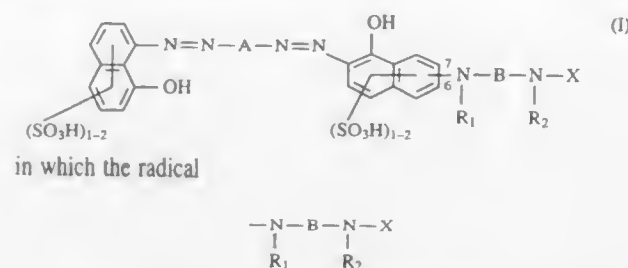
Claims priority, application Germany, Apr. 30, 1993, 43 14 300.8

Int. Cl.⁶ C09B 62/01; 62/03; D06D 1/38

U.S. Cl. 534—633

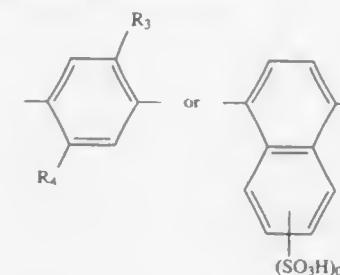
9 Claims

1. A reactive dyestuff which in the form of the free acid has the formula

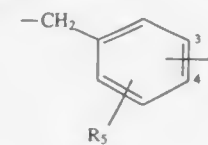


is attached to the 6 or 7 position of the naphthalene system, in which

A denotes a radical of the formula



B denotes straight-chain or branched C₂-C₆-alkylene, C₅-C₆-cycloalkylene, a radical of the formula -C₂H₄-O-C₂H₄-, or a radical of the formula



in which the group



is attached to the 3 or 4 position of the ring via the bond labelled with *, and

R₃ represents H or SO₃H,

R₁ and R₂, independently of one another, denote H, substituted or unsubstituted C₁-C₃-alkyl, or substituted or unsubstituted phenyl, or

B, R₁ and R₂ together with the two nitrogen atoms form a substituted or unsubstituted piperazine,

R₃ denotes H, C₁-C₄-alkyl, C₁-C₄-alkoxy or SO₃H, R₄ denotes H, C₁-C₄-alkyl, C₁-C₄-alkoxy, NHCOCH₃, NHCONH₂ or NHC(=O)CH₂OH, and

5,512,664

MONOAZO DYE FOR THERMAL TRANSFER PRINTING

Ki-taek Lee; Young-soup Son; Woo-seok Han, and Soon-yeol Eom, all of Suwon, Rep. of Korea, assignors to Hansol Paper Co., Ltd., Seoul, Rep. of Korea

Filed Dec. 20, 1994, Ser. No. 359,579

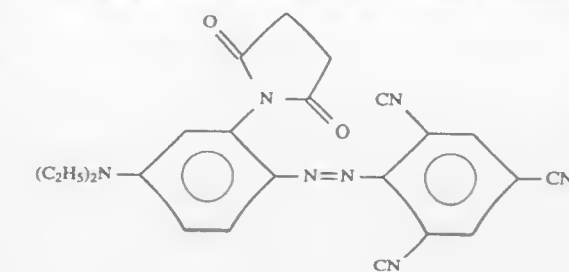
Claims priority, application Rep. of Korea, Dec. 30, 1993, 93-31257

Int. Cl.⁶ C09B 29/36; 29/085; B41M 5/30

U.S. Cl. 534—799

11 Claims

1. A magenta monoazo dye having the following formula:



5,512,665

SULFONATED COMPOUNDS OF β-CYCLODEXTRIN POLYMER AND INHIBITORY DRUG FOR VASCULAR WALL HYPERPLASIA CONTAINING THE SAME

Hideki Uchiyama, Yokohama; Hiroaki Kasukawa, Isehara; Eiko Takeda, Hadano; Junichiro Watanabe, Hiratsuka, and Ryoichi Nanba, Nakai, all of Japan, assignors to Terumo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 8, 1993, Ser. No. 117,755

Claims priority, application Japan, Sep. 24, 1992, 4-254552

Int. Cl.⁶ A61K 31/00

U.S. Cl. 536—4.1

6 Claims

1. A method of inhibiting propagation of smooth muscle cells with a β-cyclodextrin polymer sulfonate comprising a sulfur content of 10% by weight or more.

5,512,666

PROCESS FOR MAKING ALKYL POLYGLYCOSIDES

Patrick M. McCurry, Jr., Lansdale, Pa.; Janet R. Varvil, West Chester, and Carl E. Pickens, Fairfield, both of Ohio, assignors to Henkel Corporation, Plymouth Meeting, Pa.

Filed Jul. 22, 1994, Ser. No. 278,777

Int. Cl.⁶ C07H 15/04

U.S. Cl. 536—18.6

27 Claims

1. A process for making an alkyl polyglycoside comprising the steps of:

(1) reacting a fatty alcohol having from about 8 to about 22 carbon atoms with a sugar, in the presence of an acid catalyst, to form a product of alkyl polyglycoside and unreacted alcohol, wherein the molar ratio of fatty alcohol to sugar is at least 2:1; (2) separating the excess fatty alcohol from the alkyl polyglycoside product; (3) reacting the separated, excess fatty alcohol with a polybasic acid source to form a mixture comprised of one or more polybasic acid esters and non-hydroxylic compounds; (4) separating the non-hydroxylic compounds by distillation from the polybasic acid esters; (5) forming a substantially pure fatty alcohol by hydrolyzing the polybasic acid esters; (6) returning the substantially pure fatty alcohol to step (1).

5,512,667

TRIFUNCTIONAL INTERMEDIATES FOR PREPARING 3'-TAILED OLIGONUCLEOTIDES

Michael W. Reed, 3575 NE. 180th, Seattle, Wash. 98105, and Rich B. Meyer, Jr., 15411 NE. 176th Pl., Woodinville, Wash. 98072

Continuation of Ser. No. 574,348, Aug. 28, 1990, abandoned.

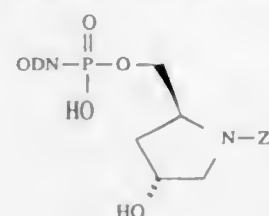
This application Feb. 3, 1993, Ser. No. 12,896

Int. Cl.⁶ C07H 21/04; C07F 9/06; 7/04; C07D 219/08

U.S. Cl. 536—24.31

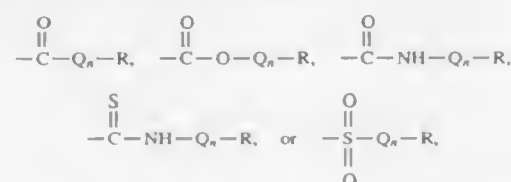
16 Claims

1. A compound having the formula shown below:



"wherein ODN represents an oligonucleotide whose terminal 3'-oxygen is attached to the above phosphate moiety" wherein

Z is selected from a group consisting of



n is 0 or 1, Q is a connecting group selected from a group consisting of alkyl, alkoxy, alkoxyalkyl, alkenyl, cycloalkyl, aryl, aryloxy, aralkyl, heterocyclic, heteroaryl, substituted aryl and substituted aralkyl; and R is selected from the group consisting of intercalating groups, cleaving groups, cholesterol and lipophilic groups.

5,512,668

SOLID PHASE OLIGONUCLEOTIDE SYNTHESIS USING PHOSPHOLANE INTERMEDIATES

Wojciech J. Stec, Andrzej Grajkowski, and Bogdan Uznanski, all of Lodz, Poland, assignors to Polish Academy of Sciences, Lodz, Poland

Continuation-in-part of Ser. No. 740,435, Aug. 5, 1991, abandoned. This application Jan. 23, 1992, Ser. No. 826,929

Claims priority, application Poland, Mar. 6, 1991, 289316; Mar. 6, 1991, 289317

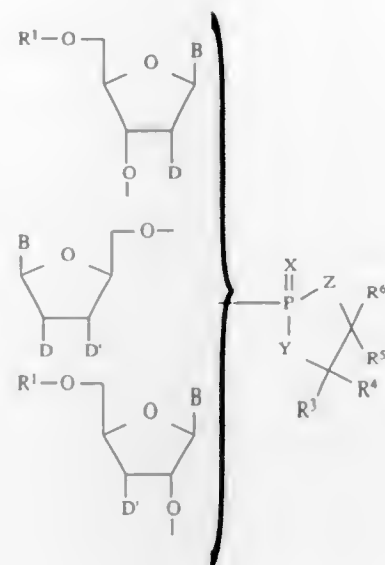
Int. Cl.⁶ C07H 21/02; 21/04

U.S. Cl. 536—25.33

31 Claims

24. A method of synthesizing a P-chiral oligonucleotide of a predetermined P-chirality and length less than 200 monomers, the P-chiral oligonucleotide having a plurality of linkages selected from the group consisting of phosphorothioate, phosphorodithioate, phosphoroselenoate, phosphorodiselenoate, phosphoroanilothiolate, phosphoroanilidate, and phosphodiester, the phosphorothioate, phosphoroselenoate, phosphoroanilothiolate, and phosphoroanilidate linkages being R_p chiral or S_p chiral, the method comprising the steps of:

- providing a first nucleoside or nucleoside analog attached to a solid phase support, the first nucleoside or nucleoside analog having a protected hydroxyl;
- deprotecting the protected hydroxyl to form a free hydroxyl;
- reacting with the free hydroxyl a synthon selected from the group defined by the formula:



wherein:

B is purine or pyrimidine;

D' is hydrogen, hydroxyl, or —ORⁿ such that Rⁿ is a 3'-hydroxyl protecting group;

D is hydrogen, halogen, hydroxyl or —ORⁿ, such that Rⁿ is an alkyl having from 1 to 3 carbon atoms or a 2'-hydroxyl protecting group;

X is S, O, or Se, or a substituted imino of the form =NR² wherein R² is alkyl having from 1 to 6 carbon atoms or aryl, alkyl-substituted aryl, or alkenyl-substituted aryl having from 6 to 12 carbon atoms;

Y is S, O, or Se;

Z is S or Se;

R¹ is a hydroxyl protecting group; and

R³, R⁴, R⁵, and R⁶ are separately hydrogen or alkyl having from 1 to 4 carbon atoms or are separately or together with the carbon atoms to which they are attached aryl or alkyl-substituted aryl having from 6 to 12 carbon atoms; and

(d) repeating steps (b) and (c) until the the P-chiral oligonucleotide of predetermined P-chirality and length is obtained.

5,512,669

GENE ENCODING BACTERIAL ACETOACETYL-COA REDUCTASE

Oliver P. Peoples, Arlington, and Anthony J. Sinskey, Boston, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

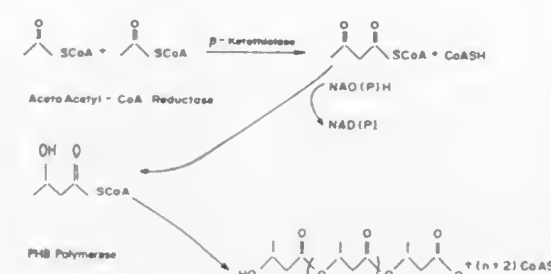
Continuation of Ser. No. 124,570, Sep. 20, 1993, abandoned, which is a continuation of Ser. No. 944,488, Nov. 3, 1992, abandoned, which is a division of Ser. No. 566,535, Aug. 13, 1990, Pat. No. 5,229,279, which is a continuation of Ser. No. 67,695, Jun. 29, 1987, abandoned. This application Aug. 29, 1994, Ser. No. 297,667

Int. Cl.⁶ C12N 15/53

U.S. Cl. 536—23.2

8 Claims

1. An isolated DNA molecule encoding an acetoacetyl-CoA reductase having a molecular weight of approximately of 25,000 daltons, said DNA hybridizing to the sequence shown in FIG. 6 beginning at the ATG at nucleotide 37 to the TGA stop codon at nucleotide 760 when hybridized at 65° C. for between sixteen and eighteen hours in 0.75M NaCl, 0.75M sodium citrate, 50 mM Na₂HPO₄, 50 mM NaH₂PO₄, 0.1% Ficoll, 0.1% polyvinylpyrrolidone and 0.1% BSA, 0.1% SDS, and 10 mM EDTA.



5,512,670

Patent Not Issued For This Number

5,512,671

ETHER LIPID-NUCLEOSIDE COVALENT CONJUGATES

Claude Piantadosi, Chapel Hill, N.C.; Canio J. Marasco, Jr., Tonawanda, N.Y., and Louis S. Kucera, Pfafftown, N.C., assignors to Wake Forest University, Winston-Salem, and University of North Carolina at Chapel Hill, Chapel Hill, both of N.C.

Continuation of Ser. No. 955,709, Feb. 16, 1993, abandoned.

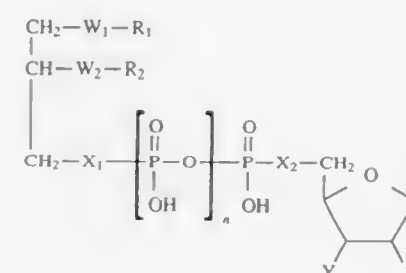
This application Apr. 7, 1995, Ser. No. 418,853

Int. Cl.⁶ C07H 19/20

U.S. Cl. 536—26.1

21 Claims

1. A lipid-nucleoside conjugate or a salt thereof having the formula:



wherein:

R₁ is C15-C20 saturated or unsaturated alkyl containing not more than three double bonds;

R₂ is H or C1-C3 saturated alkyl;

W₁ is NHC(=O) or NH;

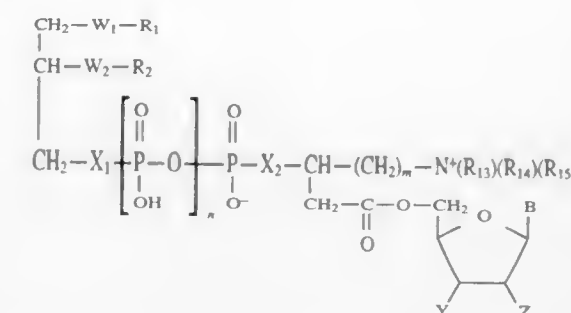
W₂ is S, O, NHC(=O), NH or a covalent bond;

n is zero or one;

X₁ and X₂ are each independently oxygen or a covalent bond, subject to the proviso that when n is zero, then at least either X₁ or X₂ is oxygen;

B is selected from the group consisting of adenine, thymine, cytosine, guanine, hypoxanthine, and uracil; and Y is H, F, or N₃; Z is H or F; or Y and Z together are a covalent bond.

11. A lipid-nucleoside conjugate or a salt thereof having the formula:



wherein:

R₁ is C10-C20 saturated or unsaturated alkyl containing not more than three double bonds;

R₂ is H or C1-C3 alkyl;

W₁ is S, O, NH or NHC(=O);

W₂ is S, O, NHC(=O), NH or a covalent bond;

n is zero or one;

X₁ and X₂ are each independently oxygen or a covalent bond, subject to the proviso that when n is zero, then at least either X₁ or X₂ is oxygen; m is 1 to 3;

B is selected from the group consisting of adenine, thymine, cytosine, guanine, hypoxanthine, and uracil;

Y is H, F, or N₃; Z is H or F; or Y and Z together are a covalent bond; and R₁₃, R₁₄, and R₁₅ are each independently either hydrogen or methyl.

5,512,672

CURDLAN SULFATE

Naoki Yamamoto; Hideki Nakashima, both of Yamaguchi; Toshiyuki Uryu, Tokyo; Takashi Yoshida, Tokyo; Kei Matsuzaki, Tokyo; Yutaro Kaneko, Tokyo, and Toru Mimura, Tokyo, all of Japan, assignors to Ajinomoto Co., Inc., and Fujirebio, Inc., both of Tokyo, Japan

Continuation of Ser. No. 953,195, Sep. 29, 1992, abandoned, which is a continuation of Ser. No. 799,885, Dec. 2, 1991, abandoned, which is a continuation of Ser. No. 447,617, Dec. 8, 1989, abandoned, which is a continuation-in-part of Ser. No. 415,462, Oct. 2, 1989, abandoned, which is a continuation of Ser. No. 216,022, Jul. 7, 1988, abandoned. This application

Jun. 14, 1993, Ser. No. 76,174

Int. Cl.⁶ C07B 37/00; A61K 31/70

U.S. Cl. 536—118

2 Claims

1. A β-1,3-glucan of a sulfated curdlan having a sulfur content of about 12.4 to 17%, and an average molecular weight by gel filtration of from about 27,000 to 330,000.

5,512,673

PHYSIOLOGICALLY ACTIVE SUBSTANCES OF PLANT, PROCESS FOR THE PREPARATION THEREOF, AND UTILITIES THEREOF

Koji Hasegawa; Hideo Kakuta, and Junya Mizutani, all of Sapporo, Japan, assignors to Research Development Corporation of Japan, Tokyo, Japan

Division of Ser. No. 30,732, Mar. 12, 1993, Pat. No. 5,455,345.

This application Sep. 30, 1994, Ser. No. 316,350

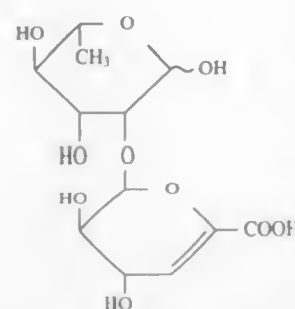
Claims priority, application Japan, May 22, 1992, 4-131050; Sep. 16, 1992, 4-246813; Nov. 30, 1992, 4-320898; Feb. 26, 1993, 5-62729

Int. Cl.⁶ C07H 1/08; 3/04

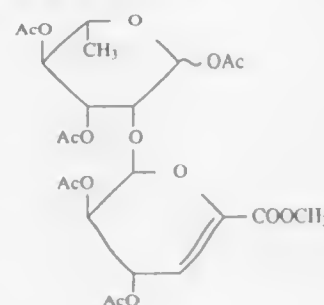
U.S. Cl. 536—128

2 Claims

1. A process for the preparation of a compound represented by the formula:



and salts thereof, which comprises chemical hydrolysis of a compound represented by the formula:



or salts thereof.

5,512,674

PROCESS FOR PREPARING TITANYL

PHthalOCYANINE CRYSTAL BY SOLVENT DILUTION

Hidemitsu Nukada; Akihiko Tokida; Yasuo Sakaguchi; Katsumi Dalmon, and Katsumi Nukada, all of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 670,778, Mar. 19, 1991, abandoned. This application Dec. 6, 1993, Ser. No. 161,496

Claims priority, application Japan, Mar. 20, 1990, 2-68091 Int. Cl.⁶ C09B 47/04

U.S. Cl. 540—141

6 Claims

1. A process for preparing a photoconductive titanyl phthalocyanine crystal for use in an electrophotographic photoreceptor, wherein said crystal shows at least one diffraction peak at a Bragg angle $(2\theta \pm 0.2)$ of 27.3° and said at least one peak at a Bragg angle of 27.3° is the strongest diffraction peak, said process comprising the step of dissolving or suspending titanyl phthalocyanine in concentrated sulfuric acid to form a solution or a slurry and diluting said solution or slurry with a solvent so as to precipitate a crystal in said solvent, wherein said solvent is an alcohol solvent having up to 5 carbon atoms, an aromatic solvent, a mixed solvent of said alcohol solvent and water, a mixed solvent of said aromatic solvent and water, or a mixed solvent of said alcohol solvent and said aromatic solvent with or without water; and wherein said aromatic solvent is an aromatic hydrocarbon, an aromatic nitro compound, an aromatic halogen compound or phenol.

5,512,675
METHODS FOR PREPARING PORPHYRIN-LIKE COMPOUNDS

Hang Tang; Lily Xie, both of Vancouver, Canada; Tilak Wijesekera, Glen Mills, Pa., and David Dolphin, Vancouver, Canada, assignors to The University of British Columbia, Vancouver, Canada

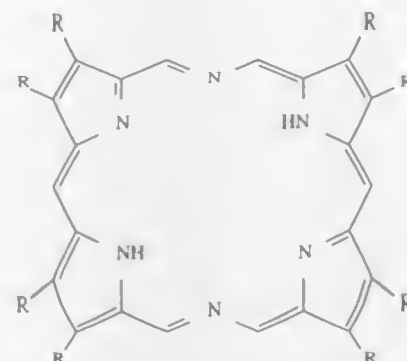
Continuation-in-part of Ser. No. 968,966, Oct. 30, 1992. This application Jun. 15, 1993, Ser. No. 77,789

Int. Cl.⁶ C07D 487/22

U.S. Cl. 540—472

2 Claims

1. A method for synthesizing a porphocyanine having the formula:



wherein each R is a ethyl, comprising the steps of:

- adding a ten-fold excess of 2,3-dichloro-5,6-dicyano-1,4-benzoquinone to 3,3'-4,4'-tetraethyl-5,5'-bisaminomethyl-2,2'-dipyrrromethane to produce a crude product;
- purifying the crude product by chromatography on an alumina column; and then
- evaporating the purified porphocyanine to dryness.

5,512,676

EXTENDED AMIDEIMIDE HUB FOR MULTIDIMENSIONAL OLIGOMERS

Clyde H. Sheppard, Bellevue, Wash., and Hyman R. Lubowitz, Rolling Hills Estates, Calif., assignors to The Boeing Company, Seattle, Wash.

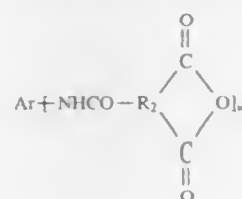
Division of Ser. No. 43,824, Apr. 4, 1993, Pat. No. 5,367,083, which is a division of Ser. No. 831,145, Jan. 13, 1992, Pat. No. 5,216,117, which is a continuation-in-part of Ser. No. 92,740, Sep. 3, 1987, abandoned. This application Jul. 26, 1994, Ser. No. 280,866

Int. Cl.⁶ C07D 307/89; 407/12

U.S. Cl. 544—198

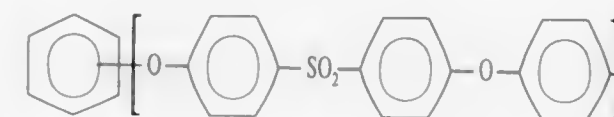
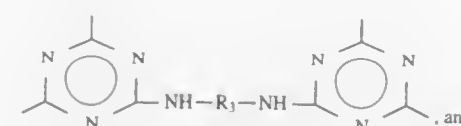
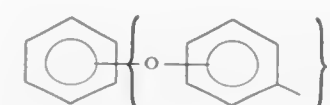
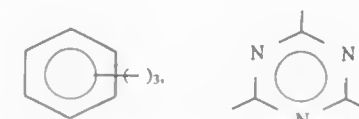
4 Claims

1. An anhydride intermediate useful in synthesizing multidimensional, crosslinking polyamideimide oligomers, comprising a compound selected from the group consisting of:



wherein

Ar=an aromatic radical of valence w selected from the group consisting of:



R₃=a divalent hydrocarbon residue containing 1-12 carbon atoms;

w=3 or 4; and

R₂=phenylene.

5,512,677

3-SUBSTITUTED METHYL-2,3-DIHYDROIMIDAZO[1,2-C]QUINAZOLINE DERIVATIVES, THE PREPARATION AND USE THEREOF

Ji-Wang Chern; Guan-Yu Lu; Yue-Jun Lai; Mao-Hsiung Yen, and Pao-Luh Tao, all of Taipei, Taiwan, assignors to National Science Council, Taipei, Taiwan

Continuation of Ser. No. 961,095, Oct. 14, 1992, Pat. No. 5,340,814, which is a continuation-in-part of Ser. No. 744,534, Aug. 13, 1991, Pat. No. 5,158,953. This application Jul. 20, 1994, Ser. No. 278,014

The portion of the term of this patent subsequent to Aug. 23, 2011, has been disclaimed.

Int. Cl.⁶ C07D 487/04; A61K 31/505

U.S. Cl. 544—250

1 Claim

1. An imidazo[1,2-c]quinazoline compound or a pharmaceutically acceptable salt thereof selected from the group consisting of: 3-{4-[1-(2-methoxyphenyl)piperazinyl]}methyl-2,3-dihydroimidazo[1,2-c]quinazolin-5(6H)-one; 3-{4-[1-(2-chlorophenyl)piperazinyl]}methyl-2,3-dihydroimidazo[1,2-c]quinazolin-5(6H)-one; 3-{4-[1-(2-chlorophenyl)piperazinyl]}methyl-6-methyl-2,3-dihydroimidazo[1,2-c]quinazolin-5(6H)-one; and 3-{4-[1-(2-methoxyphenyl)piperazinyl]}methyl-6-methyl-2,3-dihydroimidazo[1,2-c]quinazolin-5(6H)-one.

5,512,678
5-(1-FLUORO-VINYL)-1H-PYRIMIDINE-2,4-DIONE DERIVATIVES USEFUL AS ANTINEOPLASTIC AGENTS
James R. McCarthy, Solana Beach, Calif.; Donald P. Matthews, West Chester, and Jeffrey S. Sabol, Loveland, both of Ohio, assignors to Merrell Pharmaceuticals Inc., Cincinnati, Ohio

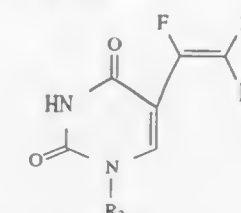
Continuation-in-part of Ser. No. 121,405, Sep. 14, 1993, abandoned. This application Apr. 29, 1994, Ser. No. 236,599

Int. Cl.⁶ C07D 405/04; 239/02; A61K 31/505

U.S. Cl. 544—310

8 Claims

1. A compound of the formula:



wherein

R₁ and R₂ are each independently hydrogen, C₁-C₄ alkyl, or a phenyl group unsubstituted or substituted with from 1 to 3 substituents, wherein each substituent is selected from the group consisting of C₁-C₄ alkyl and C₁-C₄ alkoxy; and R₃ is hydrogen, ribose, 2'-deoxyribose or arabinose.

5,512,679

PROCESS FOR THE PREPARATION OF 2-ARYL-ETHANE-SULPHONIC ACIDS

Jurgen-Dietrich Meier; Christian Munster; Volker Kass, all of Leverkusen, Germany, and Horst Siffrin, New Martinsville, W. Va., assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Continuation of Ser. No. 103,877, Aug. 6, 1993, abandoned.

This application Sep. 8, 1994, Ser. No. 302,299

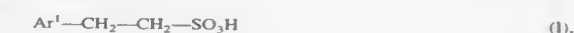
Claims priority, application Germany, Aug. 14, 1992, 42 27 027.8

Int. Cl.⁶ C07D 213/34; 211/24; 265/30; 487/08

U.S. Cl. 546—339

10 Claims

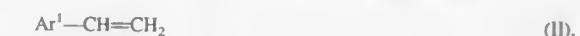
1. A process for the preparation of 2-aryl-ethane-sulphonic acids and salts thereof, which, in the form of the free acids, correspond to the formula



in which

Ar¹ denotes phenyl or naphthyl which are unsubstituted or monosubstituted to trisubstituted by C₁-C₄-alkyl, C₁-C₄-alkoxy, chlorine, bromine or fluorine or a heterocyclic aromatic five-membered or six-membered radical having one or more N atoms as hetero atoms, and are unsubstituted or substituted by C₁-C₄-alkyl, C₁-C₄-alkoxy, chlorine, bromine or fluorine

by reaction of vinyl aromatic compounds of the formula



in which

Ar¹ has the above definition, with sulphurous acid or soluble salts thereof or the anhydride thereof in a water-containing medium, wherein the reaction is carried out at a temperature of -15°C . to $+65^\circ\text{C}$. and at a pressure of 0.5 to 5 bar in the presence of an amine of the formula



in which

R¹, R² and R³, independently of each other, denote straight-chain or branched C₁-C₁₂-alkyl, C₃-C₈-cycloalkyl, phenyl or

substituted phenyl or C₇-C₁₀-aralkyl, where, furthermore, 2 of the radicals R¹, R² and R³ together with the N atom which they substitute can form a, pyrrolidine, oxazolidine, thiazolidine, piperidine or morpholine, where, furthermore, up to two of the substituents R¹, R² and R³ can denote hydrogen and where, furthermore, all three radicals R¹, R² and R³ together with the N atom to which they are attached form a diazabicycloundecane ring or a pyridine ring.

5,512,680

PROCESS FOR THE PREPARATION OF AN OPTICALLY PURE AMINOALCOHOL

Marcel Descamps, Lherm; Joël Radisson, Saubens, and Gilles Anne-Archard, Toulouse, all of, France, assignors to Sanofi, Paris, France

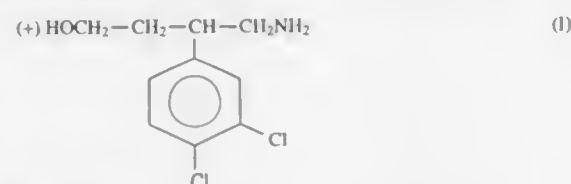
Continuation-in-part of Ser. No. 202,027, Feb. 25, 1994, abandoned. This application Aug. 24, 1994, Ser. No. 294,035

Claims priority, application France, Feb. 26, 1993, 93 02262 Int. Cl.⁶ C07D 211/58; C07C 253/30; 255/41; 213/00

U.S. Cl. 546—224

13 Claims

1. A process for the preparation of (+)-2-(3,4-dichlorophenyl)-4-hydroxybutylamine of formula (I):



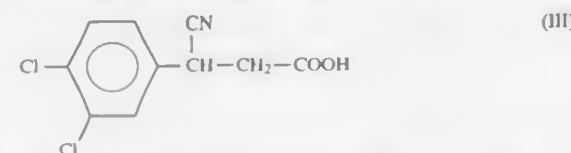
which comprises

(a) treating 3,4-dichlorophenylacetonitrile of formula (II):



with an alkali metal chloroacetate or bromoacetate in liquid ammonia or in a polar aprotic solvent, in the presence of a strong base, at a temperature of -40° C. to +25° C.;

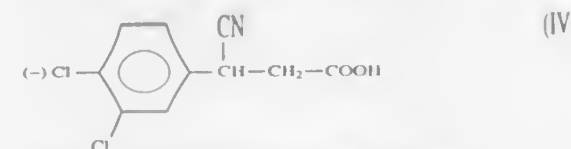
(b) treating the resulting racemic 3-cyano-3-(3,4-dichlorophenyl)propionic acid of formula (III):



with D-(-)-N-methylglucamine in order to crystallize all the acid (III) in the form of the D-(-)-N-methylglucamine salt of the levorotatory acid;

(c) treating said salt with a strong acid; and

(d) subjecting the freed (-)-3-cyano-3-(3,4-dichlorophenyl)propionic acid of formula (IV):



to enantioconservative reduction with a borane.

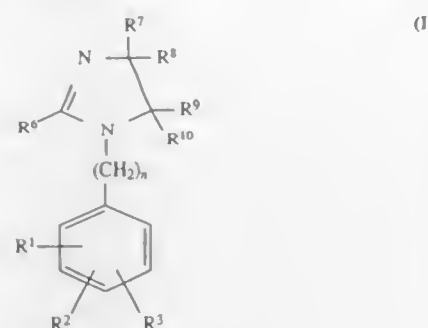
5,512,681 ANGIOTENSIN II RECEPTOR BLOCKING IMIDAZOLINONE DERIVATIVES

George A. Boswell; Indawati DeLucca, both of Wilmington, and Mimi L. Quan, Newark, all of Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 929,455, Aug. 14, 1992, abandoned, which is a continuation-in-part of Ser. No. 747,023, Aug. 19, 1991, abandoned. This application Sep. 30, 1993, Ser. No. 128,784

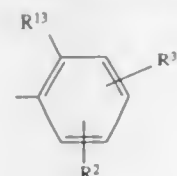
Int. Cl.⁶ C07D 231/06; 403/10; A61K 31/41; 31/415 U.S. Cl. 548—300.7 11 Claims

1. A compound of formula (I)



wherein:

R¹ is other than in the ortho position and is:



R² is

- (a) H,
- (b) halo (F, Cl, Br, I),
- (c) C₁-C₄ alkyl,
- (d) C₁-C₄ alkoxy,
- (e) C₁-C₄ acyloxy,
- (f) C₁-C₄ alkylthio,
- (g) C₁-C₄ alkylsulfinyl,
- (h) C₁-C₄ alkylsulfonyl,

(i) hydroxy (C₁-C₄) alkyl,

(j) phenyl (C₁-C₄) alkyl,

(k) —CO₂H,

(l) —CN,

(m) —CONHOR¹²,

(n) —SO₂NHR²¹,

(o) —NH₂,

(p) C₁-C₄ alkylamino,

(q) C₁-C₄ dialkylamino,

(r) —NHSO₂R²⁰,

(s) —NO₂,

(t) furyl,

(u) aryl; wherein aryl is phenyl optionally substituted with one or two substituents selected from the group consisting of halo, C₁-C₄ alkyl, C₁-C₄ alkoxy, —NO₂, CF₃, C₁-C₄ alkylthio, —OH, —NH₂, C₁-C₄ alkylamino, C₁-C₄ dialkylamino, —CN, —CO₂H, —CO₂CH₃, —CO₂CH₂CH₃, —CO₂-benzyl;

R³ is

(a) H,

(b) halo,

(c) C₁-C₄ alkyl,

(d) C₁-C₄ alkoxy,

(e) C₁-C₄ alkoxyalkyl;

R⁴ is

(a) —CN,

(b) —NO₂,

(c) —CO₂R¹¹.

R⁵ is

(a) H,

(b) C₁-C₆ alkyl,

(c) C₃-C₆ cycloalkyl,

(d) C₂-C₄ alkenyl,

(e) C₂-C₄ alkynyl;

R⁶ is

(a) C₁-C₁₀ alkyl,

(b) C₃-C₈ alkenyl,

(c) C₃-C₈ alkynyl,

(d) C₃-C₈ cycloalkyl,

(e) C₄-C₈ cycloalkenyl,

(f) C₄-C₁₀ cycloalkylalkyl,

(g) C₅-C₁₀ cycloalkylalkenyl,

(h) C₅-C₁₀ cycloalkylalkynyl,

(i) —(CH₂)_m—, R⁵,

(j) phenyl, optionally substituted with 1-2 substituents selected from the group of halo, C₁-C₄ alkyl, C₁-C₄ alkoxy, —NO₂, —NH₂, —OH and benzyloxy,

(k) benzyl, optionally substituted on the phenyl ring with 1-2 substituents selected from the group of halo, C₁-C₄ alkyl, C₁-C₄ alkoxy and —NO₂;

R⁷ and R⁸ taken together are —(CH₂)_n—,

R⁹ and R¹⁰ taken together are O;

R¹¹ is

(a) H,

(b) C₁-C₄ alkyl,

(c) C₁-C₄ cycloalkyl,

(d) phenyl,

(e) benzyl;

R¹² is

(a) H,

(b) methyl,

(c) benzyl;

R¹³ is

(a) —CH₂CO₂H,

(b) —C(CF₃)₂OH,

(c) —CONHNHSO₂CF₃,

(d) —CONHOR¹²,

(e) —CONHSO₂R²⁰,

(f) —CONHSO₂NHR¹⁹,

(g) —C(OH)R¹⁹PO₃H₂,

(h) —NHCONHSO₂R²⁰,

(i) —NHPO₃H₂,

(j) —SO₂NHCONR²⁰,

(k) —OPO₃H₂,

(l) —OSO₂H,

(m) —PO(OH)R¹⁹,

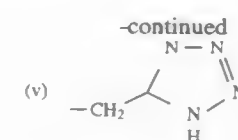
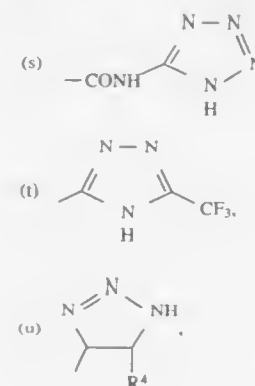
(n) —PO₃H₂,

(o) —SO₃H,

(p) —SO₂NHR¹⁹,

(q) —NHSO₂NHCONR²⁰,

(r) —SO₂NHCONR¹⁹.



R¹⁹ is

(a) H,

(b) C₁-C₅ alkyl optionally substituted with a substituent selected from the group consisting of aryl, as defined above, —OH, —SH, C₁-C₄ alkyl, C₁-C₄ alkoxy, C₁-C₄ alkylthio, —CF₃, halo, —NO₂, —CO₂H, —CO₂CH₃, —CO₂-benzyl, —NH₂, C₁-C₄ alkylamino, C₁-C₄ dialkylamino, —PO₃H₂,

(c) aryl, as defined above,

(d) benzyl

R²⁰ is

(a) aryl, as defined above,

(b) C₃-C₇ cycloalkyl,

(c) C₁-C₄ perfluoroalkyl,

(d) C₁-C₄ alkyl optionally substituted with a substituent selected from the group consisting of aryl, as defined above, —OH, —SH, C₁-C₄ alkyl, C₁-C₄ alkoxy, C₁-C₄ alkylthio, —CF₃, halo, —NO₂, —CO₂H, —CO₂CH₃, —CO₂-benzyl, —NH₂, C₁-C₄ alkylamino, C₁-C₄ dialkylamino, —PO₃H₂,

(e) C₁-C₄ alkoxy optionally substituted with a substituent selected from the group consisting of aryl as defined above, —OH, —SH, C₁-C₄ alkyl, C₁-C₄ alkoxy, C₁-C₄ alkylthio, —CF₃, halo, —NO₂, —CO₂H, —CO₂CH₃, —CO₂-benzyl, —NH₂, C₁-C₄ alkylamino, C₁-C₄ dialkylamino, —PO₃H₂,

(f) furyl;

(g) thienyl;

R²¹ is

(a) H,

(b) C₁-C₆ alkyl,

(c) phenyl,

(d) benzyl;

Z is

(a) —O—,

(b) —S—,

(c) —NR¹¹—;

m is 1 to 5;

n is 1 to 4;

t is 2 to 5;

or a pharmaceutically acceptable salt thereof.

5,512,682

NITRILE COMPOUNDS USEFUL AS INTERMEDIATES IN THE PRODUCTION OF BETA AMINO ALCOHOLS

Hans Hilpert, Reinach, Switzerland, assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 208,420, Mar. 9, 1994, Pat. No. 5,455,353.

This application Mar. 9, 1995, Ser. No. 401,583

Claims priority, application Switzerland, Mar. 24, 1993, 896/93

Int. Cl.⁶ C07D 209/48

U.S. Cl. 548—477

2 Claims

1. The compound (2S,3S)-3-(1,3-dioxo-1,3-dihydroisindol-2-yl)-2-acetoxy-4-phenylbutyronitrile or acid-addition salts thereof.

5,512,683

ALKYL OR ALKOXY SUBSTITUTED S-HETEROCYCLIC RETINOLIDS

Michael Klaus, Weill am Rhein, Germany, and Peter Mohr, Basel, Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

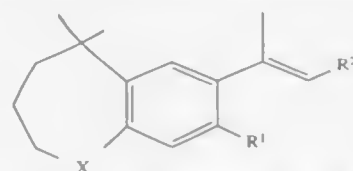
Division of Ser. No. 57,949, May 5, 1993, Pat. No. 5,391,766.
This application Oct. 18, 1994, Ser. No. 324,836

Claims priority, application Switzerland, May 7, 1992, 1465/92

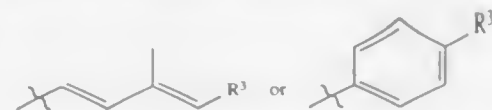
Int. Cl.⁶ C07D 337/04

U.S. Cl. 549—9

1. A fused bicyclic compound of the formula:



wherein X is —S—, —SO— or —SO₂—; R¹ is C₁₋₁₀-alkyl or C₁₋₁₀-alkoxy; R² is a residue of the formula



and R³ is carboxy or lower-alkoxycarbonyl; or salts of said bicyclic compound when R³ is carboxy.

5,512,684

PROCESS FOR PREPARING 3-(4-AMINOETHOXY-BENZOYL) BENZO[B]-THIOPHENES

Charles A. Alt, Greenwood, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

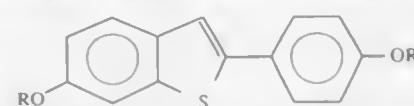
Continuation of Ser. No. 422,294, Apr. 14, 1995, which is a division of Ser. No. 279,456, Jul. 22, 1994, abandoned. This application Aug. 8, 1995, Ser. No. 512,724

Int. Cl.⁶ C07D 333/56;333/58

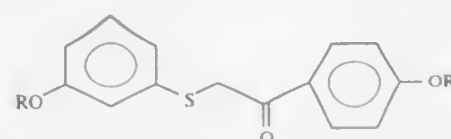
U.S. Cl. 549—51

5 Claims

1. A process for preparing a benzo[B]thiophene of the formula



wherein the R groups are the same or different and represent C₁-C₆ alkyl, the process comprising cyclizing a dialkoxy compound of the formula



in the presence of polyphosphoric acid and phosphoric acid.

5,512,685

PROCESS FOR THE PREPARATION OF 3-SUBSTITUTED THIOPHENES

Hannele Jarvinen; Leila Lahtinen, both of Helsinki; Osmo Hormi, Oulu; Jan Nasman, Turku, and Anna-Liisa Tammi, Paimio, all of, Finland, assignors to Neste Oy, Porvoo, Finland

Filed Dec. 20, 1994, Ser. No. 244,379

Claims priority, application Finland, Dec. 9, 1991, 915785
Int. Cl.⁶ C07D 333/06;333/02

U.S. Cl. 549—86

19 Claims

1. A process for the preparation of a 3-(C₄-C₁₈-alkyl)thiophene, comprising the following steps:

- combining an α-C₄-C₁₈-alkene with maleic acid anhydride to produce a C₄-C₁₈-alkenylsuccinic acid anhydride;
- catalytically hydrogenating the C₄-C₁₈-alkenylsuccinic acid anhydride to produce a C₄-C₁₈-alkylsuccinic acid anhydride;
- reacting the C₄-C₁₈-alkylsuccinic acid anhydride with an alkali metal hydroxide, producing an alkali metal salt of a C₄-C₁₈-alkylsuccinic acid; and
- reacting the alkali metal salt of the C₄-C₁₈-alkylsuccinic acid with a mixture of tetraphosphorus decasulfide and phosphorus in an organic solvent at a temperature of 100°-180° C., and obtaining a 3-(C₄-C₁₈-alkyl) thiophene.

5,512,686

METHOD FOR THE PURIFICATION OF DIOXYDIPHTHALIC ANHYDRIDE AND ESTER INTERMEDIATE MADE THEREIN

Willis T. Schwartz, Grand Island; Frank J. Dinan, Tonawanda, both of N.Y., and Jeffrey S. Stults, West Lafayette, Ind., assignors to Occidental Chemical Corporation, Niagara Falls, N.Y.

Filed Mar. 31, 1995, Ser. No. 414,827

Int. Cl.⁶ C07D 493/14;319/24

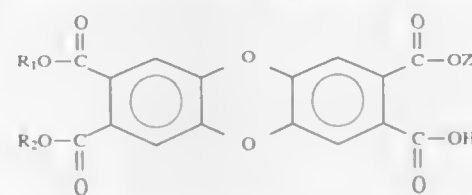
U.S. Cl. 549—234

13 Claims

1. A process for the purification of dioxydiphthalic anhydride which comprises

- treating a crude mixture of dioxydiphthalic anhydride and alkali metal salts with an alkanol selected from C₃-C₅ alkanols, to form the dioxydiphthalic acid diester thereof, the alkanol being present in sufficient excess to dissolve the diester;
- removing the insoluble alkali metal salts from the crude reaction product of step (A); and
- converting the dioxydiphthalic acid diester to dioxydiphthalic anhydride.

11. A dioxydiphthalic acid ester characterized by the formula:



where Z is n-butyl, one of R¹ and R² is H and one of R¹ and R² is n-butyl.

5,512,687

COMPOUNDS FOR INHIBITING IMMUNE RESPONSE

Cecilia M. Bastos, Westborough, Mass., assignor to Procept, Inc., Cambridge, Mass.

Filed Oct. 28, 1994, Ser. No. 331,388

Int. Cl.⁶ A61K 33/24; C07F 1/00

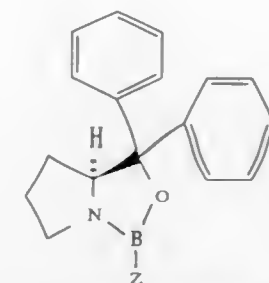
U.S. Cl. 548—101

5 Claims

1. A ruthenium complex of the general formula:



wherein Ru is ruthenium having an oxidation state of 2 or 3; wherein M is the same or different and is independently a 5-membered ring that is a heterocyclic amine, wherein m is 6; wherein Z is a counterion of appropriate charge to render the overall charge of the complex neutral; wherein n is 0, 1, 2, 3 or 4.



wherein Z is (C₁-C₄)alkyl, phenyl or (C₇-C₉)phenylalkyl, in a cyclic ether solvent at a temperature of about -20° C. to +40° C.

5,512,688

SULFONIC ACID ESTERS WHICH ARE USEFUL AS INTERMEDIATES IN THE PRODUCTION OF β-AMINOALCOHOLS

Hans Hilpert, Reinach, Switzerland, assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 208,420, Mar. 9, 1994, Pat. No. 5,455,353.
This application Mar. 9, 1995, Ser. No. 401,480

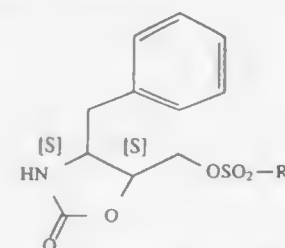
Claims priority, application Switzerland, Mar. 24, 1993, 896/93

Int. Cl.⁶ C07D 263/04

U.S. Cl. 548—232

9 Claims

1. The compound of formula,



wherein R¹ is lower-alkyl, phenyl, or substituted phenyl.

5,512,689

PROCESS FOR THE PREPARATION OF INTERMEDIATES IN THE SYNTHESIS OF CHIRAL THIAZOLIDINE-2,4-DIONE DERIVATIVES

George J. Quallich, North Stonington, Conn., assignor to Pfizer Inc., New York, N.Y.

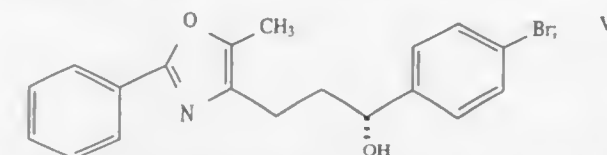
Continuation of Ser. No. 162,028, Dec. 1, 1993, abandoned, which is a continuation of Ser. No. 733,564, Jul. 22, 1991, abandoned. This application Apr. 5, 1995, Ser. No. 417,502

Int. Cl.⁶ C07D 263/32

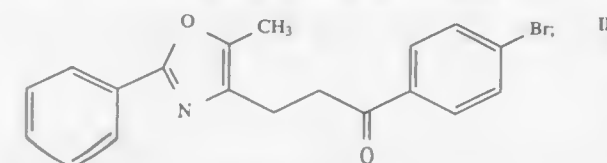
U.S. Cl. 548—235

9 Claims

1. A process for the stereoselective preparation of a compound of formula VI,



said compound being essentially free of its enantiomeric form; and said process comprising treating a ketone of formula III,



with about 2 to 3 molar equivalents of a borane reducing agent selected from the group consisting of borane methyl sulfide complex, catecholborane and borane tetrahydrofuran, said treatment being conducted in the presence of a chiral oxazaborolidine catalyst of the formula VII,

5,512,690

7-OXABICYCLOHEPTANE CARBOXYLIC ACID PROSTAGLANDIN ANALOG INTERMEDIATES USEFUL IN THE PREPARATION OF ANTI-THROMBOTIC AND ANTI-BASOPASTIC COMPOUNDS AND METHOD FOR PREPARING SAME

Michael A. Poss, Lawrenceville; Paul D. Pansegrau; Shaopeng Wang, both of E. Windsor; John K. Thottathil, Robbinsville; Janak Singh, Lawrenceville, and Richard H. Mueller, Ringoes, all of N.J., assignors to Bristol-Myers Squibb Company, Princeton, N.J.

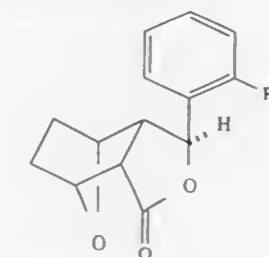
Division of Ser. No. 356,743, Dec. 15, 1994, which is a division of Ser. No. 226,091, Apr. 20, 1994, Pat. No. 5,399,725, which is a continuation-in-part of Ser. No. 67,886, May 27, 1993, Pat. No. 4,785,752. This application Sep. 14, 1995, Ser. No. 528,371

Int. Cl.⁶ C07D 407/02

U.S. Cl. 549—300

5 Claims

1. A compound having the structure



including all stereoisomers thereof, wherein R⁵ is —CHO or —CH=CH—CO₂R₆ wherein R₆ is H or alkyl.

5,512,691

PROCESS FOR THE PRODUCTION OF TOCOPHEROL CONCENTRATES

Scott D. Barnicki; Charles E. Sumner, Jr., and H. Chip Williams, all of Kingsport, Tenn., assignors to Eastman Chemical Company, Kingsport, Tenn.

Filed Nov. 7, 1994, Ser. No. 334,901

Int. Cl.⁶ C07D 311/72

U.S. Cl. 549—413

47 Claims

1. A method for preparing a tocopherol concentrate which comprises the steps:

- heating a vegetable oil by-product comprised of tocopherols, fatty acids, hydrocarbons, sterol esters of fatty acids, sterols, triterpenoid alcohols, methyl-sterols, and mono-, di-, and triglycerides, optionally in the presence of an acid catalyst, said by-product optionally containing additional C₁₀-C₂₂ fatty acids, to a temperature of about 70° C. to 300° C. and a pressure of about 50 torr to 760 torr, while continuously

removing water formed thereby, to provide a mixture comprised of sterol esters, high boiling fatty acid esters, waxes, and glycerides; and

(b) followed by subjecting said mixture to a series of distillation operations comprising:

- (i) one or more separate distillation operations, wherein said distillation(s) is (are) conducted at a temperature of about 200° C. to 320° C. and a pressure of about 0.01 torr to 10 torr, in series wherein unreacted fatty acids and low-boiling components are removed as a vapor effluent and a liquid effluent comprised of tocopherols is removed; and
- (ii) wherein said liquid effluent from step (b)(i) is subjected to one or more distillations in series, wherein said distillation(s) is (are) conducted at a temperature of about 170° C. to 270° C. and a pressure of about 0.005 torr to 2 torr, wherein a tocopherol concentrate is removed as a vapor effluent and wherein a liquid effluent comprised of sterol esters, fatty acid esters, glycerides, waxes, and other high-boiling substances is removed.

5,512,692

PROCESS FOR REMOVING GLYCEROL FROM GLYCERIDES

Siegfried Peter, Lindenweg 3, 8525, Uttenreuth-Weiher; Bernd Czech, and Eckard Weldner, both of Erlangen, all of Germany, assignors to Siegfried Peter, Uttenreuth-Weiher, Germany

Continuation of Ser. No. 891,722, Jun. 1, 1992, abandoned.

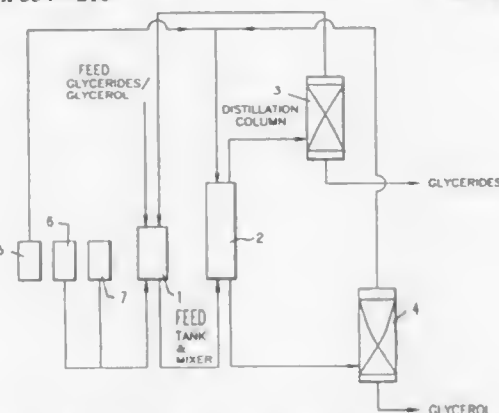
This application Oct. 11, 1994, Ser. No. 320,770

Claims priority, application Germany, Jun. 5, 1991, 41 18 487.4

Int. Cl. C 11B 7/00

U.S. Cl. 554—210

18 Claims



1. Process for removing glycerol and/or diglycerol from glycerides or glyceride mixtures by liquid-liquid extraction carried out under subcritical conditions, characterized in that the glyceride or glyceride mixture is dissolved in a solvent selected from the group consisting of:

solvent (a) consisting of:

- i. 30 to 100 weight %, based on the admixture, of at least one organic compound having at least one functional group selected from the group consisting of a carbonyl group; a sulfoxide group, a sulfone group, or a combination thereof and a solubility in water of at most 15 weight % and a boiling point of at most 200° C. in mixture with;
- ii. 0 to 70 weight %, based on the admixture, of at least one organic compound having a carbonyl and/or sulfoxide and/or sulfone group and a solubility in water of more than 15 weight %, and
- iii. 0 to 70 weight %, based on the admixture, of at least one compound containing a hydroxyl group and having a boiling point of at most 200° C.;

solvent (b) consisting of:

- i. 5 to 95 weight %, based on the admixture, of at least one compound selected from the group of compounds set forth in (a), in mixture with:

- ii. 5 to 95 weight %, based on the admixture, of at least one compound, having up to 20 carbon atoms, selected from the group consisting of hydrocarbons, halosubstituted hydrocarbons, ethers and combinations thereof;

solvent (c) consisting of:

- i. 20 to 100 weight %, based on the admixture, of at least one ether having up to 20 carbon atoms, in mixture with:

- ii. 0 to 80 weight %, based on the mixture, of at least one compound, having up to 20 carbon atoms, selected from the group consisting of hydrocarbons, halosubstituted hydrocarbons, and combinations thereof; and

solvent (d) consisting of:

- i. 5 to 100 weight %, based on the admixture, of carbon dioxide, in mixture with:

- ii. 0 to 95 weight %, based on the admixture, of propane, butane, or both propane and butane;

the amounts of said solvent (a), (b), (c) or (d) being chosen so that the amount of the glycerides, or glyceride mixture, to be purified is 5 to 80 weight % of the resulting solution, and the glycerol, diglycerol or both is extracted from said resulting solution with the aid of water.

5,512,693

PREPARATION OF TITANIUM (II) OR ZIRCONIUM (II) COMPLEXES

Robert K. Rosen, Sugar Land, and Brian W. S. Kolthammer, Lake Jackson, both of Tex., assignors to The Dow Chemical Company, Midland, Mich.

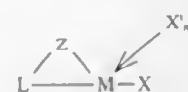
Filed Dec. 7, 1994, Ser. No. 350,924

Int. Cl. C 07F 17/00; 7/28

U.S. Cl. 556—7

13 Claims

1. A process for preparing a metal complex containing one and only one cyclic, delocalized n-bonded group, said complex corresponding to the formula:



wherein,

M is titanium or zirconium in the +2 formal oxidation state;

L is a group containing a cyclic, delocalized, anionic, n-system through which the group is bound to M, and which group is also bound to Z;

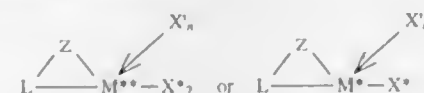
Z is a moiety bound to M via a σ-bond, comprising boron, or a member of Group 14 of the Periodic Table of the Elements, and also comprising nitrogen, phosphorus, sulfur or oxygen, said moiety having up to 60 non-hydrogen atoms;

X is a neutral, conjugated diene, optionally substituted with one or more hydrocarbyl groups, said X having up to 40 carbon atoms and forming a n-complex with M;

X' is a neutral Lewis base ligand selected from amines, phosphines and ethers said X' having from 3 to 20 non-hydrogen atoms; and

n is a number from 0 to 3;

said process comprising contacting a metal halide compound corresponding to the formula



wherein,

M* is titanium or zirconium in the +3 formal oxidation state;

M** is titanium or zirconium in the +4 formal oxidation state;

X* is halide; and

L, Z, X' and n are as previously defined;

with a free diene corresponding to X, and subsequently or simultaneously contacting the resulting reaction mixture with a Grignard derivative of a C₁₋₂₀ n-alkane to form the desired metal complex.

5,512,694

ADDITION-CURABLE SILICONE ADHESIVE COMPOSITIONS AND BIS(TRIALKOXSILYL) ALPHA-AMINO ESTER ADHESION PROMOTERS

Judith Stein, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 368,405, Dec. 29, 1994, Pat. No.

5,475,044. This application Jun. 7, 1995, Ser. No. 482,508

Int. Cl. C 07F 7/04

U.S. Cl. 556—418

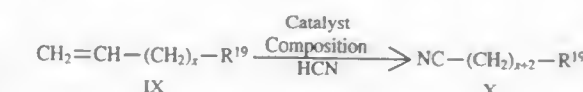
2 Claims

1. A bis(trialkoxysilyl)alpha-amino ester having the formula,



where R³ is selected from the same or different C₍₁₋₄₎alkyl radicals and R⁴ and R⁵ are selected from the same or different C₍₂₋₈₎ alkylene radicals.

R²⁰ is alkyl; or



wherein

R¹⁹ is H, CN, CO₂R²⁰, or perfluoroalkyl;

x is 0 to 12 when R¹⁹ is H, CO₂R²⁰ or perfluoroalkyl;

x is 1 to 12 when R¹⁹ is CN; and

R²⁰ is alkyl.

5,512,696

HYDROCYANATION PROCESS AND MULTIDENTATE PHOSPHITE AND NICKEL CATALYST COMPOSITION THEREFOR

Kristina A. Kreutzer, Wilmington, Del., and Wilson Tam, Boothwyn, Pa., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

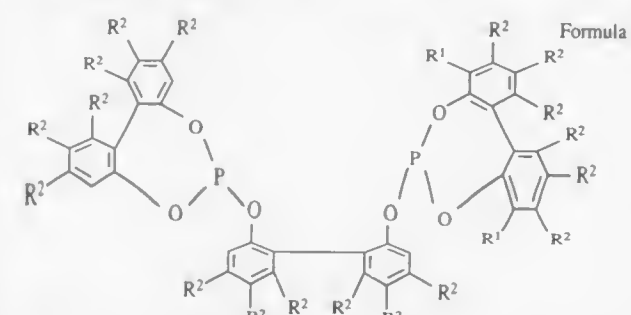
Filed Jul. 21, 1995, Ser. No. 505,137

Int. Cl. C 07C 253/10

U.S. Cl. 558—338

8 Claims

1. A hydrocyanation process comprising reacting an acyclic, aliphatic, monoethylenically unsaturated compound in which the ethylenic double bond is not conjugated to any other olefinic group in the molecule, or a monoethylenically unsaturated compound in which the ethylenic double bond is conjugated to an organic ester group, with a source of HCN in the presence of a catalyst composition comprising a Lewis acid, a zero-valent nickel, and at least one multidentate phosphite ligand selected from the group represented by the following Formulas I, II, III, IV, V, VI and VII:

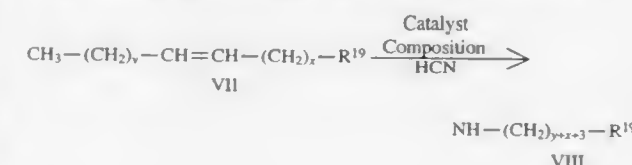


wherein

each R¹ is independently a secondary or tertiary substituted hydrocarbyl of 3 to 12 carbon atoms; and

each R² is independently, H, X wherein X is Cl, F or Br, a C₁ to C₁₂ alkyl, or OR³ wherein R³ is C₁ to C₁₂ alkyl;

and wherein said monoolefin and terminal organonitrile are



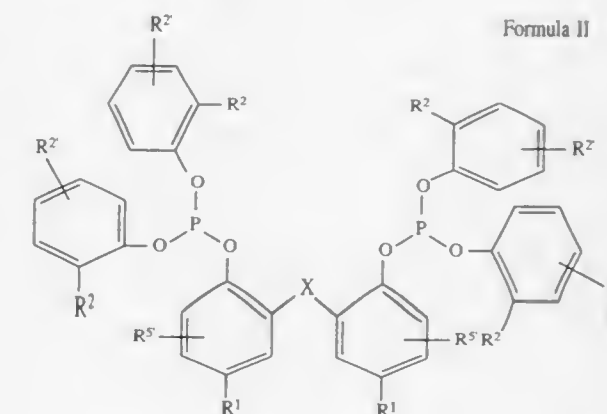
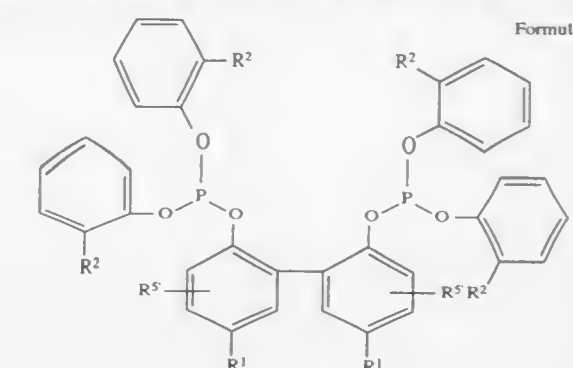
wherein

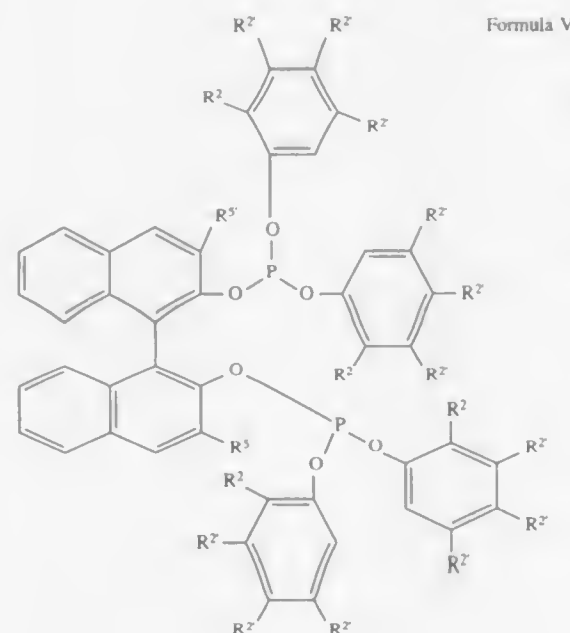
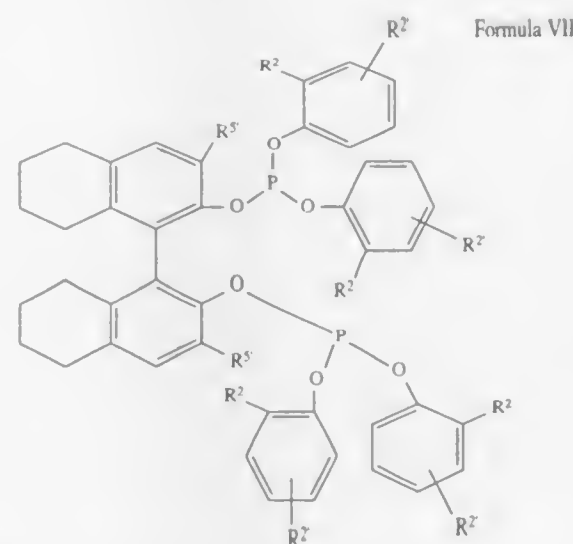
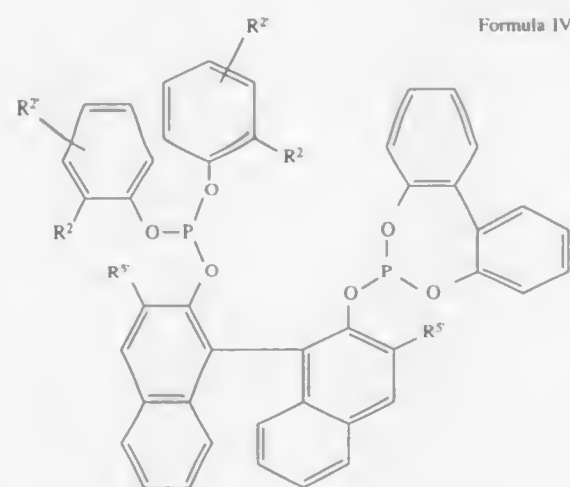
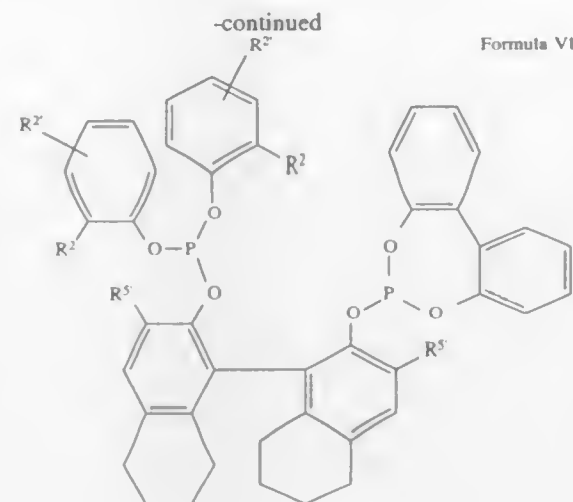
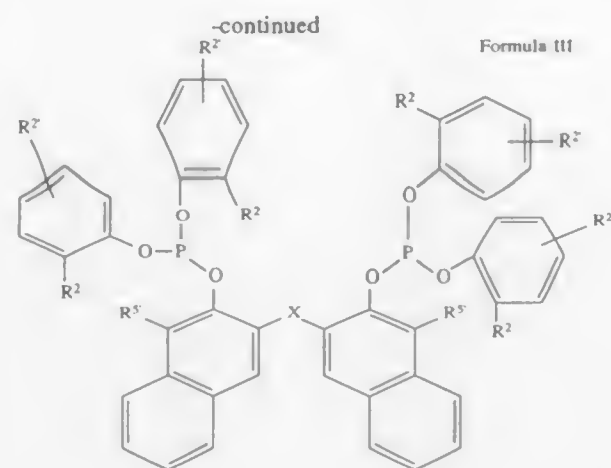
R¹⁹ is H, CN, CO₂R²⁰, or perfluoroalkyl;

y is 0 to 12;

x is 0 to 12 when R¹⁹ is H, CO₂R²⁰ or perfluoroalkyl;

x is 1 to 12 when R¹⁹ is CN; and





wherein
 each R¹ is independently, H, halogen, a C₁ to C₆ alkyl, or OR³
 wherein R³ is a C₁ to C₆ alkyl;
 each R² is independently a secondary or tertiary hydrocarbyl of 3 to 6 carbon atoms;
 each R² is independently H, halogen, OR³ wherein R³ is a C₁ to C₆ alkyl or a primary, secondary or tertiary hydrocarbyl of 1 to 6 carbon atoms; for Formulas II, III, IV, VI and VII, R² is at either the meta or para position to the oxygen;
 each R⁵ is independently H or a primary or secondary hydrocarbyl of 1 to 3 carbon atoms in either the ortho or meta position to the oxygen or CO₂R³ where R³ is a C₁ to C₄ alkyl; and
 each X is independently O or CH(R⁴), wherein R⁴ is H, a substituted phenyl, or a C₁ to C₆ alkyl;
 with the proviso that the terms "secondary" and "tertiary" herein refer to the carbon atom bonded to an aromatic ring; and with the further proviso that in Formulas I, II, and V at least one R² cannot be a tertiary hydrocarbyl.

5,512,697

PREPARATION OF ALIPHATIC ALPHA, OMEGA-AMINONITRILES

Werner Schnurr, Herxheim; Rolf Fischer, Heidelberg; Peter Bassler, Viernheim, and Wolfgang Harder, Weinheim, all of, Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Filed Jan. 10, 1995, Ser. No. 370,606

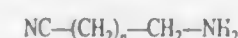
Claims priority, application Germany, Dec. 27, 1994, 44 46 894.6

Int. Cl.⁶ C07C 253/30

U.S. Cl. 558—459

3 Claims

1. A process for the preparation of aliphatic alpha,omega-aminonitriles of the formula II



II

where n is an integer from 1 to 10, by the partial hydrogenation of aliphatic alpha,omega-dinitriles of the formula I



I

where n has the abovementioned meanings, in the presence of a hydrogenation catalyst, ammonia and lithium hydroxide or of a compound which gives lithium hydroxide during the hydrogenation, at a temperature in the range of from 40° to 120° C. and at a pressure in the range of from 2 to 12 MPa, the temperature and pressure being chosen so that the reaction is carried out in the liquid phase,

the weight ratio of ammonia to dinitrile I is from 9:1 to 0.1:1, wherein the amount of lithium hydroxide is from 0.1 to 20% by weight, based on the amount of hydrogenation catalyst, wherein the hydrogenation catalyst is a nickel-, ruthenium-, rhodium- or cobalt compound, and wherein the amount of hydrogenation catalyst is chosen so that the amount of nickel, ruthenium, rhodium or cobalt is from 1 to 50% by weight, based on the amount of dinitrile I.

5,512,698

ETHYL 6-FORMYLOXY-4-HEXENOATE

Patrick Casara, Ittenheim, France, assignor to Merrell Pharmaceuticals Inc., Cincinnati, Ohio

Division of Ser. No. 279,620, Jul. 22, 1994, Pat. No. 5,440,065, which is a division of Ser. No. 184,762, Jan. 19, 1994, Pat. No. 5,380,936, which is a continuation of Ser. No. 986,636, Dec. 7, 1992, abandoned. This application Apr. 11, 1995, Ser. No. 420,179

Claims priority, application European Pat. Off., Dec. 10, 1991, 91403351.9

Int. Cl.⁶ C07C 69/73

U.S. Cl. 560—183

1 Claim

1. Ethyl 6-formyloxy-4-hexenoate.

5,512,699

POLY POLYHYDROXY FATTY ACID AMIDES

Daniel S. Connor, Yi-Chang Fu, and Jeffrey J. Scheiber, all of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

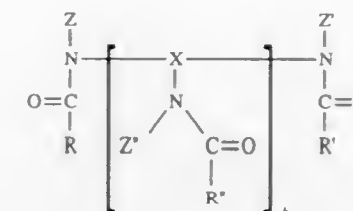
Continuation-in-part of Ser. No. 187,253, Jan. 25, 1994, abandoned. This application Nov. 21, 1994, Ser. No. 342,500

Int. Cl.⁶ C07C 233/34

U.S. Cl. 564—153

4 Claims

1. Novel poly polyhydroxy fatty acid amide compounds having the formula:



wherein: X is a bridging group from the group consisting of branched or linear alkyl, ether alkyl or alkyl amine moieties having from 2 to 200 atoms; Z, Z', and Z'' are the same or different alcohol-containing moieties having two or more hydroxyl groups, or all but one of Z, Z', or Z'' is hydrogen; R, R', and R'' are the same or different hydrocarbyl moieties having from about 1 to about 21 carbon atoms and can be saturated, branched or unsaturated and mixtures thereof; and k is from 1 to about 100.

5,512,700

PROCESS FOR PURIFYING A BISPHENOL

Emil Patrascu, Stade; Karl Kraehling, Sasbach, and Jochen Gressmann, Stade, all of, Germany, assignors to Dow Deutschland Inc., Germany

Filed Mar. 10, 1995, Ser. No. 401,513

Claims priority, application United Kingdom, Mar. 15, 1994, 9405015

Int. Cl.⁶ C07C 37/84

U.S. Cl. 568—724

20 Claims

1. A process for the purification of a crude bisphenol which comprises the steps of:

- (1) preparing a mixture comprising from about 35 to about 70 parts by weight of a crude bisphenol and from about 65 to about 30 parts by weight of water, without addition of a substantial amount of organic solvent or an alkaline compound, at a pressure above atmospheric and a temperature above about 100° C.,
- (2) crystallizing bisphenol at a pressure below atmospheric,
- (3) separating crystalline bisphenol from the mother liquor,
- (4) dividing at least a portion of the mother liquor into a bisphenol-rich oil phase and a water-rich phase,
- (5) preparing a mixture comprising at least a portion of the bisphenol-rich oil phase and water at a pressure above atmospheric and a temperature above about 100° C.,
- (6) cooling the mixture and crystallizing bisphenol; and
- (7) separating crystalline bisphenol from the mother liquor.

5,512,701

PROCESS FOR THE SYNTHESIS OF VINYL SULFENIC ACID DERIVATIVES

David W. Hoard, Lafayette, and Wayne D. Luke, West Lafayette, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

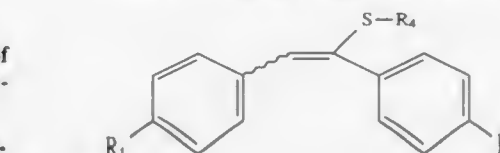
Filed Jun. 7, 1995, Ser. No. 482,692

Int. Cl.⁶ C07F 7/08; 7/18

U.S. Cl. 556—428

24 Claims

1. A process for preparing a compound of the formula

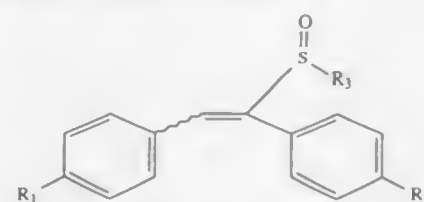


wherein:
 R₁ is hydrogen, C₁-C₄ alkoxy, arylalkoxy, halo, or amino;
 R₂ is hydrogen, C₁-C₄ alkoxy, arylalkoxy, halo, or amino;
 R₄ is OSi(R)₃, NR₄R₆, or SR₆;
 each R is independently C₁-C₆ alkyl, aryl, or arylalkyl;

R_5 and R_6 are independently hydrogen, C_1 - C_6 alkyl, arylalkyl, or aryl; or R_5 and R_6 together with the nitrogen atom form a ring selected from piperidine, pyrrolidine, morpholine, or hexamethylimine; and

R_8 is C_1 - C_6 alkyl, aryl, or arylalkyl; which comprises:

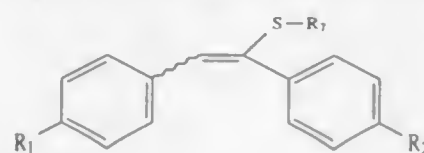
(1) reacting a compound of the formula



wherein:

R_1 and R_2 are as defined above, and

R_3 is a thermally-labile or acid-labile C_2 - C_{10} alkyl, C_4 - C_{10} alkenyl, or aryl(C_1 - C_{10} alkyl) group; with a silylating reagent to produce a sulfonate silyl ester of the formula



wherein:

R_1 and R_2 are as defined above;

R_7 is $OSi(R)_3$; and

each R is independently C_1 - C_6 alkyl, aryl, or arylalkyl;

(2) optionally reacting said sulfonate silyl ester with an amine of the formula HNR_5R_6 wherein R_5 and R_6 are as defined above; or

(3) optionally reacting said sulfonate silyl ester with a mercaptan of the formula HSR_8 , wherein R_8 is as defined above, in the presence of an amine base.

II

5,512,702

METHOD FOR IN-SITU IMMOBILIZATION OF LEAD IN CONTAMINATED SOILS, WASTES, AND SEDIMENTS USING SOLID CALCIUM PHOSPHATE MATERIALS

James A. Ryan, Cincinnati; Terry J. Logan, Columbus; Qi Y. Ma, Columbus, and Samuel J. Tralna, Columbus, all of Ohio, assignors to The Ohio State University Research Foundation

Filed Nov. 8, 1993, Ser. No. 148,725

Int. Cl.⁶ B09B 3/00

U.S. Cl. 588—256

17 Claims

- I. A method for in-situ immobilization of lead contaminated solid materials comprising:
 - determining the amount of lead in the lead contaminated solid material that needs to be immobilized;
 - mixing the lead contaminated solid material with an amount of solid insoluble calcium phosphate material sufficient to react with the lead in the lead contaminated solid material;
 - allowing a sufficient time period for a chemical reaction to take place wherein the lead in the lead contaminated solid material becomes immobilized and biologically unavailable; and
 - leaving the mixture of any remaining lead contaminated solid material, any remaining solid insoluble calcium phosphate material, and the immobilized lead in place.

IV

solid materials comprising:

- determining the amount of lead in the lead contaminated solid material that needs to be immobilized;
- mixing the lead contaminated solid material with an amount of solid insoluble calcium phosphate material sufficient to react with the lead in the lead contaminated solid material;
- allowing a sufficient time period for a chemical reaction to take place wherein the lead in the lead contaminated solid material becomes immobilized and biologically unavailable; and
- leaving the mixture of any remaining lead contaminated solid material, any remaining solid insoluble calcium phosphate material, and the immobilized lead in place.

ELECTRICAL

5,512,703

ELECTRONIC MUSICAL INSTRUMENT UTILIZING A TONE GENERATOR OF A DELAYED FEEDBACK TYPE CONTROLLABLE BY BODY ACTION

Satoshi Usa, Hamamatsu, Japan, assignor to Yamaha Corporation, Japan

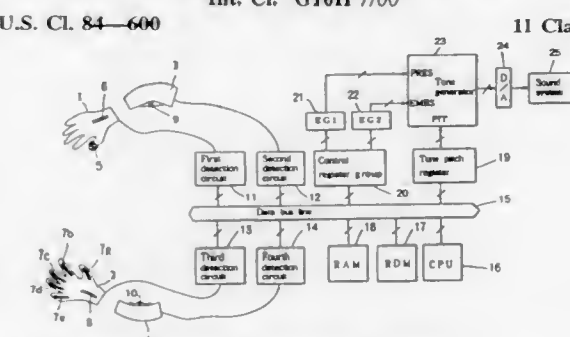
Filed Mar. 23, 1993, Ser. No. 35,631

Claims priority, application Japan, Mar. 24, 1992, 4-097021

Int. Cl.⁶ G10H 7/00

U.S. Cl. 84—600

11 Claims



1. An electronic musical instrument comprising:
 - detecting means for detecting body action to produce an action signal representative of the detected body action, the detecting means including sensor means worn by a player on a part of the player's body for detecting the body action of the part;
 - excitation means for producing an excitation signal according to the action signal, wherein the excitation means includes timing means responsive to the action signal for producing a timing signal indicative of at least one of initiation and termination of the musical tone signal, function means responsive to the timing signal for producing a time-varying signal which varies according to the at least one of initiation and termination of the musical tone signal, and synthesis means for processing the time-varying signal based on the action signal so as to form an excitation signal effective for exciting the tone generator means;
 - pitch means for designating a desired tone pitch; and
 - tone generator means of a delayed feedback type receptive of the excitation signal for generating a musical tone signal according to the designated tone pitch, the tone generator means including delay means for delaying the excitation signal by a given time corresponding to the designated tone pitch, and feedback means for feeding back the delayed excitation signal to the delay means.

5,512,704

ELECTRONIC SOUND SIGNAL GENERATOR ACHIEVING SCRATCH SOUND EFFECT USING SCRATCH READOUT FROM WAVEFORM MEMORY

Jun Adachi, Hamamatsu, Japan, assignor to Yamaha Corporation, Japan

Filed Oct. 12, 1993, Ser. No. 134,394

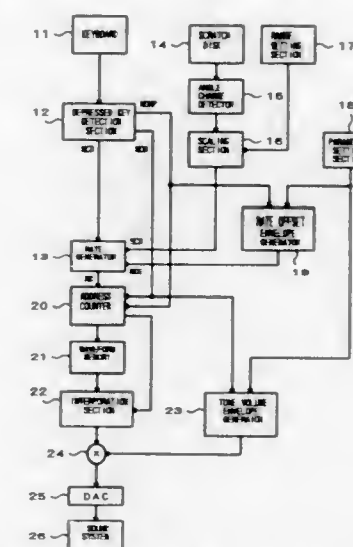
Claims priority, application Japan, Oct. 12, 1992, 4-298192

Int. Cl.⁶ G10H 7/00

U.S. Cl. 84—605

11 Claims

1. An electronic sound signal generator comprising:
 - waveform storage means for storing sound waveform data in a predetermined order;
 - rate designation means for designating a readout rate to read out the waveform data from said waveform storage means in correspondence to a given pitch;
 - scratch control means for generating time-variable scratch control data to control readout rate and readout direction;
 - rate change means for changing the readout rate designated by said rate designation means in accordance with the scratch control data, the readout rate thus changed by said rate change means being of a positive or negative value; and
 - readout control means for performing a control such that the waveform data are read out from said waveform storage means on the basis of the changed readout rate, a direction in



which the waveform data are read out from said waveform storage means being controlled to be a forward or reverse direction depending on whether the changed readout rate is of a positive or negative value.

5,512,705

MUSICAL TONE SYNTHESIZING APPARATUS

Kaoru Kobayashi, Hamamatsu, Japan, assignor to Yamaha Corporation, Japan

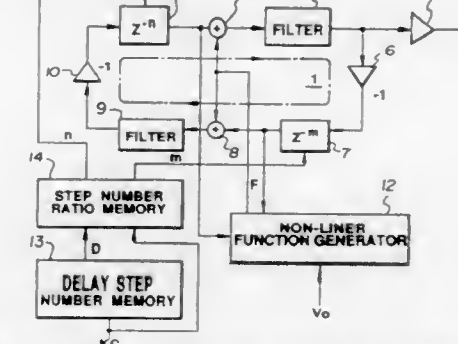
Filed Dec. 11, 1990, Ser. No. 625,374

Claims priority, application Japan, Dec. 12, 1989, 1-322249

Int. Cl.⁶ H03G 3/00

U.S. Cl. 84—622

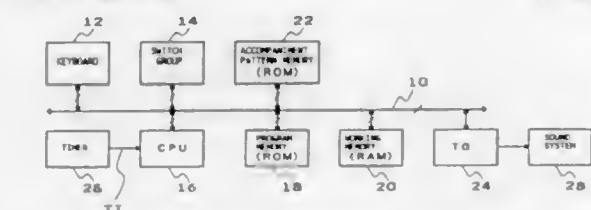
11 Claims



accordance with said delay ratio, and supplying said delay times to said delay means.

5,512,706
AUTOMATIC ACCOMPANIMENT DEVICE HAVING A
FILL-IN REPEAT FUNCTION
 Masao Kondo, Hamamatsu, Japan, assignor to Yamaha Corporation, Japan

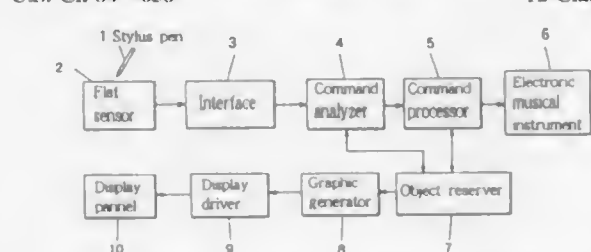
Filed Oct. 20, 1994, Ser. No. 326,706
 Claims priority, application Japan, Jan. 25, 1993, 5-288748
 Int. Cl.⁶ G10H 1/36; 1/38; 1/40
 U.S. Cl. 84—634 6 Claims



4. An automatic accompaniment device comprising: storage means for storing a first accompaniment pattern and a second accompaniment pattern; an operator for instructing an automatic accompaniment based on the second accompaniment pattern; operation detection means for detecting actuation of said operator; readout means for reading out one of said first and second accompaniment patterns; end detection means for detecting that readout of the second accompaniment pattern has come to an end; and control means for, when said end detection means detects that the readout of the second accompaniment pattern has come to an end, performing control such that the readout of the second accompaniment pattern is resumed from an intermediate portion thereof if said operator is being actuated and that the readout of the second accompaniment pattern is changed over to readout of the first accompaniment pattern if said operator is not being actuated.

5,512,707
CONTROL PANEL HAVING A GRAPHICAL USER
INTERFACE FOR SETTING CONTROL PANEL DATA
WITH STYLUS

Osamu Ohshima, Hamamatsu, Japan, assignor to Yamaha Corporation, Japan
 Filed Jan. 4, 1994, Ser. No. 177,230
 Claims priority, application Japan, Jan. 6, 1993, 5-000738
 Int. Cl.⁶ G01P 3/00
 U.S. Cl. 84—658 12 Claims



1. A panel device installed in a machine for setting numerical data in a desired updating mode into the machine, the panel device comprising:

display means for displaying at least one numerical data item; pointing means manually handled to touch the display means for designating a requested one of the numerical data to be updated, and being moved for drawing a gesture pattern; detecting means coupled to the pointing means for detecting the drawn gesture pattern;

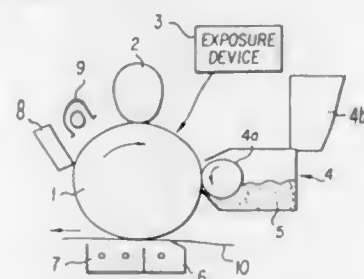
analyzing means for analyzing the detected gesture pattern to determine a particular updating mode associated to the gesture pattern; and operation means for carrying out updating of the designated numerical data according to the determined updating mode.

5,512,708
TONER USED IN AN IMAGE FORMING APPARATUS
 Sadao Takahashi, Tokyo; Kouichi Yamazaki, Yokohama; Nobuo Kikuchi, Kawagoe; Kentaro Matsumoto, Ichikawa; Tadashi Hayakawa, Tokyo; Yoshiaki Miyashita, Kawasaki; and Takeshi Tabuchi, Kawaguchi, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Oct. 17, 1994, Ser. No. 323,803
 Claims priority, application Japan, Oct. 20, 1993, 5-262331
 Int. Cl.⁶ G03G 15/08

U.S. Cl. 118—653

4 Claims



1. An image forming apparatus comprising: a photosensitive body; a charge member held in contact with said photosensitive body and for charging said photosensitive body by applying a voltage thereto; an exposure device for exposing a surface of said photosensitive body charged by said charge member and for forming an electrostatic latent image on said photosensitive body; and a developing device for attaching toner to said electrostatic latent image on said photosensitive body and for visualizing said electrostatic latent image, wherein a particle diameter of fine powder of said toner used in said developing device is equal to or less than 3 μm , and a containing rate of said fine powder is equal to or less than 5%.

5,512,709
ELECTROMAGNETIC EMISSION-SHIELDING GASKET
 Andrew D. Jencks, 540 Prospect St., Seekonk, Mass. 02771, and John DiGloia, 780 Oak Hill Rd., North Kingstown, R.I. 02852

Division of Ser. No. 203,464, Feb. 28, 1994, abandoned. This application Aug. 23, 1994, Ser. No. 294,541
 Int. Cl.⁶ H05K 9/00

U.S. Cl. 174—35 GC

22 Claims

1. A gasket for shielding from electromagnetic emissions (EMI), and exhibiting excellent characteristics of recovery, bending, and tangential compression, said gasket comprising: a knitted tubular core of monofilament synthetic polymer yarns; and



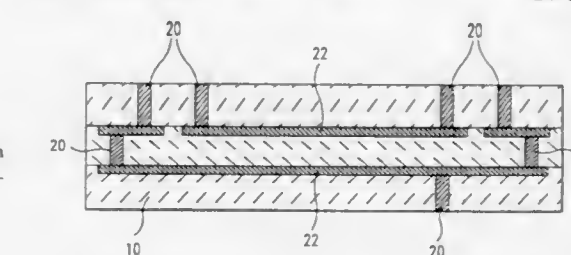
a conductive sheath over said tubular knitted core, said sheath being sufficiently conductive to provide shielding from electromagnetic interference.

5,512,711
COPPER-BASED PASTE CONTAINING REFRACTORY
METAL ADDITIONS FOR DENSIFICATION CONTROL
 Lawrence D. David, Wappingers Falls; Shaji Farooq; Anthony Mastreani, both of Hopewell Junction; Srinivasa S-N. Reddy, LaGrangeville, and Rao V. Vallabhaneni, Wappingers Falls, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 998,137, Dec. 28, 1992, abandoned.
 This application Jun. 10, 1994, Ser. No. 258,896
 Int. Cl.⁶ H05K 1/09

U.S. Cl. 174—257

14 Claims



1. A copper-based paste for ceramic substrate vias and lines comprising copper particles as the majority constituent of the paste, a refractory metal additive selected from the group consisting of chromium, tantalum, and tungsten, and organic materials.

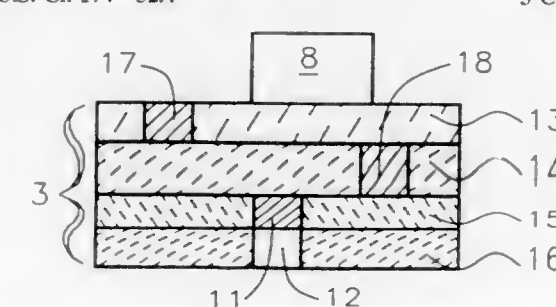
5,512,710
MULTILAYER PACKAGE WITH SECOND LAYER VIA
TEST CONNECTIONS

Donald R. Schroeder, Elkhart, Ind., assignor to CTS Corporation, Elkhart, Ind.

Filed Aug. 21, 1992, Ser. No. 934,068
 Int. Cl.⁶ H01L 23/02

U.S. Cl. 174—52.4

3 Claims



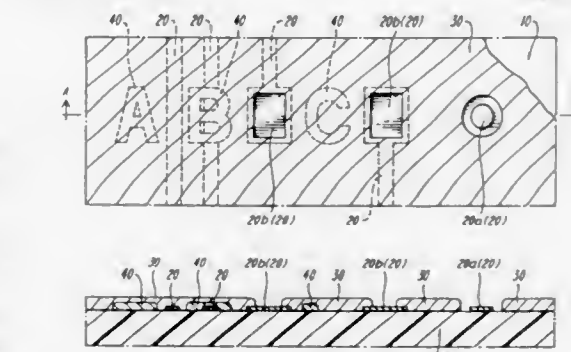
1. A multilayer package for an electronic device comprising: an enclosing means for enclosing said electronic device and environmentally isolating said electronic device from an environment external to said enclosing means; an electrically conductive test point means for electrically interconnecting said electronic device to said external environment; an electrically non-conductive isolating means for isolating said test point means, said isolating means having an opening extending entirely therethrough to expose said test point means to said external environment, said isolating means and said opening therethrough cooperatively allowing electrical access to said test point by an electrical conductor probe means; an electrically non-conductive filling means for filling said opening, said filling means preventing access by said probe means after filling thereof.

5,512,712
PRINTED WIRING BOARD HAVING INDICATIONS
THEREON COVERED BY INSULATION

Yutaka Iwata; Ryo Enomoto; Akihito Nakamura, and Akihiro Demura, all of Ogaki, Japan, assignors to Ibiden Co., Ltd., Ogaki, Japan

Filed Oct. 12, 1994, Ser. No. 322,872
 Claims priority, application Japan, Oct. 14, 1993, 5-256747;
 Dec. 22, 1993, 5-325009

Int. Cl.⁶ H05K 1/02
 U.S. Cl. 174—258 16 Claims



1. A printed wiring board comprising a substrate, conductor circuits provided on each insulated surface of said substrate, indications of a colored insulation material provided on each surface of said substrate having said conductor circuits thereon, and light transmittable insulation coating provided on each surface of said substrate having said conductor circuits and said indications thereon.

5,512,713

LOAD CELL HAVING A HOLLOW AND A STRAIN GAUGE FORMED ON A SUBSTRATE ATTACHED INSIDE THE HOLLOW

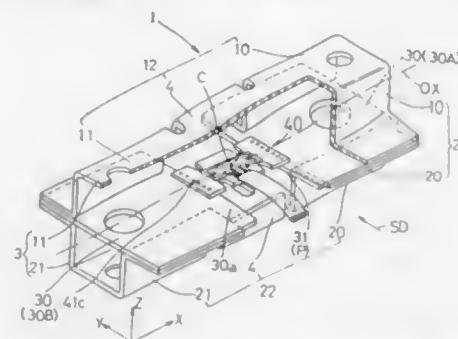
Kazufumi Naito; Michito Utsunomiya; Hiroyuki Konishi, and Shotaro Tamai, all of Shiga, Japan, assignors to Ishida Co., Ltd., Kyoto, Japan

Continuation-in-part of Ser. No. 996,644, Dec. 24, 1992, abandoned. This application Jun. 27, 1994, Ser. No. 266,210. Claims priority, application Japan, Dec. 27, 1991, 3-360,357; Aug. 6, 1992, 4-232841

Int. Cl.⁶ G01G 3/14; 3/08

U.S. Cl. 177-211

9 Claims



1. A load cell for use in detecting a load imposed thereon, said load cell comprising:

a strain inducing means having a longitudinal axis and including a strain generating area for generating a strain as a function of the load;

said strain inducing means comprising a fixed rigid body connectable to a base; a movable rigid body spaced apart from the fixed rigid body in a direction parallel to the longitudinal axis of the strain inducing means and having provisions to receive the load; first and second beams spaced apart from each other in a direction perpendicular to the longitudinal axis of the strain inducing means and connecting the fixed rigid body and the movable rigid body together; and an intermediate plate structure fixed to the fixed rigid body and the movable rigid body and positioned intermediate between the first and second beams, said intermediate plate structure having a cut space defined therein at a location intermediate between the fixed rigid body and the movable rigid body;

said strain inducing means being of a symmetrical profile with respect to a geometric center point of the load cell and having a hollow defined therein and delimited by the fixed rigid body, the movable rigid body, the first and second beams and the intermediate plate structure; and

a strain sensor including a substrate having a pair of the strain generating areas positioned apart from each other in the longitudinal axis of the strain inducing means for facilitating stress build-up on said substrate, and a strain detecting element formed on the strain generating areas of the substrate, said substrate disposed on a horizontal plane and attached to said intermediate plate structure within said hollow so as to straddle said cut space, and positioned substantially in alignment with a mid-center line extending past the geometric center point and parallel to the longitudinal axis of the strain inducing means.

5,512,714

COMPOSITE SPEAKER SYSTEM HAVING A DIRECTIONAL ADJUSTABLE TWEETER

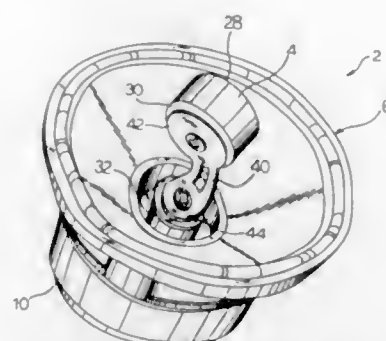
Robert Fenton, 28003 W. Via Amistosa, Agoura Hills, Calif. 91301

Filed Jun. 23, 1994, Ser. No. 264,739
Int. Cl.⁶ H04R 1/500

U.S. Cl. 181-144

13 Claims

1. A speaker system for vehicles, comprising:



a. a woofer for reproducing low frequency sounds and having a bottom plate, a top plate, a diaphragm, a damper, a pole piece extending from the bottom plate and a frame fixedly secured to the top plate, the damper having an outer edge mounted to the frame and an inner edge coupled to an inner edge of the diaphragm, the damper and the diaphragm mounted within an open space of the frame such that their inner edges form a central opening;

b. said pole piece having a central opening therethrough;

c. an elongated adapter member having a top end and a bottom end fixedly secured to said pole piece, where the top end of the elongated adapter member extends above said central opening formed by said diaphragm and said damper of said woofer;

d. a tweeter for reproducing high frequency sounds;

e. an adjustable flexible arm having one end attached to said tweeter and the other end mounted to said top end of said elongated adapter member, where said tweeter is located within said open space of said frame of said woofer such that said tweeter can be adjusted in any direction; and

f. a grill member detachably mounted on the periphery of said frame for covering said tweeter and said open space of said frame of said woofer;

g. whereby said tweeter can be adjusted in any direction for providing an aiming capability, thereby giving a listener up-front and live-performance sound.

5,512,715

SOUND ABSORBER

Hiroyuki Takewa, Kaizuka, and Yutaka Torii, Kadoma, both of, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

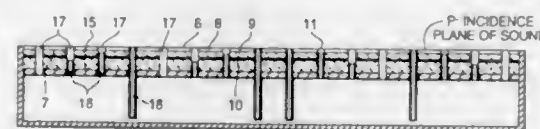
Filed Jun. 14, 1994, Ser. No. 260,232

Claims priority, application Japan, Jun. 15, 1993, 5-142481

Int. Cl.⁶ E04B 1/82

U.S. Cl. 181-295

6 Claims



1. A sound absorber apparatus having a sound incidence surface extending generally along an incidence plane, said sound absorber apparatus comprising:

a rectangular parallelepiped-shaped cabinet having a front surface baffle;

a porous material sound absorption system fixed on said front surface baffle in parallel to the incidence plane;

a plurality of perforated holes provided in said porous material sound absorption system and passing from said sound incidence surface through said front surface baffle of said rectangular parallelepiped-shaped cabinet; and

cylindrical pipes respectively disposed in said holes, said cylindrical pipe having outer diameters substantially equal to diameters of said perforated holes, respectively, and having lengths different from lengths of said perforated holes, respectively.

5,512,716

SWITCHING PAD OR PLATE

Fritz D. Buchien, Schelklingen, Germany, assignor to Mayser GmbH & Co., Ulm, Germany

PCT No. PCT/EP93/03329, § 371 Date Aug. 2, 1994, § 102(e) Date Aug. 2, 1994, PCT Pub. No. WO94/12996, PCT Pub. Date Jun. 9, 1994

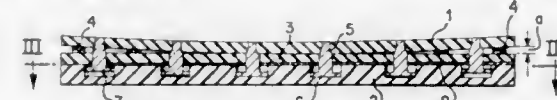
PCT Filed Nov. 26, 1993, Ser. No. 284,421

Claims priority, application Germany, Dec. 3, 1992, 42 40 622.6

Int. Cl.⁶ H01H 3/14

U.S. Cl. 200-86 R

7 Claims



1. A switching pad comprising:

electroinsulating flat bodies arranged substantially in parallel to one another;

at least one current-conducting contact path arranged between said flat bodies;

a plurality of switches coupled in series and spaced apart along said current-conducting path and being actuated to interrupt said current conducting path;

wherein said switches are formed by contact pins, each of said contact pins having a contact head and an end facing away from the contact head; and

a spring providing a spring force to bias said contact pins such that their contact heads electrically contact the contact path to form a closed current-conducting path, wherein the contact pins are firmly connected by the end facing away from the contact head with one of the flat bodies, and wherein at least one of said flat bodies forms an insulating guide in which the contact pins are movably held;

whereby pressure on one of said flat bodies actuates at least one of said switches by countering said spring force to open the electrical contact between the contact head of the contact pin and the contact path.

5,512,717

PLUNGER SWITCH

Tetsuya Magome, and Hiroshi Hayakawa, both of Furukawa, Japan, assignors to Alps Electric Co., Ltd., Tokyo, Japan

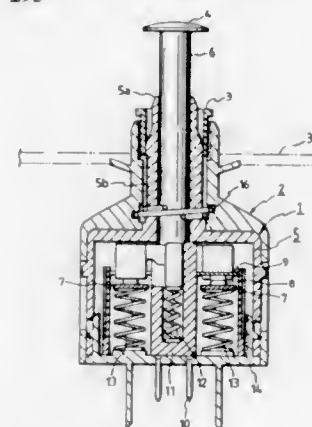
Filed Sep. 14, 1994, Ser. No. 306,239

Claims priority, application Japan, Sep. 17, 1993, 5-231651

Int. Cl.⁶ H01H 9/02

U.S. Cl. 200-295

9 Claims



1. A plunger switch comprising:

a housing;

a cylindrical portion attached to a wall of the housing and extending away from the housing;

a plunger slidably mounted in said cylindrical portion and including an end portion extending into an interior of the housing;

a switch body including a movable contact housed in said housing and attached to the end portion of said plunger, and a fixed contact housed in said housing and positioned to engage with and separate from said movable contact in response to sliding of said plunger in said cylindrical portion; and an attachment member which mates with opposed sidewalls of said housing for mounting said housing to a device having an outer actuator,

wherein a ratchet is formed on one of an outer wall portion of said cylindrical portion and said attachment member and wherein, engaging means disengageable from said ratchet is formed on the other of said outer wall portion of said cylindrical portion and said attachment member, and said ratchet and said engaging means function as a self-adjusting mechanism for mounting said switch body to said attachment member and setting said plunger in a proper initial position relative to said outer actuator.

5,512,718

KEYPAD HAVING A REFLECTIVE CONTACT

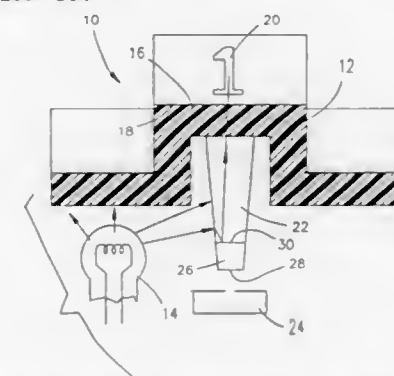
Charles W. Larose, Kokomo, Ind., assignor to Delco Electronics Corporation, Kokomo, Ind.

Filed Oct. 14, 1994, Ser. No. 323,326

Int. Cl.⁶ H01H 9/00

U.S. Cl. 200-314

17 Claims



1. A backlit component adapted to be located proximate a light source and an electrical switch, the backlit component comprising: a button member formed of an optically conductive material, the button member having an exterior surface;

an insignia formed on the exterior surface of the button member such that light is transmitted through the optically conductive material to the insignia; and

an actuator member extending from the button member for operating the electrical switch, at least a portion of the actuator member being formed from an optically conductive material and having a surface impinged by light emitted by the light source, the actuator member having a reflective surface defined by a reflective coating positioned within said actuator member and adapted to reflect light transmitted through the surface of the actuator member from the light source, such that at least a portion of the light transmitted through the surface is reflected through the actuator member toward the insignia, the actuator member having a contact member disposed on the actuator member for closing and opening the electrical switch.

5,512,719

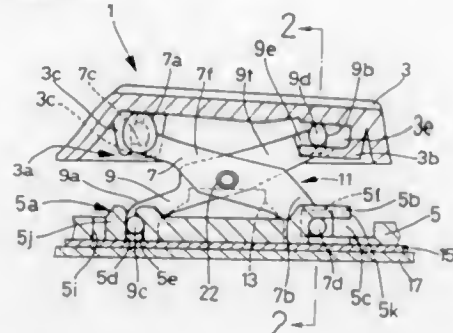
KEY SWITCH HAVING ELASTIC PORTIONS FOR FACILITATING ATTACHMENT OF SCISSORS-TYPE SUPPORT LINKAGE TO KEYTOP AND HOLDER, AND REMOVAL OF KEYTOP FROM LINKAGE

Hiroaki Okada, Kasugai; Isao Mochizuki, Kaizu, and Takeyuki Takagi, Nagoya, all of Japan, assignors to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Oct. 27, 1994, Ser. No. 329,842
Claims priority, application Japan, Nov. 5, 1993, 5-276984
Int. Cl.⁶ H01H 13/70

U.S. Cl. 200—344

27 Claims



1. A key switch comprising:

- a keytop;
- a holder spaced apart from and opposed to said keytop;
- a support linkage for connecting said keytop and said holder such that said keytop is movably supported and guided by said support linkage;
- a switching portion operated by movements of said keytop to effect a switching action;
- said support linkage including a first link and a second link which are connected to each other in the form of scissors pivotally about a common primary pivot shaft;
- said first link being generally U-shaped and including a pair of first arm portions and a first connecting portion which connect said first arm portions at corresponding fixed ends thereof such that said first arm portions are parallel to each other;
- said second link being generally H-shaped and including a pair of second arm portions and a second connecting portion which connect said second arm portions at least at middle parts thereof such that said second arm portions are parallel to each other;

one of said pairs of first and second arms having a pair of bosses while the other of said pairs of first and second arms has a pair of holes, said first and second links being connected pivotally relative to each other such that said second arms are disposed inside said first arms and such that said pair of bosses engage said pair of holes so as to provide said common primary pivot shaft;

each of opposite end portions of each of said first and second links having one of a secondary pivot shaft and a bearing portion, while each of four portions of said keytop and said holder which correspond to said opposite end portions of said first and second links having the other of said secondary pivot shaft and said bearing portion, said bearing portion engaging said secondary pivot shaft mutually pivotally about an axis of said secondary pivot shaft; and

said second arms having an abutting portion at the end portions thereof pivotally connected to said keytop through said secondary pivot shaft and said bearing portion, said abutting portion extending outwardly of said second link, for abutting contact with a corresponding portion of said first arms so as to limit an amount of movements of said keytop toward said holder.

5,512,720

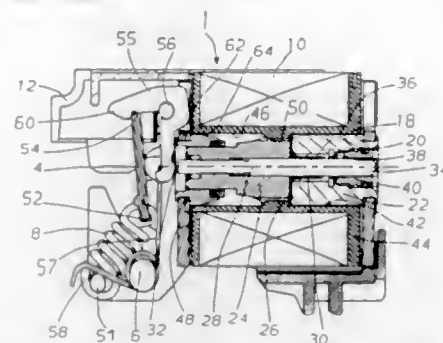
AUXILIARY TRIP DEVICE FOR A CIRCUIT BREAKER

Patrick Coudert, Eybens, and Jean-Pierre Nereau, Seyssinet, both of France, assignors to Merlin Gerin, France
Filed Mar. 30, 1994, Ser. No. 220,016

Claims priority, application France, Apr. 16, 1993, 93 04857
Int. Cl.⁶ H01H 5/00

U.S. Cl. 200—400

5 Claims



1. An auxiliary trip device for a circuit breaker having a trip bar, comprising:

- an electromechanical actuating device including a coil provided in a sheath having a bore therein, a fixed core and a movable plunger being provided in said bore, the plunger and the fixed core being axially spaced apart from each other to form an air-gap therebetween, a first spring for biasing said plunger away from said fixed core, and a push-rod connected to said plunger and extending therefrom and through said fixed core, said plunger having an actuating end;
- an energy storage system including a blade for actuating the trip bar of the circuit breaker, a latch device having an actuating part and being adapted to lock the blade to prevent movement thereof and to release the blade to allow movement thereof, and a second spring for biasing the blade against the latch device, said second spring storing and releasing an amount of energy during movements of the blade which is greater than an amount energy stored and released by said first spring during movements of the plunger with respect to the fixed core, wherein said actuating end of the push-rod is spaced apart from the actuating part of the latch device, and said push-rod is axially slidable with said plunger such that said actuating end contacts the actuating part to release the blade.

5,512,721

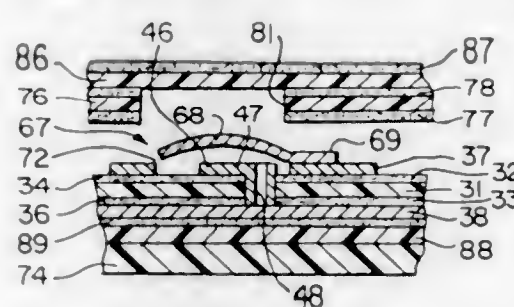
AUTOCLAVABLE ELECTRICAL SWITCH ASSEMBLY FOR USE WITH A MEDICAL DEVICE AND MEDICAL DEVICE USING THE SAME

William T. Young, Aptos, and Bradley D. Blackwood, Belmont, both of Calif., assignors to Unisurge, Inc., Cupertino, Calif.
Filed Sep. 28, 1993, Ser. No. 128,309

Int. Cl.⁶ H01H 1/10

U.S. Cl. 200—512

11 Claims



1. An autoclavable electrical switch assembly for use with a medical device having electrical functions comprising a flexible substrate formed of an insulating material and having first and second surfaces capable of withstanding high sterilization temperatures

5,512,723

SELF-CLEANING TYPE SWITCH

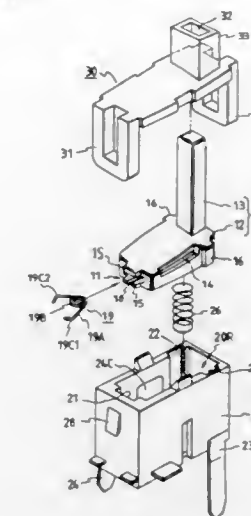
Masaharu Joshi, Nara, Japan, assignor to Hosiden Corporation, Osaka, Japan

Filed Apr. 13, 1994, Ser. No. 226,821

Claims priority, application Japan, Apr. 26, 1993, 5-021851
Int. Cl.⁶ H01H 13/14

U.S. Cl. 200—530

13 Claims



1. A self-cleaning type switch comprising:

- a body of electrically insulating material having a rectangular switch compartment formed therein, said switch compartment having an open top, a bottom wall and opposed inner walls; first and second plate-like fixed contact members secured respectively to said opposed inner walls of said switch compartment;

an actuator accommodated in said compartment for slidable movements in directions toward and away from said open top, said actuator including an elongated stem portion having an upper end extending from said compartment through said open top, and a contact holder block connected to a lower end of said stem portion, said holder block having a front end face oriented parallel to said stem portion and having an opening therein, a rear end face oriented parallel to said stem portion, opposed side surfaces extending between said front end face and rear end face, and a top surface and an opposed undersurface each oriented transverse to said stem portion, said contact holder block having a housing slot extending from said opening in said front face toward said rear end face in a direction perpendicular to said stem portion, slit-like windows formed through said opposed side surfaces communicating with said housing slot, and a guide slit extending through said undersurface of said holder block from said opening in said front end face toward said rear end face in communication with said housing slot, said guide slit extending along a line substantially equidistant from said opposed side surfaces,

a movable contact member housed in the housing slot of said contact holder block, said movable contact member having been slidably inserted into said housing slot along said guide slit and having first and second movable contact portions resiliently protruding respectively through said slit-like windows in said opposed side surfaces for selective electrical contact with said first and second fixed contact members as said actuator is moved toward and away from said open top of said switch compartment;

biasing spring means disposed between said bottom wall of said switch compartment and said undersurface of said contact holder block for resiliently biasing said actuator toward said open top of said switch compartment; and

a cover of an electrically insulating material closing said open top of said switch compartment, said cover having a through-bore through which said stem portion of said actuator protrudes.

5,512,722

KEY SWITCH

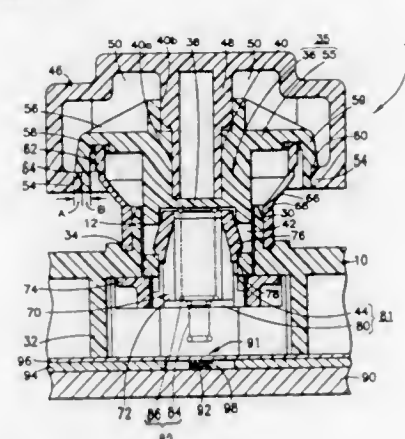
Kumlo Ozeki, Fumio Watanabe, Haruo Yoshida, Osamu Kamishima, and Yosuke Sakai, all of Tokyo, Japan, assignors to SMK Corporation, Tokyo, Japan

Filed Dec. 2, 1993, Ser. No. 160,960

Claims priority, application Japan, Dec. 2, 1992, 4-089505
Int. Cl.⁶ H01H 13/12

U.S. Cl. 200—517

18 Claims



1. A key switch, comprising:

- a housing;
- a key element;
- a switch connected to said housing;
- a first spring operatively associated with said key element; means, connected to said key element, for applying a retaining force to said first spring such that said first spring is maintained in a partially strained state whereby a non-zero initial force must be applied to said first spring to strain it further;
- a second spring operatively associated with said first spring; said second spring having a free end;
- means for displacing said free end toward said switch when said key element is displaced and for pressing said free end against said switch when said key element is displaced further whereby said switch is actuated;
- said second spring being strained by a force of said pressing;
- said first spring being strained beyond said partially strained state only when said force of said pressing exceeds said non-zero initial force;
- said non-zero initial force being transmitted through said second spring to said first spring to cause said non-zero initial force to strain said first spring beyond said partially strained state.

5,512,724

VACUUM SWITCH WITH A DRIVE DEVICE AND POLE OPERATING UNIT

Manfred Binder, Detlev Schmidt, and Norbert Steinemer, all of Berlin, Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

PCT No. PCT/DE92/00784, § 371 Date May 25, 1994, § 102(e) Date May 25, 1994, PCT Pub. No. WO92/18585, PCT Pub. Date Oct. 29, 1992

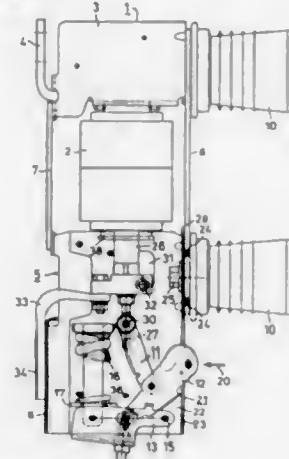
PCT Filed Sep. 11, 1992, Ser. No. 211,366

Claims priority, application Germany, Sep. 30, 1991, 41 33 091.9

Int. Cl.⁶ H01H 33/42

U.S. Cl. 218—140

9 Claims



1. A vacuum switch comprising:

- a) a vacuum switching tube having a movable operating plunger;
- b) a drive device adapted to provide an operating force for said vacuum switching tube;
- c) a pole operating unit, said pole operating unit
 - i) receiving the vacuum switching tube at one of its ends, and
 - ii) including
 - A) a guide bolt adapted to linearly guide said operating plunger of said vacuum switching tube and adapted to transmit an operating force,
 - B) a carrier, said carrier being a U-shaped sheet metal part including a central part and two legs, a distance between said two legs can be extended by elastic bending, each of said two legs having aligned elongated holes which receive ends of the guide bolt, each of said two legs having a second hole;
 - C) a lever arrangement which changes the direction of movement of the drive device, and
 - D) a connection device, said connection device connecting said movable operating plunger of said vacuum switching tube to an external conductor, and connecting and strengthening said two legs of said carrier;
- d) a support insulator connecting said drive device to said carrier and being attached, by one of its ends, to said central part of said carrier;
- e) an insulating coupling rod connecting said drive device to said direction-changing lever arrangement;
- f) a contact force spring adapted to be tensioned when said vacuum switching tube is switched on; and
- g) a counter-bearing, said counter-bearing
 - i) supporting one end of said contact force spring,
 - ii) fixed between said two legs of said carrier,
 - iii) being plate-shaped,
 - iv) having a width which corresponds to the distance between said legs in an unbent state, and
 - v) having pins arranged on its narrow sides, said pins resting against said two legs of said carrier and engaging in said second holes of said two legs.

5,512,725

METHOD FOR MAINTAINING INTEGRITY OF A POSITIONER STACK USING A WELDING PROCESS

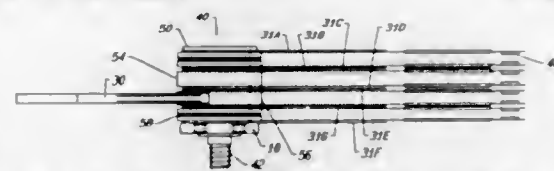
Bradley D. Kelemen, Santa Cruz, and Mike Raffetto, Scotts Valley, both of Calif., assignors to Seagate Technology, Inc., Scotts Valley, Calif.

Filed Nov. 12, 1993, Ser. No. 152,957

Int. Cl.⁶ B23K 26/00

U.S. Cl. 219—121.64

5 Claims



1. In a disc drive comprising a base plate, a spindle motor mounted in said base plate and supporting at least one disc for rotation, and at least one actuator arm supported by a pivot cartridge on said base, each said arm having at least one transducer mounted thereon for selective cooperation with tracks on an associated surface of said at least one disc for reading or writing data thereon, an element of a voice coil motor directly connected to said at least one actuator arm and responsive to commands for moving said at least one arm and said at least one transducer from track to track, said pivot cartridge supporting thereon an actuator arm support for each surface of said disc on which data is to be written or read, spacers for separating each arm support from an adjacent arm support wherever space must be left for a disc, and a motor support for supporting said motor element and incorporating said motor element into said actuator arm assembly so that energization of said voice coil motor causes corresponding movement of said arm, a method of assembly comprising stacking said actuator arms, said spacers and said voice coil motor elements on said pivot cartridge, threading a nut onto the bottom of said cartridge to press each of said elements firmly against an adjacent one, executing a sequence of welds attaching each and every one of said voice coil motor elements, actuator arm supports, spacer, and flange integrally together so that regardless of shock and motor actuation forces, said actuator arms are not displaced one relative to another.

5,512,726

AUTOMATIC WELDING INSTALLATION

Antonio C. Arantes, Ste Genevieve Des Bois; Francois Pierquin, Mennecey, and Pierre M. P. Ruault, Fleury Merogis, all of France, assignors to Societe Nationale D'Etude et de Construction de Moteurs D'Aviation "Snecma", Paris, France

Filed Mar. 23, 1995, Ser. No. 409,683

Claims priority, application France, Mar. 24, 1994, 94 03435

Int. Cl.⁶ B23K 9/12

U.S. Cl. 219—125.1

25 Claims

1. Automatic welding installation comprising a robot arm (1) provided with a control device (2) and an assembly face (13) for a random number of welding torches (20) provided with an assembly face (47), and a rack (21) provided with stowing locations (23) for the torches (20), the arm (1) comprising a magazine (7) for filler wire (8), a wire advance device (10, 11, 110), a conduit for guiding the wire (8) fixed to the assembly face (13) and a means (63 to 65) for the automatic, reversible locking of each of the torches (20) to the arm (1), the assembly faces of the arm and the torches comprising engaging means (49, 62) having a single assembly position for which, with the assembly faces coupled and the locking completed, the guide conduit of the wire of the locked torch is in the extension of the guide conduit of the arm wire, characterized in that the torches comprise a mobile nose (40) connected to another part (44) of the torches (20), to which belongs the assembly face (47), by a mechanical, distance regulating connection (45), a guide conduit (43) for the wire of the torches constituted by a part (73) fixed to the nose and a part (72) fixed to the other part (44) of the torches, the two parts (72, 73) of the guide conduit sliding in one another.

5,512,728

ELECTRIC IRON HAVING INTEGRAL STAND AND STABILIZING METHOD

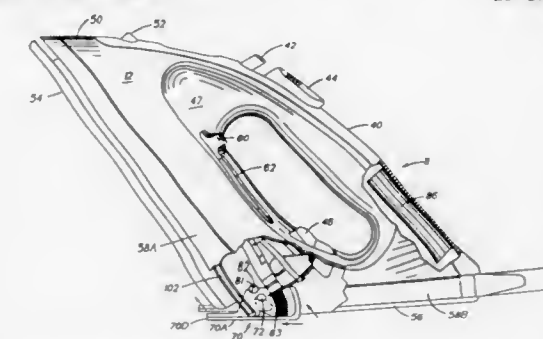
David Jalbert, Coventry, R.I., assignor to Black & Decker Inc., Newark, Del.

Filed May 10, 1994, Ser. No. 240,126

Int. Cl.⁶ D06F 75/40

U.S. Cl. 219—246

15 Claims



1. An electric iron comprising:

- a soleplate;
- electric heating means connected to said soleplate for providing heat thereto;
- a skirt connected to said soleplate;
- a housing connected to said skirt;
- a cover including a heel rest for supporting the iron in an upright position and connected to a rear end of the housing;
- a foot member attached to a lower end of said cover and pivotable within a slot formed in said lower end, said foot member having a first position offset from the axis of the cover and a second position in substantially axial alignment with said cover, said foot member being in said first position when the iron is supported on said soleplate and in the second position when the iron is supported on said heel rest, the weight of the iron providing a force to rotate the foot member from said first position to said second position when the iron is placed on said heel rest; and
- a retaining member held in a fixed position relative to the slot, the weight of the iron providing a force to move the foot member into engagement with the retaining member to hold the foot member in said second position.

5,512,727

HOT GRIP ASSEMBLY

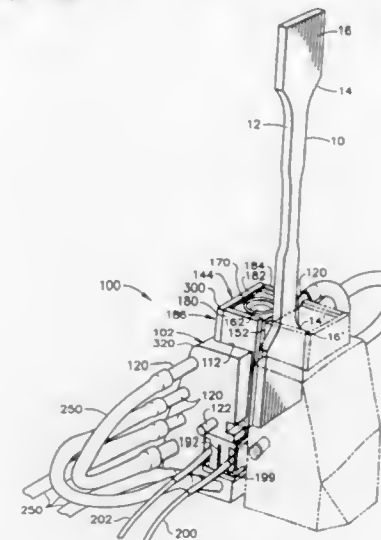
Jeffrey L. Myers, West Chester; Robert W. Abo, Cincinnati; Douglas M. Carper, West Chester; Earl D. Deaton, Cincinnati; Thomas J. Dunyak, West Chester, and Ely E. Halila, Cincinnati, all of Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed Mar. 24, 1994, Ser. No. 216,994

Int. Cl.⁶ G01N 3/08; 3/18; H05B 3/00

U.S. Cl. 219—201

18 Claims



1. A gripping element for use with a hydraulic wedge gripping machine for uniaxial mechanical testing a test specimen at elevated temperatures and having means for receiving said gripping element, said gripping element comprising a first section adapted to contact the gripping machine, said first section having a passage-way adapted to receive a cooling fluid, and a second section having a gripping surface adapted to contact the test specimen wherein a heater is received in said second section for heating the gripping surface.

5,512,729

IMAGE HEATING APPARATUS COMPRISING BACKUP ROLLER PROVIDED WITH HEAT CONDUCTING MEMBER OR CLEANING MEMBER

Kensaku Kusaka, Kawasaki; Koji Masuda, and Manabu Takano, both of Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 30, 1993, Ser. No. 159,210

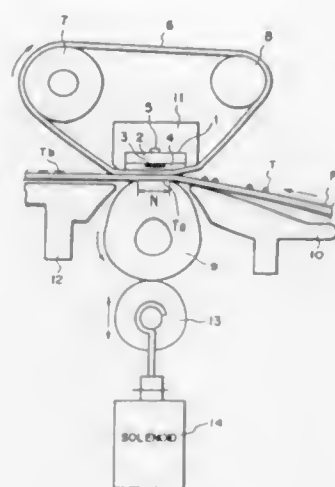
Claims priority, application Japan, Dec. 4, 1992, 4-350232; Feb. 24, 1993, 5-058067

Int. Cl.⁶ G03G 15/20

U.S. Cl. 219—216

4 Claims

1. An image heating apparatus comprising:
 - a heater;
 - a film for transferring the heat from said heater to an image on a recording material;
 - a rotary backup member for forming a nip with said film;
 - a cleaning member for cleaning a peripheral surface of said rotary backup member;
 - moving means for moving said cleaning member so that it comes in contact with, or moves away from, the surface of said rotary backup member;
 - wherein said moving means places said cleaning member in contact with the surface of said rotary backup member after a temperature of said rotary backup member increases.



5,512,730

SELF STERILIZING HYPODERMIC SYRINGE AND METHOD

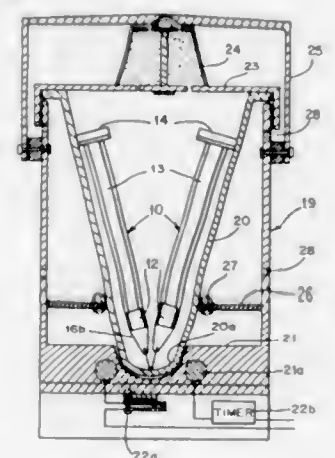
Ronald P. Spinnello, Red Lion, Pa., assignor to Spintech Inc., York, Pa.

Filed Nov. 30, 1993, Ser. No. 159,664

Int. Cl.⁶ F27B 14/06; 14/10

U.S. Cl. 219—386

4 Claims



1. A thermal processor for melting and solidifying materials including thermoplastic in conjunction with medical waste, said processor comprising:

- a housing having an upper end and a lower end;
- a controllable heat source adjacent to the lower end of the housing;
- a heat resistant container removably mounted in the housing and adapted to receive the materials for processing, said container having sides, an upper end and a lower end;
- a controllable heat source disposed below the container to apply heat to the lower end thereof; and
- a baffle means disposed within the housing to engage the sides of the container adjacent its lower end to define a hot chamber between the baffle and the heat source and a cool chamber above the baffle.

5,512,731

RADIANT ELECTRIC HEATER

Joseph A. McWilliams, Droltwich, United Kingdom, assignor to Ceramaspeed Limited, United Kingdom

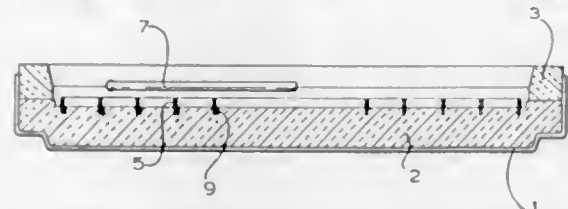
Filed Feb. 8, 1994, Ser. No. 192,984

Claims priority, application United Kingdom, Feb. 11, 1993, 9302691

Int. Cl.⁶ H05B 3/68

U.S. Cl. 219—467

9 Claims



1. A radiant electric heater comprising a base of microporous thermal and electrical insulation material having a surface with at least one groove formed therein, into which groove is located edgewise an elongate electrically conductive strip of predetermined height to serve as a heating element, the groove including transverse webs of the microporous insulation material spaced apart along the length of the groove and into which webs is embedded the conductive strip so as to secure the conductive strip to the webs.

5,512,732

SWITCH CONTROLLED, ZONE-TYPE HEATING CABLE AND METHOD

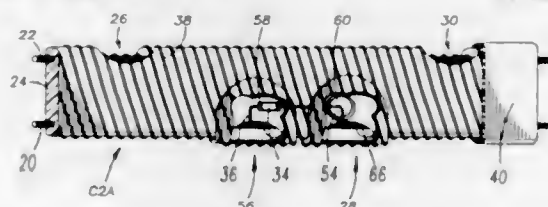
Chandrakant M. Yagnik, Austin, and Blake E. Helmbecker, Schertz, both of Tex., assignors to Thermon Manufacturing Company, San Marcos, Tex.

Continuation of Ser. No. 586,441, Sep. 20, 1990. This application Jan. 7, 1993, Ser. No. 1,894

Int. Cl.⁶ H05B 3/34; 1/02; H01C 7/02

U.S. Cl. 219—549

16 Claims



1. An electrical heating cable having a plurality of heating zones, comprising:

- first and second electrical conductor means extending substantially parallel to and spaced from each other along the length of the cable for carrying electrical current;
- insulation means encapsulating said electrical conductors for electrically insulating said electrical conductors from each other;
- heating means in each zone connected to said first electrical conductor for generating heat when electrical current passes through said first heating means;
- a thermally actuated switch in each zone connected to said second electrical conductor and connected to said first heating means, said switch being positively open when the switch temperature is above a given temperature and positively closed when the switch temperature is below said given temperature; and
- a resistive heating element in each zone connected in parallel with said switch, so that current passes through said resistive element when said switch is open and current is shunted substantially around said resistive heating element through said switch when said switch is closed.

5,512,733

COOKER

Hiroyoshi Takikawa; Yoshio Yoshida; Nobuko Kakimoto, and Shinsuke Ise, all of Kanagawa, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 991,534, Dec. 15, 1992, abandoned, which is a division of Ser. No. 752,598, Aug. 13, 1991, Pat. No. 5,386,102. This application Jun. 2, 1994, Ser. No.

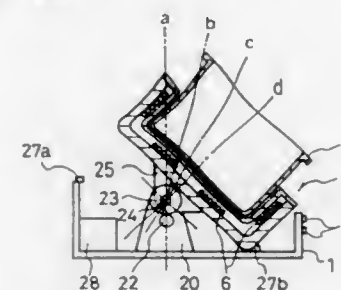
254,651

Claims priority, application Japan, Dec. 14, 1989, 1-322609; Dec. 14, 1989, 1-322610; Dec. 14, 1989, 1-322611; Dec. 14, 1989, 1-322613; Dec. 14, 1989, 1-322615; Dec. 25, 1989, 1-332776; Dec. 25, 1989, 1-332777; Dec. 25, 1989, 1-332779; Jul. 23, 1990, 2-193100; Aug. 7, 1990, 2-209500; Nov. 28, 1990, 2-323113

Int. Cl.⁶ H05B 6/12

U.S. Cl. 219—620

23 Claims



1. A cooker having a receptacle with a pot for holding ingredients and a heater for heating the pot supported by a main unit so that the pot is inclinable, the cooker comprising:

- an angle control unit coupled to the receptacle and having a motor which provides a driving force for inclining said receptacle;
- a controller coupled to said angle control unit for controlling the angle control unit;
- a thermometer having a heat sensor for measuring the temperature of the pot and for providing a temperature signal;
- means for storing cooking programs; and
- means, coupled to the storing means and the thermometer, for controlling cooking conditions, the controlling means being responsive to the cooking programs and to the temperature signal.

5,512,734

APPARATUS AND METHOD FOR HEATING USING MICROWAVE ENERGY

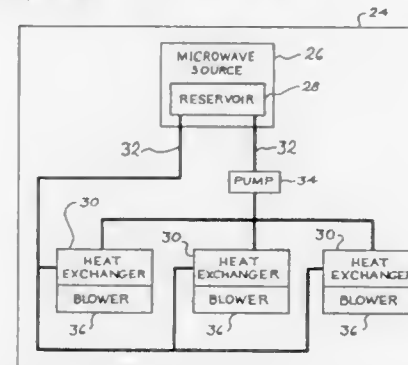
Terrance R. Copstead, Milton, Fla., assignor to Microwave Research Corp., Chicago, Ill.

Filed Sep. 20, 1994, Ser. No. 309,054

Int. Cl.⁶ H05B 6/80

U.S. Cl. 219—679

6 Claims



1. An apparatus comprising:

- a source of microwave energy having a compartment;
- a reservoir, disposed in said compartment, adapted to contain a flowable medium to be heated by said source;
- an inlet in communication with said reservoir;

an outlet in communication with said reservoir; at least a portion of said inlet and said outlet being disposed outside said compartment; an appliance, in communication with said inlet and said outlet, having a chamber for receiving articles to be washed; means for applying at least some of said flowable medium to said chamber to wash said articles; and a heat exchanger in communication with said reservoir and said appliance; means for applying at least some of the heat from said medium to heat air; and means for passing the heated air to said articles.

5,512,735

ELECTRIC COOKING RANGE HAVING NEW SAFETY FEATURES

Hiroyuki Hashimoto, Osaka, Japan, assignor to Funai Electric Co., Ltd., Daito, Japan

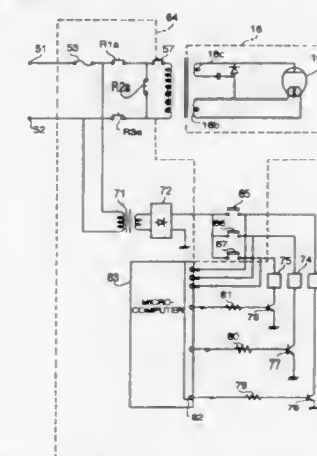
Filed Sep. 14, 1994, Ser. No. 306,752

Claims priority, application Japan, Sep. 14, 1993, 5-252495; Dec. 6, 1993, 5-339746

Int. Cl.⁶ H05B 6/68

U.S. Cl. 219—723

2 Claims



1. In an improved electronic range, having a housing with a chamber for materials placed therein, and a door, for the microwave heating of said materials, such as food, and having a microwave generation device 16 for generating microwaves, and interlocking switch circuit including a monitor switch 1, a primary switch 2, and a secondary switch 3, which are of the on/off type by opening and closing of said door 10 for safely controlling the operation/non-operation of said microwave generation device 16, and operation part 24 for setting information, and indication part 25 for indicating said information set by said operation part 24, and a control part 21 for controlling said microwave generation device 16, said operation part 24, and said indication part 25, the improvement comprising:

- a door switch 35 of the on/off type generated by opening and closing of said door 10;
- a secondary relay contact point 38a located at a position analogous to where said secondary switch 3 of a conventional microwave oven is generally located; a relay control means for controlling the secondary relay contact point 38a based on the on/off operation of said door switch 35;
- a special mode transferring means for transferring said control part 21 to the special mode transferring means;
- a relay contact point control means for turning on/off said secondary relay contact point 38a by said control part 21, when said control part 21 is transferred to the special mode by said special mode transferring means; and
- indication control means for the opening and closing state of the opening and closing of said door which distinguishes the opening or closing state of the door based upon the on/off condition of said door switch 35 and for indicating said door's operational state to the indication part 25; whereby the use of

special jigs for testing to check one or more switches is no longer required, and thus productivity in the manufacture of said electronic range is greatly improved.

5,512,736 AUTO-LOAD IMPEDANCE MATCHING DEVICE OF A MICROWAVE OVEN

Hyoungh J. Kang, Kyungki-do; Young M. Lee, Incheon-si, and
Joon S. Choi, Seoul, all of, Rep. of Korea, assignors to
Goldstar Co., Ltd., Seoul, Rep. of Korea

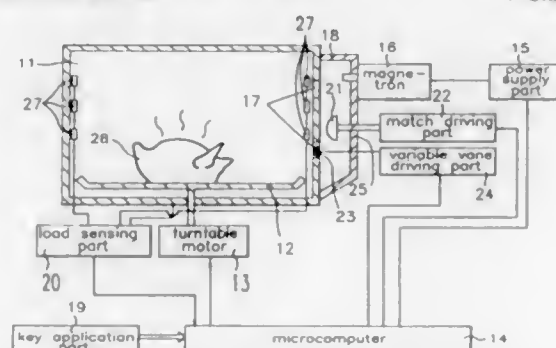
Filed Sep. 23, 1994, Ser. No. 311,017

Claims priority, application Rep. of Korea, Sep. 23, 1993,
1993-19490; Sep. 28, 1993, 1993-20065; Nov. 12, 1993, 1993-
23791; Feb. 16, 1994, 1994-2735

Int. Cl.⁶ H05B 6/74

U.S. Cl. 219-750

7 Claims



1. A microwave oven comprising:

a heating chamber having a side wall and a bottom surface;
at least one opening in said side wall of the heating chamber;
a wave guide located at said side wall of the heating chamber;
a turntable mounted above said bottom surface of the heating
chamber for placing food thereon, said turntable being rotat-
able by a turntable driving means located beneath the heating
chamber;

key signal input means for receiving external key signals from a
user and providing a first output;

load sensing means for sensing a load of food in the heating
chamber and providing a second output;

matching means movably mounted in the wave guide;

power supply means;

driving means for moving said matching means;

a microcomputer for controlling the power supply means and the
driving means in response to said first and second outputs of
the key signal input means and the load sensing means,
respectively;

a magnetron driven by the power supply means for generating
microwaves to be directed into the heating chamber through
the wave guide and through said at least one opening;

a variable vane mounted in one opening of the heating chamber;
and

a variable vane driving means for turning the variable vane at a
predetermined angle under the control of the microcomputer
in response to said second output of the load sensing means.

5,512,737 OVEN LINER FOR DIELECTRIC OVEN

Joseph P. Miklos, Germantown, Ohio, assignor to Henny
Penny Corporation, Eaton, Ohio

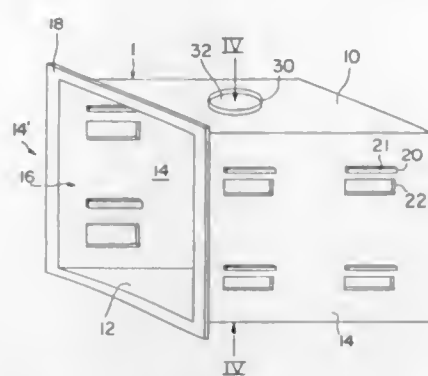
Filed May 9, 1994, Ser. No. 239,523

Int. Cl.⁶ H05B 6/54

U.S. Cl. 219-771

28 Claims

1. A dielectric oven for heating a product within a tray, said oven
comprising:
a housing including an access and a housing access cover and
defining a heating cavity therein, wherein said housing has a



liner conforming to said cavity and said liner is substantially
in contact with said housing, made from a non-electrically
conductive material and forming a vaportight boundary
between said heating cavity and said housing;

at least a pair of contacts projecting through said housing and
said liner and into said cavity, such that said liner forms said
vaportight boundary around said contacts;

an electromagnetic energy source located outside of said hous-
ing and said liner coupled to and supplying current to each of
said contacts and capacitor plates located between said hous-
ing and said liner; and

at least first and second electrodes located within said cavity,
each of which is coupled to one of said contacts, bracketing
said product.

5,512,738 CODED SEAL

Ki S. Yuen, Brampton, Canada, assignor to International Veri-
fact Inc., Toronto, Canada

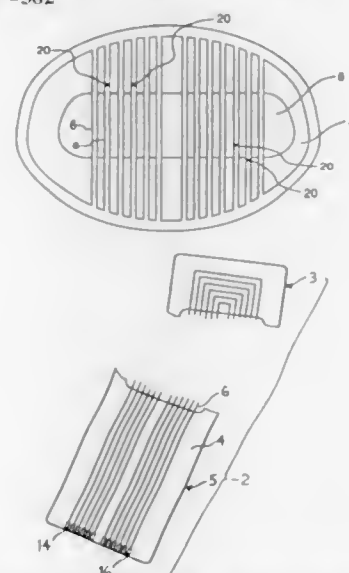
Filed Jan. 18, 1995, Ser. No. 374,022

Claims priority, application Canada, Oct. 20, 1994, 2133902

Int. Cl.⁶ G06K 5/00; G06F 7/04

U.S. Cl. 235-382

21 Claims



1. A seal comprising a substrate having at least three frangible
conductors coded by having some of said conductors continuous
and some of said conductors discontinuous, said substrate includ-
ing a tear region which tears when said seal is stressed and causes
said continuous conductors to break.

5,512,739 DUAL PROCESSOR OMNIDIRECTIONAL BAR CODE READER WITH DUAL MEMORY FOR BAR CODE LOCATION AND ORIENTATION

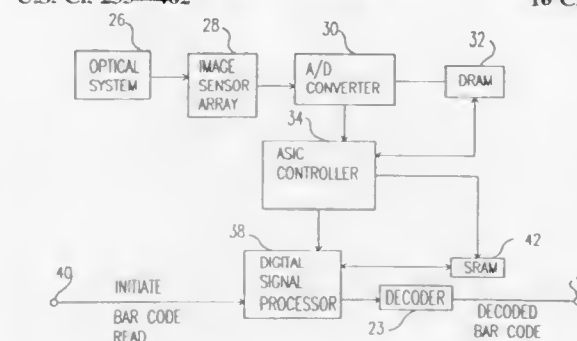
Donald G. Chandler, and Eric P. Batterman, both of Princeton,
N.J., assignors to Omniplanar, Inc., Princeton, N.J.

Continuation of Ser. No. 844,927, Mar. 4, 1992, abandoned,
which is a continuation of Ser. No. 502,411, Mar. 28, 1990,
abandoned. This application Mar. 15, 1995, Ser. No. 405,382

Int. Cl.⁶ G06K 7/10

U.S. Cl. 235-462

10 Claims



1. A bar code reader comprising:

an optical system for forming a two dimensional image, said two
dimensional image containing the image of a bar code symbol
anywhere within the field of view of said two dimensional
image;

a first memory for storing said two dimensional image;

a second memory for storing at least a portion of said two
dimensional image;

a first processor means coupled to said first memory, for locating
a plurality of areas within the field of view of said stored two
dimensional image, each of said located areas being likely to
contain a bar code image;

means for transferring image data corresponding to each of said
plurality of located areas from said first memory for storage in
said second memory; and

a second processor means operating substantially simultaneously
with said first processor means, said second processor means
coupled to said second memory, said second processor means
including means for scanning said transferred image data
corresponding to said located area stored in said second
memory in order to read out information contained in said two
dimensional image of said bar code symbol.

5,512,740 BAR CODE SCANNER WITH FIELD REPLACEABLE WINDOW

L. Michael Hone, Pittsford, and Vincent T. LaManna, Webster,
both of N.Y., assignors to PSC Inc., Webster, N.Y.

Continuation of Ser. No. 59,799, May 10, 1993, abandoned.

This application Sep. 7, 1994, Ser. No. 302,093

Int. Cl.⁶ G06K 7/10

U.S. Cl. 235-472

7 Claims

1. A bar code scanner comprising:

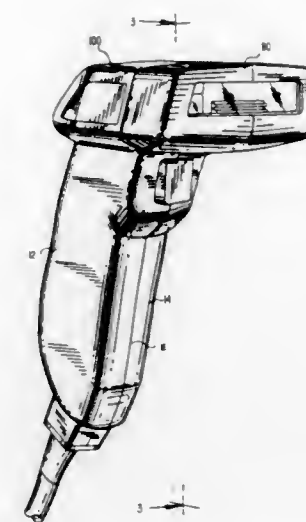
a housing;

a bar code scanning device having a laser for generating a laser
beam and a photodetector secured within said housing;
said laser beam optically directed to exit said housing through an
optical element to scan a target;

said photodetector positioned to receive said laser beam
reflected from said target through said optical element;

said housing having a nose section with an end face, said end
face having an opening defined at least in part by a shoulder;

said optical element seated adjacent said shoulder; and
a boot of elastomeric material removably positioned around said
nose section and securing said optical element against said
shoulder and thus to said housing.



5,512,741 TARGET ACQUISITION OPTOELECTRONIC SYSTEM WITH A VERY WIDE FIELD

Denis Levallant, Villebon S/Yvette; Guy Timossi, Le Vesinet;
Bertrand Remy, Cachan; Jacques Lonnay, Paris, and
Jacques-Henri Rothenburg, Epinay sur Orge, all of, France,
assignors to Thomson-CSF, Puteaux, and Societe Anonyme
de Telecommunications - "SAT", Paris, both of, France

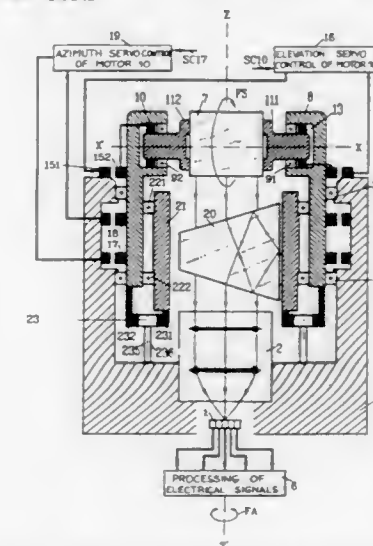
Filed Dec. 19, 1990, Ser. No. 638,111

Claims priority, application France, Dec. 29, 1989, 89 17427

Int. Cl.⁶ G01C 21/02; G01J 5/02; G02B 26/08; 23/02

U.S. Cl. 250-203.3

7 Claims



1. An optoelectronic device for a target acquisition system, said
device comprising:

an optical focusing means;

photodetector means disposed in the focal plane of said focusing
means on an output side of said focusing means;

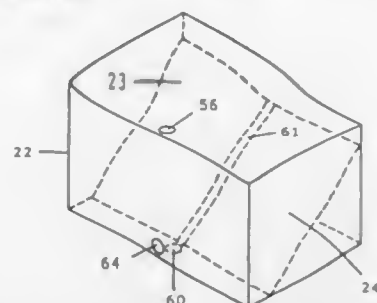
a double prism located on an input side of said focusing means
opposite to said photodetector means;

first means for rotatably driving said double prism about an axis
longitudinal to said double prism and perpendicular to an
optical axis of said focusing means wherein said first means
rotatably drives said double prism relative to a support;

second means for rotatably driving said support carrying said
double prism about said optical axis;

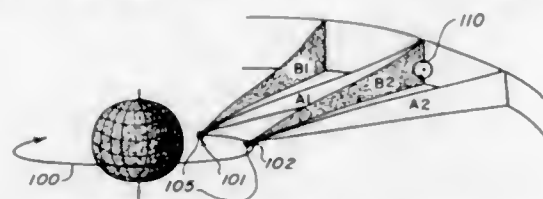
means located between said double prism and said focusing
means to hold an image of the target in a single direction in
said focal plane, regardless of the rotations of said support
carrying said double prism.

5,512,742
SOLAR ENERGY & TRACKING SYSTEM
 Brad A. Mattson, 1805 Dogwood, North Las Vegas, Nev. 89030
 Filed Dec. 28, 1993, Ser. No. 174,677
 Int. Cl.⁶ F24J 2/38
 U.S. Cl. 250—203.4 3 Claims



1. A solar tracking system that is comprised of a dark enclosure with an opening to let in light associated with a consequential axis having therein two light sensors, each giving two separate directional signals in response to light impinging thereon from said opening, said sensors connected to an electronic control means for directing a dual axis movement support means.

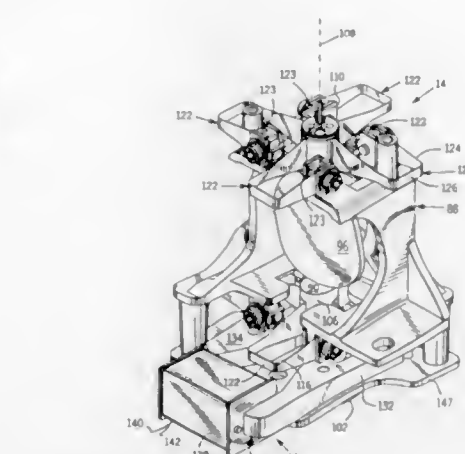
5,512,743
SPACE-BASED ASTEROID DETECTION AND MONITORING SYSTEM
 William A. Shaffer, Galtersburg; Martin J. McHugh, Baltimore, both of Md., and Dexter Wang, Concord, Mass., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
 Filed Jan. 25, 1994, Ser. No. 186,075
 Int. Cl.⁶ G01C 21/02
 U.S. Cl. 250—203.6 10 Claims



1. An apparatus for detecting bodies near a celestial object, said apparatus comprising:
 means, disposed in orbit about said celestial object, for forming a first and a second image of at least a portion of the celestial sphere about said celestial object, said means for forming adapted to permit forming said second image at a time after said forming of said first image; and
 means for differencing said first and second images to produce a resultant image, said means for differencing comprising means for registering said first and said second image prior to said differencing.

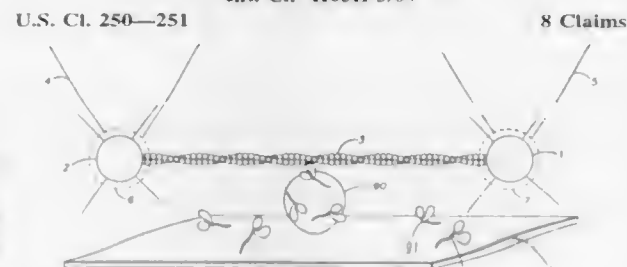
5,512,744
TAPERED BEAM FOLDED CROSS FLEXURE SUSPENSION
 Robert E. Scofield, Pewaukee, and Jeffrey R. Annis, Waukesha, both of Wis., assignors to Allen-Bradley Company, Inc., Milwaukee, Wis.
 Filed Sep. 26, 1994, Ser. No. 312,263
 Int. Cl.⁶ H01J 3/14
 U.S. Cl. 250—234 18 Claims

1. In a bar code scanner of the type including a light source for producing scanning light and a transducer for sensing scanning light reflected from a bar code, a light directing assembly comprising:



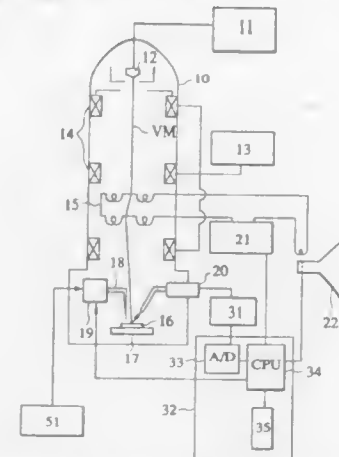
a mirror support;
 a mirror fastened to the mirror support;
 a frame; and
 at least two generally U-shaped springs each including first and second substantially parallel legs connected by a third leg, the first legs being fastened to the mirror support and the second legs being fastened to the frame, where the springs are configured to resiliently support the mirror support for oscillation about a predefined rotational axis relative to the frame.

5,512,745
OPTICAL TRAP SYSTEM AND METHOD
 Jeffrey Finer, Palo Alto, Calif.; Robert Simmons, Middlesex, United Kingdom; James A. Spudich, Palo Alto, and Steven Chu, Stanford, both of Calif., assignors to Board of Trustees of the Leland Stanford Jr. University, Palo Alto, Calif.
 Filed Mar. 9, 1994, Ser. No. 208,131
 Int. Cl.⁶ H05H 3/04
 U.S. Cl. 250—251 8 Claims



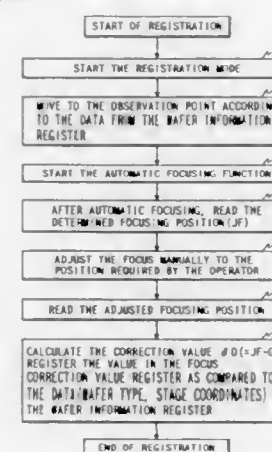
1. An optical system for optically trapping first and second spaced particles comprising:
 a light source forming a light beam;
 beamsplitting means for receiving said light beam and forming first and second light beams;
 means for focusing said first and second light beams to first and second focal regions,
 first optical processing means for directing said first light beam so that the first focal region impinges on the first particle,
 second optical processing means responsive to a drive signal for controlling the direction of the second light beam to control the multi-dimensional position of the second focal region on the second particle to position the particle;
 a detector for detecting the multi-dimensional position of the second particle image and generating a signal representative of the deviation of the position of the second particle image on the detector from a desired target position of the second particle image on the detector, wherein the signal is provided to a driver; and
 a driver for converting a signal from the detector into a drive signal to the second optical processing means.

5,512,746
MICRO-PATTERN MEASURING APPARATUS
 Tsuyoshi Saito, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kanagawa, Japan
 Filed Sep. 21, 1994, Ser. No. 309,660
 Claims priority, application Japan, Sep. 22, 1993, 5-236840
 Int. Cl.⁶ G01N 23/225
 U.S. Cl. 250—310 20 Claims



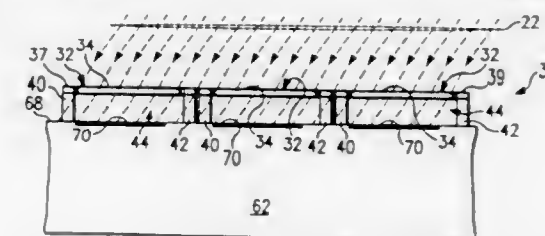
1. A micro-pattern measuring apparatus for transversely scanning a measurement object with an electron beam, to measure the size of the object without causing a surface contamination of the object and without deforming a microstructure of the object, comprising:
 (a) an electron gun for emitting an electron beam toward the object;
 (b) an electron optical system for periodically deflecting the electron beam, to scan the object;
 (c) detection means for detecting a secondary electron signal generated by the object in response to the electron beam;
 (d) measurement means for measuring the size of the object according to the secondary electron signal; and
 (e) a conductive probe for catching charged electrons on the object, the probe being arranged in a predetermined space relation as to the position of a scanning line of the electron beam on a surface of the object.

5,512,747
AUTO FOCUSING APPARATUS OF SCANNING ELECTRON MICROSCOPES
 Tatsuya Maeda, Hitachinaka, Japan, assignor to Hitachi, Ltd., Tokyo, Japan
 Filed Dec. 14, 1994, Ser. No. 355,927
 Claims priority, application Japan, Dec. 21, 1993, 5-322396
 Int. Cl.⁶ H01J 37/21
 U.S. Cl. 250—310 8 Claims



1. An auto focusing apparatus of a scanning electron microscope comprising:
 an auto focusing mechanism;
 an objective lens;
 a focus correction value register; and
 a focus correction mechanism;
 wherein said auto focusing mechanism calculates a focus evaluation value, using an electron signal generated from a specimen when the specimen is scanned by an electron beam focused by said objective lens, and controls an exciting current of the objective lens according to said focus evaluation value; and
 said focus correction mechanism corrects a focused position determined by said auto focusing mechanism by as much as a focus correction value registered in the focus correction value register.

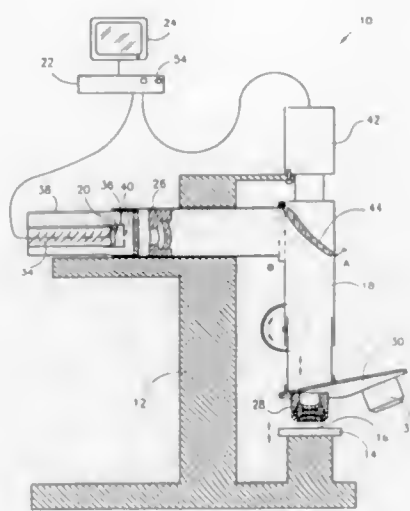
5,512,748
THERMAL IMAGING SYSTEM WITH A MONOLITHIC FOCAL PLANE ARRAY AND METHOD
 Charles M. Hanson, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.
 Filed Jul. 26, 1994, Ser. No. 281,711
 Int. Cl.⁶ G01J 5/02; G02F 1/13
 U.S. Cl. 250—332 21 Claims



1. A thermal sensor mounted on an integrated circuit substrate to provide an image representative of the amount of infrared radiation incident to the thermal sensor comprising:
 a film layer of infrared sensitive material disposed adjacent to a first surface of the substrate with a gap formed therebetween, wherein said gap is approximately one-fourth of a wavelength of said infrared radiation;
 a plurality of photosensors disposed on the first surface of the substrate adjacent to the film layer; and
 a supporting structure for providing thermal and electrical isolation between the film layer and the substrate.

5,512,749
INFRARED MICROSCOPE
 Gavriel J. Iddan, Haifa; Ephraim Pinsky, Kiryat Tivon, and Gavriel Catalan, Qiryat Motzkin, all of Israel, assignors to Rafael-Armament Development Authority, Haifa, Israel
 Filed Nov. 18, 1994, Ser. No. 344,594
 Claims priority, application Italy, Nov. 26, 1993, 107763
 Int. Cl.⁶ H04N 5/33
 U.S. Cl. 250—332 9 Claims

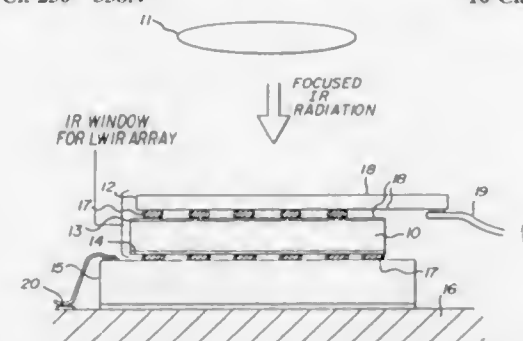
1. A staring infrared microscope, comprising:
 (a) optics for focusing a magnified image of an object onto a 2D array detector of IR sensitive elements;
 (b) processing means for processing the information received from said 2D array detector including controlling the integration time of said 2D array detector as a function of the magnification of the object to generate a thermal descriptive image of object; and
 (c) output means for displaying the thermal descriptive image.



5,512,750
A-DUAL BAND IR SENSOR HAVING TWO
MONOLITHICALLY INTEGRATED STARRING
DETECTOR ARRAYS FOR SIMULTANEOUS,
COINCIDENT IMAGE READOUT

Robert W. Yanka, and Milton L. Noble, both of Liverpool,
N.Y., assignors to Martin Marietta Corporation, Syracuse,
N.Y.

Filed Jun. 3, 1994, Ser. No. 253,716
Int. Cl.⁶ H01L 25/065; 27/146; 31/0296; G01J 5/22
U.S. Cl. 250—338.4 10 Claims



1. In a two-dimensional IR staring array in which pixel-registered, medium wave and long wave infrared (MWIR, LWIR) images of the same object field are simultaneously readout, a focal plane assembly comprising:

- (A) an LWIR transmissive crystalline first substrate having a first face oriented for front side illumination and a second face oriented for back side illumination;
- (B) an integrated MWIR radiation sensitive metal insulator semiconductor (MIS) charge injection device (CID) detector array formed on said first face for sensing a two-dimensional image comprising:

- (a) a first semiconductor layer of a material suitable for MWIR radiation sensing and absorption epitaxially grown on said first face; and
- (b) an insulated gate structure formed on said first semiconductor layer comprising an IR transparent metallic gate layer patterned to form a two dimensional array of IR transmissive window shaped pixels, and IR opaque metallic conductors for connection to individual pixels lying principally in aisles framing said window shaped pixels, said first semiconductor layer and said gate structure forming an array of MWIR sensing MIS-CID pixels distributed within the boundary of said image, each pixel sensing and absorbing MWIR radiation and constituting an LWIR radiation transmissive window,

- (c) an integrated multiplexer (MUX) for said MWIR detector array comprising switch, preamplifier, multiplexer, and shift register portions, disposed on the back face of a IR transmissive second substrate disposed in front of said first substrate, the IR opaque parts of said switch portion being apertured and laid out in aisles framing said apertures, said aperture and aisles on said second substrate being in registry with said pixels and aisles on said first substrate; the preamplifier, multiplexer, and shift register portions of said MWIR MUX being displaced outside said image boundary,

- (C) opaque conductive means aligned with said aisles interconnecting the individual pixels of said MWIR detector array to said MWIR MUX to enable image readout,

- (D) an integrated two-dimensional, LWIR radiation sensitive, photovoltaic (PV) diode array coextensive with said MWIR detector array comprising a second semiconductor layer epitaxially grown on said second face for monolithic integration with said MWIR detector array, said second semiconductor layer being of a material suitable for LWIR radiation sensing; and a diffusion on the back face of said second semiconductor layer patterned to provide an array of LWIR radiation sensitive PV diode pixels, the LWIR sensitive regions of said LWIR pixels being aligned with said LWIR radiation transmissive windows of said MWIR detector array to provide image radiation to each pixel of said LWIR detector array in registration with the image provided to each pixel of said MWIR detector array, and

- (E) an integrated LWIR MUX disposed on a third substrate mechanically attached to the back face of said first substrate and electrically connected to individual PV diodes of said LWIR sensitive detector array to enable an LWIR radiation image to be readout simultaneously with and in pixel-registration to the MWIR radiation image.

5,512,751
CALIBRATION OF NIR SPECTRA IN MEASURING
PROPERTIES OF PETROLEUM PRODUCTS

Richard C. Murray, Jr., Palatine, Ill., and Mark S. Zetter, El Dorado Hills, Calif., assignors to UOP, Des Plaines, Ill.

Filed Dec. 19, 1994, Ser. No. 358,288
Int. Cl.⁶ G01N 21/35 6 Claims

- 1. A method of calibrating the change in octane number of a blended gasoline from its near infrared spectrum comprising:

- a) determining the octane number of a selected base blended gasoline feedstock using a knock engine;
- b) adding to the base blended gasoline feedstock an amount not to exceed 25 weight percent of at least one octane-contributing component to afford a modified base blended gasoline feedstock;
- c) measuring i) the octane number change using a knock engine and ii) the near infrared spectrum in the region of about 1100 nm to about 1600 nm of said modified base blended gasoline feedstock;
- d) repeating steps b) and c) to afford no more than about 25 measurements;
- e) determining by a suitable mathematical technique, the relation between the measured octane number changes and the near infrared spectra.

5,512,752
METHOD OF DETERMINING TYPE OF PLASTICS
Katsuaki Aikawa, and Tadashi Shiratama, both of Saitama, Japan, assignors to Tna Electronics, Ltd., Tokyo, Japan
Filed Jan. 13, 1994, Ser. No. 181,517

Claims priority, application Japan, Jan. 14, 1993, 5-021865
Int. Cl.⁶ G01N 21/35 13 Claims

- 1. A method of determining a type of an unknown plastic, comprising the steps of:

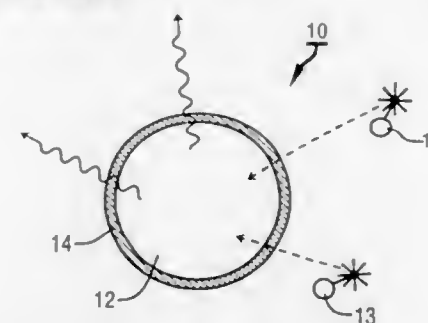
- (a) irradiating the unknown plastic with near-infrared rays to measure an absorption spectrum of the unknown plastic over a measurement wavelength range within a near infrared-region;
- (b) calculating and measuring a differential spectrum of the unknown plastic at equal intervals of wavelength of up to 10 nm to provide a differential spectrum measurement for each measurement interval;
- (c) determining a class of the differential spectrum measurement for each interval as to whether each differential spectrum measurement is positive, negative or zero;
- (d) comparing the class of the differential spectrum measurement of the unknown plastic with a class of a differential spectrum measurement previously determined for each of a plurality of plastics of known types for each interval;
- (e) calculating a ratio of agreement for each known plastic by dividing the number of times the class of the differential spectrum measurement of the unknown plastic agrees with the class of the differential spectrum measurement of each known plastic by the total number of intervals compared; and
- (f) determining the type of the unknown plastic as the known plastic having the highest ratio of agreement.

5,512,753
SCINTILLATION COUNTING SYSTEM USING
SCINTILLATOR CAPSULES

James Thomson, Bedum; Jan ter Wiel, Loppersum; Harry van Lune, Groningen; Herbert M. Bösel, Haren, all of, Netherlands, and Gerhard H. Kremer, Richterswil, Switzerland, assignors to Packard Instrument, B.V., Ulgermaweg, Netherlands

Filed Jun. 8, 1994, Ser. No. 255,472
Int. Cl.⁶ G01T 1/204

U.S. Cl. 250—361 R 37 Claims



- 1. A scintillator capsule for producing scintillations in response to radioactive substances in a sample, said scintillator capsule to be located with said sample and comprising:

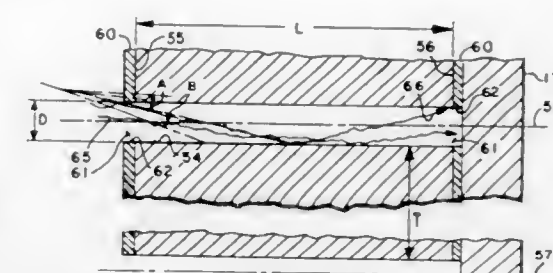
- a liquid scintillator core having a fluorescent substance for converting radiation energy from said sample into light energy; and
- a wall surrounding said core, said wall having a diameter less than 3000 microns and being permeable to said light energy and to said radiation energy from said sample, said core being located inside said wall and said sample being located outside of said wall.

5,512,754
FILTERED COLLIMATOR FOR DUAL ISOTOPE
MEDICAL IMAGING
Gary W. Enos, Macedonia, Ohio, assignor to Summit World Trade Corp., Hudson, Ohio

Filed Nov. 14, 1994, Ser. No. 338,431

Int. Cl.⁶ G21K 1/02 16 Claims

- 1. An X-ray collimator for use in a medical nuclear camera comprising:



a body of radioactive absorbing material having an entrance end adjacent a source of radiation and an exit end adjacent a radiation sensing medium, said body having a first plurality of tubular passageways extending therethrough; and
an X-ray filter material having an edge thickness of about 1 to 2 mm affixed to at least one of said body ends, said filter material having a second plurality of openings extending through said edge thickness equal in number to said passageways, each opening aligned with a corresponding passageway to be co-incident and contiguous with said passageway at said end thereof, said filter material being composed of layers of different materials bonded to one another.

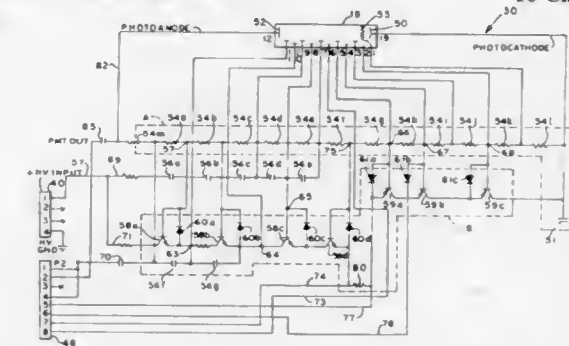
5,512,755
GAMMA CAMERA DEVICE

David S. Vickers, Independence; John C. Gibbons, Macedonia, and Geoffrey G. Cochrane, Chippewa Lake, all of Ohio, assignors to Summit World Trade Corp., Hudson, Ohio

Filed May 20, 1994, Ser. No. 247,067

Int. Cl.⁶ G01T 1/208

U.S. Cl. 250—363.09 10 Claims



- 1. A scintillation camera comprising:

- a) scintillation means receiving radiation and transmitting light in response thereto;
- b) a plurality of photomultipliers adjacent said scintillation means and generating electrical output signals indicative of the position and intensity of said light emanating from said scintillation means;
- c) each photomultiplier having within a vacuum enclosed space a photocathode connected to ground, an anode and a plurality of dynodes spaced incrementally between said photocathode and said anode and numbered sequentially as d_1, d_2, d_3 , etc. from said photocathode with any one specific dynode designated d_n ; high voltage potential means including a resistor voltage divider string and a power supply for applying a D.C. high voltage to each dynode at incremental potentials corresponding to said numbering of said dynodes whereby the voltage potential at one dynode is less than said voltage potential at the next numbered dynode which in turn is less than the voltage potential at the next numbered dynode, said power supply supplying said D.C. line voltage adjacent said anode;
- d) means for converting said electrical signals generated by said photomultiplier tubes into a scintillation image;
- e) gain means for electronically establishing the gain of all photomultipliers to be equal to another in accordance with the

radiation of a predetermined test beam by establishing the voltage potential for said specific dynode, d_n , at a voltage value which is set between the value of the high voltage potential applied to an immediately preceding dynode d_{n-1} and the value of the voltage potential applied by said resistor string to an immediately succeeding dynode d_{n+1} for each photomultiplier so that the gain of all photomultipliers are equal; and,

f) means to regulate said power supply to set said constant D.C. high voltage to different constant voltage levels in accordance with the energy level of the radiation being detected.

5,512,756

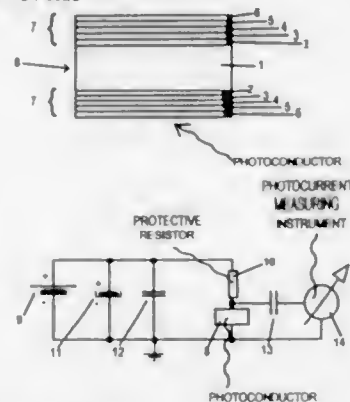
X-RAY DETECTOR WITH DIRECT CONVERSION

Eberhard Bayer, deceased, late of Munich; Andreas Jahnke, Munich; Eric Chemisky, Haar, and Ralf-Dieter Schnell, Munich, all of, Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Dec. 21, 1994, Ser. No. 361,101

Claims priority, application Germany, Dec. 23, 1993, 43 44 252.0

Int. Cl. G01T 1/24; G01J 1/24
U.S. Cl. 250—370.13 10 Claims



1. An x-ray detector comprising:

a photoconductor formed by a lamina having a crystalline, semi-insulating semiconductor body having high purity in its interior, said semiconductor body being formed of material selected from the group consisting of GaAs, CdTe, CdSe, HgTe, $\text{CuInGa}_{1-x}\text{Se}_{2-2x}\text{S}_{2y}$, wherein $1 \geq x$ and $y \geq 0$, said semiconductor body having opposite surfaces;

electrodes respectively disposed on said opposite surfaces of said semiconductor body and defining an input surface for x-rays, said input surface being substantially perpendicular to said opposite surfaces;

said semiconductor body having a flat, highly doped layer region immediately beneath the electrode at each of said opposite surfaces;

a capacitor;

a constant voltage source electrically connected in parallel with said capacitor and connected to said electrodes for charging said electrodes with a constant voltage and producing a substantially uniform electric field throughout said semiconductor body between said electrodes; and

measuring means for detecting a photocurrent flowing through said photoconductor as a result of x-rays incident on said input surface of said photoconductor.

5,512,757
SPECTROPHOTOMETER AND OPTICAL SYSTEM THEREFOR

Carl N. Cederstrand, Brea; Sharam M. Salimian, Westminster, and Rolf W. Slemmon, Brea, all of Calif., assignors to Rosemount Analytical, Inc., La Habra, Calif.

Filed Apr. 6, 1992, Ser. No. 863,830

Int. Cl. G01N 21/33

U.S. Cl. 250—373

12 Claims



1. In a spectrophotometer of the type having a sample cell for containing sample to be analyzed, an emission source for directing radiation through said sample cell, filter means in the path of said radiation for eliminating wavelengths shorter than a designated wavelength, detectors for detecting radiation of selected wavelengths emitted from said sample cell and for producing an electronic signal in response to the detected radiation and means for measuring said electronic signal from said detectors as an indicator of the quantities of sought for component in said sample, the invention comprising:

- at least a first and a second spectrally selective mirror serially positioned in the path of a beam of radiation emitted from said sample cell;
- said first spectrally selective mirror being selected to reflect to a first detector a first band of wavelengths having a range at least encompassing the absorption spectrum of a first gas being detected and to transmit remaining wavelengths to said second spectrally selective mirror;
- said second spectrally selective mirror being selected to reflect a second band of wavelengths different from said first band and having a range encompassing a second gas to a second detector; and
- means for integrating said electronic signal from said first and said second detectors; thereby to obtain an output signal directly related to the concentration of one of said first and second gas.

5,512,758

FLUORESCENCE DETECTION APPARATUS

Takao Kobayashi, Katsutoshi Sakai, and Kenzou Kobayashi, all of Tokyo, Japan, assignors to Furukawa Electric Co., Ltd., Tokyo, Japan

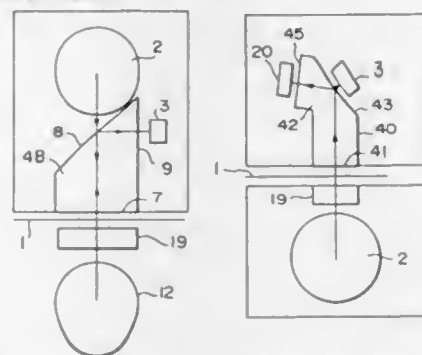
Filed Apr. 28, 1994, Ser. No. 234,291

Claims priority, application Japan, Apr. 27, 1993, 5-123526; May 21, 1993, 5-142924; May 31, 1993, 5-152705

Int. Cl. G01N 21/64

U.S. Cl. 250—461.1

17 Claims



1. A fluorescence detection apparatus for differentiating an object containing a fluorescent substance by detecting fluorescence emitted by said fluorescent substance, said apparatus comprising:

an excitation light source which emits ultraviolet light that excites a fluorescent substance, said ultraviolet light being filtered or non-filtered;

a light detector for detecting fluorescence; and

an optical guiding system for guiding said ultraviolet light to an object containing a fluorescent substance thereon, and for guiding fluorescence emitted by said fluorescent substance excited by said ultraviolet light to said light detector for differentiating said object, said optical guiding system consisting essentially of a single glass block which does not fluoresce under ultraviolet light, said single glass block being of an angular columnar shape having an inclined face, said single glass block comprising:

- an incidence face located on a side of said glass block, through which said ultraviolet light enters;
- a reflection and emission face constituted by said inclined face, from which said incident ultraviolet light reflects toward said object, and through which fluorescence emitted from said object passes toward said light detector, said reflection and emission face being treated to reflect ultraviolet light and pass fluorescence; and
- a detection face at the bottom of said glass block facing said object, through which said ultraviolet light exits and hits said object, and through which fluorescence emitted from said object enters, said detection face being treated to pass ultraviolet light and pass fluorescence.

5,512,759

CONDENSER FOR ILLUMINATING A RINGFIELD CAMERA WITH SYNCHROTRON EMISSION LIGHT

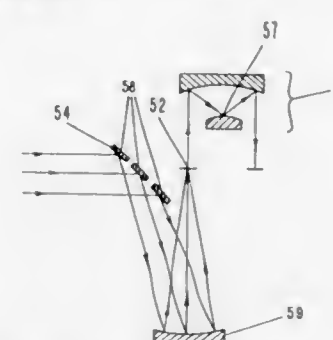
William C. Swett, 13027 Arroyo de Vista, Albuquerque, N.M. 87111

Filed Jun. 6, 1995, Ser. No. 469,590

Int. Cl. G21K 1/06

U.S. Cl. 250—492.1

17 Claims



1. A condenser system for collecting synchrotron radiation from a synchrotron source that emits a fan of synchrotron emission light in the plane of the source and for illuminating the ringfield of a camera, comprising:

- collecting means, positioned about the periphery of a synchrotron source, for collecting a plurality of synchrotron light beams emitted from the fan of synchrotron emission light and for transforming the plurality of synchrotron light beams into a plurality of arc-shaped light beams, each one of the plurality of arc-shaped light beams having an arc-shaped cross-section;
- processing means, succeeding said collecting means, for rotating and directing the plurality of arc-shaped light beams toward the real entrance pupil of a camera and for positioning a plurality of substantially parallel arc-shaped light beams at the real entrance pupil of the camera; and
- imaging means, succeeding said processing means, for converging the substantially parallel arc-shaped light beams, for transmitting the plurality of the substantially parallel arc-shaped light beams through a resistive mask and into the virtual entrance pupil of the camera, and for illuminating the ringfield of the camera.

5,512,760

OPTICAL HEIGHT DETECTOR WITH COAXIAL IRRADIATION AND IMAGE AXES AND PLURAL DETECTORS SPACED ALONG THE IMAGE AXIS

Joseph L. Horijon; Christiaan H. F. Velzel, and Cornelis S. Kootjman, all of Eindhoven, Netherlands, assignors to U. S. Philips Corporation, New York, N.Y.

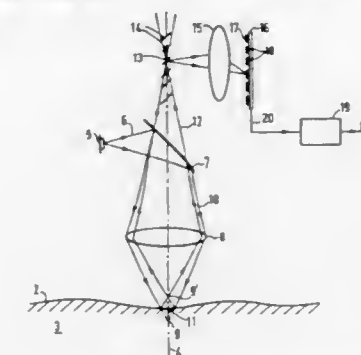
Filed Apr. 29, 1994, Ser. No. 236,775

Claims priority, application European Pat. Off., May 6, 1993, 93201304

Int. Cl. G01N 21/86; G01B 11/30

U.S. Cl. 250—559.29

16 Claims



1. A device for optically measuring the height of a surface of an object, which device comprises a radiation source for generating an irradiating beam which is directed along a predetermined beam axis and forms an irradiated spot on the surface, and an imaging system for converging radiation reflected from the irradiated spot to a radiation beam forming an image spot on the predetermined beam axis in the image space of the image system, characterized by a detection unit arranged in the image space for receiving radiation from the radiation beam at at least three different positions along the predetermined beam axis and for converting said radiation into electric signals and by electronic means for determining, from said signals, that position of the at least three positions which receives the maximum amount of radiation, said position being related to the height of the surface at the location of the irradiated spot.

5,512,761

DISTANCE SENSOR FOR DETERMINING A DISTANCE BETWEEN TWO RELATIVELY MOVABLE MEMBERS BY MEASURING A TIME DURING WHICH A MEASURING MARK IS IN A LIGHT PATH BETWEEN A LIGHT TRANSMITTER AND A LIGHT RECEIVER

Helmut Winkelmann, Forchheim, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

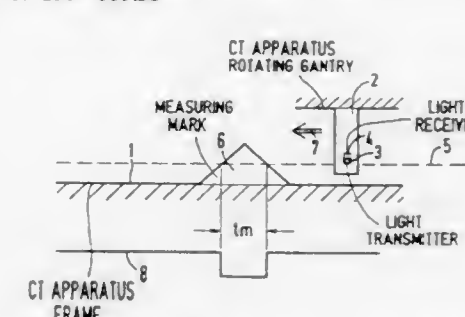
Filed Aug. 29, 1994, Ser. No. 296,590

Claims priority, application Germany, Sep. 22, 1993, 43 32 254.9

Int. Cl. G01N 21/00

U.S. Cl. 250—559.38

5 Claims



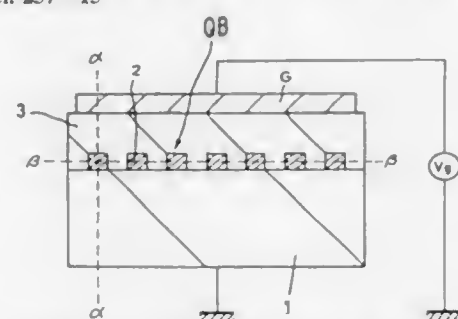
1. A computed tomography apparatus comprising: first and second components which are movable relative to one another and which are spaced a distance from each other;

a light transmitter and a light receiver mounted on one of said components and having a light path therebetween;
 a measuring mark mounted on the other of said components, said measuring mark being disposed to temporarily move into said light path as said measuring mark passes said light receiver and light transmitter as said components move relative to each other, and said measuring mark having a shape for changing a duration of incidence of light from said light transmitter on said light receiver, when said measuring mark is in said light path, dependent on the distance between said components;
 said light receiver generating a distance signal having a signal parameter which is representative of said duration; and
 means for evaluating said signal parameter of said distance signal for identifying the distance between said components therefrom.

5,512,762

QUANTUM DEVICE WITH PLURAL STABLE STATES
 Toshikazu Suzuki, Kanagawa; Kazumasa Nomoto, Tokyo, and Ryuchl Ugajin, Kanagawa, all of, Japan, assignors to Sony Corporation, Tokyo, Japan
 Filed Sep. 20, 1994, Ser. No. 309,888
 Claims priority, application Japan, Sep. 22, 1993, 5-259482
 Int. Cl.⁶ H01L 29/06; 31/0328; 31/0336
 U.S. Cl. 257—15

4 Claims

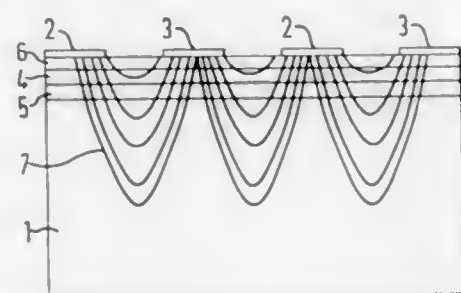


1. A quantum device comprising a plurality of quantum boxes, wherein electrons or holes existing in said quantum boxes are variable in number to establish plural stable states, and interaction energy between said electrons or holes is larger than transfer energy between said quantum boxes.

5,512,763

METAL-SEMICONDUCTOR-METAL PHOTODETECTOR
 Jeremy Allam, Cambridge, United Kingdom, assignor to Hitachi, Ltd., Tokyo, Japan
 Filed Oct. 11, 1994, Ser. No. 321,645
 Claims priority, application United Kingdom, Oct. 28, 1993, 9322246
 Int. Cl.⁶ H01L 29/06; 31/0328; 31/0336
 U.S. Cl. 257—21

20 Claims



1. A metal-semiconductor-metal MSM photoconductor device comprising:

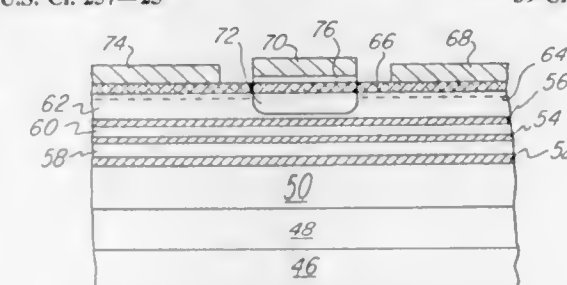
a photoconductive region for generating charge carriers in response to incoming optical radiation,
 an array of electrodes for applying an electric field to the photoconductive region so as to collect charge carriers produced in response to the incoming radiation, and
 means defining an optical resonant cavity containing the photoconductive region, whereby incoming optical radiation resonates in the cavity to generate said carriers.

5,512,764

COUPLED-QUANTUM-WELL FIELD-EFFECT RESONANT TUNNELING TRANSISTOR FOR MULTI-VALUED LOGIC/MEMORY APPLICATIONS
 Alan C. Seabaugh, Richardson, Tex.; Chad H. Mikkelsen, Cambridge, Mass., and Gary Frazier, Garland, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.
 Continuation of Ser. No. 40,037, Mar. 31, 1993, abandoned.
 This application Jan. 3, 1995, Ser. No. 368,251
 Int. Cl.⁶ H01L 29/06; 31/0328

U.S. Cl. 257—25

39 Claims



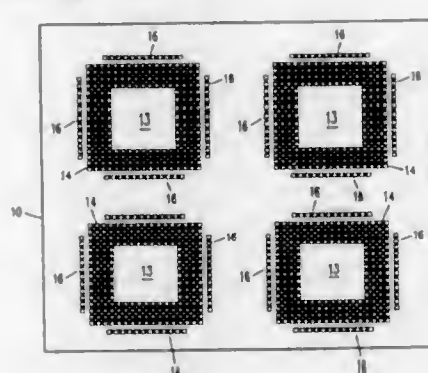
1. A resonant tunneling transistor device comprising:
 a semi-conducting substrate;
 a drain region above said semi-conducting substrate;
 a multiple-barrier multi-well resonant tunneling diode above said drain region;
 a two dimensional electron gas heterostructure above said multiple-barrier multi-well resonant tunneling diode;
 a source region, wherein said source region provides an ohmic connection to said two dimensional electron gas;
 contacts on said drain region and said source region; and
 a gate besides said source region.

5,512,765

EXTENDABLE CIRCUIT ARCHITECTURE
 Timothy L. Gaverick, Cupertino, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.
 Filed Feb. 3, 1994, Ser. No. 190,910
 Int. Cl.⁶ H01L 27/10; 23/053

U.S. Cl. 257—202

9 Claims



1. An extendable semiconductor based system, comprising:
 a substrate having substrate bonding pads for the mounting of lower capacity logic arrays, the substrate bonding pads serv-

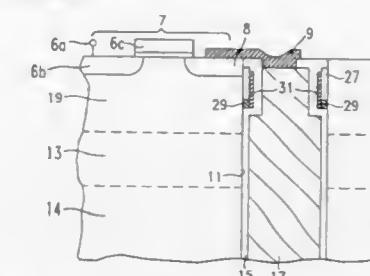
5,512,767

TRENCH CAPACITOR FIELD SHIELD WITH SIDEWALL CONTACT

Wendell P. Noble, Jr., Milton, Vt., assignor to International Business Machines Corp., Armonk, N.Y.
 Division of Ser. No. 56,090, May 3, 1993, Pat. No. 5,422,294.
 This application Dec. 13, 1994, Ser. No. 355,942
 Int. Cl.⁶ H01L 27/108; 23/58

U.S. Cl. 257—301

19 Claims



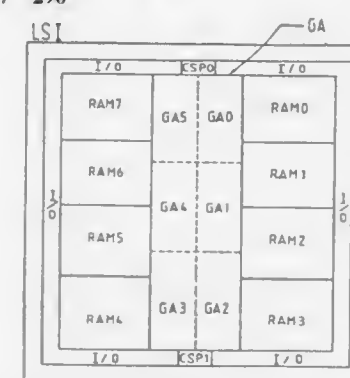
1. A storage capacitor having two electrodes formed in a trench having sidewalls and a bottom wall, the trench located in a semiconductor substrate, the capacitor comprising:
 a layer of insulator on walls of the trench;
 a layer of electrically conductive material on said layer of insulator;
 a node diffusion, one of the electrodes contacting said node diffusion and
 an electrically conductive member connected to said layer of electrically conductive material, extending through a sidewall portion of said layer of insulator, and contacting a selected region of the substrate other than said node diffusion.

5,512,766

SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE
 Mitsugu Kusunoki; Shuichi Miyaoaka, both of Ohme; Michiaki Nakayama, Tokyo; Kouji Kobayashi, Hadano; Masato Ikeda, Takasaki, and Takashi Ogata, Ohme, all of, Japan, assignors to Hitachi, Ltd., and Hitachi Microcomputer System Ltd., both of Tokyo, Japan
 Division of Ser. No. 764,938, Sep. 24, 1991, abandoned. This application Oct. 15, 1993, Ser. No. 137,958
 Claims priority, application Japan, Oct. 10, 1990, 2-271357
 Int. Cl.⁶ H01L 27/02; 27/10

U.S. Cl. 257—296

47 Claims



1. A semiconductor integrated circuit device having a semiconductor substrate, said device comprising:
 a plurality of memory blocks arranged on said semiconductor substrate, each memory block including a memory mat and a peripheral circuit; and
 a plurality of logic blocks formed on said substrate, each logic block including:
 a plurality of unit gate array cells which (i) are coupled to clock signal lines to receive internal clock signals therefrom, (ii) are coupled to supply voltage feed lines to receive a supply voltage therefrom, and (iii) are coupled to ground potential feed lines to receive a ground potential therefrom, and
 a plurality of unit capacitor cells, each of which is substantially the same size as that of said each unit gate array cell, each of said unit capacitor cells being coupled to said supply voltage feed lines and said ground potential feed lines, each of said unit capacitor cells being contiguous to a corresponding at least one of said unit gate array cells.

5,512,768

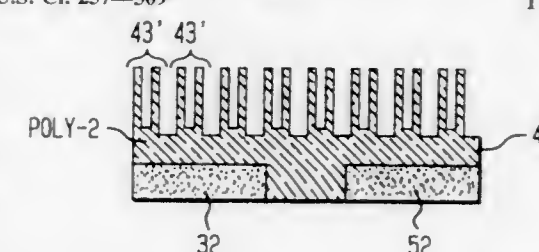
CAPACITOR FOR USE IN DRAM CELL USING SURFACE OXIDIZED SILICON NODULES
 Water Lur, Taipei; Johnson Liu, Tour U Shiang, and Jiunn-Yuan Wu, Guu Keng Shiang, all of, Taiwan, assignors to United Microelectronics Corporation, Hsin-Chy, Taiwan

Filed Mar. 18, 1994, Ser. No. 214,591

Int. Cl.⁶ H01L 27/04; 27/108

U.S. Cl. 257—309

1 Claim



1. A capacitor for use in a DRAM cell comprising,
 (a) a first polysilicon electrode layer, said first polysilicon electrode layer having a surface with a plurality of annular cylindrical polysilicon pillars,
 (b) a dielectric layer on said surface of said first polysilicon electrode layer, and
 (c) a second polysilicon electrode layer on said dielectric layer, wherein said annular cylindrical pillars have a wall thickness of 100-300 Angstroms and a diameter of 0.05 to 0.2 microns.

terized in that the dielectric comprises a ferroelectric material with a remanent polarization which influences a dimension of the tunnelling barrier.

5,512,774

DIELECTRICALLY ISOLATED SUBSTRATE AND SEMICONDUCTOR DEVICE USING THE SAME

Akio Nakagawa, Hiratsuka; Kazuyoshi Furukawa, Kawasaki; Isuneo Ogura, and Katsujino Tanzawa, both of Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

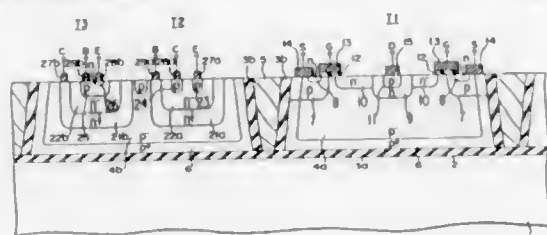
Continuation of Ser. No. 188,131, Jan. 24, 1994, which is a continuation of Ser. No. 850,964, Mar. 11, 1992, Pat. No. 5,332,920, which is a continuation of Ser. No. 732,575, Jul. 18, 1991, Pat. No. 5,097,314, which is a continuation of Ser. No. 486,395, Feb. 28, 1990, Pat. No. 5,049,968, which is a continuation-in-part of Ser. No. 307,770, Feb. 8, 1989, abandoned. This application Mar. 1, 1995, Ser. No. 396,964

Claims priority, application Japan, Feb. 8, 1988, 63-26787; Sep. 30, 1988, 63-246441; May 16, 1989, 1-122311; Aug. 7, 1989, 1-202936; Dec. 11, 1989, 1-318980

Int. Cl.⁶ H01L 29/00

U.S. Cl. 257-501

1 Claim



1. A semiconductor device, comprising:

- a composite substrate formed by directly bonding a first semiconductor substrate serving as an element region to a second semiconductor substrate serving as a supporting member with a first insulating film interposed therebetween;
 - a plurality of low breakdown voltage elements formed in said first semiconductor substrate; and
 - a high breakdown voltage element formed in said first semiconductor substrate;
- said first semiconductor substrate being divided into first and second island regions which are isolated from each other by an isolating region including an oxide film formed on a side surface of a groove formed in said first semiconductor substrate, and polycrystalline silicon filled in the groove, said second island region including a plurality of element regions, said high breakdown voltage element being formed in said first island region, and said low breakdown voltage elements being formed in said second island region.

5,512,775

LOW DIELECTRIC CONSTANT INSULATION IN VLSI APPLICATIONS

Chin-Chen Cho, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 234,443, Apr. 28, 1994. This application Jun. 7, 1995, Ser. No. 483,591

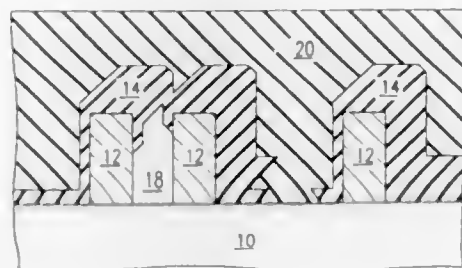
Int. Cl.⁶ H01L 29/00; 23/48

U.S. Cl. 257-522

2 Claims

2. A semiconductor device which comprises:

- (a) first, second, and third horizontally adjacent conductors formed on a substrate;
- (b) said first and second conductors horizontally separated by a space smaller than the height of said conductors; and
- (c) a layer of dielectric material, said dielectric material bridging between said first and second conductors, but not bridging between said second and third conductors.



5,512,776

INTERDIGITATED IMPATT DEVICES

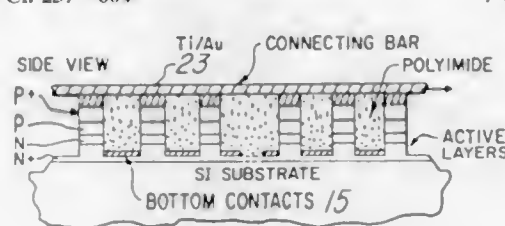
Burhan Bayraktaroglu, Plano, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation-in-part of Ser. No. 849,320, Apr. 8, 1986, abandoned, which is a division of Ser. No. 630,486, Jul. 13, 1984, Pat. No. 4,596,070. This application May 11, 1988, Ser. No. 192,801

Int. Cl.⁶ H01L 29/864

U.S. Cl. 257-604

7 Claims



1. A monolithic semiconductor structure, comprising:

- (a) a semiconductor substrate;
- (b) an IMPATT device formed on said substrate and electrically isolated from other surface regions of said substrate, said IMPATT device including:
 - i. a plurality of stacks, each of said stacks vertical from said substrate and including a heavily doped top portion, a lightly doped middle portion, and a heavily doped bottom portion with doping type opposite that of said top portion, said stacks spaced from each other to provide heat dissipation through said substrate and with said bottom portions joined to a common active layer, and
 - ii. a connector electrically coupling together said top portions of said stacks remote from said substrate.

5,512,777

SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE HAVING ELEMENTS OF DIFFERENT SWITCHING SPEEDS INTEGRATED ON A SINGLE CHIP

Koichi Endo, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

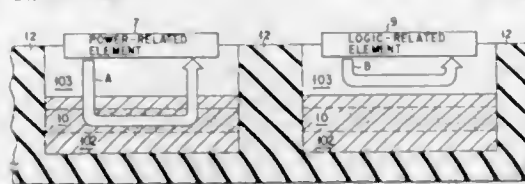
Filed Oct. 28, 1994, Ser. No. 328,785

Claims priority, application Japan, Oct. 29, 1993, 5-272478

Int. Cl.⁶ H01L 29/32

U.S. Cl. 257-617

33 Claims



1. A semiconductor integrated circuit device comprising: a semiconductor substrate;

a first element formed in the semiconductor substrate and having a first current path in a first portion of the semiconductor substrate;

a second element formed in the semiconductor substrate separated from the first element and having a second current path in a second portion of the semiconductor substrate; and

a carrier-recombination-center layer formed in said first portion of the semiconductor substrate, wherein the semiconductor substrate includes a first semiconductor layer of a first conductivity type, a second semiconductor layer of a second conductivity type formed on the first semiconductor layer, and an isolating region isolatingly separating the second semiconductor layer into a first island region and a second island region, the first element having the first current path extending in the first island region and the first semiconductor layer, the second element having the second current path extending in the second island region, and the carrier-recombination-center layer being formed in the first semiconductor layer.

5,512,779

SEMICONDUCTOR MEMORY DEVICE HAVING SILICON NITRIDE OVERLYING ONLY PERIPHERAL CIRCUIT AREAS

Masanori Noda, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

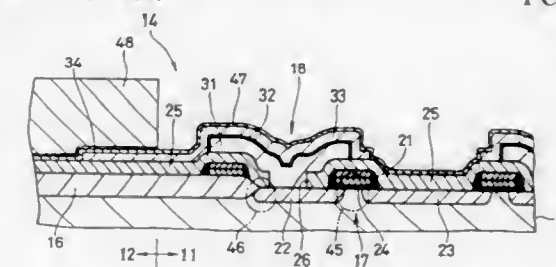
Continuation of Ser. No. 960,880, Oct. 14, 1992, abandoned.

This application Jun. 24, 1994, Ser. No. 265,612

Claims priority, application Japan, Oct. 29, 1991, 3-309667 Int. Cl.⁶ H01L 23/58

U.S. Cl. 257-640

1 Claim



1. A semiconductor memory device comprising: source and drain regions formed in a substrate, a gate oxide insulator formed on said substrate between said source and drain, a gate electrode on said gate oxide insulator between said source and drain, a first polysilicon film on said source, an ONO film on said first polysilicon film, a second polysilicon film on said ONO film, another insulation film on said second polysilicon film, and a silicon nitride film on said another insulation film at regions which extend laterally from said ONO film and which is not over said source or said drain regions, and wherein said first and second polysilicon films form electrodes of a capacitor.

5,512,778

SEMICONDUCTOR DEVICE WITH IMPROVED CONTACT

In S. Chung, Ichonkun, and Youn J. Kim, Seongnamsi, both of Rep. of Korea, assignors to Hyundai Electronics Industries Co., Ltd., Ichonkun, Rep. of Korea

Division of Ser. No. 36,897, Mar. 25, 1993, Pat. No. 5,292,684.

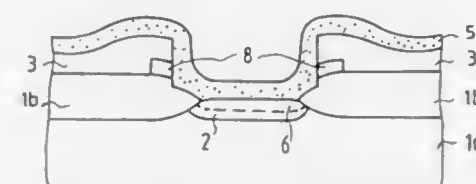
This application Dec. 2, 1993, Ser. No. 161,236

Claims priority, application Rep. of Korea, Mar. 28, 1992, 1992-5201

Int. Cl.⁶ H01L 23/58

U.S. Cl. 257-629

4 Claims



1. A semiconductor device having improved junction breakdown voltage and junction leakage current characteristics comprising a semiconductor substrate, at least two element-isolation oxide films formed on said semiconductor substrate, each said element-isolation oxide film having a bird's beak edge portion and an impurity diffusion region formed between element-isolation oxide films and adapted for use as an active region, said semiconductor device further comprising:

- an opening portion between element-isolation oxide films, said opening portion being wider than said active region;
- an etch barrier material film formed on a portion of each element-isolation oxide film adjacent to said opening portion such that said bird's beak edge portions are prevented from being damaged;
- an insulating film formed on said element-isolation oxide films and said etch barrier material films; and
- a conductive material layer in contact with said impurity diffusion region, said insulating films and a side-wall portion of said etch barrier material films.

5,512,780

INORGANIC CHIP-TO-PACKAGE INTERCONNECTION CIRCUIT

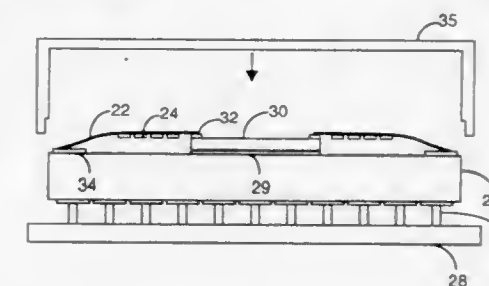
Howard L. Davidson, San Carlos, Calif., assignor to Sun Microsystems, Inc., Mountain View, Calif.

Filed Sep. 9, 1994, Ser. No. 303,466

Int. Cl.⁶ H01L 23/495; 23/48

U.S. Cl. 257-668

6 Claims



1. A chip-to-package interconnection circuit comprising: a plurality of electrical conductors in a predetermined configuration; and a plurality of insulating inorganic tie bars supporting said plurality of electrical conductors in said predetermined configuration, wherein each of said tie bars is between 25 and 50 microns thick.

5,512,781

SEMICONDUCTOR PACKAGE DEVICE FOR SUPER HIGH-FREQUENCY BAND

Kazuhiko Inoue, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 159,308, Nov. 30, 1993, abandoned.

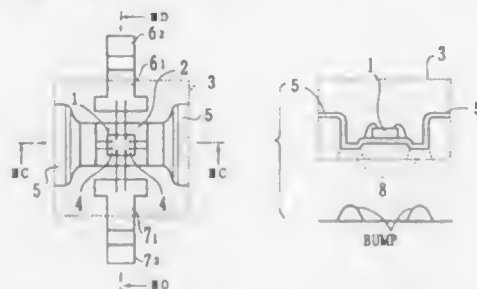
This application May 9, 1995, Ser. No. 437,780

Claims priority, application Japan, Dec. 1, 1992, 4-321853

Int. Cl.⁶ H01L 23/13;23/48

U.S. Cl. 257-676

9 Claims



1. A transistor package for super high-frequency band having a semiconductor chip which has a source, a gate and a drain terminal, the package comprising:

a first inner lead having a bed portion mounting the semiconductor chip, the first inner lead serving as a base portion of the package;

a second inner lead and a third inner lead electrically disconnected from the first inner lead; and

means for enclosing the first inner lead, the second inner lead and the third inner lead, the enclosing means including a connection window formed in the vicinity of the semiconductor chip, through which a portion of the first inner lead is exposed and electrically connected to an outer circuit, wherein the first inner lead is bent upward in the vicinity of a side face of the enclosing means and then bent again toward and substantially perpendicular to the side face of the enclosing means.

5,512,782

SEMICONDUCTOR DEVICE FOR DC/AC CONVERTER

Shinichi Kobayashi, Nagano, Japan, assignor to Fuji Electric Co., Ltd., Kawasaki, Japan

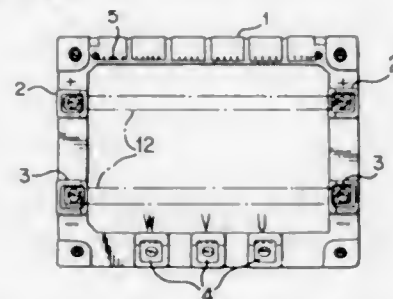
Filed Oct. 4, 1994, Ser. No. 310,314

Claims priority, application Japan, Oct. 13, 1993, 5-254614

Int. Cl.⁶ H01L 23/52;23/48

U.S. Cl. 257-691

7 Claims



1. A semiconductor device for converting DC input power to AC output power, comprising:

a package having a rectangular shape and an upper surface thereon, said package including four side edge portions on a periphery of the upper surface with the rectangular shape and containing a plurality of semiconductor chips therein, said four side edge portions being formed of a first pair of parallel side edge portions and a second pair of parallel side edge portions perpendicular to the first pair of the side edge portions,

DC input terminals formed of two pairs of positive and negative terminals, each pair formed of one positive terminal and one negative terminal being situated on each side edge portion of the first pair of the parallel side edge portions, respectively; such that the positive terminals on the respective side edge portions directly face to each other and the negative terminals on the respective side edge portions directly face to each other, and

AC output terminals and control terminals arranged on the side edge portions in said second pair of the parallel side edge portions.

5,512,783

SEMICONDUCTOR CHIP PACKAGES

Elwyn P. M. Wakefield, Bristol, and Christopher P. H. Walker, Portlsea, both of, United Kingdom, assignors to INMOS Limited, Bristol, United Kingdom

Continuation of Ser. No. 782,863, Oct. 15, 1991, Pat. No.

5,165,067, which is a continuation of Ser. No. 617,997, Nov.

26, 1990, abandoned. This application Oct. 7, 1992, Ser. No.

958,448

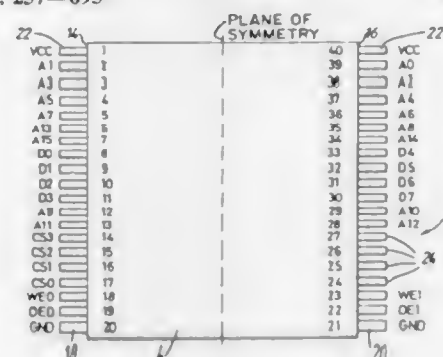
Claims priority, application United Kingdom, Dec. 1, 1989,

8927164

Int. Cl.⁶ H01L 23/48;23/02

U.S. Cl. 257-693

60 Claims



1. A semiconductor chip package comprising: a chip package having at least one semiconductor chip disposed therein; and

a plurality of first and second pins extending from the package, each first pin being electrically connected to the at least one semiconductor chip to conduct signals between said at least one semiconductor chip and circuitry external to the chip package and each second pin being redundant and not electrically connected to the at least one semiconductor chip,

the first pins comprising a plurality of groups which includes a first group and more than one remaining group,

each said group consisting of one or more pins and being arranged to conduct a respective signal type,

there being at least one pair of first group and second pins,

the respective pins of each said pair being functionally asymmetrically disposed in opposed relation along respective opposite or adjacent edges of the package,

each said remaining group of first pins being mutually symmetrically disposed along opposite or adjacent edges of the package.

5,512,784

SURGE PROTECTOR SEMICONDUCTOR SUBASSEMBLY FOR 3-LEAD TRANSISTOR OUTLINE PACKAGE

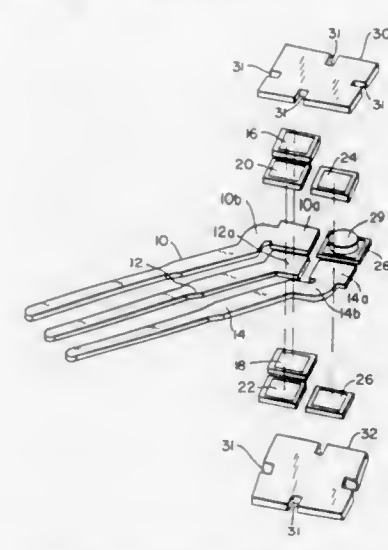
Robert L. Fried, Plainview; Enrico F. Napoletano, Flushing, and Marie Guillot, St. James, all of N.Y., assignors to Jerrold Communications, General Instrument Corporation, Hatboro, Pa.

Filed Apr. 19, 1994, Ser. No. 229,555

Int. Cl.⁶ H01L 29/861;23/34;23/495

U.S. Cl. 257-724

22 Claims



1. A semiconductor circuit module for a surge protector comprising:

three pairs of aligned diodes and a single, unidirectional thyristor arranged in a substantially square pattern between aligned conductive plates to form a subassembly, wherein one of the conductive plates has a substantially square configuration; and,

means for encapsulating the subassembly in a non-conductive package, wherein the package has a standard 3-lead transistor outline configuration.

5,512,785

SEMICONDUCTOR DEVICE HAVING AN EMITTER TERMINAL SEPARATED FROM A BASE TERMINAL BY A COMPOSITE NITRIDE/OXIDE LAYER

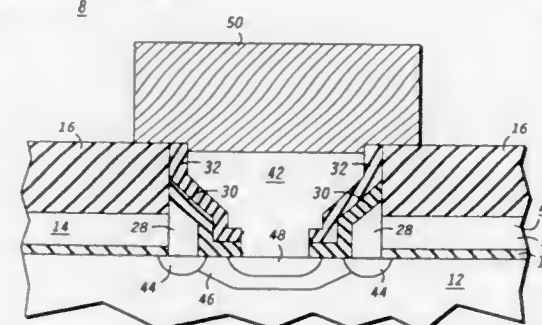
Harrison B. Haver, Scottsdale, and Mark D. Griswold, Chandler, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 30, 1994, Ser. No. 347,522

Int. Cl.⁶ H01L 23/58

U.S. Cl. 257-758

2 Claims



1. A semiconductor device comprising: a pad oxide layer disposed on a semiconductor substrate; a conducting layer disposed on said pad oxide layer;

an insulating layer disposed on said conducting layer wherein said insulating layer has a first opening, said conducting layer has a second opening, and said pad oxide layer has a third opening, wherein said first, second, and third openings are substantially coextensive and define an aperture that extends from said insulating layer to said semiconductor substrate; a conductive plug disposed in said aperture and in contact with both said conducting layer and a first diffusion region in said semiconductor substrate;

an oxide layer disposed in said aperture and on said conductive plug wherein said oxide layer is also in contact with said semiconductor substrate;

a nitride layer disposed on said oxide layer; and a first conductive terminal substantially disposed in said aperture and in contact with a second diffusion region in said semiconductor substrate wherein said oxide layer and said nitride layer are disposed between said first conductive terminal and said conductive plug.

5,512,786

PACKAGE FOR HOUSING SEMICONDUCTOR ELEMENTS

Hitomi Imamura; Shin Matsuda; Nobuyuki Ito, and Kazuhiro Kawabata, all of Kokubu, Japan, assignors to Kyocera Corporation, Kyoto, Japan

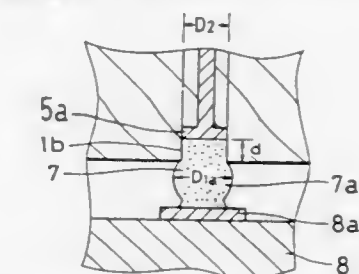
Filed Jun. 1, 1995, Ser. No. 457,427

Claims priority, application Japan, Aug. 10, 1994, 6-18127; Aug. 12, 1994, 6-190222

Int. Cl.⁶ H01L 23/48;23/52;27/40

U.S. Cl. 257-780

5 Claims



1. A package for housing semiconductor elements, the package comprising:

an insulating base, comprising electrical insulation material, the insulating base having on the upper surface thereof, a mounting portion that mounts the semiconductor elements as well as a plurality of depressions on either of the upper surface and the lower surface thereof;

a plurality of metallized wiring layers led away from the periphery of the mounting portion and extending to one end surface of the depressions;

a plurality of connection pads for electrically connecting the metallized wiring layers, formed on the end surface of the depressions of the insulating base; and

terminals which are soldered to the connection pads, each terminal forming integrally with the soldered portion, a ball protrusion on the surface of the insulating base, wherein the following equations must be satisfied with respect to D_{1a} , D_2 and d where D_{1a} represents the diameter of the ball protrusion, D_2 represents the diameter of the opening of the depression, and d represents the depth of the depression:

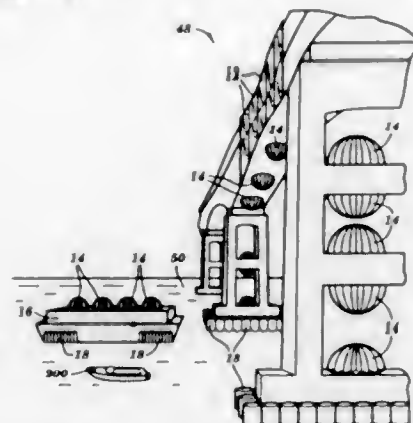
$$D_2 < D_{1a}$$

$$0.2 \text{ (mm)} \leq D_2 \leq 1.0 \text{ (mm)}$$

$$d \geq 0.05 \text{ (mm)}$$

$$0.08 \leq d/D_2 \leq 0.85.$$

5,512,787
**FACILITY FOR REFUELING OF CLEAN AIR VEHICLES/
 MARINE CRAFT AND POWER GENERATION**
 Robert Dederick, P.O. Box 367, Port Ewen, N.Y. 12466
 Filed Oct. 19, 1994, Ser. No. 325,830
 Int. Cl.⁶ F01D 15/10; F03B 13/12; F03D 9/00
 U.S. Cl. 290—4 R 20 Claims



1. A site system for provision of electrical and fuel products for site servicing of vehicles and marine craft comprising in combination:

an elevated structure for providing a substantial base for said site and having an upper utility area and a lower utility area, said upper and said lower utility areas demarcated and defined by a roadway used by vehicles;

at least one electrical generation subsystem selected from a group consisting of a solar panel collector, a wind generator, a barge and a water power generation means, said subsystem located in either or both said upper or said lower utility areas; conduction means for transferring electrical output of said subsystem to electrolysis means, said conduction means including switching means for shunting said electrical output to said electrolysis means or to electrical power storage means; water supply means;

said electrolysis means for production of gaseous products while in electrical communication with said conduction means and receptive of water from said water supply means;

compression and storage means for receiving said gaseous products;

a multi-service station network for tapping into said compression and storage means, using said gaseous products for generating electrical power and, upon demand, for dispensing pure hydrogen and oxygen product; and

an electric conversion means for generating alternating current power.

5,512,788
EXHAUST AIR RECOVERY SYSTEM
 Robert M. Berenda, 4233 Haut Brion Ct., Allison Park, Pa. 15101, and Jack Ferenci, R.D. #1, Box 248A, Grindstone, Pa. 15442

Filed Sep. 12, 1994, Ser. No. 304,371
 Int. Cl.⁶ F03D 9/00; H02P 9/04; F02C 6/00

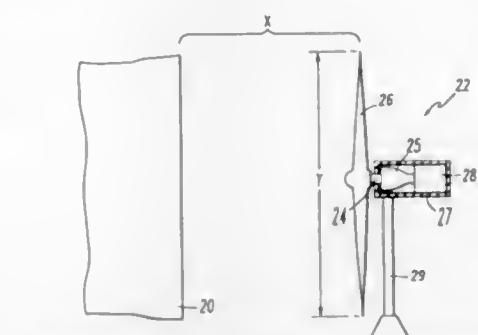
U.S. Cl. 290—55

13 Claims

13. An energy recovery system comprising:
 a ventilation system of a mine, the mine ventilation system having at least one exhaust location, wherein air from the mine is expelled at the at least one exhaust location; and
 a plurality of windmills located exterior to the mine and being spaced a selected distance from one another and from such at least one exhaust location, each such at least one windmill having:

(i) a rotatable shaft;

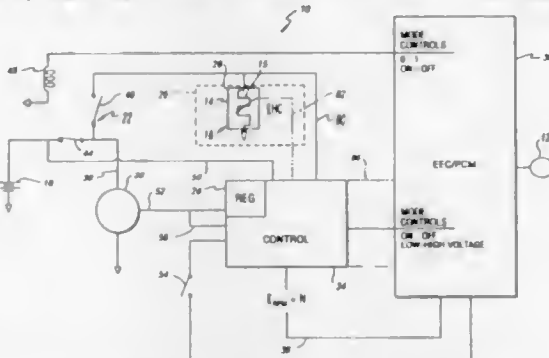
(ii) a plurality of vanes attached to said rotatable shaft wherein the expelled air from the mine ventilation system acts on said vanes, said rotatable shaft; and



(iii) an electrical generator connected to said rotatable shaft.

5,512,789
ELECTRICALLY HEATED CATALYST CONTROL
 Peter M. Lyon, Birmingham, Mich., assignor to Ford Motor Company, Dearborn, Mich.
 Filed Jul. 5, 1994, Ser. No. 270,973
 Int. Cl.⁶ F01N 3/10 13 Claims

U.S. Cl. 307—10.1



1. A control for electrically heating catalysts in a motor vehicle catalytic converter, the motor vehicle having a battery and an alternator with an output, the control comprising:

a switch for selectively coupling said alternator output to one of said electrically heated catalyst and said battery,

a monitor for generating a power threshold signal when said electrically heated catalyst has received a threshold level of power, and

wherein said switch is responsive to said power threshold signal to couple said alternator output to said battery.

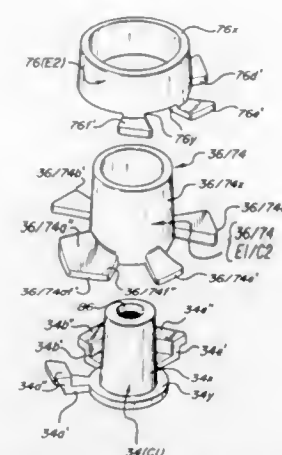
5,512,790
TRIAXIAL DOUBLE SWITCH MODULE
 Frank D. Lachenmaier, Kokomo; Donald E. Lake, deceased, Rochester; Timothy D. Martin; John D. Tagle, both of Kokomo, and Lisa A. Viduya, Carmel, all of Ind., assignors to Delco Electronics Corporation, Kokomo, Ind.
 Filed Jul. 21, 1994, Ser. No. 278,199
 Int. Cl.⁶ H01L 25/07 20 Claims

U.S. Cl. 307—112

1. A semiconductor double switch module having reduced inductance and adapted for commercial manufacture, said module comprising:

a housing having a baseplate and defining a chamber;

a low electrical resistance highly contoured first terminal member disposed in said chamber, said first terminal member having a cylindrical first terminal portion and also having a radially extending first flange portion, said cylindrical first terminal portion having an axis, said first flange portion having a highly contoured first circumferential edge with an outer extremity providing a first contact area that has an arcuate length, said first contact area being radially spaced



from said first terminal portion axis a first predetermined distance, effective to substantially provide a predetermined low electrical resistance between said first contact area and said cylindrical first terminal portion, and further effective to substantially provide a given inductance in said cylindrical first terminal portion with respect to a given electrical current flow;

a low electrical resistance highly contoured second terminal member disposed in said chamber, said second terminal member having a cylindrical second terminal portion and also having a radially extending second flange portion, said cylindrical second terminal portion having an axis, said second flange portion having a highly contoured second circumferential edge with an outer extremity providing a second contact area that has an arcuate length, said second contact area being radially spaced from said second terminal portion axis a second predetermined distance, effective to substantially provide a predetermined low electrical resistance between said second contact area and said cylindrical second terminal portion, and further effective to substantially provide a predetermined inductance in said cylindrical second terminal portion with respect to said given electrical current flow;

a low electrical resistance highly contoured third terminal member disposed in said chamber, said third terminal member having a cylindrical third terminal portion and also having a radially extending third flange portion, said cylindrical third terminal portion having an axis, said third flange portion having a highly contoured third circumferential edge with an outer extremity providing a third contact area that has an arcuate length, said third contact area being radially spaced from said third terminal portion axis a predetermined distance, effective to substantially provide a predetermined low electrical resistance between said third contact areas and said cylindrical third terminal portion and to further substantially provide a given inductance in said cylindrical third terminal portion with respect to a given electrical current flow;

a triaxial disposition of said first, second and third cylindrical terminal portions on a common axis, wherein the cylindrical portion of the second terminal member concentrically surrounds the cylindrical portion of the first terminal member and the cylindrical portion of the third terminal member concentrically surrounds the cylindrical portion of the second terminal member, whereby the cylindrical portions of the first and second terminal members have a common axis and a significant axial overlap, and the cylindrical portions of said second and third terminal members have significant axial overlap;

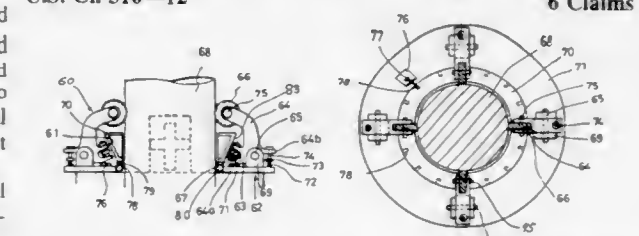
at least two insulated gate semiconductor switching devices disposed in said chamber adjacent said triaxially disposed terminal members, with one of said devices in close radial proximity to said first and second contact areas and the other of said devices in close radial proximity to said second and third contact areas;

low electrical resistance connections between said devices and said contact areas, whereby input and output electrical current of each device can flow through an adjacent pair of said

concentric cylindrical terminal portions at substantially equal rates but in opposite directions;
 a close spacing between said concentric cylindrical terminal portions, effective to allow the inductances of paired cylindrical terminal portions to significantly negate one another.

5,512,791
AIR GAP ADJUSTING APPARATUS FOR CYLINDRICAL LINEAR MOTOR OF AN ELEVATOR
 Kil Hee Cho, Kyungsangnam, Rep. of Korea, assignor to LG Industrial Systems Co., Ltd., Seoul, Rep. of Korea
 Filed Jun. 6, 1994, Ser. No. 254,702
 Claims priority, application Rep. of Korea, Jun. 11, 1993, 10269/1993; Nov. 5, 1993, 23118/1993
 Int. Cl.⁶ H02K 41/00 6 Claims

U.S. Cl. 310—12



1. An air gap adjusting apparatus for a cylindrical linear motor of an elevator having a cylindrical rotor having a longitudinal bore hole therethrough and a stator slidable within the bore hole, with a predetermined air gap between an inner surface of the rotor and an outer surface of the stator, comprising:

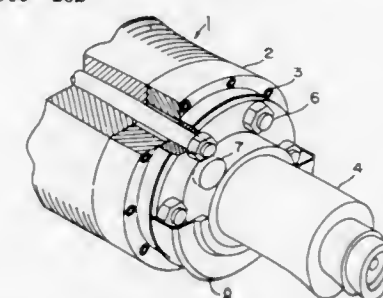
a cylindrical upper plate member each having an internally threaded portion at an inner edge thereof fixedly mounted on an upper portion of the rotor;

a plurality of adjusting units, pivotably mounted atop the plate member, for adjusting an air gap between an inner surface of the rotor and the outer surface of the stator; and

an inverted frusto-conical-shaped hollow tapered guide member having an externally threaded lower portion by which it may be screwed into the internal thread of the plate member for adjusting the plurality of adjusting units.

5,512,792
ELECTRIC MOTOR WITH HIGH POWER AND HIGH ROTATIONAL SPEED
 Pierre Bawin, 3 Avenue de la Paix, B-6032 Mont-sur-Marchienne; Roland Botte, 28 Avenue des Gaulx, B-6180 Courcelle; Jean-Marie Edebouw, 5 Loripette, B-6120 Marbaix-la-Tour, and Dominique Gilon, 31 Avenue Heures Claires, B-1410 Waterloo, all of Belgium
 Filed Feb. 3, 1994, Ser. No. 191,422
 Claims priority, application European Pat. Off., Feb. 5, 1993, 93870023; May 11, 1993, 93870078
 Int. Cl.⁶ H02K 1/22 19 Claims

U.S. Cl. 310—262



1. For use in a high speed asynchronous electric motor, the motor including a rotor and a stator, an improved rotor comprising:

169-398 O.G.-96-18: OL3

5,512,799 GLOWBOTTLE STARTING DEVICE FOR GASEOUS DISCHARGE DEVICES

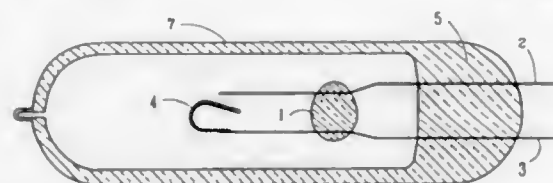
John F. Waymouth, Marblehead, Mass., assignor to John F. Waymouth Intellectual Property and Educational Trust, Marblehead, Mass.

Filed Oct. 25, 1994, Ser. No. 328,442

Int. Cl.⁶ H01J 7/36; 7/30

U.S. Cl. 313—567

15 Claims



1. A glowbottle starter switch for igniting gaseous discharge lamps in alternating current circuits, said glowbottle including a hermetically sealed glass envelope containing a fill of an ionizable gas and having at least two lead wires disposed therein and extending to the exterior of said envelope and a bimetal switch disposed on at least one of said lead wires, said switch being arranged to move within a gap to contact the other of said lead wires, the improvement comprising:

an electroluminescent light-emitting means including an electroluminescent phosphor dispersed in a dielectric disposed in optically-contiguous relationship with said glowbottle, said electroluminescent light-emitting means being arranged to be energized to emit light by electric fields produced by alternating voltage between said lead wires, said light emission causing a photoelectric emission of electrons from interior surfaces within the glowbottle envelope to serve as initial electrons for electron avalanches promoting the ionization and breakdown of said gasses within the gap between electrodes of said glowbottle.

5,512,806 LONG LIFE METAL HALIDE LAMP AND AN ILLUMINATION OPTICAL APPARATUS AND IMAGE DISPLAY SYSTEM USING SAME

Hideaki Omura, Ibaraki; Masayuki Wakamiya, Saita; Munehiro Tahata, Ibaraki, and Nobuyoshi Takeuchi, Osaka, all of, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

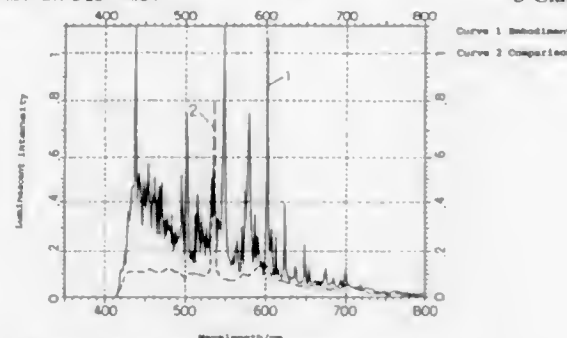
Filed Jul. 13, 1994, Ser. No. 274,409

Claims priority, application Japan, Jul. 13, 1993, 5-172789; Jul. 13, 1993, 5-172790; Sep. 7, 1993, 5-221611

Int. Cl.⁶ H01J 17/20

U.S. Cl. 313—637

8 Claims



1. A metal halide lamp comprising:

a light transparent container possessing a pair of electrodes, and a fill material sealed in said light transparent container, wherein said fill material consists essentially of:

gadolinium halide (GdX₃), lutetium halide (LuX₃), and cesium halide (CsX), using iodine or bromine or their mixture as halogen, together with mercury and starting rare gas.

5,512,801 BALLAST FOR INSTANT-START PARALLEL-CONNECTED LAMPS

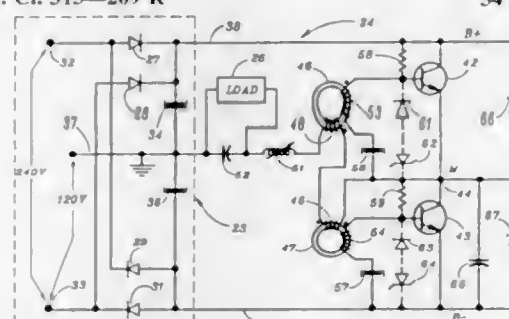
Ole K. Nilssen, Caesar Dr., Barrington, Ill. 60010

Continuation of Ser. No. 895,710, Jun. 9, 1992, abandoned, which is a continuation-in-part of Ser. No. 856,392, Mar. 23, 1992, abandoned, which is a continuation-in-part of Ser. No. 734,188, Jul. 22, 1991, Pat. No. 5,428,266, which is a continuation-in-part of Ser. No. 643,023, Jan. 18, 1991, abandoned, which is a continuation-in-part of Ser. No. 787,692, Oct. 15, 1985, abandoned, which is a continuation of Ser. No. 644,155, Aug. 27, 1984, abandoned, which is a continuation of Ser. No. 555,426, Nov. 23, 1983, abandoned, which is a continuation of Ser. No. 178,107, Aug. 14, 1980, abandoned. This application Aug. 18, 1994, Ser. No. 292,929

Int. Cl.⁶ H05B 37/02

U.S. Cl. 315—209 R

34 Claims



1. An arrangement comprising:

a source operative to provide a substantially constant DC supply voltage at a pair of DC terminals;

inverter circuit connected with the DC terminals and operative to provide an inverter output voltage at a pair of inverter output terminals; the magnitude of the inverter output voltage being substantially constant; the inverter circuit including a frequency control circuit operative on receipt of a control signal at a control input to control the frequency of the inverter output voltage;

an LC circuit effectively series-connected across the inverter output terminals; the LC circuit having a natural resonance frequency about equal to or lower than the frequency of the inverter output voltage; the LC circuit having a tank-capacitor across which exists a substantially sinusoidal AC voltage having an RMS magnitude; the RMS magnitude being a function of the frequency of the inverter output voltage;

voltage-magnitude-sensing circuit connected with the LC circuit and operative to provide an output signal indicative of the RMS magnitude of the AC voltage across the tank capacitor; the output signal being supplied to the control input, thereby: (i) to constitute the control signal, and (ii) to control the inverter frequency, thereby to control the RMS magnitude and to prevent it from exceeding a predetermined level, substantially irrespective of the level of power drawn from the inverter output terminals and without controlling the magnitude of the DC supply voltage; and

plural series-combinations; each series-combination: (i) including a gas discharge lamp series-connected with a current-limiting reactance means, and (ii) being connected in parallel across the tank-capacitor.

5,512,802 COLOUR DISPLAY TUBE INCLUDING A CONVERGENCE CORRECTION DEVICE

Jacobus H. T. Jamar, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

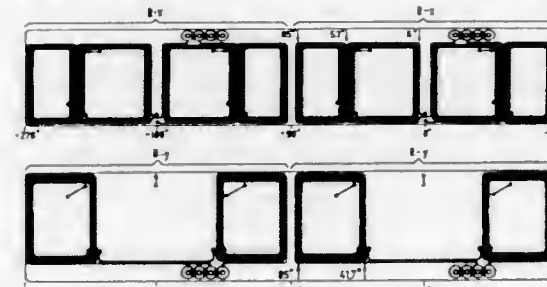
Filed Nov. 30, 1993, Ser. No. 159,395

Claims priority, application European Pat. Off., Nov. 30, 1992, 92203686

Int. Cl.⁶ G09G 1/28; H01J 29/51; 29/74; H01H 1/00

U.S. Cl. 315—368.25

13 Claims



1. A display device having a display tube provided with a display screen and a tube neck located opposite thereto, and including a convergence correction device which comprises an arrangement of correction coils disposed around the neck for producing correction fields, characterized in that the arrangement of correction coils comprises:

- a. an insulating support surrounding the tube neck and having opposite first and second sides and a plurality of metallized apertures extending through said support from the first side to the second side;
- b. a first system of spiral coils formed of first conductors disposed on the first side of the insulating support, at least first and second ones of said coils having respective first and second electrical connection points which are disposed on opposite sides of at least one of said first conductors and are electrically connected to respective adjacent first and second ones of said metallized apertures;
- c. a second system of spiral coils formed of second conductors disposed on the second side of the insulating support, at least one of the coils in the second system being offset with respect to one of the coils in the first system to provide an area on said second side which is separate from said second conductors and includes said first and second metallized apertures; and
- d. an interconnecting conductor disposed on the second side of the insulating support in said area for electrically connecting the first and second metallized apertures.

5,512,803 APPARATUS FOR COMPENSATING FOR IMAGE ROTATION IN A CRT DISPLAY AND METHOD FOR PREPARING THE SAME

Kazuhiko Endo; Hideyuki Kokubun, both of Fukushima, and Takehiro Misonou, Kanagawa, all of, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Sep. 15, 1994, Ser. No. 306,743

Claims priority, application Japan, Sep. 16, 1993, 5-230219; Sep. 16, 1993, 5-230238

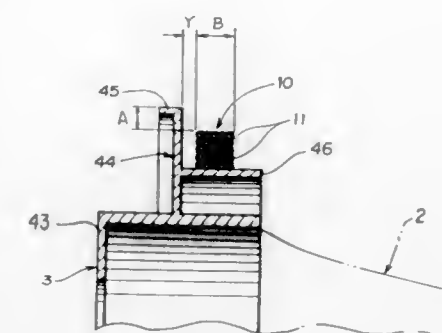
Int. Cl.⁶ H01J 29/56

U.S. Cl. 315—370

20 Claims

1. A video display device for displaying an image on a screen in the presence of an external magnetic field capable of causing rotation of said image said device comprising:

- a cathode ray tube including an electron gun and a screen, said electron gun arranged to emit an electron beam along a path toward said screen forming an image on said screen;
- a deflection yoke arranged to deflect said electron beam and compensate for rotation of said image, said yoke positioned between said electron gun and said screen and having a first end facing said screen and a second end facing said gun;



a coil cover attached to a front part of said yoke and having a coil winding element, a conductor wound around said coil winding element to form a plurality of coil windings, said coil cover having at least one projection located between coil windings for retaining said conductor on said coil cover, said conductor having a first end and a second end; and a control means for producing a compensation current said control means coupled to said first and second ends of said conductor.

5,512,804 DYNAMIC FOCUS CIRCUIT OF ELECTROMAGNETIC FOCUSING TYPE FOR CATHODE RAY TUBE OF VIDEO IMAGE DISPLAYING APPARATUS

Katsunori Yamamoto, Tokyo, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

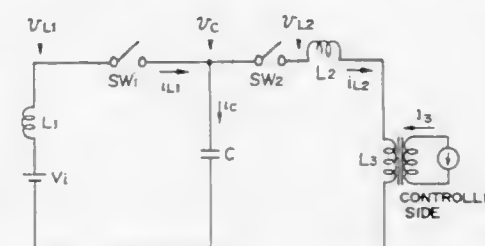
Filed Sep. 8, 1994, Ser. No. 303,155

Claims priority, application Japan, Sep. 9, 1993, 5-224807

Int. Cl.⁶ G09G 1/04

U.S. Cl. 315—382.1

12 Claims



1. A dynamic focus circuit of electromagnetic focusing type for a cathode ray tube of a video image displaying apparatus, said dynamic focus circuit comprising a first oscillating circuit and a second oscillating circuit,

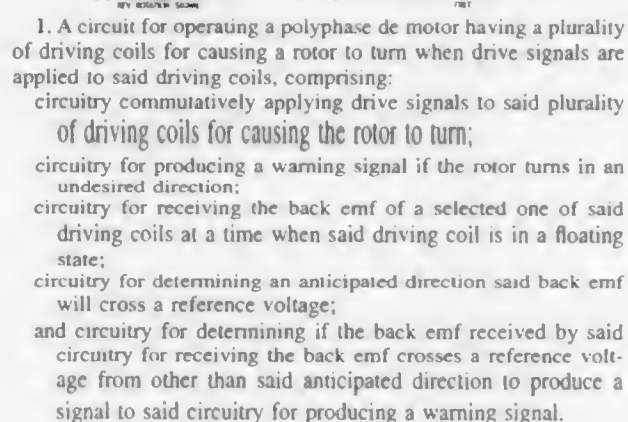
said first oscillating circuit comprising: an electric power source; a first switching means; and a capacitor, which are connected in series to form a loop, said first oscillating circuit being opened and closed by said first switching means,

said second oscillating circuit comprising: a second switching means; said capacitor, which is commonly used with said first oscillating circuit such that said first and second oscillating circuits are parallel with respect to said capacitor; and a focus coil for focusing an electron beam of said cathode ray tube, said second switching means, said capacitor and said focus coil being connected in series to form a loop, said second oscillating circuit being opened and closed by said second switching means,

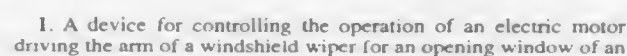
said first switching means opening and closing at a timing in correspondence with a blanking time period or a video image time period based on a horizontal scanning frequency of video image data of said video image displaying apparatus, to charge and discharge said capacitor,

said second switching means opening and closing at a timing according to an inverse logic of said first switching means, to charge and discharge said capacitor.

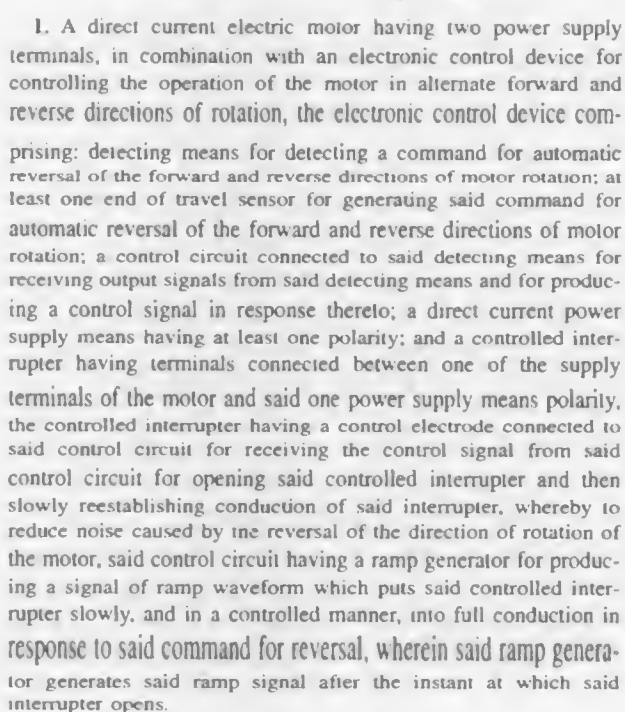
15 Claims



11 Claims

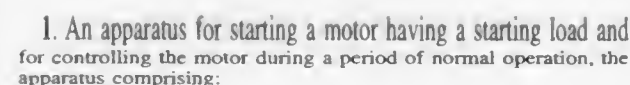


5 Claims



4 Claims

23 Claims

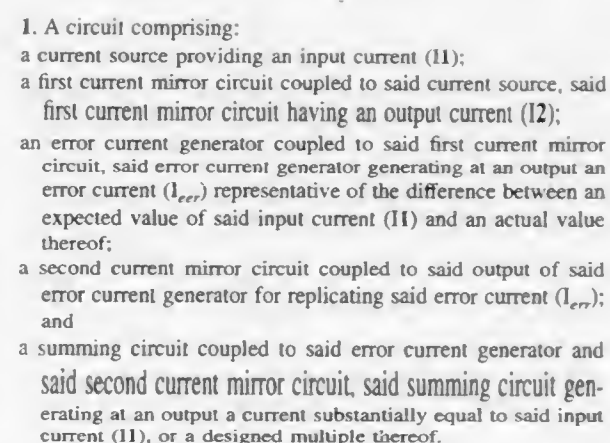


terminated range to a second predetermined range.

10 Claims

1. In a hand-held power tool having an electric motor and a pair of power terminals for connection to a source of alternating electricity, a variable speed control circuit comprising:

- a switch which is operable by a user of the power tool;
- a triac having a gate electrode, first and second electrodes and a conduction path between the first and second electrodes with conductivity of the conduction path being controlled by voltage applied to the gate electrode, and wherein the conduction



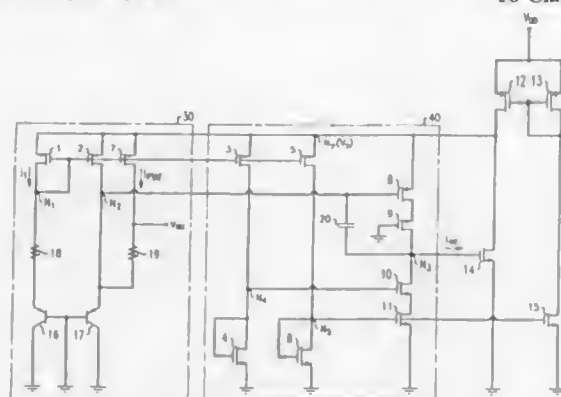
5,512,817

BANDGAP VOLTAGE REFERENCE GENERATOR
 Krishnaswamy Nagaraj, Wescosville, Pa., assignor to AT&T Corp., Murray Hill, N.J.

Filed Dec. 29, 1993, Ser. No. 175,076
 Int. Cl.⁶ G05F 3/30

U.S. Cl. 323—316

16 Claims



1. A bandgap voltage reference generator formed in an integrated circuit for providing a predetermined output bandgap voltage comprising:

a bandgap voltage supply circuit having an input suitable for connection to a voltage power source, a first output generating a voltage output in response to the voltage received by said bandgap voltage supply circuit input from the voltage power source, and a second output generating said predetermined output bandgap voltage in response to the voltage received by said bandgap voltage supply circuit input from the voltage power source, said bandgap voltage supply circuit comprising:

a first current mirror having two outputs and an input, said input of said first current mirror being suitable for connection to the voltage power source, said first output of said first current mirror being coupled to said first output of said bandgap voltage supply circuit;

a first biopolar transistor responsive to said first output of said first current mirror and coupled to said second output of said bandgap voltage supply circuit;

a first resistor responsive to a second output of said first current mirror; and

a second biopolar transistor coupled to said first resistor and said first biopolar transistor;

an amplifier circuit receiving the voltage from said first output of said bandgap voltage supply circuit and providing an amplified output signal in response thereto; and

a voltage regulator controlled by the output signal of said amplifier and connected to the input of said bandgap voltage supply circuit so that said voltage regulator controls the voltage supplied to said input of said bandgap voltage supply circuit by the voltage power source so as to maintain the output voltage of said bandgap voltage supply circuit at the predetermined output bandgap voltage.

5,512,818

VOLTAGE PROPORTIONAL REPLICATION DEVICE USING MAGNETORESISTIVE SENSING ELEMENTS

Sungho Jin, Millington, N.J.; Ashraf W. Lotfi, Mesquite, Tex., and Mark T. McCormack, Summit, N.J., assignors to AT&T Corp., Murray Hill, N.J.

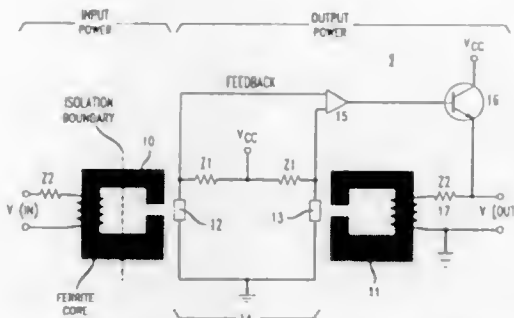
Filed Mar. 31, 1994, Ser. No. 220,768

Int. Cl.⁶ G01V 3/06

U.S. Cl. 323—368

14 Claims

1. A voltage proportional replicating device comprising an input electromagnet responsive to an input voltage for producing a magnetic field in proportion to said input voltage;



a first magnetoresistive sensing element disposed within the field of said input electromagnet;

an adjustable source of output voltage;

an output electromagnet responsive to said output voltage for producing a magnetic field in proportion to said output voltage;

a second magnetoresistive sensing element disposed within the field of said output electromagnet, at least one of said first and second magnetoresistive sensing elements comprising a compound of the form $A_m B_n C_p O_q$, where A comprises one or more rare earth elements, B comprises one or more elements chosen from the group consisting of Mg, Ca, Sr, Ba, Pb and Cd and C is one or more elements from the group consisting of Cr, Mn, Fe and Co, said at least one sensing elements responsive to ac voltages over the range 10^3 to 10^8 Hz; and

a control circuit for controlling said adjustable output voltage to maintain a constant ratio between the resistances of said first and second magnetoresistive elements, thereby maintaining a constant ratio between said input voltage and said output voltage.

5,512,819

ASSEMBLY AND ASSOCIATED METHOD FOR LOCATING A SELECTED WIRE OF A WIREMAT

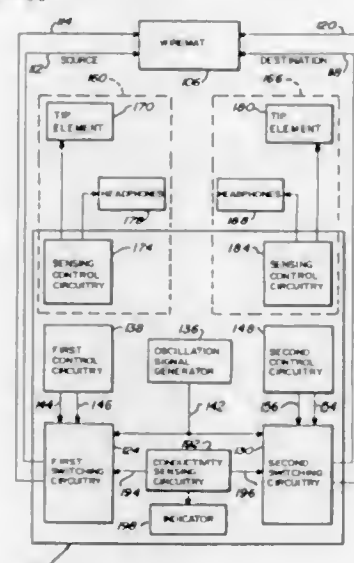
Randall J. Boudreaux, Colorado Springs, Colo., assignor to Dasu Limited Liability Company, Houston, Tex.

Filed Mar. 17, 1994, Ser. No. 214,829

Int. Cl.⁶ G01R 19/155; 31/08

U.S. Cl. 324—66

12 Claims



1. An assembly for locating a distal wire-portion of at least one selected wire positioned amongst a plurality of wires wherein each of the wires of the plurality of wires includes a distal wire-portion and a proximal wire-portion, said assembly comprising:

an oscillation signal generator for generating an electromagnetic field-generative, oscillation signal of a desired oscillation

frequency, said oscillation signal generator coupled to a proximal side portion of the at least one selected wire for applying the electromagnetic field-generative oscillation signal to the at least one selected wire;

at least one sensing probe positionable amongst the plurality of wires and operative to sense proximity of the sensing probe to the distal wire-portion of the at least one selected wire upon which the electromagnetic field-generative, oscillation signal is generated by the oscillation signal generator, said at least one sensing probe including an elongated, conductive tip element supported to extend beyond a support tube, the conductive tip element for sensing electromagnetic fields generated by the electromagnetic field-generative, oscillation signal applied to the at least one selected wire by the oscillation signal generator and for converting the electromagnetic fields sensed thereat into electrical signals of signal values representative of values of the electromagnetic-fields, a filter circuit for filtering the electrical signals generated by the conductive tip element and for generating filtered signals representative of the electrical signals, and rectifier circuitry coupled to receive the filtered signals generated by the filter circuit, said rectifier circuitry for rectifying the filtered signals supplied thereto and for generating rectified signals responsive to the filtered signals; and

annunciator circuitry for generating an aural annunciator signal, the aural annunciator signal of a frequency of a value representative of the proximity of the at least one sensing probe to the distal wire-portion of the at least one selected wire, said annunciator circuitry including an annunciation oscillator coupled to receive the rectified signals generated by the rectifier circuitry of the at least one sensing probe, said annunciation oscillator for generating oscillating signals forming the aural annunciator signal, said oscillating signals being of frequencies responsive to values of the rectified signals generated by the rectifier circuitry, and a mute circuit for muting the aural annunciator signal when the rectified signals generated by the rectifier circuitry of the at least one sensing probe are of magnitudes less than selected values.

5,512,820

ROTATIONAL POSITION SENSOR WITH A TWO-PART ROTATABLE MEMBER TO RESIST JAMMING

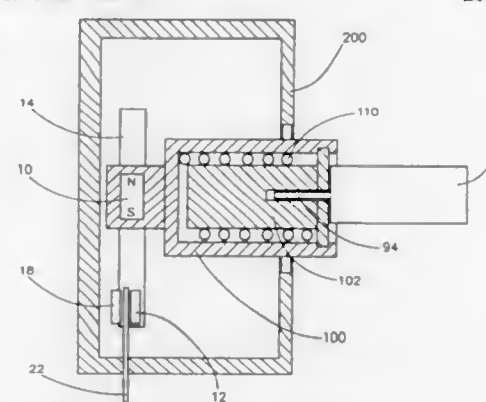
Eugene D. Alfors, Rockford, Ill., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Mar. 17, 1995, Ser. No. 405,651

Int. Cl.⁶ G01B 7/14; 7/30

U.S. Cl. 324—207.22

20 Claims



1. A rotational position sensor, comprising:

a stationary member comprising a magnetically sensitive component;

a rotatable member comprising a first portion and a second portion, said first and second portions being rotatable relative to each other, said second portion being shaped to be attachable to a rotatable shaft;

a magnet attached to said first portion, said magnetically sensitive component being disposed within the magnetic field of

said magnet, said magnet being rotatable relative to said magnetically sensitive component in response to rotation of said rotatable member; and

a resilient member connected to said first and second portions to resist relative rotational movement between said first and second portions and to permit said relative rotational movement between said first and second portions only in response to a force which exceeds a predetermined magnitude urging said relative movement.

5,512,821

METHOD AND APPARATUS FOR MAGNETICALLY DETECTING DEFECTS IN AN OBJECT WITH COMPENSATION FOR MAGNETIC FIELD SHIFT

Seigo Ando; Yasuhiro Matsufuji; Hiroshi Maki; Mamoru Inaba; Kenichi Iwanaga; Atsuhisa Takeoshi, and Masaki Takenaka, all of Tokyo, Japan, assignors to NKK Corporation, Tokyo, Japan

PCT No. PCT/JP92/00191, § 371 Date Feb. 1, 1993, § 102(e)

Date Feb. 1, 1993, PCT Pub. No. WO92/21964, PCT Pub. Date Dec. 10, 1992

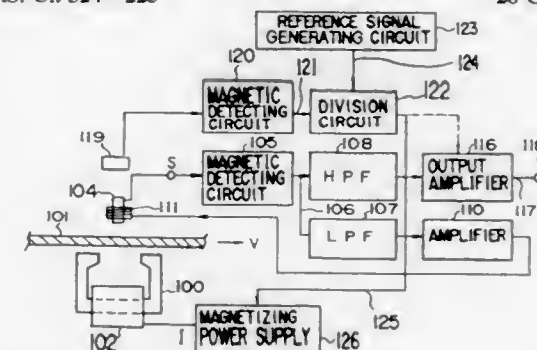
PCT Filed Feb. 24, 1992, Ser. No. 974,585

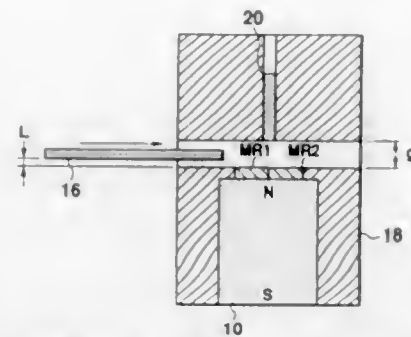
Claims priority, application Japan, Jun. 4, 1991, 3-132911; Jul. 16, 1991, 3-175488; WIPO, Dec. 3, 1991, PCT/JP91/01685

Int. Cl.⁶ G01R 39/02; G01N 27/72

U.S. Cl. 324—225

28 Claims





tioned adjacent to a space in which a magnetic paper-like medium is moved and also being positioned parallel to a direction of movement of the magnetic paper-like medium, said change in applied magnetic flux being caused by the movement of the magnetic paper-like medium;

a magnet disposed close to said space for applying a bias flux to said magnetic sensing element; and

a magnetic piece disposed opposite to said magnet through said space, said magnetic piece having a magnetic contour anisotropy for restraining a divergence of the bias flux in said space.

5,512,823

ELECTROMAGNETIC FIELD DETECTOR FOR DETECTING ELECTROMAGNETIC FIELD STRENGTH IN AN EXTREMELY LOW FREQUENCY BAND AND A VERY LOW FREQUENCY BAND

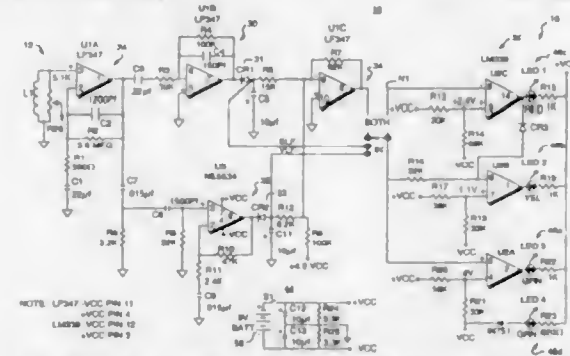
Raymond Nepveu, Londonderry, N.H., assignor to Eakes Research, Inc., Merrimack, N.H.

Filed Dec. 15, 1993, Ser. No. 167,512

Int. Cl.⁶ G01R 33/02; 29/08; 13/00

U.S. Cl. 324—258

20 Claims



1. A meter for measuring electromagnetic fields comprising:
 - a coil that produces a coil voltage in response to varying electromagnetic fields;
 - a first filter for receiving the coil voltage at an input, the filter having an upper cut-off frequency less than a predetermined frequency and providing a first output signal that is indicative of received electromagnetic field strength at frequencies below the upper cut-off frequency, the filter including components that provide the first output signal within a predetermined signal range;
 - a second filter for receiving the coil voltage at its input, the filter having a lower cut-off frequency greater than the predetermined frequency and providing a second output signal that is indicative of a received electromagnetic field strength at frequencies above the lower cut-off frequency, the filter including components that provide the second output signal within the predetermined signal range;
 - combining means for combining the first and second output signals from the first and second filters to provide a combined filter output signal indicative of the received electromagnetic field strengths at frequencies below the upper cut-off frequency of the first filter, and at frequencies above the lower cut-off frequency of the second filter; and

display means, responsive to the combined filter output signal from the combining means, for generating a visual indication when the magnitude of the combined output signal indicates that a predetermined level of electromagnetic field strength has been exceeded.

5,512,824

MAGNETIC FIELD PROBE INCLUDING SYMMETRICAL PLANAR LOOPS FOR ELIMINATING THE CURRENT INDUCED BY THE E-FIELD

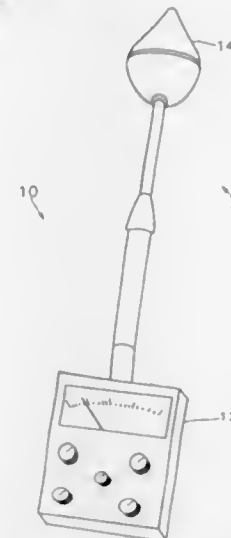
Zdenek (Danny) Adler, West Hempstead, and Refael Popovich, Bellmore, both of N.Y.

Filed Jun. 15, 1994, Ser. No. 260,337

Int. Cl.⁶ G01R 33/02; 33/025

U.S. Cl. 324—258

20 Claims



1. A magnetic field probe comprising:
 - first and second symmetrical electrical loops mounted in close proximity defining a symmetric loop pair in a fixed relationship to each other;
 - means for electrically coupling said loops such that:
 - a current induced in said first loop from exposure of said loop pair to an electric field is offset by the current induced in said second loop from exposure of said loop pair to the electric field; and
 - a current induced in said first loop from exposure of said loop pair to a magnetic field is combined with the current induced in said second loop from exposure of said loop pair to the magnetic field; and
 - lead means for measuring the current induced in said loop pair from exposure of said loop pair to an electromagnetic field whereby the measurement is substantially equal to the amount of current induced by the magnetic field portion of the electromagnetic field.

5,512,825

METHOD OF MINIMIZING DEAD-PERIODS IN MAGNETIC RESONANCE IMAGING PULSE SEQUENCES AND ASSOCIATED APPARATUS

Ergin Atalar, Baltimore, and Elliot R. McVeigh, Timonium, both of Md., assignors to The Johns Hopkins University, Baltimore, Md.

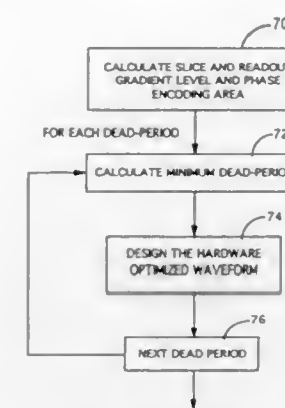
Filed Nov. 25, 1994, Ser. No. 346,130

Int. Cl.⁶ G01V 3/00; 3/14

U.S. Cl. 324—309

40 Claims

1. A method of minimizing the duration of dead-periods in magnetic resonance imaging pulse sequences comprising
 - providing a specimen disposed within a main magnetic field, a source of pulsed RF signals, receiver means for receiving



signals from said specimen responsive to said RF pulses and emitting responsive output signals, computer means for receiving said output signals from said receiver means and establishing image information related thereto and display means for displaying images from said imaging information, determining for said dead-periods for the scan plane gradient pulse for the slice, phase encoding and readout directions determining the starting and ending gradient values and moments of the dead-period waveform, transferring said values and moments to gradient amplifier coordinates, determining minimum dead-periods from said gradient amplifier values, and employing said minimum dead-periods to establish a hardware optimized waveform based upon said minimum dead-period values.

5,512,826

SCREEN-BASED INTERACTIVE IMAGE-PLANE PRESCRIPTION FOR MRI

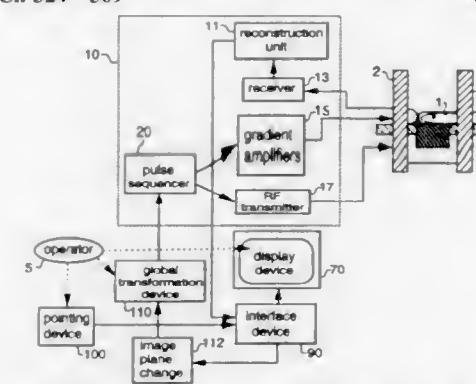
Christopher J. Hardy, Niskayuna, and Robert D. Darrow, Scotia, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jun. 2, 1995, Ser. No. 458,601

Int. Cl.⁶ G01R 33/48

U.S. Cl. 324—309

6 Claims



1. A method of producing magnetic resonance (MR) images of a subject in an MR imaging device in an interactive fashion, comprising the steps of:
 - a) acquiring a current MR image of said subject at an imaging plane centered at (x,y,z) and oriented at angles (θ,φ,κ) with respect to I₁, I₂, I₃ axes of a global coordinate system fixed with respect to the MR Imaging device;
 - b) displaying the current image on a monitor screen;
 - c) enabling imaging plane prescription by selecting an enable button displayed on the monitor;
 - d) displaying a x,y translate icon, a z translate icon, a spin icon and a tilt icon

- e) translating a center of a proposed imaging plane by a translation offset Δz proportional to γ, when the z translate icon is selected and dragging it a distance γ;
- f) translating the center of the proposed imaging plane by a translation offset Δx, Δy proportional to α, β, when the x, y translate icon is selected and dragging it a distance α, β in the x, y directions, respectively;
- g) rotating about the Z axis through the center of the imaging plane by a rotation offset Δκ proportional to γ, when the spin icon is selected and dragging an angle γ;
- h) rotating the proposed imaging plane by rotation offsets Δθ, Δφ about the X and Y axes, respectively, when the tilt icon is selected and dragged through angular distances;
- i) transforming the offsets to transformed coordinates relative to the global coordinate system;
- j) passing the transformed coordinates to said MR imaging device;
- k) acquiring a new MR image with the transformed coordinates; and
- l) displaying the newly acquired MR image as the current image.

5,512,827

SCAN CONTROL PLATFORM-BASED INTERACTIVE IMAGE PLANE PRESCRIPTION FOR MRI

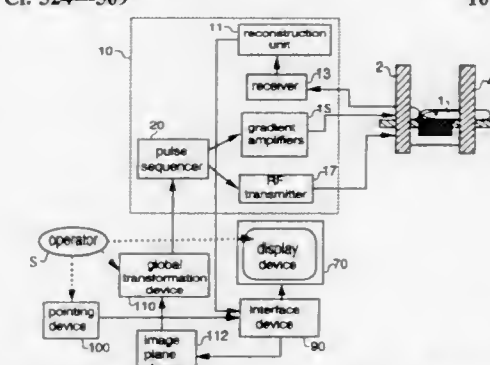
Christopher J. Hardy, Niskayuna, and Robert D. Darrow, Scotia, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jun. 2, 1995, Ser. No. 460,018

Int. Cl.⁶ G01R 33/48

U.S. Cl. 324—309

10 Claims



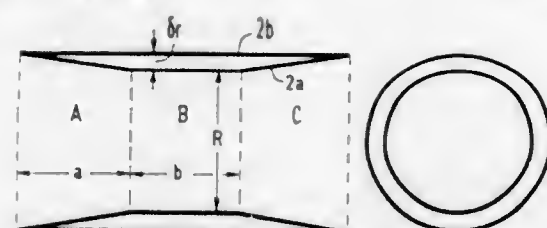
1. A method of producing magnetic resonance (MR) images of a subject in an MR imaging device in an interactive fashion, comprising the steps of:
 - a) acquiring a current MR image of said subject at an imaging plane centered at (x,y,z) and oriented at angles (θ,φ,κ) with respect to I₁, I₂, I₃ axes of a global coordinate system fixed with respect to the MR Imaging device;
 - b) displaying the current image on a monitor;
 - c) enabling imaging plane prescription by interaction with a scan control platform;
 - d) interacting with the scan control platform, to select either a 'translate mode' or a 'rotate mode';
 - e) actuating a 1-dimensional (1D) input device of the scan control platform to select an input γ;
 - f) converting input γ into a translation offset Δz when the scan control platform is in the translate mode, and into a rotation offset Δκ when the scan control platform is in the rotate mode, all offsets indicating a location and orientation of a proposed imaging plane relative to the current imaging plane;
 - g) actuating a 2-dimensional (2D) input device of the scan control platform to select inputs (α,β);
 - h) converting inputs (α,β) into translation offsets (Δx,Δy) when the scan control platform is in the translate mode, and rotation offsets (Δθ,Δφ) when the scan control platform is in the rotate mode;
 - i) transforming the offsets to transformed coordinates relative to the global coordinate system;

- j) passing the transformed coordinates to said MR imaging device;
 k) acquiring a new MR image with the transformed coordinates; and
 l) displaying the newly acquired MR image as the current image.

5,512,828
ACTIVELY SHIELDED TRANSVERSE GRADIENT COIL FOR NUCLEAR MAGNETIC RESONANCE TOMOGRAPHY APPARATUS
 Guenther Pausch, Eberich, and Heinz Hentzelt, Erlangen, both of, Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Jun. 20, 1995, Ser. No. 492,570
 Claims priority, application Germany, Jun. 29, 1994, 44 22 782.5

Int. Cl.⁶ G01R 33/20
 U.S. Cl. 324—309 17 Claims



1. In a magnetic resonance imaging apparatus for producing a tomogram of an examination subject disposed in an examination volume of the apparatus, the improvement of an actively shielded transverse gradient coil arrangement comprising:

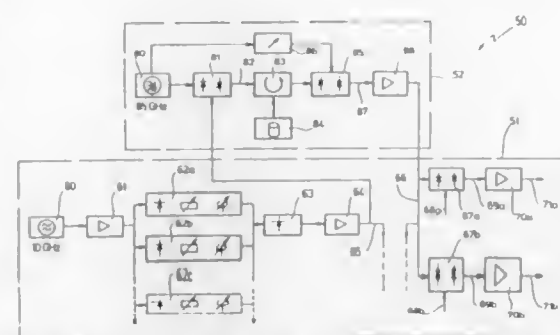
- a plurality of gradient coils;
- each gradient coil being composed of a primary coil and a secondary coil disposed at a radial spacing from each other with the secondary coil lying on a larger radius than the primary coil;
- means for supplying said primary coil and said secondary coil with current for causing said primary and secondary coil, in combination, to generate a linear magnetic field in a center of said examination volume; and
- each of said primary coil and said secondary coil having windings which are farther from said center in an axial direction of the gradient coil and windings which are closer to said center, said windings of said primary coil and said secondary coil which are farther from said center having a smaller radial spacing from each other than said windings disposed closer to said center.

5,512,829
METHOD OF MEASURING PULSED ELECTRON SPIN RESONANCE SIGNALS AND PULSED ELECTRON SPIN RESONANCE SPECTROMETER
 Károly Holczér, Los Angeles, Calif.; Dieter Schmalbein, Marxzell-Burbach, and Peter Höfer, Karlsruhe, both of, Germany, assignors to Bruker Analytical Messtechnik GmbH, Rheinstetten-Forchheim, Germany

Filed Sep. 22, 1994, Ser. No. 310,938
 Claims priority, application Germany, Apr. 11, 1994, 44 12 064.8
 Int. Cl.⁶ G01V 3/00

U.S. Cl. 324—316 18 Claims
 1. A method of measuring pulsed electron spin resonance signals, the method comprising the steps of:

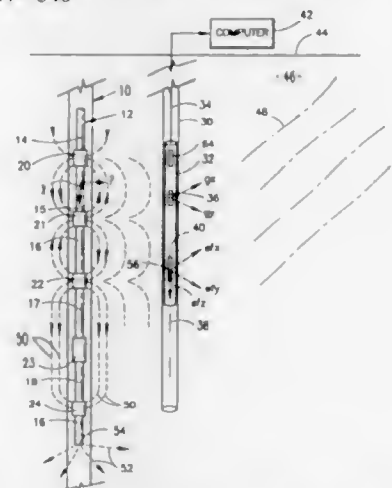
- generating a first signal of a high microwave frequency of between 20 GHz and 250 GHz;
- generating a second signal of a low microwave frequency of between 1 GHz and 20 GHz;
- gating said second signal for obtaining a pulsed second signal;



mixing said first signal with said pulsed second signal for generating a pulsed mixed signal having a pulse length sufficient for carrying out pulsed electron spin resonance experiments;
 applying said pulsed mixed signal to a measuring resonator containing a sample under investigation;
 receiving a measuring signal from said resonator as a response to said application of said pulsed mixed signal;
 mixing said measuring signal with an auxiliary signal derived from said first signal for generating an output signal having a lower microwave frequency; and
 processing said output signal.

5,512,830
MEASUREMENT OF VECTOR COMPONENTS OF STATIC FIELD PERTURBATIONS FOR BOREHOLE LOCATION
 Arthur F. Kuckes, Ithaca, N.Y., assignor to Vector Magnetics, Inc., Ithaca, N.Y.

Filed Nov. 9, 1993, Ser. No. 149,841
 Int. Cl.⁶ G01V 3/18; E21B 47/09
 U.S. Cl. 324—346 15 Claims



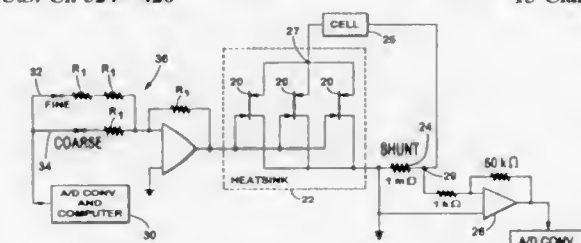
1. A method for determining distance and direction to a borehole containing ferromagnetic material producing a static magnetic field perturbation in the earth's magnetic field, comprising:

- providing a downhole measuring instrument having a single magnetometer for measuring three vector components of a magnetic field;
- moving said measuring instrument along a first borehole to a plurality of spaced measurement locations, each at a different depth within the first borehole;
- measuring, at each of said plurality of spaced locations, three vector components of total static magnetic field strength due to the earth's magnetic field and to static magnetic field perturbations produced by ferromagnetic material in a second borehole;
- measuring the depth of each of said spaced locations within said first borehole from a known reference point;

determining an orientation in space of a high side of said first borehole to establish in said first borehole a fixed system of coordinates having axes rotationally fixed in space for all of said measurement locations;
 determining from said measured vector components three corresponding fixed coordinate vector components of said total static magnetic field strength established with respect to said fixed system of coordinates;
 determining from said fixed coordinate vector components a relative direction from said first borehole to said second borehole; and
 determining from said fixed coordinate vector components a magnetic field vector component magnitude in said direction to said second borehole to thereby determine the distance between said first and second boreholes.

5,512,831
METHOD AND APPARATUS FOR TESTING ELECTROCHEMICAL ENERGY CONVERSION DEVICES
 Alan J. Cisar, Cypress, and Oliver J. Murphy, Bryan, both of Tex., assignors to Lynntech, Inc., College Station, Tex.

Filed Nov. 23, 1994, Ser. No. 344,285
 Int. Cl.⁶ G01N 27/403; G01R 19/00
 U.S. Cl. 324—426 13 Claims

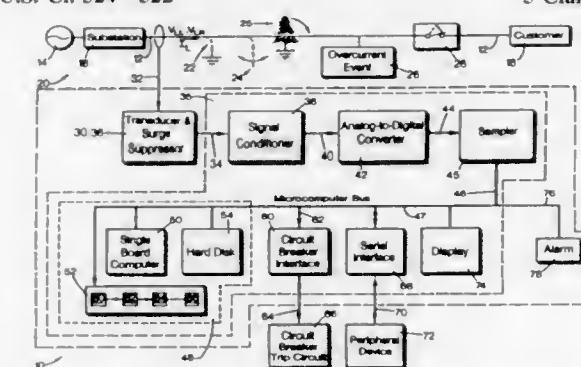


2. A method of testing an electrochemical energy storage device comprising the steps of:

- a. coupling an energy storage device in series with a plurality of parallel connected transistors;
- b. sensing the current through the energy storage device; and
- c. varying the resistance of the parallel connected transistors in response to the current sensed, said testing involving operating the device at a known and controlled current and measuring the voltage produced by the device at the current.

5,512,832
ENERGY ANALYSIS FAULT DETECTION SYSTEM
 B. Don Russell, and B. Michael Aucoin, both of College Station, Tex., assignors to The Texas A & M University System
 Filed Oct. 15, 1993, Ser. No. 138,146
 Int. Cl.⁶ G01R 31/08; 19/00

U.S. Cl. 324—522 5 Claims

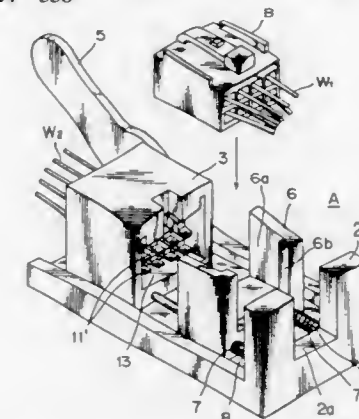


1. A method of detecting high impedance faults occurring on a power line carrying a load current, comprising the steps of:

- (a) sampling said load current to obtain sampled load current signals near the fundamental frequency of said load current;
- (b) analyzing said sampled load current signals to obtain energy values that are stored in an accumulator;
- (c) calculating an average of said energy values;
- (d) sampling said load current to obtain a new sampled load current signal near the fundamental frequency of said load current;
- (e) analyzing said new sampled load current signal to obtain a new energy value;
- (f) comparing said new energy value to a first threshold value derived from said average;
- (g) determining whether said new energy value exceeds said first threshold value, and if so, sampling said load current to obtain event state load current signals near the fundamental frequency of said load current;
- (h) analyzing said event state load current signals to obtain event state energy values; and
- (i) assessing said event state energy values to identify a sudden and sustained change in energy level indicative of a dangerous arcing fault on said power line.

5,512,833
CONNECTOR CHECKING DEVICE
 Masaru Fukuda, and Elji Fukuda, both of Shizuoka, Japan, assignors to Yazaki Corporation, Tokyo, Japan
 Filed Aug. 23, 1994, Ser. No. 294,572
 Claims priority, application Japan, Aug. 24, 1993, 5-209147; Feb. 2, 1994, 6-010829

Int. Cl.⁶ H01H 32/04; H01R 3/00
 U.S. Cl. 324—538 2 Claims



1. A connector checking device comprising:
 a connector support for supporting a connector with a plurality of terminal receiving cavities, wherein the connector has a cantilever resilient supporting piece for supporting a terminal; a main body independently movable to and from said connector support; and

a plurality of detection pins disposed in said main body and urged toward the connector support by resilient means, said detection pins being connected to detecting electrical circuits, each of said detection pins having a conductive contact face and a detection finger extending beyond said conductive contact face;

wherein, said main body is moved toward said connector support for checking to determine whether the terminal is completely inserted within the connector, such that when the terminal is completely inserted within the connector, contact occurs between the terminal and said conductive contact face, whereas when the terminal is incompletely inserted with the connector, said detection finger proceeds into a space in said connector where said cantilever resilient supporting piece deflects by being bent; and

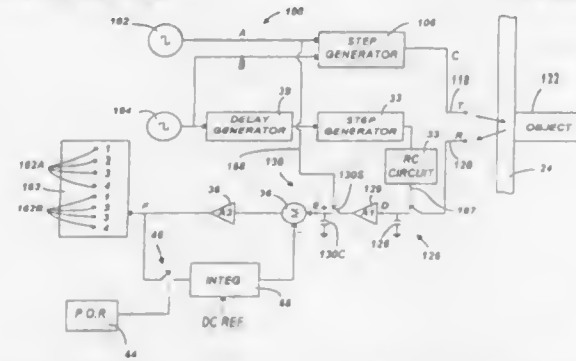
wherein said connector includes a terminal receiving cavity and a tapered guide face is formed at a front end of a side wall with the cantilever resilient supporting piece in the terminal

receiving cavity of the connector; and wherein a tapered contact face is formed at a tip of said detection finger such that, when incomplete insertion occurs, and said tapered contact face opposes the tapered guide face formed at the front end of the side wall with the cantilever resilient supporting piece in the terminal receiving cavity of the connector.

5,512,834 HOMODYNE IMPULSE RADAR HIDDEN OBJECT LOCATOR

Thomas E. McEwan, Livermore, Calif., assignor to The Regents of the University of California, Oakland, Calif.
Continuation-in-part of Ser. No. 58,398, May 7, 1993, Pat. No. 5,457,394. This application Sep. 13, 1994, Ser. No. 305,104
Int. Cl.⁶ G01S 13/04; G01R 27/00; 29/02; G01V 3/17
U.S. Cl. 324-642

22 Claims



1. An electromagnetic detector for locating an object behind a separator, comprising:

- a signal generator for generating a sequence of pulses having a predetermined frequency;
- a step generator connected to said signal generator for producing a sequence of transmit pulses;
- a homodyne oscillator connected to said step generator for modulating said sequence of transmit pulses at a homodyne modulation frequency;
- a transmit antenna connected to said step generator for transmitting said modulated sequence of transmit pulses in the direction of the separator;
- a receive antenna for receiving reflected pulses from the object;
- an averaging sample and hold (S/H) circuit connected to the receive antenna for sampling a plurality of reflected pulses to produce an average reflected signal;
- a gating switch connected between the receive antenna and the S/H circuit and to the signal generator so that only reflected pulses from a selected range are sampled by the S/H circuit;
- a DC bias rejection filter connected to the output of the S/H circuit for significantly reducing near wall proximity effect on said receive antenna;
- a demodulator connected to the output of the DC bias rejection filter and to the homodyne oscillator to remove the homodyne modulation frequency from the reflected signal.

5,512,835 ELECTRICAL PROBE AND METHOD FOR MEASURING GAPS AND OTHER DISCONTINUITIES IN ENCLOSURES USING ELECTRICAL INDUCTANCE FOR RF SHIELDING ASSESSMENT

Alexander F. Rivera, Hawthorne, and Vincent Q. McElhaney, Oakland, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

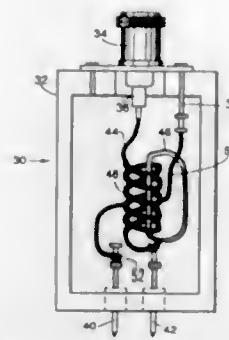
Filed Dec. 22, 1992, Ser. No. 994,815

Int. Cl.⁶ G01R 27/26

U.S. Cl. 324-654

4 Claims

2. Apparatus for inspecting an electrically conductive device for measuring the length of a discontinuity therein, comprising:



electrical probes placed about the discontinuity; a balun connected to said electrical probes; a network analyzer coupled to said balun, wherein said network analyzer measures the value of characteristic inductance of the discontinuity; and means for evaluating the length of the discontinuity using the value of the characteristic inductance of the discontinuity as measured by the network analyzer in accordance with a predetermined relationship between the length of the discontinuity and the characteristic inductance value.

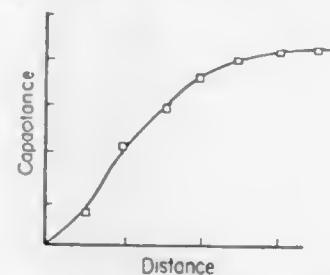
5,512,836 SOLID-STATE MICRO PROXIMITY SENSOR Zhenhai Chen, 282 Grove St., #7, Newton, Mass. 02166, and Ren C. Luo, 1010-B2 Avent Hill, Raleigh, N.C. 27606

Filed Jul. 26, 1994, Ser. No. 280,799

Int. Cl.⁶ G01R 27/26

U.S. Cl. 324-687

23 Claims



1. A solid-state fringe effect micro capacitive proximity sensor, said proximity sensor comprising:
an insulating substrate;
a plurality of sensing electrodes formed on said insulating substrate in closely spaced relationship and without any screen element therebetween, said electrodes adapted to measure the proximity distance of a target object by means of the fringe capacitance effects created between said electrodes and wherein the distance range between said electrodes is 1 micrometer to electrode width; and
capacitance measurement processing circuitry electrically connected to said plurality of sensing electrodes.

5,512,837 VOLTAGE DROP DETECTING CIRCUIT Shuji Ohnishi, Kyoto, Japan, assignor to Rohm Co., Ltd., Kyoto, Japan

Filed Jan. 28, 1993, Ser. No. 10,563

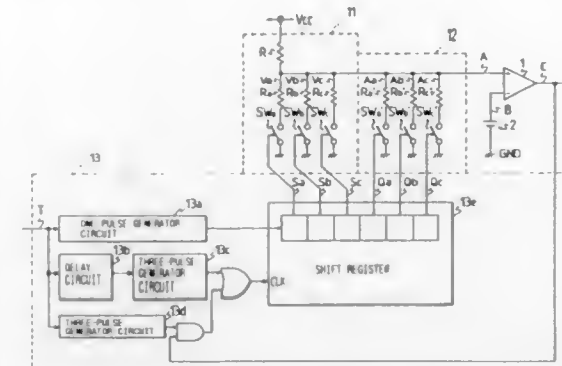
Claims priority, application Japan, Feb. 6, 1992, 4-056217

Int. Cl.⁶ G01R 27/26

U.S. Cl. 324-704

3 Claims

1. A voltage drop detecting circuit, comprising:
a first resistor connected to a line of the voltage to be monitored;
a first resistor group circuit composed of a plurality of second resistors that are connected downstream of said first resistor and which increase or decrease progressively in resistance;



a second resistor group circuit composed of a plurality of third resistors that are connected downstream of said first resistor and which increase or decrease progressively in resistance in the same order as said second resistors do in said first resistor group circuit;
a selective connecting circuit by which at least one of said resistors in each of the first and second resistor group circuits is connected selectively to a line of reference voltage; and
a voltage detection circuit that senses that a voltage at a junction between said first resistor and said second resistor group circuit has dropped below a predetermined level;
wherein a ratio of a resistance of each of said second resistors in said first resistor group circuit to said first resistor and a ratio of a resistance of each of said third resistors in said second resistor group circuit to said first resistor are such that a ratio between said two ratios is in substantial correspondence to a ratio between said voltage being monitored in a steady-state and said predetermined level;
when the voltage being monitored is in a steady-state, said second resistors in said first resistor group circuit are selected sequentially by said selective connecting circuit to be connected to said line of reference voltage; and
when a voltage drop is detected by said voltage detection circuit, one of said third resistors in said second resistor group circuit is selectively connected to said line of reference voltage in accordance with the order of one of said second resistors being selected by said selective connecting circuit.

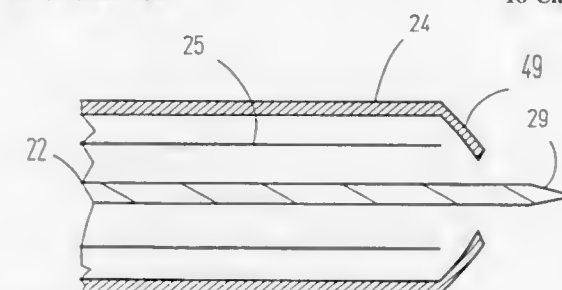
5,512,838 PROBE WITH REDUCED INPUT CAPACITANCE Steven D. Roach, Colorado Springs, Colo., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Sep. 3, 1992, Ser. No. 940,128

Int. Cl.⁶ G01R 1/06

U.S. Cl. 324-754

18 Claims



12. An electrical test probe comprising:

a probe tip including: a probe input conductor, conductive shield means for shielding said probe input conductor; a middle conductor having a preselected thickness and shape such that it is substantially located on an equipotential surface between said probe input conductor and said conductive shield means, wherein said equipotential surface is defined by an electrical field between said probe input conductor and said conductive shield means in the absence of the middle conductor; dielec-

tric means for insulating said middle conductor from said probe input conductor and said conductive shield means;
a probe-amplifier circuit having an input electrically coupled to said probe input conductor and to said middle conductor, wherein said probe amplifier circuit has a capacitance Cx and said test probe an attenuation factor A, said test probe has a length (l) said probe input conductor has a radius r0, said shield means is located at a radius r2 from said probe input conductor, and said equipotential surface is located at a distance r1 from said probe input conductor where r1 is selected to satisfy the equation

$$A = [1 + \ln(r_1/r_0) / \ln(r_2/r_1) + (C_x) \ln(r_1/r_0) / 2\pi \epsilon]^{-1};$$

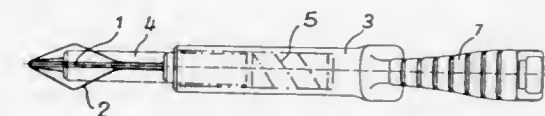
and
a frequency compensation capacitor having a first electrode formed by said middle conductor and having a second conductor formed by said probe input conductor.

5,512,839 TEST PROBE FOR ELECTRICAL MEASURING INSTRUMENTS, PARTICULARLY FOR VOLTMETERS Edoardo De Monaco, Bäretswil, Switzerland, assignor to MDM Elektrosystem AG, Wetzikon, Switzerland Filed Apr. 7, 1994, Ser. No. 225,041 Claims priority, application Switzerland, May 18, 1993, 01508/93

Int. Cl.⁶ G01R 31/02

U.S. Cl. 324-754

3 Claims



1. A test probe for an electrical measuring instrument, comprising:

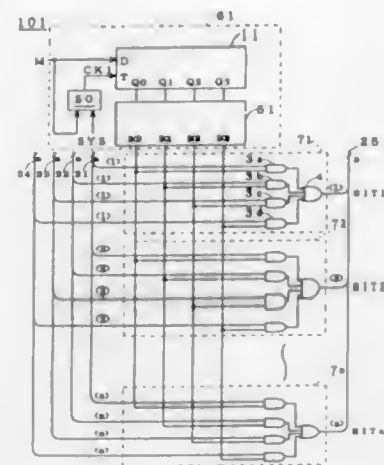
- a housing;
- a contact pin having a portion projecting from said housing and forming a probe tip; and
- automatic holding means for automatically holding the test probe in a variety of different types of socket-outlet jacks, and comprising:
- a contact spring partially adjacent to the portion of said contact pin and bilaterally bulging toward the probe tip;
- a compression spring located within said housing; and
- a shock-hazard protection sleeve coaxially slidable along said contact pin and against a force of said compression spring into a first position, and being slidable to at least partially encompass said contact spring in at least a second position.

5,512,840 ELECTRICAL TEST CLIPS FOR SLOTTED AND PHILLIPS SCREW HEADS Paul V. Nogaki, 7033 116th Ave. SE., Renton, Wash. 98056 Filed Jan. 28, 1994, Ser. No. 188,015 Int. Cl.⁶ G01R 1/04; 1/06

U.S. Cl. 324-756

9 Claims

1. An electrical test clip for use on screw heads having openings in the form of slots and cavities, said slots and cavities having walls, said electrical test clip comprising means for disengageably engaging said walls and means for actuating said means for disengageably engaging said walls.



5,512,847

BICMOS TRI-STATE OUTPUT DRIVER

Yukio Suzuki, Hiroshi Ikuro Masuda; Masahiro Iwamura, both of Hitachi; Shinji Kadono, Fussa; Akira Urugami, Takasaki; Masayoshi Yoshimura, Maehashi, and Toshiaki Matsubara, Takasaki, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

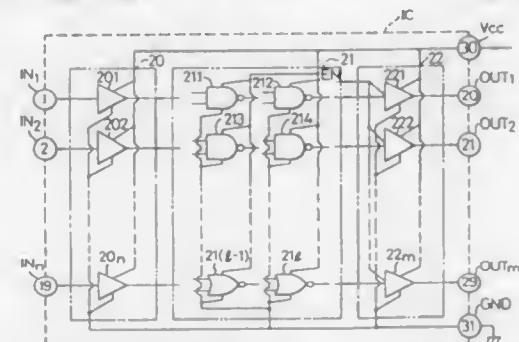
Continuation of Ser. No. 84,624, Jun. 30, 1993, abandoned, which is a continuation of Ser. No. 845,136, Mar. 3, 1992, Pat. No. 5,245,224, which is a continuation of Ser. No. 636,892, Jan. 2, 1991, Pat. No. 5,103,120, which is a continuation of Ser. No. 429,489, Oct. 31, 1989, Pat. No. 4,983,862, which is a continuation of Ser. No. 240,450, Sep. 2, 1988, Pat. No. 4,879,480, which is a continuation of Ser. No. 102,245, Sep. 28, 1987, abandoned, which is a continuation of Ser. No. 8,467, Jan. 29, 1987, abandoned, which is a continuation of Ser. No. 575,567, Jan. 31, 1984, Pat. No. 4,689,503. This application Oct. 6, 1994, Ser. No. 321,012

Claims priority, application Japan, Jan. 31, 1983, 58-12711; Jan. 31, 1983, 58-12712; Jan. 31, 1983, 58-12713

Int. Cl.⁶ H03K 19/01

U.S. Cl. 326—110

28 Claims



1. An electric system comprising:
a driving semiconductor integrated circuit having an external output lead; and
at least one electric circuit to be driven by said driving semiconductor integrated circuit, which electric circuit is coupled to said external output lead of said driving semiconductor integrated circuit,
wherein the driving semiconductor integrated circuit includes an internal logic block including at least P- and N-channel MOSFETs and an output circuit including a bipolar output transistor for providing an output of said internal logic block to said external output lead,
wherein said output circuit has an output terminal coupled to said external output lead, and
wherein said output circuit is controlled by an enable signal to bring said output terminal thereof into a floating state;

wherein said internal logic block further includes logic circuits and at least one bipolar transistor, and wherein one of said logic circuits includes an input stage having said P- and N-channel MOSFETs and an output stage having said at least one bipolar transistor.

5,512,848

OFFSET COMPARATOR WITH COMMON MODE VOLTAGE STABILITY

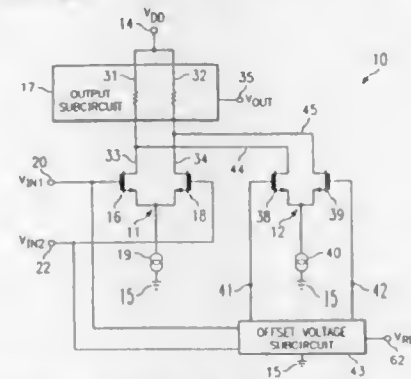
Daniel A. Yaklin, Garland, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 307,140, Sep. 16, 1994. This application Jun. 7, 1995, Ser. No. 476,957

Int. Cl.⁶ H03K 5/22

U.S. Cl. 327—65

15 Claims



1. A method for applying an offset voltage in a comparator circuit, said comparator circuit comprising:

- a first pair of transistors comprising a first transistor having a first terminal coupled to a first power supply terminal, a second terminal coupled to a first input terminal, and a third terminal; and a second transistor having a first terminal coupled to said first power supply terminal, a second terminal coupled to a second input terminal, and a third terminal;
- a first current source coupled between said third terminals of said first and second transistors and a second power supply terminal;
- a second pair of transistors comprising a third transistor having a first terminal coupled to said first power supply terminal, a second terminal, and a third terminal; and a fourth transistor having a first terminal coupled to said first power supply terminal, a second terminal, and a third terminal; and
- a second current source coupled between said third terminals of said third and fourth transistors and said second power supply terminal;

and said method comprising:

- applying first and second input voltage signals respectively to said first and second input terminals;
- providing a reference voltage signal;
- applying first and second offset voltage signals respectively to said second terminals of said third and fourth transistors;
- setting a voltage difference of said first and second offset voltage signals by said reference voltage signal;
- setting the common mode voltage of said first and second offset voltage signals by the common mode voltage of said first and second input voltage signals; and
- generating an output voltage signal which is indicative of relative values of said first and second input voltage signals, offset by an amount determined by said first and second offset voltage signals.

5,512,849

LOW POWER INTELLIGENT CURRENT SOURCE FOR MONITORING A HIGH VOLTAGE

Stephen L. Wong, Scarsdale, N.Y., assignor to North American Philips Corporation, New York, N.Y.

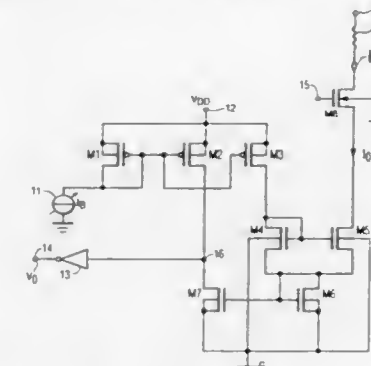
Continuation of Ser. No. 55,651, Apr. 30, 1993, abandoned.

This application Sep. 19, 1994, Ser. No. 308,468

Int. Cl.⁶ H03K 5/24

U.S. Cl. 327—77

19 Claims



1. A voltage monitor circuit comprising:
an input voltage terminal for receiving a voltage to be monitored and through which an input current flows,
an output terminal at which a voltage is derived indicative of the voltage to be monitored,
a current source,
a first current mirror means coupled to the current source for comparing a current derived from the current source with said input current that flows through the input terminal thereby to derive at its output a voltage indicative of the monitored voltage,
a second current mirror means coupled to the input terminal so as to limit said input current to a value determined by said current source,
a DC supply voltage terminal coupled to the first and second current mirror means to supply a DC operating voltage thereto independent of said current source, and
means coupling said output terminal to said output of the first current mirror means.

5,512,850

SWITCHED HIGH-SLEW RATE BUFFER

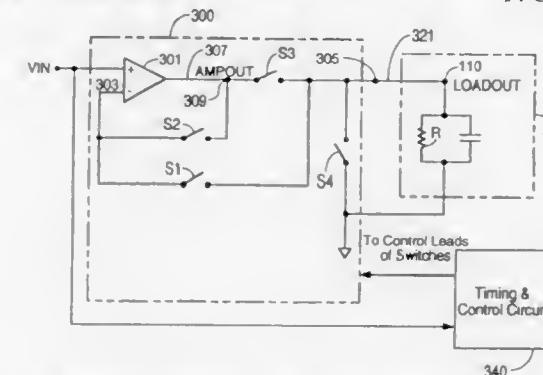
Zhong H. Mo, Daly City, Calif., assignor to TelCom Semiconductor, Inc., Mountain View, Calif.

Filed Sep. 30, 1994, Ser. No. 316,161

Int. Cl.⁶ H03B 1/00

U.S. Cl. 327—108

14 Claims



1. A circuit for driving a load, said circuit having an input terminal and an output terminal, said circuit adapted to receive an input signal at said input terminal, said input signal having a first time period, a second time period, and a third time period, said

first, second and third time periods being contiguous, said output terminal adapted to be coupled to said load, said circuit comprising:

- an amplifier having a first input lead, a second input lead, and an output lead, said first input lead coupled to said input terminal; and
 - a switch network coupled to said output lead and said output terminal,
- wherein said switch network isolates said amplifier from said load at the beginning of said first time period, couples said output lead to said load at the beginning of said second time period, and isolates said output lead from said load and couples said output terminal to a source of ground potential at the beginning of said third time period.

5,512,851

CIRCUIT SYNCHRONIZATION WHEN SWITCHING BETWEEN MULTIPLE CLOCK SIGNALS USING A VARIABLE ADVANCE CONTROLLER

Keith S. P. Clarke, Cambridge, United Kingdom, assignor to Advanced RISC Machines Limited, Cambridge, United Kingdom

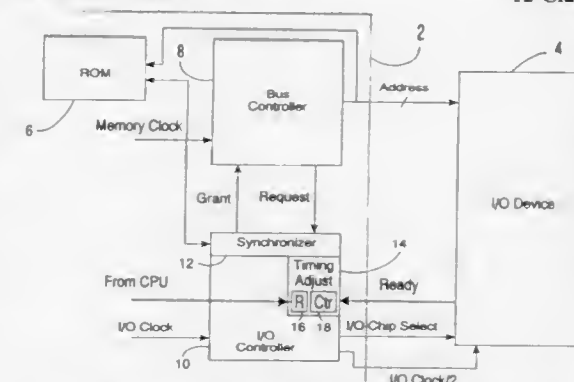
Filed Mar. 31, 1995, Ser. No. 414,623

Claims priority, application United Kingdom, Oct. 27, 1994, 9421661

Int. Cl.⁶ H03L 7/00

U.S. Cl. 327—144

12 Claims



1. Apparatus for processing data, said apparatus comprising:
(i) a first circuit responsive to a first clock signal, for asserting a first control signal and a request signal, said first control signal being asserted until said first circuit receives an indication to stop asserting said first control signal;
- (ii) a second circuit responsive to a second clock signal, for asserting a second control signal and a grant signal, said second clock signal being asynchronous to said first clock signal;
- (iii) a third circuit responsive to said first control signal and said second control signal, said request signal being supplied to said second circuit to trigger said second circuit to initiate operation of said third circuit using said second control signal, and said grant signal being supplied to said first circuit to indicate that operation of said third circuit is complete and said first circuit may stop asserting said first control signal;
- (iv) a synchronizer for receiving said request signal from said first circuit and synchronizing said request signal to said second clock signal prior to passing said request signal to said second circuit and for receiving said grant signal from said second circuit and synchronizing said grant signal to said first clock signal prior to passing said grant signal to said first circuit; and
- (v) an advance controller coupled to said second circuit and serving to select one of a plurality of possible times in advance of completion of operation of said third circuit at which said second circuit passes said grant signal to said synchronizer for synchronization to said first clock signal.

5,512,852

AUTOMATIC TRIGGER CIRCUIT WITH FLOATING-GATE DETECTION TRANSISTOR

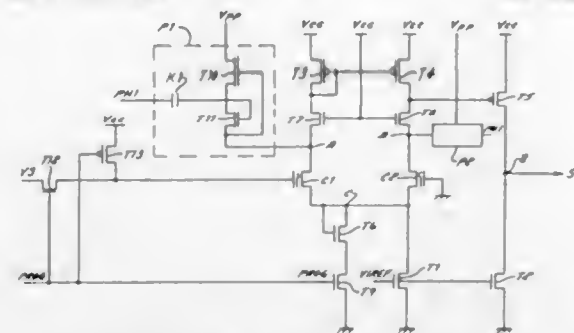
Jacek A. Kowalski, Trets, France, assignor to Gemplus Card International, Gemenos, France

Filed Apr. 1, 1994, Ser. No. 222,260

Claims priority, application France, Apr. 2, 1993, 93 03934
Int. Cl.⁶ H03K 3/037

U.S. Cl. 327—206

20 Claims



1. An automatic trigger circuit having a voltage comparator that a) receives a first level reference voltage that is to be monitored with respect to a second level reference voltage and b) produces a variation in an output signal on an output node when a voltage difference between said first and second level reference voltages exceeds a threshold, said automatic trigger circuit comprising: a two-arm current mirror including

I a first arm connected between a DC electrical supply and a ground, said first arm including

A a first transistor including a first source connected to said DC electrical supply, a first gate, and a first drain connected to said first gate;

B a second transistor including a second gate connected to said DC electrical supply, a second drain connected to said first drain and a second source;

C a third transistor including a third drain connected to said second source, a third gate for receiving said first level reference voltage, and a third source; and

D a fourth transistor including a fourth drain connected to said third source and a fourth source connected to said ground; and

II a second arm connected between said DC electrical supply and said ground, said second arm including

A a fifth transistor including a fifth source connected to said DC electrical supply, a fifth gate connected to said first gate and a fifth drain; and

B a sixth transistor including a sixth drain connected to said fifth drain, a sixth gate for receiving said second level reference voltage, and a sixth source connected to said fourth drain,

wherein said third transistor is a floating-gate detection transistor.

5,512,853

INTERFACE CIRCUIT ADAPTIVE TO HIGH SPEED AND LOW VOLTAGE OPERATION

Norio Ueno, Kawasaki, and Toru Matsuyama, Sapporo, both of Japan, assignors to Fujitsu Limited, Kanagawa, Japan

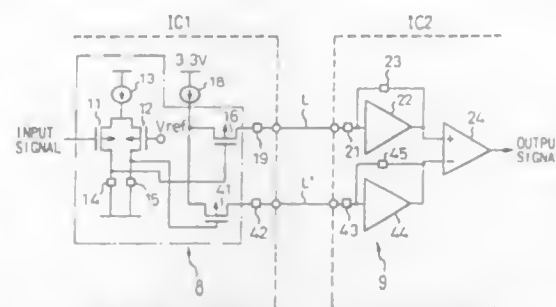
Filed Oct. 7, 1994, Ser. No. 320,068

Claims priority, application Japan, Mar. 17, 1994, 6-047490
Int. Cl.⁶ H03L 5/00; H03K 17/16; H03B 1/00; H01L 25/00

U.S. Cl. 327—333

7 Claims

1. An interface circuit for interfacing between a first integrated circuit on a transmitting side and a second integrated circuit on a receiving side over a line on a printed circuit board, comprising: an output circuit provided on said first integrated circuit on said transmitting side and including a current source for supplying a given current, and a switching circuit for intermittently



cutting off said given current according to a binary signal and delivering said intermittently cut-off current as a current signal to said line; and

an input circuit provided on said second integrated circuit on said receiving side and including a transimpedance circuit whose input impedance is matched with a characteristic impedance of said line and which converts said current signal into a voltage signal, and a comparison circuit for identifying said voltage signal relative to a given threshold voltage and reproducing said binary signal, said output circuit further including an additional current source for supplying a half of a current supplied by said current source and a transistor for delivering said half of a current to said line; and

said input circuit further including an additional transimpedance circuit whose input impedance is matched with a characteristic impedance of said line and which converts said half of a current into a voltage the converted voltage determining said given threshold voltage for said comparison circuit.

5,512,854

DATA OUTPUT BUFFER FOR A SEMICONDUCTOR MEMORY DEVICE

Kee W. Park, Kyoungki-do, Rep. of Korea, assignor to Hyundai Electronics Industries Co., Inc., Kyoungki-do, Rep. of Korea

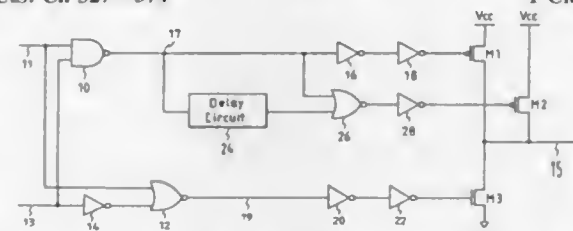
Filed Dec. 28, 1994, Ser. No. 365,012

Claims priority, application Rep. of Korea, Dec. 31, 1993, 93-31875

Int. Cl.⁶ H03K 17/04

U.S. Cl. 327—374

1 Claim



1. A data output buffer for a semiconductor memory device having a plurality of memory cells, each of said memory cells storing a data signal, the data output buffer comprising:

an input line for receiving the data signal from each of said memory cells;

pull-up driving means connected between a supply voltage source and an output line, said pull-up driving means being driven in response to a first logic state of the data signal from said input line;

pull-down driving means connected between a ground voltage source and said output line, said pull-down driving means being driven complementarily to said pull-up driving means in response to a second logic state of the data signal from said input line;

at least one auxiliary pull-up driving means connected in parallel to said pull-up driving means; and

control means for driving said at least one auxiliary pull-up driving means for a time period from a start portion of the first

logic state of the data signal from said input line until a voltage on output line reaches a reference voltage, said control means including:

a comparator being driven in response to the first logic state of the data signal from said input line to compare a voltage of an output signal on said output line with the reference voltage; and

a gate means for switching the compared result from said comparator to said at least one auxiliary pull-up driving means responding to the data signal from said input line.

5,512,855

CONSTANT-CURRENT CIRCUIT OPERATING IN SATURATION REGION

Katsuji Kimura, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Division of Ser. No. 873,228, Apr. 24, 1992, Pat. No. 5,357,149.

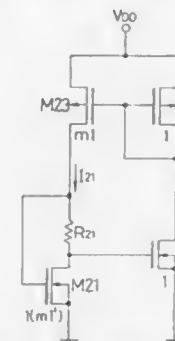
This application Feb. 18, 1994, Ser. No. 198,581

Claims priority, application Japan, Oct. 24, 1990, 2-286120; Aug. 9, 1991, 3-224897; Jan. 14, 1992, 4-024558

Int. Cl.⁶ G05F 1/10; 3/04; 3/16

U.S. Cl. 327—538

14 Claims



1. A constant-current circuit comprising:

a first MOS transistor;

a second MOS transistor;

a current mirror circuit comprising a third MOS transistor and a fourth MOS transistor different in gate-width and gate-length ratio from each other,

wherein said first MOS transistor has a drain and a gate connected through a resistor to each other and is supplied through said resistor with a first driving current from said third MOS transistor of said current mirror circuit, and

said second MOS transistor has a gate connected to a drain of said first MOS transistor and a drain directly receiving a second driving current from said fourth MOS transistor of said current mirror circuit,

said first, second, third and fourth MOS transistors operating in saturation regions,

whereby said first and second MOS transistors are driven at a constant current ratio corresponding to a ratio of gate-width and gate-length ratios of said third and fourth MOS transistors,

one of said first and second driving currents being used as a constant current.

5,512,856

METHOD AND APPARATUS FOR NONLINEAR COMPENSATION

David B. Doak, Boonton, N.J., assignor to AT&T Corp., Murray Hill, N.J.

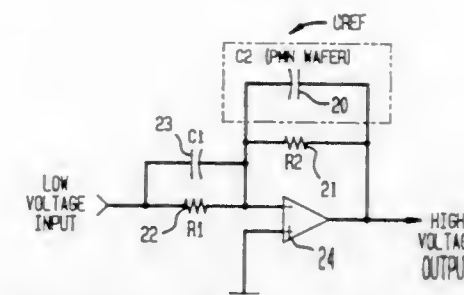
Filed Dec. 23, 1994, Ser. No. 363,766

Int. Cl.⁶ H03F 1/34; H01L 41/04

U.S. Cl. 330—1 R

17 Claims

6. A method for providing compensation for an amplifier circuit driving capacitive loads to minimize undesired harmonic distortion in the current waveform through such capacitive loads comprising



selecting a reference element having capacitance vs. voltage response characteristics substantially identical to those of the load whose waveform response contains the undesired harmonic distortion,

utilizing the reference element in said amplifier circuit to alter the driving voltage waveform so as to non-linearize the amplified voltage waveform predictably in anticipation of the undesired harmonic distortion created by the load, and

coupling the non-linearized amplified voltage waveform to said load wherein the capacitance vs. voltage characteristic of the load transforms the non-linearized voltage waveform to a linearized current waveform without harmonic distortion.

5,512,857

CLASS AB AMPLIFIER ALLOWING QUIESCENT CURRENT AND GAIN TO BE SET INDEPENDENTLY

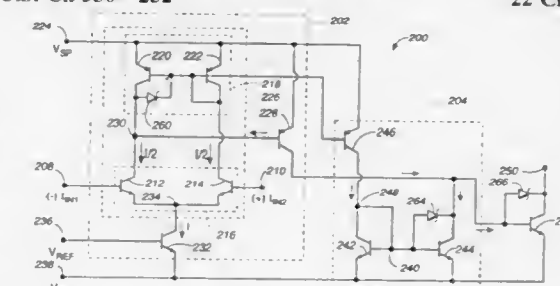
Gregory N. Koskovich, Pleasanton, Calif., assignor to ReSound Corporation, Redwood City, Calif.

Filed Nov. 22, 1994, Ser. No. 343,243

Int. Cl.⁶ H03F 3/45

U.S. Cl. 330—252

22 Claims



1. An amplifying cell comprising:

a first input port for receiving a first input voltage signal, a second input port for receiving a second input voltage signal, and an output port;

an output transistor having a first terminal, a second terminal, and a control terminal, said first terminal coupled to said output port and said second terminal coupled to a first source of potential, said control terminal controlling the flow of current between said first and second terminals;

a differential amplifying network comprising a first input terminal coupled to said first input port, a second input terminal coupled to said second input port, and an output port coupled to said control terminal of said output transistor, and having an input voltage signal difference between said first and second input terminals, said amplifying network generating a current signal at its output as a function of said input voltage signal difference when said input voltage signal difference has a first polarity, and generating a substantially lower current signal at its output as a function of said difference when said difference has a second polarity opposite to said first polarity, said amplifying network further generating a quiescent output current at its output when the input voltage signal difference is substantially zero; and

a bias network for generating a bias current and coupling said bias current to said control terminal of said output transistor such that the total quiescent current provided to said control

5,512,865

DIGITAL OVERSAMPLED QUADRATURE MODULATOR

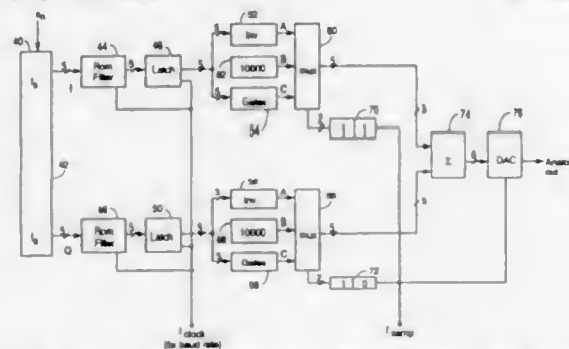
Daniel E. Fague, Sunnyvale, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed May 8, 1995, Ser. No. 436,669

Int. Cl.⁶ H04L 27/20

U.S. Cl. 332-103

20 Claims



12. A method for providing phase shifted signals, said method comprising the steps of:
- generating first digital data to be modulated, said first digital data having a maximum value, a minimum value, and a mid-value approximately equal to an average of said maximum value and said minimum value;
 - inverting said first digital data to be modulated to create inverted data;
 - applying said inverted data, said mid-value, and non-inverted data to inputs of a first multiplexer;
 - controlling said first multiplexer with a first counter providing at least a four-state control signal to said first multiplexer for selecting as an output of said first multiplexer said inverted data, said mid-value, or said non-inverted data; and
 - clocking said first counter with a sampling clock to cause an output of said first multiplexer to provide a first modulated carrier signal having a carrier frequency of less than or equal to one-fourth that of said sampling clock.

5,512,866

CERAMIC DUPLEX FILTER

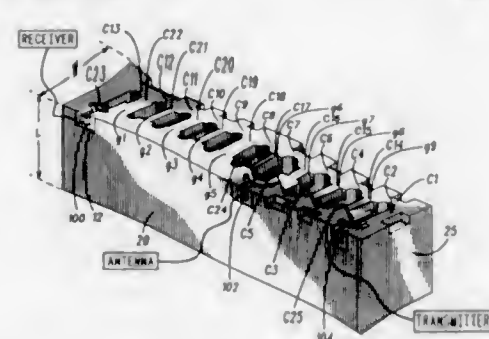
Reddy R. Vangala, Albuquerque, and Truc Hoang, Rio Rancho, both of N.M., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 29, 1994, Ser. No. 235,588

Int. Cl.⁶ H01P 1/213; 1/201

U.S. Cl. 333-134

40 Claims



1. A duplex filter, comprising:
- a duplex-filter body having a receiver filter and a transmitter filter;
 - the filter body comprising a block of dielectric material having top, bottom and side surfaces, and having a plurality of through-holes including at least receiver, antenna and transmitter through-holes respectively extending from the top surface to the bottom surface and having a corresponding plurality of receptacles adjacent to the top surface, the through-holes and the receptacles define substantially funnel-shaped

resonators, the surfaces and through-holes being substantially covered with a metallized layer, with the exception that the top surface is substantially unmetallized;

the top surface having respective metallized channels adjacent to the receiver, antenna and transmitter through-holes, the metallized channels and the receptacles respectively define corresponding embedded capacitors in the duplex-filter body for coupling signals into and out of the duplex-filter body, and are substantially immediately surrounded by the dielectric material.

5,512,867

HIGH TEMPERATURE SUPERCONDUCTING COIL AND METHOD OF MANUFACTURING THEREOF

Nobuhiro Shibuta, Kenichi Sato, Hidehito Mukai, and Takato Masuda, all of Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Japan

Continuation of Ser. No. 862,619, Apr. 1, 1992, abandoned.

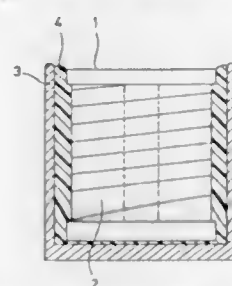
This application Feb. 8, 1995, Ser. No. 385,571

Claims priority, application Japan, Apr. 2, 1991, 3-069755

Int. Cl.⁶ H01F 6/06

U.S. Cl. 335-216

3 Claims



1. A high temperature superconducting coil comprising:
- a bobbin;
 - an ensheathed oxide superconducting wire wound around said bobbin to form a coil;
 - a rigid container for accommodating the coil, and
 - a filling resin portion for fixing said coil in the container by being injected into said container and then cured.

5,512,868

MAGNETOSTATIC MICROWAVE DEVICE HAVING LARGE IMPEDANCE CHANGE AT RESONANCE

Shigeru Takeda, and Yasuhide Murakami, both of Tottori, Japan, assignors to Hitachi Metals, Ltd., Tokyo, Japan

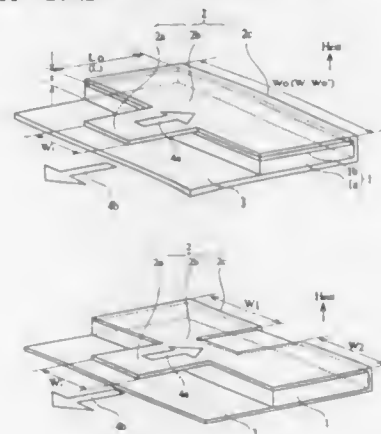
Filed Sep. 28, 1994, Ser. No. 314,499

Claims priority, application Japan, Sep. 28, 1993, 5-241252

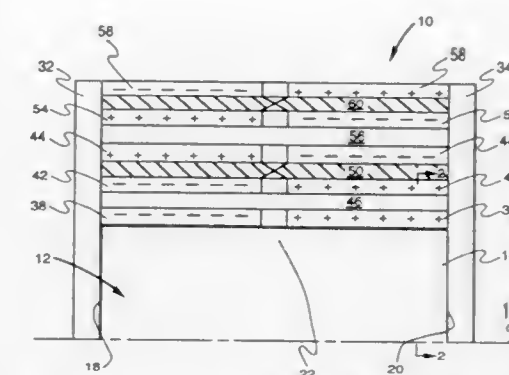
Int. Cl.⁶ H01P 7/00; 1/218

U.S. Cl. 333-219.2

7 Claims



1. A magnetostatic wave microwave device comprising a thin magnetostatic wave element and a conductor disposed on the top of said magnetostatic wave element, wherein said conductor consists of an input portion through which microwaves are input, a junction portion at which said conductor is connected to said magnetostatic wave element, and a short portion to be connected to a ground conductor, and wherein each of said input portion, junction portion and short portion has a width perpendicular to a propagation direction of said microwaves and the width of said junction portion is larger than the width of said input portion.



5,512,869

LINEAR CONTROL APPARATUS FOR A CIRCUIT-BREAKER

Edmond Thuries, Meyzieu, France, assignor to GEC Alsthom T & D SA, Paris, France

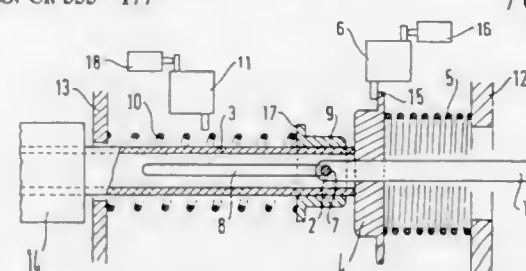
Filed Dec. 23, 1994, Ser. No. 362,928

Claims priority, application France, Dec. 27, 1993, 93 15694

Int. Cl.⁶ H01H 9/00

U.S. Cl. 335-177

7 Claims



1. Linear control apparatus for engaging and disengaging a circuit-breaker that includes a drive rod provided with a control end, the apparatus itself including a slidably-mounted tubular arm which is actuated by a solenoid, which has the same longitudinal axis as the drive rod, and which is coupled to the drive rod whose control end is inside the tubular arm, and a "disengagement" first slide which presses against the tubular arm and through which the drive rod passes, the first slide being subjected to a "disengagement" first spring assembly which displaces it from the circuit-breaker engaged position to the circuit-breaker disengaged position under the action of first control means actuated on disengagement, wherein the control end of the drive rod is coupled to the tubular arm via at least one projecting portion fixed to the drive rod and passing through a respective longitudinal slot provided along the tubular arm, and wherein the control apparatus includes an "engagement" second slide to which the drive rod is fixed via its projecting portion, the engagement second slide being subjected to an "engagement" second spring assembly which displaces it from the circuit-breaker disengaged position to the circuit-breaker engaged position under the action of second control means actuated on engagement.

5,512,870

SUPERCONDUCTING SWITCH

Lembit Salasoo; Evangelos T. Laskaris, both of Schenectady, and Richard A. Ranze, Scotia, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Aug. 11, 1995, Ser. No. 514,331

Int. Cl.⁶ H01F 6/06

U.S. Cl. 335-216

10 Claims

1. A superconductive switch comprising:
- a) a coil form including a generally cylindrical shaft having a generally longitudinally extending axis, first and second ends, a middle disposed generally equidistant from said ends, and clockwise and counterclockwise directions about said axis around said shaft;
 - b) a first layer of an electrically-insulated, stabilized superconductive coil wire circumferentially wound around said shaft in

- said clockwise direction from said first end to said middle and in said counterclockwise direction from said middle to said second end;
- c) a second layer of said coil wire circumferentially wound around said first layer in said clockwise direction from said first end to said middle and in said counterclockwise direction from said middle to said second end;
- d) a third layer of said coil wire circumferentially wound around said second layer in said counterclockwise direction from said first end to said middle and in said clockwise direction from said middle to said second end;
- e) a first electrically-insulated, electrical heater disposed between said first and second layers; and
- f) a first stratum of electrical insulation discrete from that of said coil wire and disposed between said second and third layers.

5,512,871

ROTATABLE SINGLE-PHASE ELECTROMAGNETIC ACTUATOR

Claude Oudet, Besancon, and Daniel Prudham, Thise, both of, France, assignors to Moving Magoet Technologies S.A., Besancon, France

Continuation of Ser. No. 75,511, Oct. 21, 1993, abandoned.

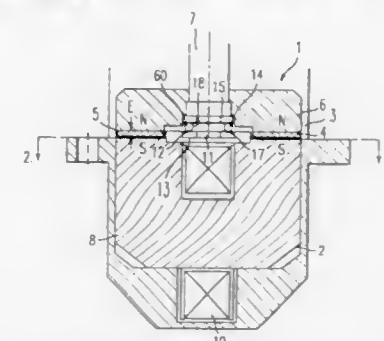
This application Nov. 28, 1994, Ser. No. 348,163

Claims priority, application France, Dec. 17, 1990, 90 15782

Int. Cl.⁶ H01F 7/08; 1/00; H02K 5/16; 7/10

U.S. Cl. 335-220

3 Claims



1. Single-phase constant torque electromagnetic actuator, comprising:
- a coupling shaft having a longitudinal axis;
 - a bore shaped movable device having a longitudinal axis and a flat annular surface, the movable device rigidly attached to the coupling shaft such that the longitudinal axis of the coupling shaft is aligned with the longitudinal axis of the movable device;
 - an annular magnetic disk fixed on the flat annular surface of the movable device, the magnetic disk having poles magnetized in alternating axial directions;
 - a stationary device including a stator circuit made of a high-permeability magnetic material and a trip coil for exciting the stator circuit, the stator circuit cylindrically shaped and having an outer diameter equal to an outer diameter of the

magnetic disk, wherein the stationary device remains stationary with respect to the movable device;

- a thrust ball bearing including an annular ball race and ball bearings positioned within the ball race, the thrust ball bearing fixed to the stationary device, the ball race having an outer diameter equal to an inner diameter of the magnetic disk; wherein the movable device is detachably engaged in close proximity with the stationary device such that a uniform space is formed at every point between the magnetic disk and the stationary device, thereby magnetically coupling the magnetic disk to the stator circuit, the outer diameter and the inner diameter of the magnetic disk aligned with the outer diameter and an inner diameter of the stator circuit, respectively, the movable device rotatable about a rotational axis with respect to the stationary device, wherein the movable device cannot move in a lateral direction to the stationary device, but is free to tilt at an offset to the rotational axis; a lever formed by a portion of the movable device disengaged from the ball bearings by the offset to the rotational axis; and a fulcrum formed by some of said ball bearings engaged with the movable device when the rotational axis is offset, wherein a magnetic force generated by magnetic coupling of the magnetic disk to the stator circuit acts upon the lever and the fulcrum in a direction which corrects the offset of the rotational axis.

5,512,872

PERMANENT MAGNET ARRANGEMENT FOR USE IN MAGNETRON PLASMA PROCESSING

Ken Ohashi, Fukui, Japan, assignor to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

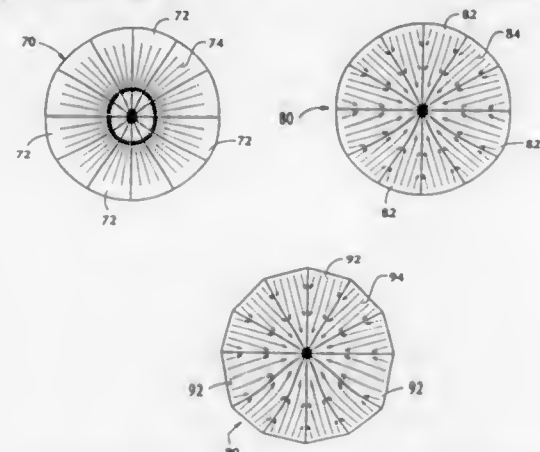
Filed Jan. 10, 1994, Ser. No. 179,551

Claims priority, application Japan, Jan. 8, 1993, 5-017979

Int. Cl.⁶ H03F 7/02

U.S. Cl. 335—306

14 Claims



1. A permanent magnet arrangement for magnetron plasma processing, comprising:

- a plurality of permanent magnets each of which has a sector-shaped cross section including a single vertex, said sector-shaped cross section including a single vertex, said plurality of permanent magnets being assembled to form said permanent magnet arrangement which has a disk-like configuration, each of said plurality of permanent magnets being made of a rare-earth material and radially magnetized.

6. A permanent magnet arrangement for magnetron plasma processing, comprising:

- a plurality of permanent magnets each of which has a sector-shaped cross section including a single vertex, said sector-shaped cross section including a single vertex, said plurality of permanent magnets being assembled to form said permanent magnet arrangement which has a disc-like configuration, each of said plurality of permanent magnets being made of a rare-earth material and magnetized in a direction

parallel to a line originating from a midpoint of a circular arc to a vertex of said permanent magnet.

11. A permanent magnet arrangement for magnetron plasma processing, comprising:

- a plurality of permanent magnets each of which has an equilateral triangular cross section parallel to major surfaces thereof, said plurality of permanent magnets being assembled to form said permanent magnet arrangement which has the form of a polygon, each of said plurality of permanent magnets being made of a rare-earth material and magnetized in a direction parallel to a line extending from a line extending from a midpoint of a base of said magnet to a vertex thereof.

5,512,873

HIGHLY-ORIENTED DIAMOND FILM THERMISTOR

Kimitsugu Saito, Nijyu E-103, 4-1-15 Fududa, Tarumi-ku, Kobe 655; Koichi Miyata, 2-13-18, J-404, Koyo, Tarumiku, Kobe 655, both of Japan; John P. Bade, Jr., 2803-D Bainbridge Dr., Durham, N.C. 27713; Brian R. Stoner, 2659 Broad Oaks Pl., Raleigh, N.C. 27603; Jesko A. von Windheim, 7709 Blufftop Ct., Raleigh, N.C. 27615, and Scott R. Sahaida, 700 E. Whitaker Mill Rd., Raleigh, N.C. 27606

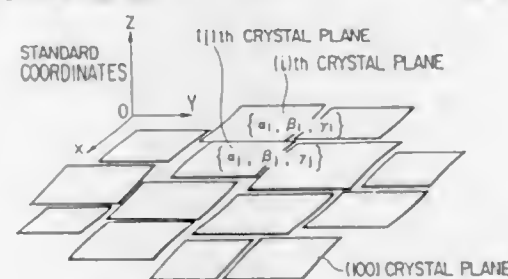
Continuation of Ser. No. 196,422, Feb. 15, 1994, which is a continuation of Ser. No. 61,433, May 4, 1993. This application

Jun. 10, 1994, Ser. No. 258,608

Int. Cl.⁶ H01C 7/10

U.S. Cl. 338—22 SD

18 Claims



SURFACE STRUCTURE OF DIAMOND FILM WITH HIGHLY ORIENTED (100) CRYSTAL PLANE

1. A highly-oriented diamond film thermistor comprising a temperature sensing part formed of a highly-oriented diamond film grown by chemical vapor deposition, in which at least 65% of the surface area of said diamond film surface consists of (100) crystal planes, and the differences $\{\Delta\alpha, \Delta\beta, \Delta\gamma\}$ of Euler angles $\{\alpha, \beta, \gamma\}$ which represent the orientations of the crystal plane, simultaneously satisfy $|\Delta\alpha| \leq 10^\circ$, $|\Delta\beta| \leq 10^\circ$, and $|\Delta\gamma| \leq 10^\circ$ between adjacent (100) crystal planes.

5,512,874

SECURITY DEVICE

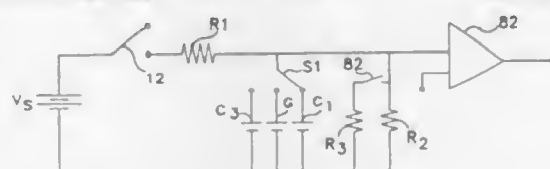
Travis Poston, Herndon, Va., assignor to T.B. Poston; N. E. Poston, and A. T. Coudert

Filed May 4, 1994, Ser. No. 238,051

Int. Cl.⁶ B60R 25/10

U.S. Cl. 340—426

62 Claims



1. A security device comprising: a shock impulse sensor comprising a pair of electrical contacts, at least one of said contacts being responsive to a percussive force of a predetermined minimum acceleration to cause said contacts to close;

- a detection circuit responsive to a predetermined minimum number of contact closures per percussive shock impulse event within a predetermined time period for generating a detection signal;

- a transmitter, responsive to said detection signal for transmitting an intrusion signal; and

- a remote receiver for receiving said intrusion signal.

5,512,875

AUTOMATIC TRANSMISSION LEVER POSITION INDICATING DEVICE

Gregory A. Polityka, Oshawa, Canada, assignor to Atoma International Inc., Ontario, Canada

Continuation of Ser. No. 981,459, Nov. 25, 1992, Pat. No.

5,398,018, which is a continuation of Ser. No. 657,862, Feb.

20, 1991, Pat. No. 5,245,313. This application Jan. 20, 1995,

Ser. No. 376,730

Int. Cl.⁶ B60Q 1/00

U.S. Cl. 340—456

8 Claims



1. A visual indicating device for an automotive vehicle having an automatic transmission operatively shiftable by a lever that is movable to anyone of a parking position, a reverse position, a neutral position and a plurality of forward driving speed positions, and means for generating input signals indicative of the position the lever is in, said visual indicating device comprising:

- a housing including a face wall structure having an inner side and a visible outer side, said face wall structure having a first plurality of spaced transmission position indicators which permit light to transmit therethrough, each of which corresponds to one of the position of the transmission lever, said face wall further having a second plurality of spaced position indicators which permit light to transmit through said face wall structure, corresponding in number to said first indicators and positioned adjacent said first indicators;

- a plurality of light emitting diodes corresponding in number to said second indicators, each of said second indicators having one of said light emitting diodes positioned in close proximity thereto and adjacent said inner side such that light emitting therefrom transmits through said wall face structure;

- illumination-confining structure confining illumination of each light emitting diode to only one of said second indicators;

- a separate light source positioned opposite said inner side for simultaneously illuminating all of said first indicators through said first indicators; and

- a circuit for receiving signals from the automotive transmission and connected to said light emitting diodes and said separate light source for activating said separate light source, and for illuminating one of said second indicators with one of said light emitting diodes that corresponds to the position of the transmission to provide a visual indication thereof.

5,512,876

DEVICE FOR THE TIMED LIGHTING OF SIGNAL TRIANGLES ON VEHICLES AND OF TRIANGLES FOR EMERGENCY STOPS

Vincenzo Brusca, Via E. Petrolini, 5 0043 Ciampino, Rome, Italy

PCT No. PCT/IT90/00070, § 371 Date Jul. 31, 1991, § 102(c)

Date Jul. 31, 1991, PCT Pub. No. WO91/08927, PCT Pub.

Date Jun. 27, 1991

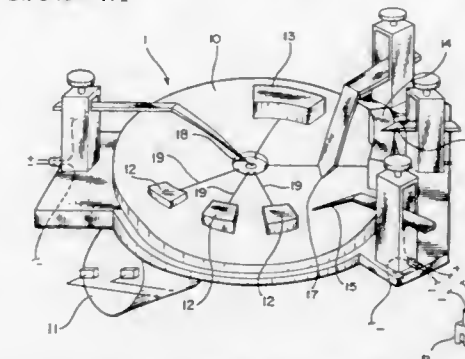
PCT Filed Jul. 13, 1990, Ser. No. 741,502

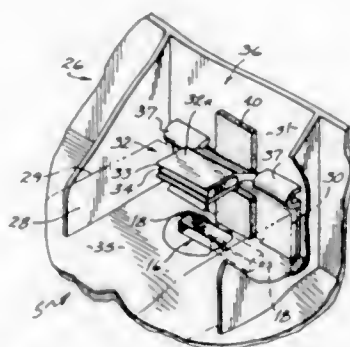
Claims priority, application Italy, Dec. 12, 1989, 48638A/89

Int. Cl.⁶ B60Q 1/52

U.S. Cl. 340—471

14 Claims





back wall of a defined height to hold currency, the tray and drawer being free from direct electrical connection together and the tray being positionable in the drawer such that the magnetic field sensor is located below said currency compartment and is proximate the back wall of the compartment; an elongated clip device including a field-generating element positioned at an outward end of the clip device for generating a magnetic field outwardly from said outward end in the longitudinal direction of the clip device, the clip device mounted at an inward end to pivot from the back wall of the currency compartment at a point spaced above the bottom surface of the currency compartment;

the clip device being dimensioned in length less than the height of the back wall end operable to pivot to a downward position wherein the clip device lies against the back wall in a vertical plane generally parallel to the plane of the back wall for being generally unnoticeable in the currency compartment, when in the downward position, the clip device suspending said field-generating element vertically above the field sensor to generate a magnetic field downwardly and in a direction generally vertically co-planar with the field sensor, the downwardly directed magnetic field having an effective strength to be detectable by said field sensor when the tray is installed in the drawer;

the clip device further being operable to pivot to an upward position wherein the elongated clip extends in a plane angled from the plane of the back wall and maintains the field-generating element away from the back wall such that the field generating element generates a field outwardly from the back wall and away from the field sensor so as not to be detected by said field sensor when the tray is installed in the drawer;

whereby when the clip device is held in its upward position by a stack of currency, the removable currency tray with said stack of currency therein may be quickly and easily removed from and returned to the cash drawer without initiating an alarm sequence, however, removing currency from under the clip when the tray is in the drawer causes the clip device to move to the downward position generally noticed within the currency compartment to initiate an alarm sequence without visually indicating the presence of an alarm.

5,512,878

PULSED ELECTRONIC ARTICLE SURVEILLANCE SYSTEMS

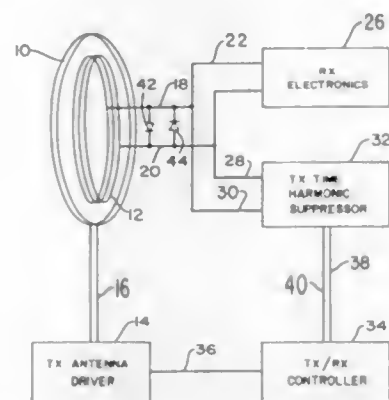
Brent Balch, Fort Lauderdale, Fla., and David L. Roherson, Forest, Va., assignors to Sensormatic Electronics Corporation, Deerfield, Fla.

Filed Oct. 6, 1994, Ser. No. 319,263
Int. Cl.⁶ G08B 13/14

U.S. Cl. 340—572

26 Claims

- In combination, in an electronic article surveillance system:
- a transmitting antenna;
- drive means controllable for exciting said transmitting antenna at a preselected frequency;
- a receiving antenna separate from and in electromagnetically coupled relation with the transmitting antenna and having output terminals;



- suppressing means separate from said transmitting antenna and connected to said receiving antenna output terminals and controllable for suppressing the presence of signals in the receiving antenna which are harmonics of said preselected frequency; and
- control means for concurrently controlling said drive means and said suppressing means.

5,512,879

APPARATUS TO PREVENT INFANT KIDNAPPINGS AND MIXUPS

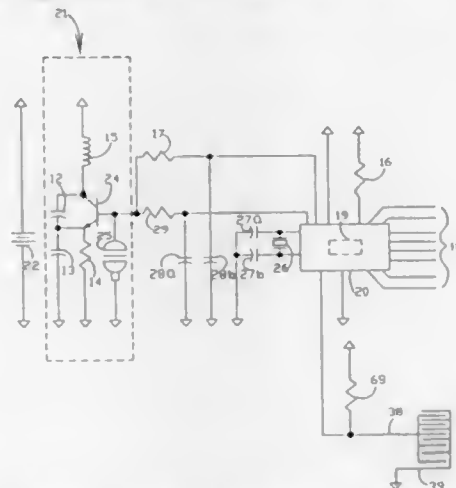
John H. Stokes, 7336 York La., Lincoln, Nebr. 68505

Filed Jul. 25, 1994, Ser. No. 279,975

Int. Cl.⁶ G08B 23/00

U.S. Cl. 340—573

13 Claims



- An electronic security tag for uniquely identifying and locating persons or articles in order to prevent their removal from a protected area comprising:

- a conductive security element attachment means having two ends, whose electrical state will change when stretched, severed, partially severed or removed by parting the ends;
- an encoding means for generating a unique identity code for said tag;
- an alarm code generating means for determining the electrical state of said attachment means and generating an alarm code indicating said state of said attachment means;
- radiant energy transmission means for transmitting said identity code and said alarm code;
- an internal direct current power means operably connected to said attachment means, said encoding means, said alarm code generating means and said radiant energy transmission means; and
- a power activation and deactivation means for activating said tag immediately prior to use and for permanently deactivating said tag subsequent to use.

5,512,880

WRIST BABY MONITOR

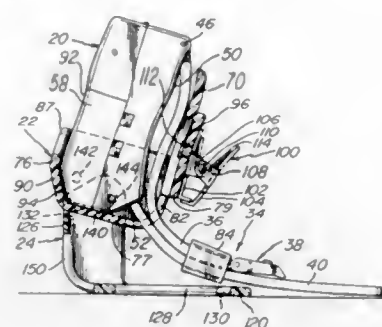
Randy L. Abrams, Leominster; Michael S. Bernstein, Natick, both of Mass., and David W. Crossley, Woonsocket, R.I., assignors to Safety 1st, Inc., Chestnut Hill, Mass.

Filed Mar. 27, 1995, Ser. No. 409,847

Int. Cl.⁶ G08B 23/00

U.S. Cl. 340—573

12 Claims



- A baby monitor to be used by an attendant to listen to a child in a remote location comprising:

- a receiver including a housing and a strap for securing the housing about the wrist of the attendant so that it may be worn as a wristwatch,
- a holder having a cradle for releasably receiving the receiver, said holder including a clip for attachment to the clothing of the attendant,

and a stand forming part of the holder for supporting the receiver on a flat surface.

5,512,881

PERSONAL ALARM APPARATUS

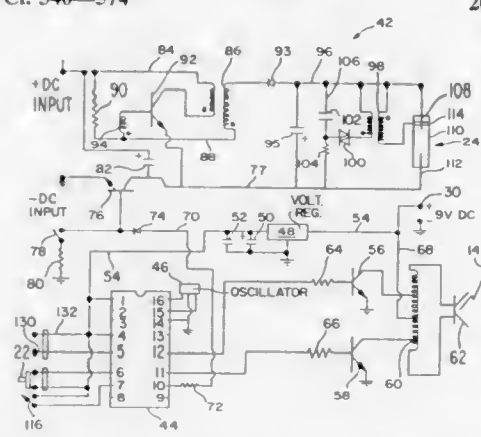
Kashyap Majmudar, Willowdale, Canada, assignor to Alertcall, Inc., Tonawanda, and MKM Electronics, Inc., Buffalo, both of N.Y.

Filed Aug. 27, 1993, Ser. No. 113,650

Int. Cl.⁶ G08B 13/00

U.S. Cl. 340—574

20 Claims



- Alarm apparatus comprising electrical circuit means including controller means for generating a variable frequency repetitive sound wave having at least two different predetermined frequencies which occur within a predetermined interval of time, and a resonator for generating a predetermined clock frequency for the sound wave.

5,512,882

CHEMICAL SENSING APPARATUS AND METHODS

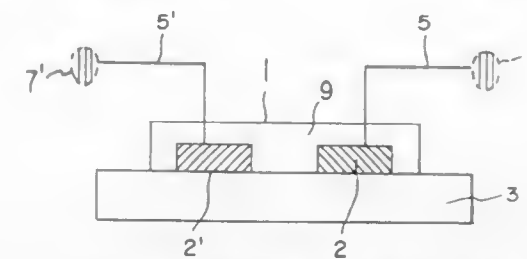
Joseph R. Stetter, Naperville, and G. Jordan Maclay, Maywood, both of Ill., assignors to Transducer Research, Inc., Aurora, Ill.

Filed Aug. 7, 1991, Ser. No. 741,573

Int. Cl.⁶ G08B 17/10

U.S. Cl. 340—632

26 Claims



- Apparatus for indicating the end of service life of a filter cartridge for removing vapors of a chemical species from respired air, including a sensor that comprises:

- a polymer whose physical structure changes upon exposure to said chemical species,
 - discrete electrically conductive elements at least partly separated by said polymer, and
 - an impedance-measuring means for measuring the impedance between two of said conductive elements,
- wherein a change in said polymer's physical structure upon exposure to said chemical species results in an increase in the impedance between said two conductive elements, and wherein the change in physical structure consists of partial or complete disintegration of said polymer.

5,512,883

METHOD AND DEVICE FOR MONITORING THE OPERATION OF A MOTOR

William E. Lane, Jr., 458 Emerson Dr., Lexington, Ky. 40505

Continuation of Ser. No. 282,091, Jul. 5, 1994, abandoned,

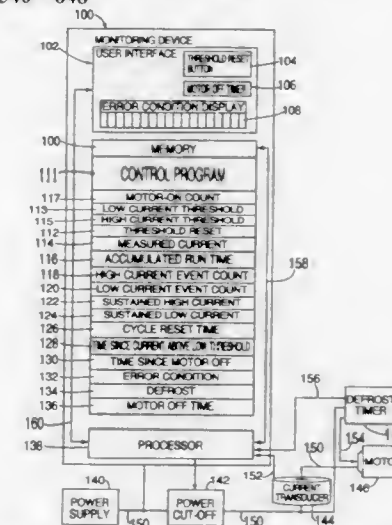
which is a continuation of Ser. No. 970,659, Nov. 3, 1992,

abandoned. This application Apr. 25, 1995, Ser. No. 428,508

Int. Cl.⁶ G08B 21/00

U.S. Cl. 340—648

11 Claims



- A method of monitoring the operation of a motor-driven system, comprising the steps of:
- sensing a current drawn by the motor at a preselected time after starting the motor;
- comparing the sensed current to previously determined minimum and maximum current threshold values which define a range of currents;

determining that a malfunction has occurred in the system when the current is sensed outside the range of currents;
adjusting at least one of the minimum and maximum current threshold values as a function of the sensed current; and
storing the adjusted threshold values to be used the next time the preceding steps are carried out.

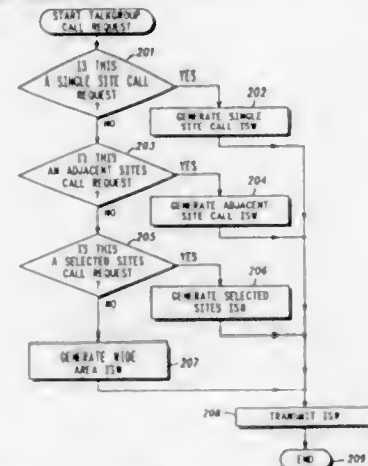
5,512,884 USER REQUESTED COMMUNICATION RESOURCE ALLOCATION

Gregory N. Hesse, Hanover Park, and Daniel J. McDonald, Cary, both of Ill., assignors to Motorola Inc., Schaumburg, Ill.

Continuation of Ser. No. 858,251, Mar. 26, 1992, abandoned.
This application Apr. 21, 1995, Ser. No. 428,786
Int. Cl.⁶ H01H 67/00

U.S. Cl. 340—825.03

22 Claims



1. A method of allocating communication resources amongst a plurality of users belonging to a user group in a communication system having a plurality of sites, wherein each site includes at least one communication resource that is allocatable to support a communication within an associated coverage area, comprising the steps of:
identifying, by a communication unit, sites where communication resources should be allocated when at least one member of the user group is active therein, yielding identifying information;
generating, by the communication unit, a communication request, comprising the identifying information;
transmitting, by the communication unit, the communication request; and
allocating, by the communication system, communication resources using the communication request.

5,512,885 CONTROL OF DATA COMMUNICATION IN NETWORKS WITH CLOSED USER GROUPS

Lennart Agestam, Göteborg, Sweden; Henry Helleder, Chavennay, France, and Hans Ågårdh, Göteborg, Sweden, assignors to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

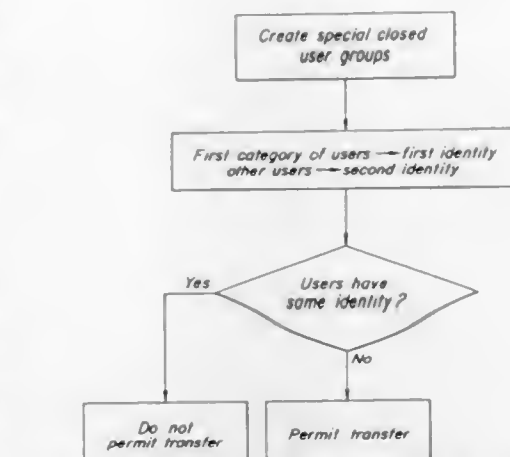
Filed Oct. 15, 1993, Ser. No. 136,700

Claims priority, application Sweden, Oct. 16, 1992, 9203054
Int. Cl.⁶ H04L 12/22

U.S. Cl. 340—825.52

3 Claims

1. In a data network having a number of closed user groups, a method of controlling information transfer between a first category of users and a group of other users, wherein the users of the first category belong to the data network and the other users belong to any of the number of closed user groups and are of a category different from the first category, the method comprising the steps of:



creating a special closed user group, wherein the special closed user group includes the first category of users and the group of other users, and each such user has an identifier that comprises a first part and a second part;

allocating, to the second parts of the identifiers of the first category of users, a first identity in the special closed user group;

allocating, to the second parts of the identifiers of the other users, a second identity in the special closed user group, wherein the second identity is different from the first identity; and

permitting the data network to transfer information between two users in the special closed user group only when the second parts of the respective identifiers of the two users have different identities.

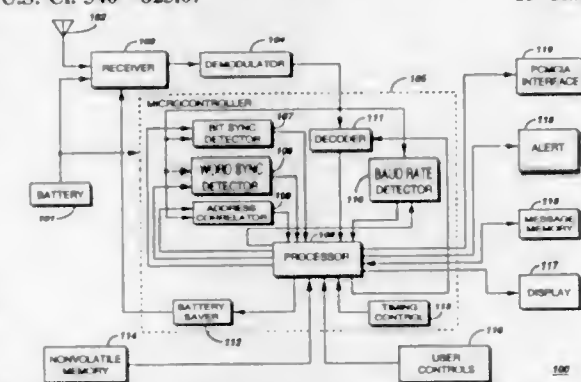
5,512,886 SELECTIVE CALL RECEIVER WITH COMPUTER INTERFACE

William J. Macko, W. Palm Beach, and Gregory L. Cannon, Delray Beach, both of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 963,884, Oct. 19, 1992, abandoned.
This application May 30, 1995, Ser. No. 453,930
Int. Cl.⁶ G05B 23/02

U.S. Cl. 340—825.07

13 Claims



1. A selective call messaging peripheral capable of receiving at least one message comprising an information content suitable for presentation by the selective call messaging peripheral and communicating the at least one message to an electronic information processing device, the selective call messaging peripheral comprising:

- a receiver that receives and demodulates an information signal to provide a recovered information signal including an address signal and the at least one message;
- a correlator that performs a comparison between the address signal recovered from the received information signal and a predetermined address associated with the selective call mes-

saging peripheral, the correlator generating a detection when the recovered address is substantially equivalent to the predetermined address indicating selection of the selective call messaging peripheral;

at least one electronic memory coupled to the receiver and the correlator in which the at least one message is stored in response to the detection generated by the correlator;

a microcontroller coupled to the correlator and the at least one electronic memory, the microcontroller operating to examine at least a portion of the at least one message stored in the at least one electronic memory to determine if the at least one message comprises a computer file of a proprietary internal format suitable primarily for use by the electronic information processing device and the at least one message further comprises an information content that is unsuitable for presentation by the selective call messaging peripheral; and

a PCMCIA communication interface coupled to the microcontroller and the at least one electronic memory, the PCMCIA communication interface operating to immediately communicate the at least one message between the selective call messaging peripheral and the electronic information processing device in response to selection of the selective call messaging peripheral as determined by the detection generated by the correlator, and further in response to the at least one message being identified as a computer file of a proprietary internal format that is unsuitable for presentation by the selective call messaging peripheral as previously determined by the microcontroller.

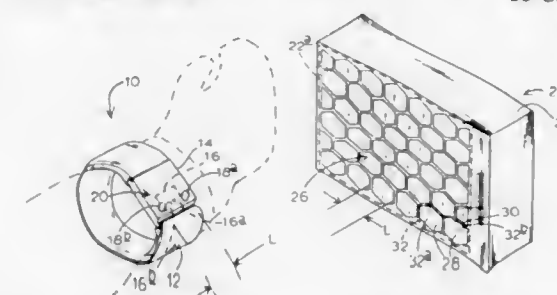
5,512,887 PERSONAL IDENTIFICATION, ACCESS CONTROL AND MONITORING SYSTEM

Clarke W. McAllister, Corvallis, Oreg., assignor to First Tracks, Eugene, Oreg.

Division of Ser. No. 700,215, May 13, 1991, Pat. No. 5,266,783. This application Jan. 22, 1993, Ser. No. 7,649
Int. Cl.⁶ H04Q 1/00

U.S. Cl. 340—825.34

18 Claims



1. A portable identification code-producing unit for use with a code reader having an array of energizable planar contact pairs, the unit comprising:

- a housing
- a solid state device mounted to the housing and having a pair of operative terminals, and producing a signal bearing an identification code;
- a pair of electrical point contacts projecting outwardly from the housing and operatively connected with said pair of terminals, said electrical point contacts of said pair each terminating in a distal end that is spheroidal in shape, each distal end having a small-pattern contact surface area and being spaced from one another a predetermined distance, so that a two-lead circuit can be completed, with each contact being associated with a separate lead of the circuit; and

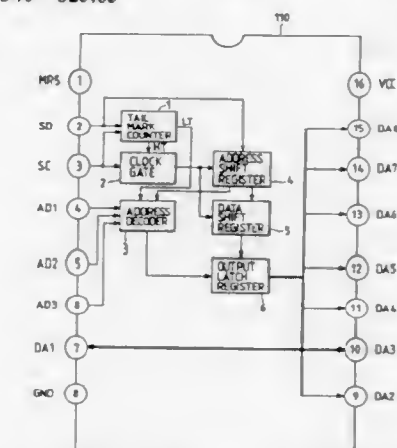
means connected with said housing for extending at least partially around a limb of a user so that the contacts are exposed for direct electrical-physical contact with a code reader.

5,512,888 COMMUNICATIONS SYSTEM HAVING A SEMICONDUCTOR INTEGRATED CIRCUIT FOR SIMULTANEOUS MODE CONTROL AND A SYSTEM CONTROL METHOD

Masakazu Hoshino, Tamamura, and Tetsuo Sato, Takasaki, both of Japan, assignors to Hitachi, Ltd., and Hitachi Microcomputer System, Ltd., Tokyo, Japan
Continuation of Ser. No. 853,922, Mar. 19, 1992, Pat. No. 5,341,131. This application Jun. 3, 1994, Ser. No. 253,506
Claims priority, application Japan, Mar. 29, 1991, 3-091737
Int. Cl.⁶ G08C 19/16

U.S. Cl. 340—825.65

10 Claims



1. A semiconductor integrated circuit device comprising:
a first terminal;

a second terminal;

a shift register having a clock input and a data input, the data input thereof being coupled to the second terminal, the shift register being responsive to a clock signal received at the clock input thereof and storing serial data containing an address and data supplied from the second terminal;

a clock gate coupled between the first terminal and the clock input of the shift register;

a counter coupled to the first and second terminals and which counts a number of voltage transitions on the second terminal for a period when the first terminal is fixed at a predetermined voltage;

an address decoder coupled to receive the address stored in the shift register, the address decoder comparing an address destined to semiconductor integrated circuit device with the address stored in the shift register and outputting a signal when the address destined to the semiconductor integrated circuit device agrees with the address stored in the shift register;

a data output register coupled to receive the data stored in the shift register;

wherein the clock gate closes when the counter outputs a first output representing a first mode in response to a first count result thereof and the address decoder outputs the signal, and wherein the data stored in the shift register is outputted from the data output register when the counter outputs a second output representing a second mode in response to a second count result and the address decoder outputs the signal.

5,512,889 DOWNHOLE INSTRUMENTS FOR WELL OPERATIONS

Paul A. Fletcher, Richardson, Tex., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed May 24, 1994, Ser. No. 248,295

Int. Cl.⁶ G01V 1/00

U.S. Cl. 340—854.6

8 Claims

1. In an arrangement for a downhole instrument for transmitting data to the surface from a well, said well having a casing extending through an earth formation, said well having perforating means in



said casing in communication with a predetermined zone of said earth formation, a signal transmitting device interposed in said well, comprising at least one sensor for sensing a condition in a portion of the wellbore of said well and a signal transmitter for transmitting information related to said condition to the earth's surface, a contactor connected to said device and engaged with said casing at one point, a tubing extending within said well for positioning said devices and a mandrel engaged with a landing nipple connected to said tubing for locking said device in a predetermined position in said well and for providing an electrically conductive path between said device and said casing at a predetermined distance from said contactor for establishing a dipole for the generation of electromagnetic waves in the earth by said device.

5,512,890

SENSOR CONNECTION SYSTEM

Harold W. Everson, Jr., Painesville; Jon Slaybaugh, Mentor, and Charles C. Juda, Hudson, all of Ohio, assignors to Namco Controls Corporation, Mentor, Ohio

Continuation-in-part of Ser. No. 837,738, Feb. 19, 1992, abandoned. This application Mar. 11, 1994, Ser. No. 212,589

Int. Cl.⁶ G08C 15/06

U.S. Cl. 340—870.13

13 Claims

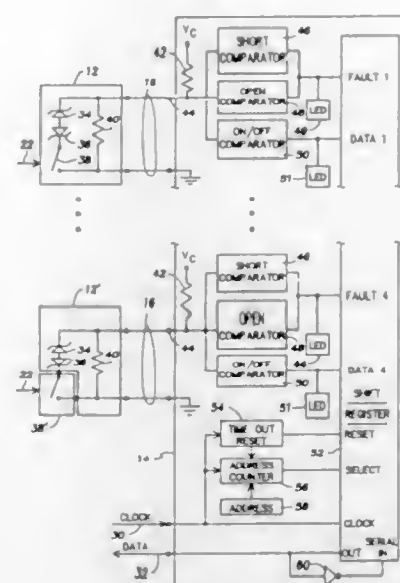
1. A sensor connection apparatus for connecting a plurality of contact sensors to a process controller having a bus for transferring information, wherein each sensor produces an open and closed switch output corresponding to a sensed condition, comprising:

- a respective sensor cable for connection at one end thereof to each sensor;
- a concentrator having means for connecting each of said sensor cables thereto; and

means for connecting said concentrator to the bus;

said concentrator comprising circuit means producing for each sensor and associated sensor cable connected thereto a first signal in response to the sensor output and a second signal that represents a sensor cable open circuit and short circuit conditions;

said circuit means further operating to couple said first and second signals for each sensor connected to said concentrator onto the bus when accessed by the process controller.



5,512,891

DRIVE-UP STATION VEHICLE DETECTION SYSTEM AND METHOD OF USING SAME

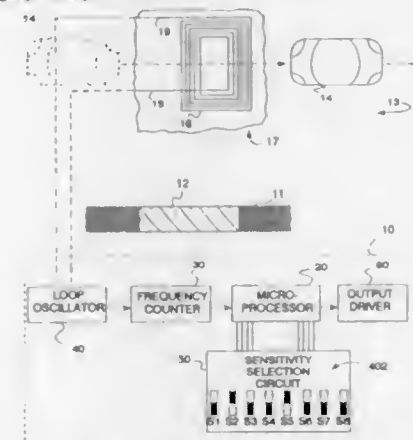
Chao M. Kang, San Diego, Calif., assignor to H. M. Electronics, Inc., San Diego, Calif.

Filed May 4, 1994, Ser. No. 237,625

Int. Cl.⁶ G08G 1/01

U.S. Cl. 340—941

26 Claims



1. A detection system for use with a conductive wire loop having a given inductance, said given inductance being subject to change by the effect of at least one external element, comprising:

loop oscillation means coupled to the conductive wire loop for generating an output frequency rate, said output frequency rate including an idle frequency rate during a non-detection time period interval and an active frequency rate during a detection time period interval;

said idle frequency rate and said active frequency rate being subject to small incremental frequency rate changes caused by external condition changes;

drift detection means responsive to said loop oscillation means for generating an idle drift correction signal whenever the output frequency rate of said loop oscillation means drifts by less than a predetermined percentage of a threshold value, said threshold value being equal to a reference frequency rate, said reference frequency rate being dependent upon external changes in temperature or humidity;

frequency rate referencing means responsive to said idle drift correction signal for adjusting said reference frequency rate

during said non-detection time period interval to help prevent false detections during said non-detection time period interval;

detection determination means for generating an active detection signal whenever the output frequency rate of said loop oscillation means changes by more than a predetermined percentage of said threshold value; and

drift compensation means responsive to said active detection signal for changing said reference frequency rate by a small incremental value to help prevent interruption of a valid detection resulting from external changes in temperature or humidity during said detection time period interval.

5,512,892

HAND HELD CONTROL DEVICE

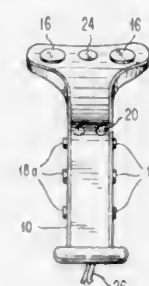
Liam P. Corballis, Smithsburg, Md.; Joseph D. Rutledge, Mahopac, N.Y., and Edwin J. Selker, Palo Alto, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 25, 1994, Ser. No. 202,928

Int. Cl.⁶ H03K 17/94

U.S. Cl. 341—22

4 Claims



1. A hand held control device comprising:

a rigid body adapted for being gripped and carried by a single hand of a user while leaving the thumb and finger tips of said gripping and carrying hand free to operate control elements mounted in said rigid body;

a plurality of control elements mounted in the rigid body for activation by a thumb or finger tip of said gripping and carrying hand to generate control data;

transmission means located in the rigid body for communicating said control data between the hand held control device and a remotely located computing system having a display;

at least one of said control elements being a pointing stick for controlling in a joystick-like manner actions at said display;

at least one of said control elements corresponding to a left gripping and carrying hand and being mounted on the rigid body for activation only by a finger tip of said gripping and carrying hand when said gripping and carrying hand is a left hand and at least one other one of said control elements corresponding to a right gripping and carrying hand and being mounted on the rigid body for activation only by a finger tip of said gripping and carrying hand when said gripping and carrying hand is a right hand; and

a chirality detector mounted in the rigid body for automatically sensing whether said gripping and carrying hand is a left hand or a right hand and automatically enabling said control elements corresponding thereto.

5,512,893
KEYPAD SCANNER PROCESS AND DEVICE AND CORDLESS TELEPHONE EMPLOYING THE MECHANISM

Dale E. Gulick, Austin, Tex., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

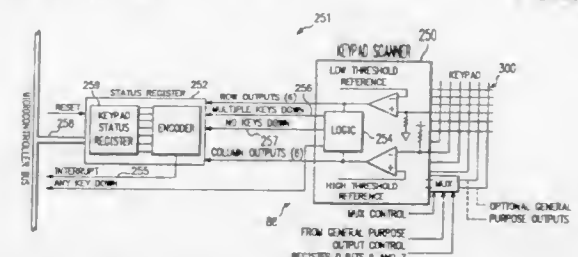
Continuation of Ser. No. 918,625, Jul. 21, 1992, abandoned.

This application Jun. 5, 1995, Ser. No. 464,072

Int. Cl.⁶ H03K 17/94; H04M 1/00

U.S. Cl. 341—26

8 Claims



5. A method for scanning a keypad comprised of more than one key, said keypad being incorporated with an integrated circuit including a microcontroller, comprising the steps of: detecting depression of at least one of said keys on said keypad; triggering a wake up of said integrated circuit in response to said detecting; and debouncing said keys using software, wherein said software comprises the steps of: receiving an interrupt signal at an interrupt port when one of said keys is depressed; masking said interrupt port for a predetermined amount of time; and reading a keypad status register to obtain a stable identity of said depressed key after said predetermined amount of time.

5,512,894

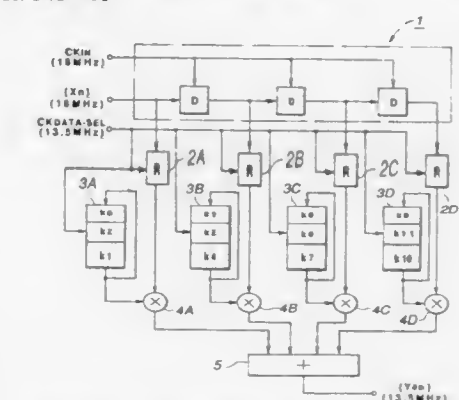
RATE CONVERTER FOR CONVERTING DATA RATE
Hiromasa Ikeyama, and Takashi Asaida, both of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jun. 15, 1993, Ser. No. 76,839

Claims priority, application Japan, Jun. 22, 1992, 4-185774
Int. Cl.⁶ H03M 7/00

U.S. Cl. 341—61

7 Claims



1. A rate converter for converting data rate of an input signal, comprising: shift-register means having a plurality of output stages, and adapted for sequentially shifting said input signal at an input clock rate of said input signal; latch means connected to said output stages, and adapted for holding signals from said output stages and outputting the held signals at an output clock rate different from said input clock rate; coefficient generating means for generating filter coefficients at said output clock rate;

multiplier means for multiplying said held signals from said latch means by said filter coefficients from said coefficient generating means, respectively; and adding means for adding output signals from said multiplier means to output a rate converted signal.

5,512,895

SAMPLE RATE CONVERTER

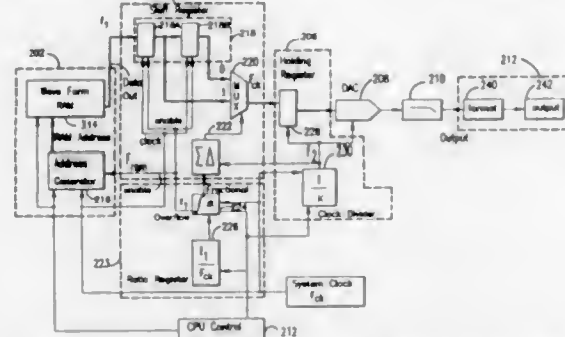
Timothy J. Madden, Malden, Mass., and Daniel A. Rosenthal, Saratoga, Calif., assignors to Teradyne, Inc., Boston, Mass.

Filed Apr. 25, 1994, Ser. No. 232,604

Int. Cl.⁶ H03M 7/00

U.S. Cl. 341-61

22 Claims



1. A method of converting the sampling rate of an input digital signal from a first rate f_1 to a second rate f_2 comprising the steps of:

- forming a signal having a sampling rate of f_2 by:
 - identifying at least two adjacent values of the input digital signal, said values being ordered from earlier to later;
 - during a predetermined interval of time equal to the time between samples of the input digital signal, selecting one of the identified values every $1/f_2$ seconds, wherein the rate at which any one of the identified adjacent values is selected varies over the predetermined interval of time, with the rate at which the earlier values are selected is greater earlier in the interval and the rate at which the later values are selected is greater later in the interval;
 - identifying a new group of adjacent values of the input digital signal and repeating step ii);
- low pass filtering the signal having a sampling rate of f_2 .

5,512,896

HUFFMAN ENCODING METHOD, CIRCUIT AND SYSTEM EMPLOYING MOST SIGNIFICANT BIT CHANGE FOR SIZE DETECTION

Christopher J. Read, Houston, and Karl M. Guttig, Missouri City, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Nov. 30, 1993, Ser. No. 159,359

Int. Cl.⁶ H03M 7/40

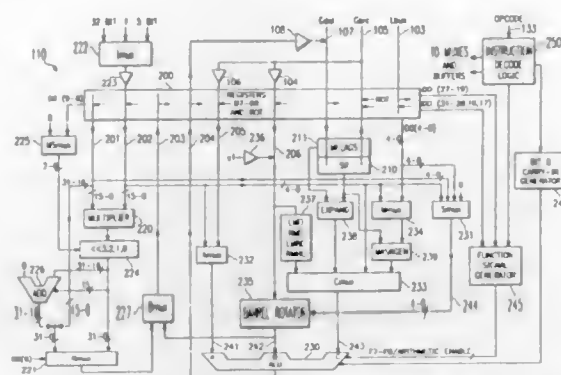
U.S. Cl. 341-65

50 Claims

1. A method of Huffman encoding a series of multibit signed digital numbers comprising the steps of:

- detecting a bit position of a greatest significant bit of a next multibit signed digital number that differs from a most significant bit of said next multibit signed digital number;
- generating a data size digital number having a predetermined number of bits and having a value corresponding to said detected bit position of the greatest significant bit of said next multibit signed digital number that differed from the most significant of said next multibit signed digital number;
- selecting from said next multibit signed digital number a number of least significant bits corresponding to said data size digital number;

forming a Huffman encoded signal by either



concatenating said data size digital number and said selected least significant bits of said next multibit signed digital number if said next multibit signed digital number is greater than or equal to zero, or

concatenating said data size digital number and a sum of said selected least significant bits of said next multibit signed digital number and a multibit digital constant if said next multibit signed digital number is less than zero, said multibit digital constant having all "1's" and said predetermined number of bits of said data size digital number; and

concatenating said Huffman encoded signal corresponding to said next multibit signed digital number with Huffman encoded signals of prior multibit signed digital numbers in the series.

5,512,897

VARIABLE SAMPLE RATE DAC

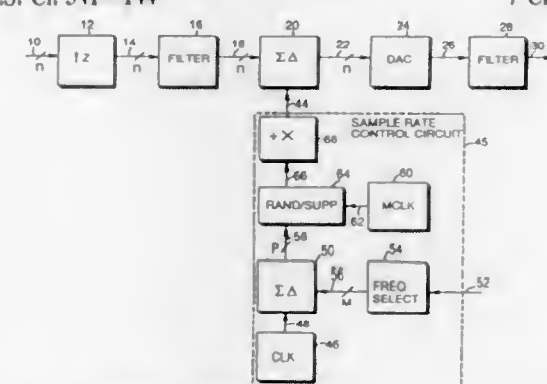
James Wilson, Sharon; Ronald A. Cellini, Newton, and James M. Sobol, Norfolk, all of Mass., assignors to Analog Devices, Inc., Norwood, Mass.

Filed Mar. 15, 1995, Ser. No. 404,235

Int. Cl.⁶ H03M 1/66

U.S. Cl. 341-144

7 Claims



1. A DAC system comprising:

an oversampling modulator, that receives digital input samples and, responsive to a noise-shaped clock signal, modulates the digital input samples to produce modulated samples at an oversampling rate, wherein the oversampling rate is equal to an oversampling ratio times a preselected input sample rate;

a DAC, coupled to the modulator, that converts the modulated samples to an analog signal; and

a modulator sample rate control circuit, coupled to the modulator, that receives a frequency select signal representing the preselected input sample rate, and produces the noise-shaped clock signal for controlling operation of the oversampling modulator at the oversampling rate, the control circuit including a first sigma-delta modulator that sigma-delta modulates the frequency select signal.

5,512,898
DATA CONVERTER WITH MINIMUM PHASE FIR FILTER AND METHOD FOR CALCULATING FILTER COEFFICIENTS

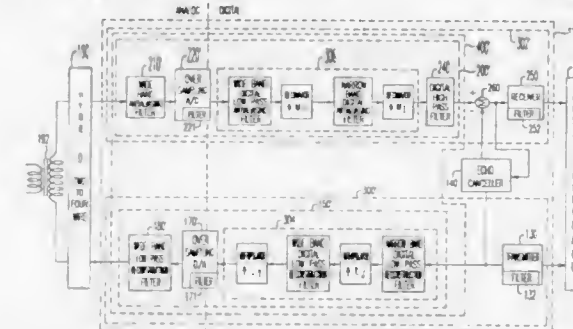
Steven R. Norsworthy, Emmaus, Pa., and David G. Shaw, Middletown, N.J., assignors to AT&T Corp., Murray Hill, N.J.

Division of Ser. No. 56,234, Apr. 30, 1993. This application Jun. 7, 1995, Ser. No. 485,303

Int. Cl.⁶ H03M 1/00

U.S. Cl. 341-155

32 Claims



1. A coder-decoder for sending and receiving signals comprising:

an analog-to-digital converter for converting an incoming analog signal into a plurality of first digital signal samples;

a digital antialiasing filter for receiving the plurality of first digital signal samples;

a decimator for reducing the number of said first digital signal samples provided from said digital antialiasing filter to provide a digital output signal having a predetermined signal rate less than the rate of said first digital signal samples;

a digital low pass reconstruction filter for receiving a plurality of second digital signal samples and for filtering images of the base band from said second digital signal samples;

an interpolator for increasing the number of said second digital signal samples provided from said digital low pass reconstruction filter to provide a digital output signal having a predetermined signal rate, greater than the rate of said second digital signal samples; and

an oversampling digital-to-analog converter for converting the digital output signal received from the interpolator into an analog signal for sending, wherein at least one of said filters is a minimum phase finite impulse response filter.

5,512,899

METHOD OF EVALUATING THE IMAGE QUALITY OF A SYNTHETIC APERTURE RADAR

Yuji Osawa, and Toshihiro Sezai, both of Tokyo, Japan, assignors to National Space Development Agency of Japan, Tokyo, Japan

Filed Feb. 16, 1995, Ser. No. 390,221

Claims priority, application Japan, Mar. 8, 1994, 6-062156

Int. Cl.⁶ G01S 13/90

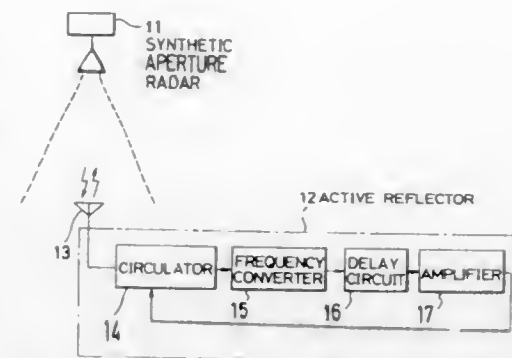
U.S. Cl. 342-25

14 Claims

1. A method of evaluating the quality of an image formed by a synthetic aperture radar comprising the steps of:

placing an active reflector at a location within an area to be detected by the synthetic aperture radar, said active reflector having the capability of receiving an incoming radio wave emitted by the synthetic aperture radar, changing the amplitude, frequency, and delay time of the received radio wave, and transmitting the resultant radio wave as a reflected radio wave, the characteristics of said active reflector being predetermined;

shifting a position of an image produced by said active reflector in which said active reflector receives an incoming radio wave emitted by said synthetic aperture radar, a characteristic or characteristics of the received radio wave are changed from the original characteristics of the incoming radio wave com-



ing from said synthetic aperture radar, and the resultant radio wave is returned back as a reflected radio wave, thereby shifting the display position of the image of said active reflector from its original display position on a display screen of said synthetic aperture radar; and

evaluating the quality of the image formed by the synthetic aperture radar by quantitatively detecting the ambiguity from the pixel value obtained at said original display position on the display screen at which the image of said active reflector was displayed before it was shifted.

5,512,900

AIRCRAFT LANDING SYSTEMS

David Parkin, Seaview, and John D. Sole, Newport, both of, England, assignors to Siemens Plessey Electronic Systems Limited, Chessington, England

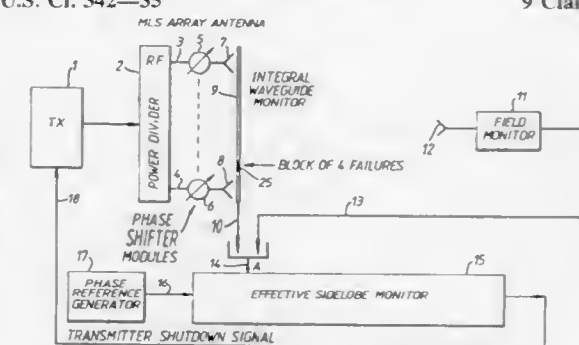
Filed Aug. 19, 1994, Ser. No. 293,193

Claims priority, application United Kingdom, Sep. 28, 1993, 931999

Int. Cl.⁶ G01S 7/40

U.S. Cl. 342-35

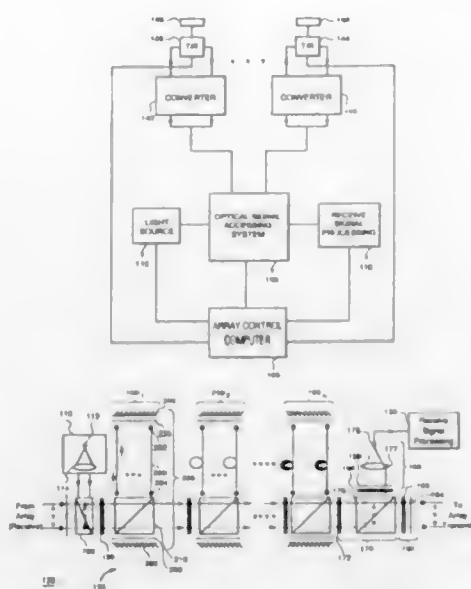
9 Claims



1. An MLS system comprising ground equipment which includes a microwave signal transmitter arranged to feed microwave signals to radiator elements of an array antenna via phase shifter modules one of which is provided for each of the said elements, whereby the production of a scanned microwave signal beam is facilitated, a signal monitor/detector receiving said scanned microwave signal beam and providing a detected sample signal derived from the scanned beam, a filter responsive to the detected sample signals and providing a filtered signal derived in dependence upon effective sidelobe signals in the said beam, and a comparator responsive to the filtered signal and providing a transmitter shutdown signal when the filtered signal exceeds a predetermined threshold level for more than a predetermined time during a predetermined number of successive scans.

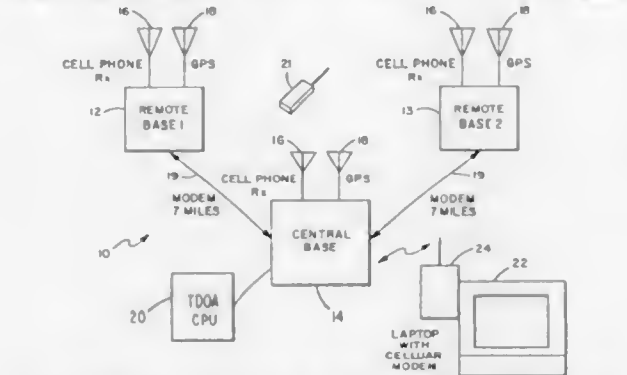
1. An optical beamsteering system for providing a plurality of respectively time-delayed optical signals, said optical beamsteering system comprising an optical signal processing system comprising a plurality of optical time delay units optically coupled together in a cascade, each of said optical time delay units further comprising:

- a) a respective spatial light modulator (SLM) having an array of liquid crystal pixels disposed such that respective ones of said optical signals pass through a respective one of said pixels such that each optical signal emerges from said SLM having a selected linear polarization orientation; and
- a) a respective multiple-pass optical delay path apparatus optically coupled to said respective optical time delay unit SLM to receive said respective optical signals from said SLM, said multiple-pass optical delay path apparatus comprising a polarizing beam splitter (PBS), a plurality of optical delay fibers, and a first and a second quarter wave plate, each of said optical delay lines being optically coupled at a respective first terminus of said fiber to said first quarter wave plate and optically coupled at a respective second terminus of said fiber to said PBS, said second quarter wave plate being optically coupled to said PBS so as to receive optical signals passing through said PBS from said optical delay lines.



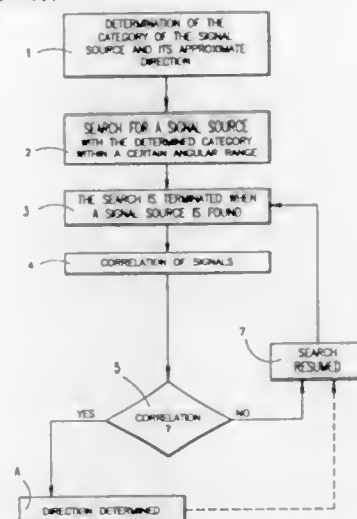
said PBS in each respective multiple-pass optical time delay unit being disposed such that respective ones of said optical signals pass along a direct path or a delay path dependent upon the polarization orientation of said respective optical signal and such that optical signals passing along a respective delay path pass through one respective fiber delay line twice before passing from said multiple-pass optical time delay unit.

5,512,908
APPARATUS AND METHOD FOR LOCATING CELLULAR TELEPHONES
David L. Herrick, Mont Vernon, N.H., assignor to Lockheed Sanders, Inc., Nashua, N.H.
Filed Jul. 8, 1994, Ser. No. 272,725
Int. Cl.⁶ G01S 1/24; H04M 11/00
U.S. Cl. 342—387 17 Claims



1. A method for determining the time difference of arrival, tdoa, of signals from a cellular telephone, cell phone, at a pair of base stations, comprising the steps of:
substantially simultaneously sampling transmission signals from the cell phone at the pair of base stations in a plurality of cell phone channels having different frequencies;
correlating the corresponding signals sampled at the base stations for each channel to determine a tdoa therebetween for each channel;
averaging the tdoas determined for each channel;
subtracting the average tdoa from each of the determined channel tdoas to determine a residual phase tdoa for each channel;
determining an overall phase tdoa between the pair of base stations based upon the residual phase tdoas for each channel; and
adding the average tdoa to the overall phase tdoa to determine an overall tdoa between the pair of base stations.

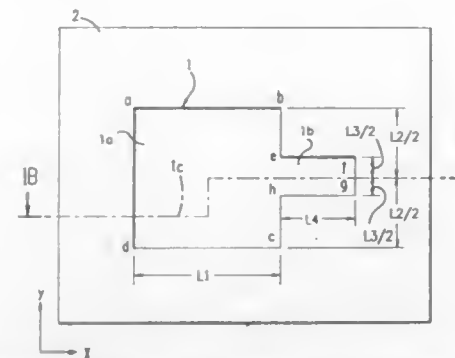
5,512,909
METHOD AND DEVICE FOR DETERMINATION OF DIRECTION
Thomas R. Kronhamn, Hålsö, Sweden, assignor to Telefonaktiebolaget L.M. Ericsson, Stockholm, Sweden
Filed Nov. 17, 1994, Ser. No. 343,908
Claims priority, application Sweden, Nov. 17, 1993, 9303808
Int. Cl.⁶ G01S 5/02
U.S. Cl. 342—417 7 Claims



1. A method of determining a direction to a signal source by means of co-operation between a first device that determines the direction with a low angular accuracy and a second device that determines the direction with a high angular accuracy, comprising the steps of:
using the first device to determine the direction to be in a certain angular range and to determine a category of the signal source based on a signal transmitted by the signal source and detected by the first device;
searching for a signal source of the category within the certain angular range with the second device and interrupting the search when a signal from a signal source of the category is detected;
correlating the signal detected by the first device with the signal detected by the second device with respect to time; and
when correlation exists the direction is determined by determining the direction in which the second device detects the signal source, and when correlation does not exist, continuing searching until a new signal source of the category is detected, at which time the search is once again interrupted, after which the correlating step is repeated.

5,512,910
MICROSTRIP ANTENNA DEVICE HAVING THREE RESONANT FREQUENCIES
Yuichi Murakami, Kawasaki, and Ieda Kiyokazu, Tokyo, both of Japan, assignors to Aisin Seiki, Co., Ltd., Japan
Continuation of Ser. No. 964,466, Oct. 21, 1992, abandoned, which is a continuation of Ser. No. 248,722, Sep. 26, 1988, abandoned. This application Apr. 28, 1994, Ser. No. 234,634
Claims priority, application Japan, Sep. 25, 1987, 62-241331
Int. Cl.⁶ H01Q 1/38
U.S. Cl. 343—700 MS 1 Claim

1. A microstrip antenna device having three resonant frequencies comprising:
a dielectric sheet having a thickness smaller than a wavelength of one of the resonant frequencies;
a first radiating conductor sheet disposed on one surface of said dielectric sheet and which is substantially rectangularly shaped;
a second conductor sheet located substantially in the center of and connected to one side of said rectangularly shaped first radiating conductor sheet and forming two minimum input

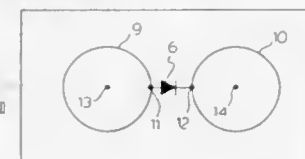


admittances at respective first and second resonant frequencies of the three resonant frequencies; and
a ground conductor sheet disposed on a second surface of said dielectric sheet;
wherein said device has a feed point located substantially on a line diagonally bisecting said substantially rectangularly shaped first radiating conductor sheet to generate two perpendicular planes of polarization, and wherein said feed point is separated from the second conductor sheet, and wherein:
the first radiating conductor sheet forms a first sheet characteristic admittance Y_{x1} ; and
the feed point is characterized by an input admittance defined by

$$2G + j\{Y_{x1} \tan(2\pi L_1/\lambda_g) + Y_{x2} \tan(2\pi L_2/\lambda_g)\},$$

Y_{x2} being the second sheet characteristic admittance, G being the radiating conductance, L_1 being a length of the first radiating conductor sheet, L_2 being a length of the second conductor sheet, the first and second resonant frequencies corresponding to values of λ_g where the imaginary part of the input admittance equals zero.

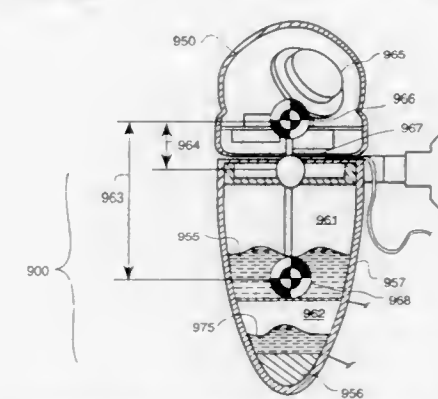
5,512,911
MICROWAVE INTEGRATED TUNED DETECTOR
Alexandru Oprea, Willowdale, Canada, assignor to Disys Corporation, Toronto, Canada
Filed May 9, 1994, Ser. No. 239,454
Int. Cl.⁶ H01Q 1/38
U.S. Cl. 343—700 MS 6 Claims



1. A microwave integrated tuned detector for receiving microwave signals in a predetermined frequency range, comprising:
a) a DC output;
b) a substrate;
c) a grounded plane mounted on one side of said substrate;
d) first and second circular patch antennas mounted on an opposite side of said substrate from said grounded plane, said antennas being of predetermined radius for exciting a dominant TM_{11} mode in said predetermined frequency range, said first and second circular patch antennas having respective first and second centers;
e) a detector diode having one terminal thereof connected to said first circular patch antenna, and having an opposite terminal thereof connected to a point on said second circular patch antenna nearest to said first antenna;

f) said center of said first circular patch antenna being connected to said grounded plane for providing a DC return path for said detector diode; and
g) said center of said second circular patch antenna being connected to said DC output.

5,512,912
MARINE ANTENNA MOUNT
David J. Ross, Leesburg; Gary Churan, Annandale, and Charles Kittiver, Vienna, all of Va., assignors to AMSC Subsidiary Corporation, Reston, Va.
Filed Jan. 28, 1994, Ser. No. 187,996
Int. Cl.⁶ H01Q 1/12 26 Claims



17. An antenna mount for mounting an antenna to a surface, comprising:
a ballast housing and radome enclosure substantially enclosing the antenna and including a dampener disposed in a lower area of said ballast housing dampening oscillations of said ballast housing induced by an external force;
a first gimbal, coupled to said ballast housing, and allowing at least one of said ballast housing and the antenna mount to rotate with respect to a first rotational axis;
a yoke, coupled to said first gimbal;
a second gimbal, coupled to said yoke, and allowing at least one of said yoke and the antenna mount to rotate with respect to a second rotational axis; and
a mounting bracket, coupled to said second gimbal and to the surface, and rotating relative to said ballast housing with respect to the first rotational axis and the second rotational axis.

5,512,913
FLAT PLATE ANTENNA, SCALER COLLECTOR AND SUPPORTING STRUCTURE
Michael W. Staney, 1551 NE Thirteenth Ter., Suite A3, Jensen Beach, Fla. 34957
Continuation-in-part of Ser. No. 913,526, Jul. 15, 1992, abandoned. This application Apr. 14, 1994, Ser. No. 227,582
Int. Cl.⁶ H01Q 13/00; 3/02 24 Claims

U.S. Cl. 343—781 P 1. A flat plate antenna for receiving microwave signals comprising:
a first circular reflective surface with a centrally disposed convex shaped depression placed along a common axis and positioned to reflect signals from an upper surface of said reflective surface to a predetermined focal point, said first reflective surface having a raised edge placed along a first horizontal plane defining a border thereto;
a second reflective surface concentrically surrounding said first reflective surface placed along said common axis and having an inclined angle to reflect signals from an upper surface to said predetermined focal point and a second raised edge

comprising at least three data regions, each of the data regions having contents comprising frame data, and said frame buffer apparatus further comprising a display region pointer, a background region pointer, and a new frame region pointer, said method comprising the following steps:

displaying, on a video display device, the contents of the data region addressed by the display region pointer;
copying the contents of the data region addressed by the background region pointer into the data region addressed by the new frame region pointer;
rendering a next frame in the sequence of animation frames;
overlaying the next frame onto the data region addressed by the new frame region pointer;

resetting the display region pointer to identify the data region addressed by the new frame region pointer;
resetting the new frame region pointer to identify the data region previously addressed by the display region pointer;
iteratively repeating the foregoing steps until the sequence of animated frames has been completely displayed on the video display device.

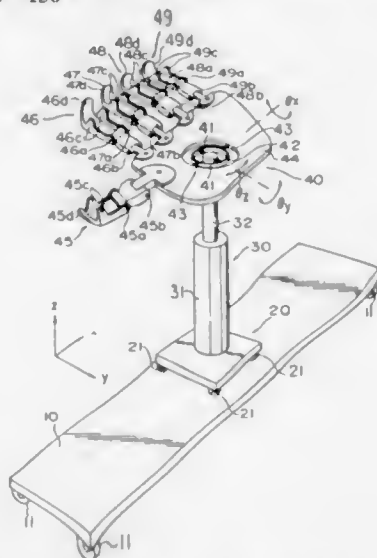
5,512,919 THREE-DIMENSIONAL COORDINATES INPUT APPARATUS

Yoshitsugu Araki, Tokorozawa, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan
Filed Mar. 30, 1993, Ser. No. 40,276

Claims priority, application Japan, Mar. 31, 1992, 4-105558
Int. Cl.⁶ G09G 5/00

U.S. Cl. 345—156

2 Claims



1. A three-dimensional coordinates input apparatus for supplying three-dimensional coordinates data, comprising:

hand detecting means for detecting a position and a posture of a hand;
finger detecting means for detecting positions and postures of fingers;
hand detection means moving means for moving said hand detecting means in horizontal and vertical directions;
rotating means for rotating said hand detecting means and said finger detecting means;

tracing means for controlling said hand detection means moving means to move said hand detecting means to approach the palm of the hand to a position of a predetermined non-zero distance and for controlling said hand detection means moving means to move said hand detecting means to trace movement of said hand when the palm of the hand is put over said hand detecting means based on the detecting by said hand detecting means;

finger detection responsive bending means, responsive to said positions and postures detected by said finger detecting

means, for bending said finger detecting means in accordance with a bending state of the fingers when the fingers are detected to be bent at a position near but spaced from said finger detecting means by a predetermined non-zero distance; and

coordinate data producing output means for producing three-dimensional coordinate data of the hand and fingers based on results of the detections of said positions and postures of the hand and fingers in real space by said hand detecting means and said finger detecting means.

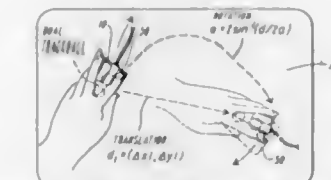
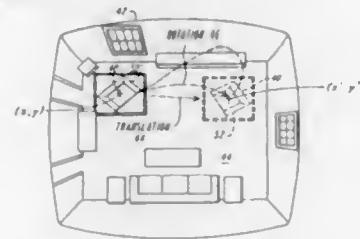
5,512,920 LOCATOR DEVICE FOR CONTROL OF GRAPHICAL OBJECTS

Sarah F. F. Gibson, Arlington, Mass., assignor to Mitsubishi Electric Research Laboratories, Inc., Cambridge, Mass.
Filed Aug. 17, 1994, Ser. No. 291,667

Int. Cl.⁶ G09G 5/08

U.S. Cl. 345—163

14 Claims



1. Apparatus for the control of graphical objects appearing on a computer driven display, comprising:

a locator device for permitting simultaneous two-dimensional translation and rotation of said graphical object including spaced-apart rollerball sensors positioned on said locator device in a fixed relationship to each other on the same side of said locator device, each of said rollerball sensors including means for generating signals corresponding to rollerball movement for simultaneously generating an output corresponding to the angle associated with the angular orientation of said locator device and the translation of said locator device as said locator device is moved and rotated in a two-dimensional plane; and

means coupled to the output of said locator device for translating and rotating said graphical object in accordance with the sensed displacements of said sensors to mimic the angular rotation and displacement of said locator device, whereby the movement of said graphical object on said display is controlled by the movement of said locator device.

5,512,921 VISUAL DISPLAY SYSTEM HAVING LOW ENERGY DATA STORAGE SUBSYSTEM WITH DATE COMPRESSION CAPABILITIES, AND METHOD FOR OPERATING SAME

Amit Mital, and David Voith, both of Redmond, Wash., assignors to Microsoft Corporation, Redmond, Wash.

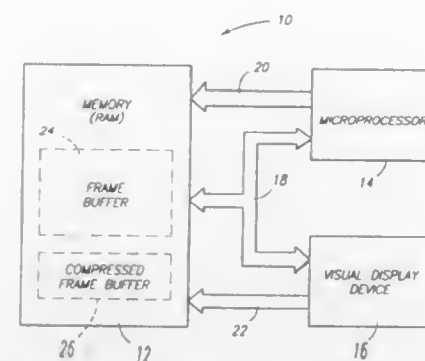
Filed Jun. 22, 1994, Ser. No. 263,540

Int. Cl.⁶ G09G 5/36

U.S. Cl. 345—202

29 Claims

1. A method for operating a data storage subsystem for a visual display device used in computers, the method comprising the following steps:



storing visual information data in a particular format in a frame buffer for input to a visual display device;

compressing the visual information data according to a pre-defined compression/decompression scheme on some occasions, while leaving the visual information data uncompressed on other occasions;

storing the compressed visual information data in a compressed frame buffer for input to the visual display device; and selectively using the visual information data stored in the frame buffer in the event the visual information data is not compressed and using the compressed visual information data stored in the compressed frame buffer in the event the visual information data is compressed to repeatedly update the visual display device.

5,512,922 METHOD OF MULTI-TONE PRINTING

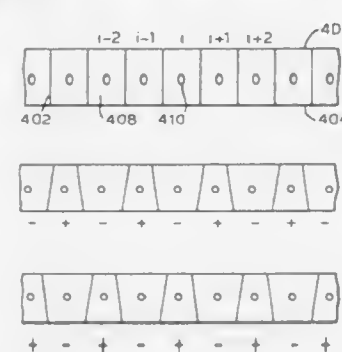
Anthony D. Paton, Cambridge, England, assignor to XAAR Limited, Cambridge, England

Continuation-in-part of Ser. No. 594,772, Oct. 9, 1990, Pat. No. 5,361,084. This application Sep. 30, 1994, Ser. No. 316,256
Claims priority, application United Kingdom, Oct. 10, 1989, 8922821; Jan. 23, 1990, 9001493

Int. Cl.⁶ B41J 2/205

U.S. Cl. 347—12

27 Claims



1. A method of printing employing a drop-on-demand ink jet apparatus comprising an array of parallel channels, disposed side by side and having side walls which extend in a lengthwise direction of the channels and separating one channel from another, the channels having an identical longitudinal acoustic resonant frequency, at least some of the channels being arranged into first and second interleaved groups of channels, a series of nozzles which communicate respectively with said channels for ejection of ink therefrom; connection means for connecting the channels with a source of ink and electrically actuatable means for effecting transverse displacement in opposite senses of a portion at least of a channel separating side wall of a selected channel to effect ink ejection therefrom; the method comprising the steps of receiving print data; selecting in accordance with said print data a band of adjacent channels for ink ejection and actuating the electrically actuatable means to apply sequences of pulses of energy at or near the longitudinal acoustic resonant frequency within the selected band to first and second interleaved groups of channels in anti-phase and varying a number of adjacent channels in the band in

successive cycles of the resonant frequency to control print density in accordance with said print data.

5,512,923 COLOR VARIATION CONTROL METHOD FOR INK-JET PRINTERS

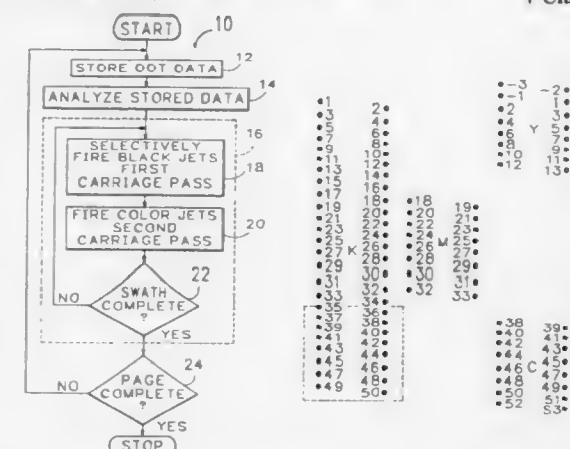
Joseph H. Bauman, Vancouver, Wash., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Sep. 30, 1992, Ser. No. 955,541

Int. Cl.⁶ B41J 2/205

U.S. Cl. 347—15

4 Claims



1. A method of producing printed images on a liquid ink-jet printer having plural pens of different colors wherein ink dots of different colors are interposed along a horizontal print axis to produce desired color hues, the method comprising the steps of: storing ink dot data in a memory connected with the printer; analyzing said stored ink dot data to identify whether any of the ink drop data represent differently colored closely adjacent dots along such axis; and upon identifying closely adjacent dots of different colors, printing such closely adjacent dots of different colors by firing selected ink jets of one pen during one pass of the pens and firing selected ink jets of another pen during another pass of the pens where ink jets are selected such that a vertical span of selected ink jets of the one pen is approximately equal to a vertical span of selected ink jets of the other pen, a difference between an elapsed time between the firings of a first pair of horizontal adjacent different color ink drops and an elapsed time between the firings of any other pair of horizontally adjacent different color ink drops thus being minimized.

5,512,924 JET APPARATUS HAVING AN INK JET HEAD AND TEMPERATURE CONTROLLER FOR THAT HEAD

Yoshihiro Takada; Akio Suzuki, both of Yokohama; Masami Izumizaki; Ken Tsuchii, both of Tokyo; Hidejiro Kadowaki, Yokohama; Toshiyuki Yanaka, Tokyo; Haruhiko Takahashi, Yokohama; Makoto Takamiya, Kawasaki; Kosuke Yamamoto, Yokohama; Masafumi Wataya; Yasushi Miura, both of Kawasaki; Haruhiko Moriguchi, Yokohama, and Yasushi Murayama, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

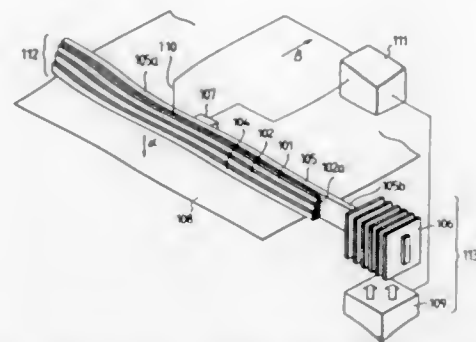
Continuation of Ser. No. 852,333, Mar. 17, 1992, abandoned, which is a continuation of Ser. No. 458,569, Dec. 28, 1989, abandoned. This application Feb. 1, 1994, Ser. No. 190,220
Claims priority, application Japan, Dec. 28, 1988, 63-329478; Mar. 9, 1989, 1-55201; Mar. 9, 1989, 1-55202; Mar. 9, 1989, 1-55203; Mar. 9, 1989, 1-55204; Mar. 10, 1989, 1-56247; Sep. 1, 1989, 1-224654; Dec. 22, 1989, 1-333159

Int. Cl.⁶ B41J 2/05; 29/377

U.S. Cl. 347—18

7 Claims

1. An ink jet apparatus, comprising:



an ink jet head having a heat generating resistance element, said ink jet head discharging ink droplets by causing a change in a state of an ink by utilizing heat generated by said heat generating resistance element;

conveying means for conveying a recording medium to be recorded upon in a conveyance direction, so that a predetermined recording image is formed on said recording medium by ink droplets discharged by said ink jet head;

heat exchanging means for exchanging heat with said head, said heat exchanging means being attached to a side surface of said head where said element is provided;

heating means for heating said heat exchanging means, said heating means being a part of said heat exchanging means;

cooling means for cooling said heat exchanging means;

temperature detecting means for detecting a temperature of said heat exchanging means; and

control means for controlling driving of said heating means and said cooling means based on the temperature detected by said temperature detecting means;

wherein said head to which said heat-exchanging means is attached is joined to said apparatus so that said heat-exchanging means is positioned at a downstream side in said conveyance direction of said recording medium.

5,512,925 INK JET HEAD CARTRIDGE AND INK TANK THEREFOR

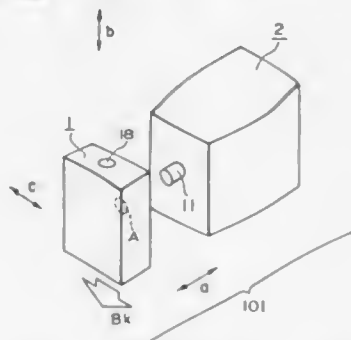
Tetsuyo Ohashi, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 28, 1993, Ser. No. 174,459

Claims priority, application Japan, Dec. 28, 1992, 4-348492
Int. Cl.⁶ B41J 2/17

U.S. Cl. 347—86

13 Claims



1. An ink jet head, usable with an ink container to supply ink thereto, for ejecting ink, comprising:

an ink ejection outlet for ejecting ink;

an ink passage in communication with said ink ejection outlet;

an ink ejecting pressure generating element provided corresponding to said ink passage; and

a plurality of selectively usable ink inlets, provided in different sides of said ink jet head, for receiving ink for supplying it to said ink passage from said ink container.

5,512,926 INK JET RECORDING APPARATUS AND METHOD FOR RELEASABLY MOUNTING INK JET RECORDING HEAD AND SEPARABLE INK TANK

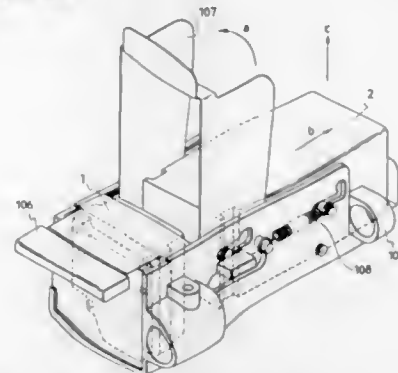
Yoshio Uchikata, Yokohama; Yoshifumi Hattori, Yamato; Yoji Ara, Yokohama; Masashi Kitani, Yokohama; Etsuro Suzuki, Yokohama; Toshihide Wada, Yokohama; Hiromitsu Hirahayashi, Yokohama; Hideo Saikawa, Kawasaki; Masami Kojima, Tokyo; Tadashi Hanabusa, Yokohama; Kenji Kawano, Tokyo; Koichi Tanno, Kawasaki; Tetsuyo Ohashi, Yokohama; Toshihiko Bekki; Kenji Aono, both of Kawasaki, and Masaharu Ikado, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 988,442, Dec. 9, 1992, abandoned.

This application Jun. 7, 1995, Ser. No. 478,827
Claims priority, application Japan, Dec. 11, 1991, 3-327558; Dec. 11, 1991, 3-327709; Dec. 11, 1991, 3-327710; Dec. 11, 1991, 3-327711; Dec. 11, 1991, 3-327714; Dec. 11, 1991, 3-327715; Dec. 11, 1991, 3-327717; Dec. 11, 1991, 3-327719; Dec. 11, 1991, 3-350807; Dec. 11, 1991, 3-351047; Dec. 19, 1991, 3-336790
Int. Cl.⁶ B41J 2/17

U.S. Cl. 347—86

11 Claims



5,512,930

SYSTEMS AND METHODS OF PRINTING BY APPLYING AN IMAGE ENHANCING PRECOAT

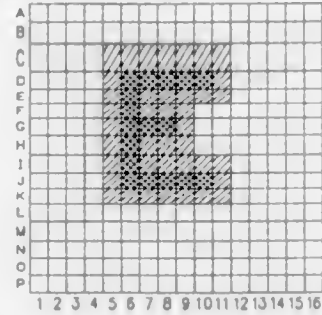
Thomas J. Brandt, Canby, and Stephen A. Zimmerman, Wilsonville, both of Oreg., assignors to Tektronix, Inc., Wilsonville, Oreg.

Continuation-in-part of Ser. No. 930,572, Aug. 17, 1992, which is a continuation-in-part of Ser. No. 762,537, Sep. 18, 1991, abandoned. This application Oct. 16, 1992, Ser. No. 962,367

Int. Cl.⁶ B41J 2/325

U.S. Cl. 347—212

40 Claims



1. A method of printing to form a predetermined printed image on a substrate, comprising the steps of:
 - (a) determining a first area on the substrate where a colorant is to be deposited to form said printed image;
 - (b) determining a second area which is immediately adjacent to said first area;
 - (c) depositing a precoat material over said first area and said second area, said precoat material having an exposed surface which is adapted for receiving said colorant and enhancing said printed image to form an image-enhancing precoat material; and
 - (d) depositing said colorant on to said exposed surface of said image-enhancing precoat material so as to be over said first area and to thereby create said printed image, whereby a border of precoat material is defined about said printed image on said substrate.

5,512,931

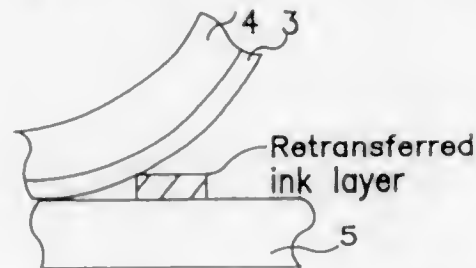
HEAT TRANSFER RECORDING PROCESS USING AN INTERMEDIATE RECORDING SHEET

Atsushi Nakajima; Shinji Matsumoto; Katsumi Maejima; Koichi Nakatani; Sota Kawakami; and Ai Katsuda, All of Hino, Japan, assignors to Konica Corporation, Japan

Filed Jun. 1, 1993, Ser. No. 71,173
Claims priority, application Japan, Jun. 3, 1992, 4-142801; Jan. 7, 1993, 5-001235; Mar. 4, 1993, 5-043859Int. Cl.⁶ B41J 2/32

U.S. Cl. 347—213

15 Claims



1. A process for forming an image by heat transfer, said process comprising:
 - imagewise transferring an ink layer from an ink sheet, said ink sheet comprising a support having provided thereon a heat-fusible ink layer, onto a surface of an intermediate image

receiving layer on an intermediate image receiving sheet by imagewise heating said heat-fusible ink layer, and retransferring said ink layer imagewise transferred onto said intermediate image receiving layer, to a secondary image receiving sheet, wherein said heat-fusible ink layer comprises a coloring material and a homopolymer or copolymer comprising a repeating unit derived from a monomer represented by Formula 1, or a phthalic polyester formed by polymerization of phthalic acid and a polyol,



wherein R_1 is hydrogen or alkyl having 1 to 12 carbon atoms; R_2 , R_3 and R_4 are each hydrogen, alkyl having 1 to 12 carbon atoms or $COOR_5$, and R_5 is hydrogen or alkyl having 1 to 12 carbon atoms.

5,512,932

METHOD AND APPARATUS FOR DRIVING A SEMICONDUCTOR LASER DEVICE

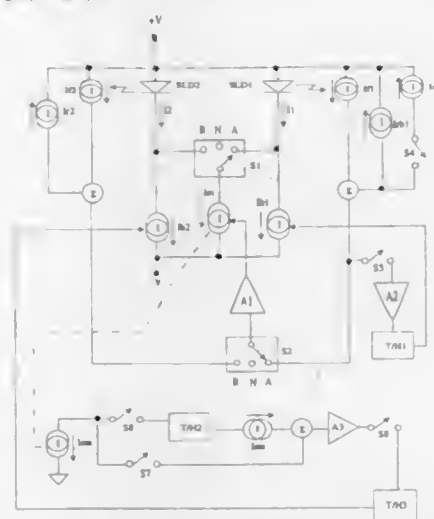
Norman F. Rolfe, Carlisle, Mass., assignor to Miles Inc., Wilmington, Mass.

Filed Jan. 12, 1994, Ser. No. 180,828

Int. Cl.⁶ B41J 15/16

U.S. Cl. 347—247

36 Claims



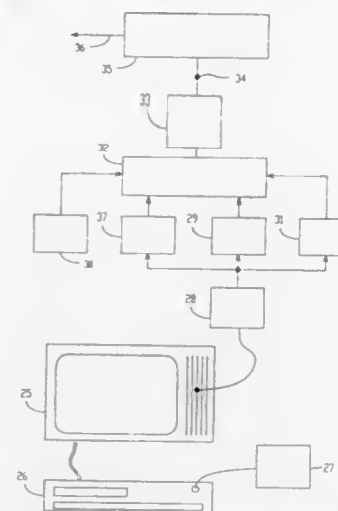
1. A method for driving a semiconductor laser device between first and second states comprising the steps of:
 - (a) driving the semiconductor laser device with a bias current which produces a predetermined optical power output that defines said first state;
 - (b) driving said semiconductor laser device at a higher current produced by the combination of said bias current and an information current, said higher current producing another predetermined optical power output that defines said second state;
 - (c) producing a transition from said second state to said first state by steering the information current to a current sink having substantially the same switching speed and voltage versus current terminal characteristics as said semiconductor laser device; and
 - (d) producing a transition from said first state to said second state by steering said information current to said semiconductor laser device.

5,512,933

IDENTIFYING A RECEIVED PROGRAMME STREAM
Mark A. Wheatley, Maidenhead, and Peter Wilcox, Roehampton, both of, United Kingdom, assignors to Taylor Nelson AGB plc, London, United KingdomFiled Oct. 12, 1993, Ser. No. 135,054
Claims priority, application United Kingdom, Oct. 15, 1992, 9221678Int. Cl.⁶ H04N 7/00; 17/00

U.S. Cl. 348—5

35 Claims



1. A method of identifying a programme which has been broadcast to a television receiver location as part of a programme stream and displayed by a television receiver receiving the stream at said location, the method comprising:

- (a) at a remote station, monitoring the broadcast programme stream by measuring a predetermined parameter of the stream repetitively and storing the resulting measurements as reference data;
- (b) determining and storing as part of said reference data, time data for defining the time of broadcast of those portions of the stream from which said measurements have been obtained;
- (c) at the location of the television receiver measuring the same parameter of the displayed programme stream repetitively and at a rate less than that at the remote station, and recording the resultant measurements as local data;
- (d) determining and recording as part of said local data, time data defining time of receipt at the location of those portions of said displayed programme stream from which said same parameter has been obtained;
- (e) transmitting the recorded local data from said location to a remote station; and
- (f) comparing the transmitted local data with the reference data to identify a correlation therebetween.

5,512,934

SYSTEM AND METHOD FOR TRANSMISSION OF PROGRAMMING ON DEMAND

Gregory P. Kochanski, Dunellen, N.J., assignor to AT&T Corp., Murray Hill, N.J.

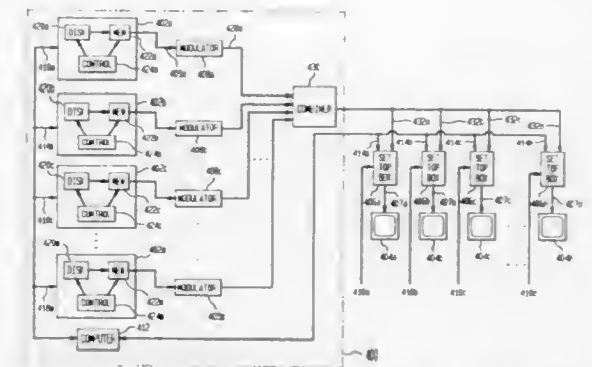
Filed Dec. 29, 1994, Ser. No. 365,645

Int. Cl.⁶ H04N 7/173

U.S. Cl. 348—7

11 Claims

1. A method of providing programming on demand service, comprising the steps of:
 - coupling a first subscriber who requests a program at a given time to a first program feed which plays said program at a first feed rate;
 - coupling a second subscriber who requests said program at a different time from said first subscriber to a second program feed which plays said program at a second feed rate, said second feed rate differing from said first feed rate;



- grouping said first subscriber and said second subscriber into a first group when said subscribers progress to the same point within said program; and
- coupling said first group to a first group feed so that said first subscriber and said second subscriber receive the remainder of said program on said group feed, said first group feed being selected from one of said program feeds.

5,512,935

APPARATUS AND METHOD FOR DISPLAYING AN ALERT TO AN INDIVIDUAL PERSONAL COMPUTER USER VIA THE USER'S TELEVISION CONNECTED TO A CABLE TELEVISION SYSTEM

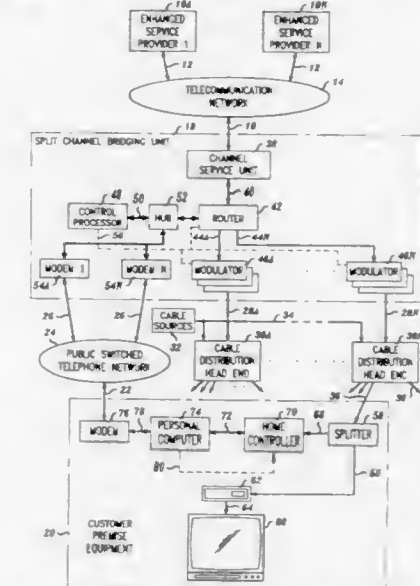
Venkata C. Majeti; Mowaffak T. Midani, both of Naperville, Ill.; Richard J. Watson, Catawissa, Mo., and Kenneth A. Zabriskie, Indianapolis, Ind., assignors to AT&T Corp., Murray Hill, N.J.

Filed Mar. 31, 1994, Ser. No. 221,340

Int. Cl.⁶ H04N 7/10

U.S. Cl. 348—9

23 Claims



1. A method for providing a user of a cable television system with an alert notice generated by a service provider of information subscribed to by the user, the method comprising the steps of:
 - using a demodulator to demodulate radio frequency (RF) signals transmitted via a high speed data channel on a cable that carries cable television channels, said demodulator translating encoded packets of data carried as said RF signals into digitally formatted packets;
 - identifying ones of said digitally formatted packets having a predetermined address associated with customer premises equipment of the user;
 - transmitting data derived from said ones of digital formatted packets to a user's personal computer;

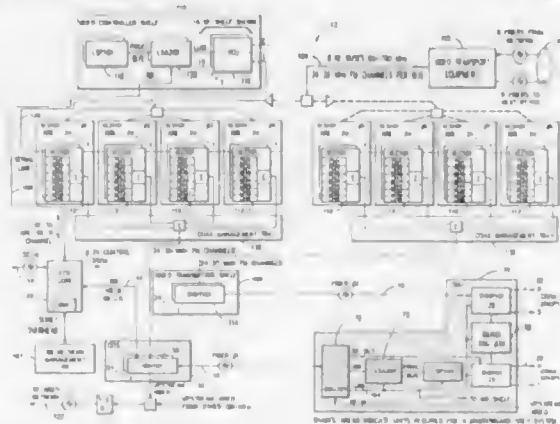
monitoring said ones of digitally formatted packets for the receipt of an alert flag;
determining a television channel currently selected for viewing by the user;
transmitting to the user's personal computer channel data defining said television channel currently selected by the user;
upon receiving said alert flag, using a modulator to superimpose an alert message on the cable television channel which has been selected for viewing by the user in order to provide a visual alert message to the user.

5,512,936

VIDEO LINE CARD SWITCH FOR USE IN A VIDEO LINE CARD SHELF IN A SWITCHED VIDEO SYSTEM
Larry W. Burton, and Todd D. Poston, both of Raleigh, N.C., assignors to Alcatel Network Systems, Inc., Richardson, Tex.
Continuation of Ser. No. 738,842, Jul. 31, 1991, abandoned.
This application Feb. 7, 1994, Ser. No. 192,956
Int. Cl. H04N 7/10

U.S. Cl. 348-11

13 Claims



1. A channel selection switch for selecting a selected channel having a desired program signal carried at one frequency from a plurality of available channels having different program signals carried at different frequencies, said switch comprising:

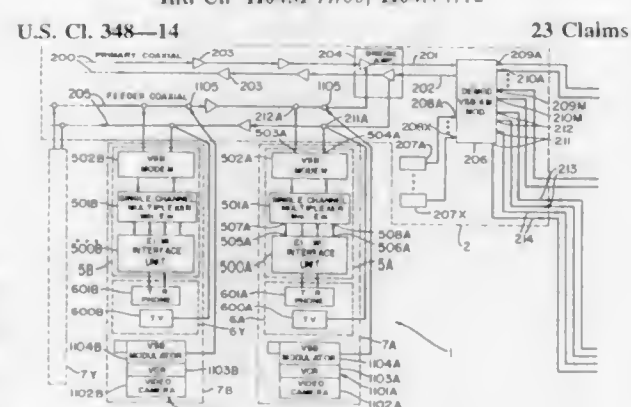
- luner means, responsive to a tuner selection signal, for dynamically tuning to the one frequency of the selected channel for providing the desired program signal of the selected channel on an intermediate frequency;
- converter means, responsive to a converter selection signal, for dynamically converting said desired program signal of the selected channel on the intermediate frequency to a distribution channel frequency permanently assigned to a particular subscriber to differentiate the particular subscriber from other subscribers of a plurality of subscribers; and
- a signal processor, responsive to a dynamically selected selection signal from the particular subscriber, for providing the tuner selection signal and the converter selection signal, wherein said channel selection switch is among a plurality of channel selection switches located remotely from said plurality of subscribers each having different distribution frequencies assigned to them.

5,512,937

SYSTEM FOR INTEGRATED DISTRIBUTION OF SWITCHED VOICE AND TELEVISION ON COAXIAL CABLE AND WITH VIDEO SIGNAL TRANSMISSION ORIGINATING FROM SUBSCRIBER LOCATIONS
John D. Beierle, Danbury, Conn., assignor to Nynex Corporation, New York, N.Y.
Continuation of Ser. No. 243,530, May 16, 1994, abandoned, which is a continuation of Ser. No. 150,281, Nov. 10, 1993, abandoned, which is a continuation of Ser. No. 815,071, Dec. 30, 1991, abandoned. This application Nov. 7, 1994, Ser. No. 335,184
Int. Cl. H04M 11/00; H04N 7/12

U.S. Cl. 348-14

23 Claims



1. A system comprising:

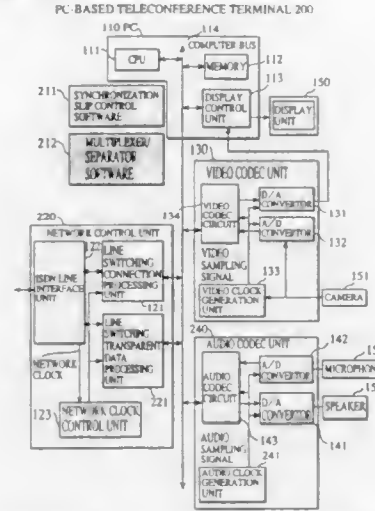
- a plurality of telephone subscriber locations, each telephone subscriber location including: means for establishing a radio frequency ("RF") transmitting channel and a RF receiving channel associated with the subscriber location for conveying signalling and voice information from and to respectively, the subscriber location; tunable video generating means for generating video signals on a subscriber video RF broadband channel to which said tunable video generating means is tuned; tunable video receiving means for receiving video signals on a subscriber video RF broadband channel to which said tunable video receiving means is tuned;
- the RF transmitting channels of said subscriber locations forming one or more transmitting frequency-division-multiplexed signals and the RF receiving channels of said subscriber locations forming one or more receiving frequency-division-multiplexed signals;
- the subscriber video RF broadband channels on which video signals are to be generated at said subscriber locations forming with said one or more transmitting frequency-division-multiplexed signals a first composite frequency-division-multiplexed signal and the subscriber video RF broadband channels on which video signals are to be received at said subscriber locations forming with said one or more receiving frequency-division-multiplexed signals a second composite frequency-division-multiplexed signal;
- a broadband cable network for carrying the first composite frequency-division-multiplexed signal and the second composite frequency-division-multiplexed signal;
- and a central switch means responsive to said cable network: for enabling each RF transmitting channel in the first composite frequency-division-multiplexed signal on the cable network to be selectively coupled to any of the RF receiving channels in the second composite frequency-division-multiplexed signal on the cable network; for enabling a particular subscriber video RF broadband channel to be assigned to a subscriber location which is to transmit video signals; and for enabling a particular subscriber video RF broadband channel to be assigned to a subscriber location which is to receive video signals.

5,512,938

TELECONFERENCE TERMINAL
Kenzo Ohno, Habikino, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Mar. 30, 1995, Ser. No. 413,631
Claims priority, application Japan, Apr. 6, 1994, 6-068372
Int. Cl. H04M 11/00

U.S. Cl. 348-15

25 Claims



1. A teleconference terminal using a personal computer for sending and receiving video code, audio code and data to and from another teleconference terminal, using an ISDN line switching method wherein AV multiframes are defined for an H series recommendation for CCITT, comprising:

- audio coding means for encoding and compressing an inputted audio signal in accordance with an audio sampling signal, for generating transmission audio code and outputting the transmission audio code to a computer bus, as well as receiving reproduction audio code from the computer bus, and generating a reproduction audio signal by decompressing and decoding the reproduction audio code in accordance with the audio sampling signal;

video coding means for encoding and compressing an inputted video signal, for generating transmission video code and outputting the transmission video code to the computer bus, as well as receiving reproduction video code from the computer bus, and generating a reproduction video signal by expanding and decoding the reproduction video code;

AV multiframe conversion means for generating transmission AV multiframes by performing multiplex conversion of the transmission audio code and the transmission video code inputted from the computer bus according to a CCITT recommendation, and outputting the generated transmission AV multiframes to the computer bus;

transfer means for transmitting the transmission AV multiframes inputted from the computer bus via an ISDN line to the other teleconference terminal, and for receiving reproduction AV multiframes from the other teleconference terminal according to a CCITT recommendation via the ISDN line, and outputting the received reproduction AV multiframes to the computer bus;

AV separation means for receiving the received reproduction AV multiframes from the computer bus and for separating the reproduction video code and the reproduction audio code from the received reproduction AV multiframes, as well as outputting the reproduction video code and reproduction audio code to the computer bus;

internal clock supplying means for independently generating an internal clock for the personal computer, as well as supplying the audio sampling signal synchronized with the internal clock to the audio coding means, wherein the audio sampling signal has a frequency of 8 kHz; and

adjustment means for adjusting surpluses and shortages in the transmission audio code to be included in the transmission AV multiframes, which occur due to synchronization slips

5,512,939

LOW BIT RATE AUDIO-VISUAL COMMUNICATION SYSTEM HAVING INTEGRATED PERCEPTUAL SPEECH AND VIDEO CODING

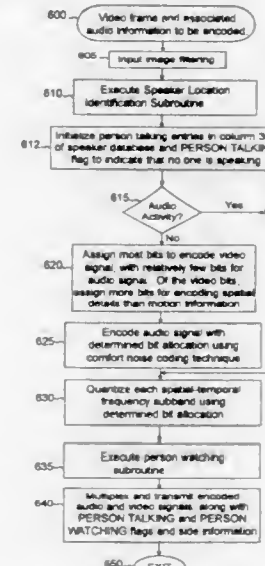
Yong Zhou, Washington Township, N.J., assignor to AT&T Corp., Murray Hill, N.J.

Filed Apr. 6, 1994, Ser. No. 223,903

Int. Cl. H04N 7/52

U.S. Cl. 348-17

11 Claims



1. A method of encoding audio and video signals with a number of available bits in an audio-visual communication system, said encoding method comprising the steps of:

- analyzing said audio signal to determine the content of said audio signal;
- analyzing said video signal to determine the content of said video signal and to locate a region of perceptual significance in said video signal;
- allocating said available bits among said audio and video signals based on the perceptual significance of said content of said audio and video signals to a user; and
- encoding said audio and video signals with said allocated bits.

5,512,940

IMAGE PROCESSING APPARATUS, ENDOSCOPE IMAGE SENSING AND PROCESSING APPARATUS, AND IMAGE PROCESSING METHOD FOR PERFORMING DIFFERENT DISPLAYS DEPENDING UPON SUBJECT QUANTITY

Kei Takasugi, and Kazunari Nakamura, both of Tokyo, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan
Filed Mar. 17, 1994, Ser. No. 214,202

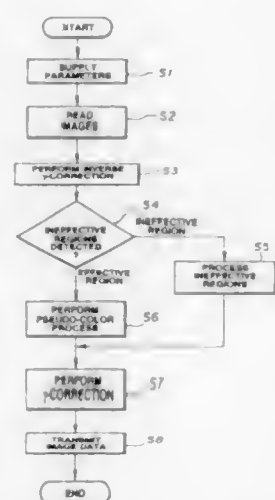
Claims priority, application Japan, Mar. 19, 1993, 5-060632; Apr. 1, 1993, 5-075821

Int. Cl. A61B 1/04; 1/06

U.S. Cl. 348-71

45 Claims

1. An image processing apparatus comprising: calculating means that subjects, to a predetermined calculation process, a plurality of image signals obtained by image sensing means by taking an image of a subject having light beams in a plurality of different wavelength regions to calculate a



subject quantity of said subject or a subject quantity caused from a medication dosed into said subject;
range setting means for setting a predetermined range of said subject quantity; and
display processing means for subjecting said image signals to a predetermined process in order to display, by different display methods, a portion of said image of said subject in which said subject quantity calculated by said calculating means is included in said predetermined range of said subject quantity and a portion of said image of said subject in which said subject quantity calculated by said calculating means is outside said predetermined range of said subject quantity.

5,512,941

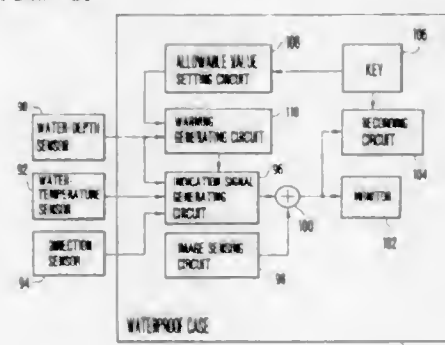
IMAGE SENSING APPARATUS

Kenji Takahashi, and Isao Harigaya, both of Kanagawa, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 664,323, Mar. 4, 1991, abandoned.
This application Jun. 24, 1994, Ser. No. 265,503

Int. Cl.⁶ H04N 7/18

U.S. Cl. 348—81

12 Claims



1. An image sensing apparatus comprising:
 - (a) image sensing means for outputting an image signal representative of a subject image;
 - (b) a direction sensor for measuring directions;
 - (c) indication signal generating means for generating an indication signal indicating a direction measured by said direction sensor;
 - (d) combining means for combining an output of said image sensing means and an output of said indication signal generating means;
 - (e) image displaying means for displaying an image represented by an output of said combining means, said image displaying means being integrally formed with said image sensing means; and
 - (f) recording means for recording the subject image on a recording medium.

5,512,942

ANOMALY SURVEILLANCE DEVICE

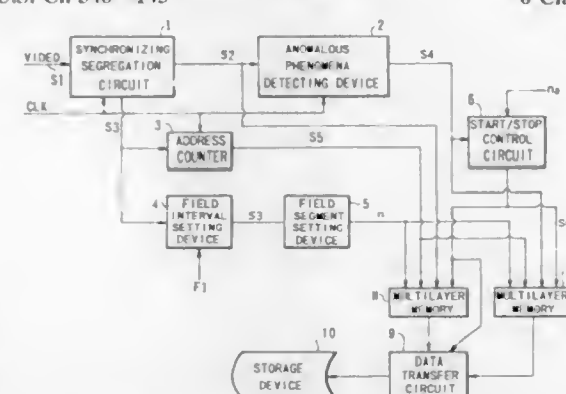
Akira Otsuki, Matsudo, Japan, assignor to Fujikura Ltd., and FMT Ltd., both of Tokyo, Japan

Filed Oct. 14, 1993, Ser. No. 135,618

Claims priority, application Japan, Oct. 29, 1992, 4-291798
Int. Cl.⁶ H04N 7/18

U.S. Cl. 348—143

6 Claims



1. An anomaly surveillance device comprising:
 - camera means for photographing a surveillance area and outputting a shot image as image data;
 - anomalous phenomena detecting means, connected to said camera means, for detecting an anomalous image from said image data output by said camera means and outputting said anomalous image as anomalous image data;
 - recording interval setting means, connected to said camera means, for setting a recording interval for said image data output by said camera means;
 - segment setting means, connected to said recording interval setting means, for setting a number of frames in which said image data output by said camera means and said anomalous image data output by said anomalous phenomena detecting means are to be recorded;
 - cycling address generating means, connected to said camera means and anomalous phenomena detecting means, for generating a cycling address in accordance with said number of frames selected by said segment setting means;
 - anomalous image recording means, connected to receive said anomalous image data output by said anomalous phenomena detecting means, consisting of primary frame memories for storing said number of frames set by said segment setting means, said anomalous image recording means sequentially recording said anomalous image data output by said anomalous phenomena detecting means in a frame memory indicated by said cycling address from among said primary frame memories, at each recording interval which is set by said recording interval setting means;
 - image storing means, connected to receive said image data output by said camera means, consisting of secondary frame memories storing said number of frames set by said segment setting means, said image storing means sequentially storing said image data output by camera means in a frame memory indicated by said cycling address from among said secondary frame memories, at each recording interval set by said recording interval setting means; and
 - control means for setting a number of valid frames of said primary frame memories in which said anomalous image data is to be recorded, with respect to said number of frames set by said segment setting means, said control means controlling an initiation and termination of storing of said anomalous image data by said anomalous image data recording means, and initiation and termination of storing of image data by said image storing means, in accordance with said number of valid frames, when an anomalous image is detected by said anomalous image detecting means.

5,512,943

VIDEO MONITOR CONTRAST REFERENCE GRAY SCALE APPARATUS AND METHOD OF USE THEREOF

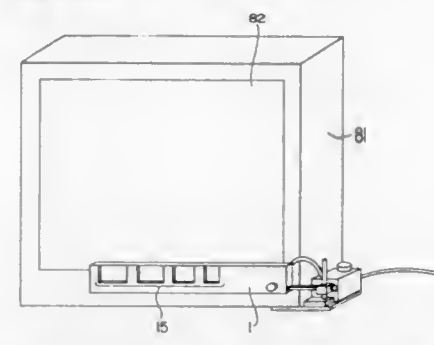
Volker W. Bahnmann, Greenwich, Conn., and Stanislaw Loth, Nanuet, N.Y., assignors to Arriflex Corporation, Blauvelt, N.Y.

Filed Apr. 14, 1994, Ser. No. 227,417

Int. Cl.⁶ H04N 17/00

U.S. Cl. 348—177

11 Claims



1. A video monitor contrast reference gray scale apparatus, comprising:
 - a reference gray scale housing;
 - a reference gray scale which comprises a plurality of fields which provide a contrast range on said reference gray scale;
 - a light source which is located inside said reference gray scale housing and which provides illumination to said reference gray scale; and
 - a power supply for providing power to said light source; wherein said reference gray scale is located in said reference gray scale housing, and further wherein said power supply provides power to said light source so as to provide illumination of said reference gray scale,
 wherein said apparatus further comprises:
 - a reference gray scale housing support means; and
 - at least one of an attachment and a locking means, wherein said reference gray scale housing is one of attached and locked to said housing support means by said one of said attachment and locking means, and further wherein said reference gray scale housing is one of adjustable and positionable at least one of vertically and horizontally.

5,512,944

PHASE SHIFTING DEVICE FOR VECTORSCOPE

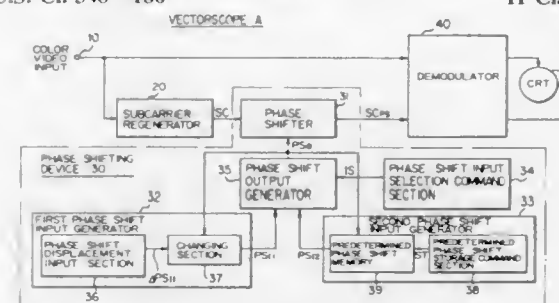
Kenzo Ikuzawa, and Yoshimichi Hika, both of Kanagawa, Japan, assignors to Leader Electronics Corporation, Kanagawa, Japan

Filed May 17, 1995, Ser. No. 443,191

Claims priority, application Japan, May 17, 1994, 6-102934
Int. Cl.⁶ H04N 17/02

U.S. Cl. 348—186

11 Claims



6. A phase shifting device including phase shift means for controlling the phase of an entire vector-displayed waveform displayed on a vectorscope, characterized by including:

predetermined phase shift input generator means for producing a predetermined phase shift input signal representative of a predetermined amount of phase shifting for application to said phase shift means.

5,512,945

STILL PICTURE RECORDING DIGITAL CAMERA

WHICH OUTPUTS A DYNAMIC PICTURE WHEN

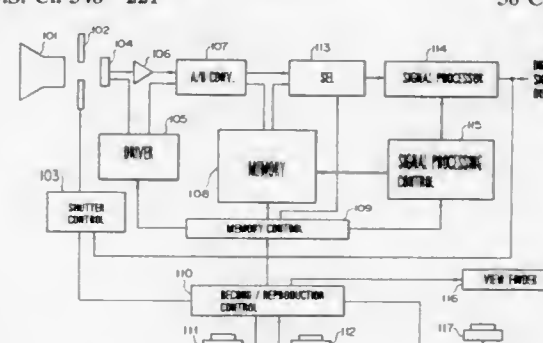
INCIDENT LIGHT IS LIMITED AND OUTPUTS A STILL PICTURE WHEN INCIDENT LIGHT IS INTERRUPTED
Hiroshi Sakurai; Hiroyasu Ohtsubo; Kouji Asada, all of Yokohama; Masaru Noda, Kanagawa; Noriyuki Iura, Yokohama; Takuya Imaide, Fujisawa; Junji Kamimura; Hiroyuki Komatsu, both of Yokohama, and Toshiro Kinugasa, Hiratsuka, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Dec. 10, 1993, Ser. No. 164,798

Claims priority, application Japan, Dec. 11, 1992, 4-331393;
Dec. 21, 1992, 4-339975

Int. Cl.⁶ H04N 5/225; 5/235

U.S. Cl. 348—221

38 Claims



5. A still picture recording digital camera comprising:
 - light quantity limiting means for interrupting incident light;
 - a pixel for converting incident light;
 - image pickup means for outputting a signal of said pixel as a digital image signal;
 - a signal processing means for generating a digital image signal having a predetermined format; and
 - recording means for storing a digital signal of a still picture outputted from said image pickup means or said signal processing means;
 wherein said light quantity limiting means interrupts incident light after limiting said incident light to a predetermined amount, said image pickup means outputs a digital signal of a dynamic picture when said light quantity limiting means is limiting the incident light and outputs a digital signal of a still picture after said light quantity limiting means has interrupted the incident light to said signal processing means or to said recording means, said signal processing means performs a different signal processing operation when said signal processing means receives the digital signal of said still picture and when said signal processing means receives the digital signal of said dynamic picture, said recording means records the digital signal of said still picture supplied from said image pickup means and said signal processing means to output said recorded digital signal of said still picture through said signal processing means or without processing of said signal processing means.

5,512,946

DIGITAL VIDEO SIGNAL PROCESSING DEVICE AND TV CAMERA DEVICE ARRANGED TO USE IT

Nobuo Murata, Musashino, and Yasuo Yoshimura, Hachioji, both of Japan, assignors to Hitachi Denshi Kabushiki Kaisha, Tokyo, Japan

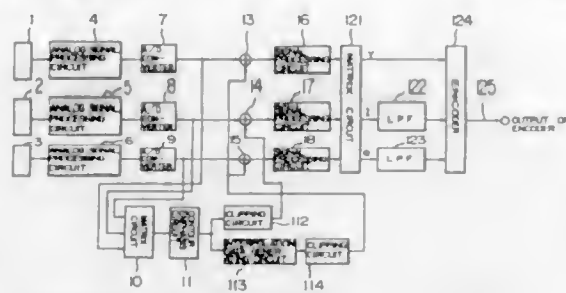
Filed Jan. 30, 1995, Ser. No. 380,703

Claims priority, application Japan, Jan. 31, 1994, 6-010046; Jan. 31, 1994, 6-010047

Int. Cl.⁶ H04N 5/228

U.S. Cl. 348—222

7 Claims



1. A TV camera device comprising:

digital contour emphasis means for generating a digital contour emphasis signal from digitized video signals;

first clipping means for clipping said digital contour emphasis signal to a predetermined upper limit value or lower limit value and providing an output thereof;

interpolation data generating means for generating interpolation data at an intermediate point between adjacent sampling points from said digital contour emphasis signal;

second clipping means for clipping said interpolation data to said predetermined upper limit value or lower limit value and providing an output thereof;

first adding means for adding one of the outputs from said first and second clipping means to a G signal of said digitized video signals; and

second adding means for adding the other of the outputs from said first and second clipping means to R and B signals of said digitized video signals.

5,512,947

VIDEO CAMERA

Yoshiaki Sawachi, and Masanori Yoshida, both of Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

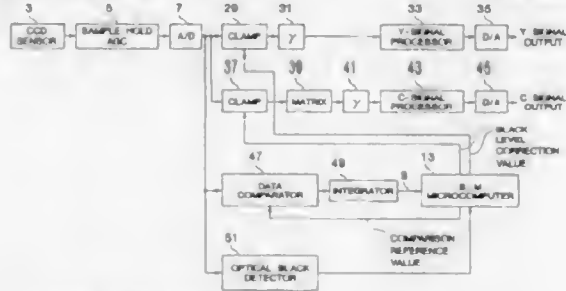
Filed Mar. 30, 1994, Ser. No. 220,169

Claims priority, application Japan, Mar. 31, 1993, 5-074261

Int. Cl.⁶ H04N 5/232

U.S. Cl. 348—243

30 Claims



1. A video camera comprising:

A/D conversion means for converting analog video signals obtained from a camera device to digital video signals;

clamp means for clamping a black level of the digital video signals at a black level correction value;

sampling means for sampling a brightness of the digital video signals to obtain brightness samples;

comparison means for comparing the brightness samples with a reference value at predetermined intervals;

a counter for counting a number of times S that the brightness samples are lower, during the predetermined intervals, than the reference value;

determination means for determining whether the number of times S is more or less than a predetermined number of times B;

reference value updating means for increasing the reference value of said comparison means by a predetermined value to be a next updated reference value when S is determined to be less than of B, $S < B$; and

black level correction value setting means for setting said black level correction value according to the reference value when S is determined to be not less than B, $S \geq B$, and providing said clamp means with said black level correction value.

5,512,948

NEGATIVE-IMAGE SIGNAL PROCESSING APPARATUS

Satoshi Iwamatsu, Tokyo, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Division of Ser. No. 267,763, Jul. 5, 1994, which is a continuation of Ser. No. 746,365, Aug. 16, 1991, abandoned. This application May 24, 1995, Ser. No. 449,544

Claims priority, application Japan, Aug. 28, 1990, 2-224364; Aug. 28, 1990, 2-224365; Aug. 28, 1990, 2-224366; Sep. 21, 1990, 2-250077

Int. Cl.⁶ H04N 5/202

U.S. Cl. 348—255

10 Claims



1. A variable-gamma correction circuit for use in an image processing apparatus comprising:

a gamma correction circuit having an input/output characteristic which, up to a fixed input range, is represented by an exponential curve for a gamma correction, and which, in a range beyond the fixed input range, is represented by a KNEE curve having a slope smaller than that of the exponential curve; and variable-gain amplifier circuits connected in front of and in back of said gamma correction circuit for adjusting the used range of the input/output characteristic curve in said gamma correction circuit.

5,512,949

MULTIPLE BEAM RASTER OUTPUT SCANNER OPTICAL SYSTEM HAVING TELECENTRIC CHIEF EXIT RAYS

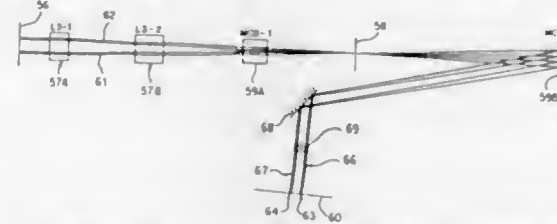
Tibor Fisl, Los Altos Hills, and David A. Grafton, Santa Monica, both of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 29, 1993, Ser. No. 174,917

Int. Cl.⁶ B41J 2/47

U.S. Cl. 347—259

30 Claims



1. A raster output scanner optical system for a printing apparatus, the optical system comprising:

at least one light emitting device, each light emitting device emitting at least one light beam;

a photoreceptor;

5,512,951

AUTO-FOCUSING APPARATUS

Reiko Torii, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 66,584, May 25, 1993, abandoned.

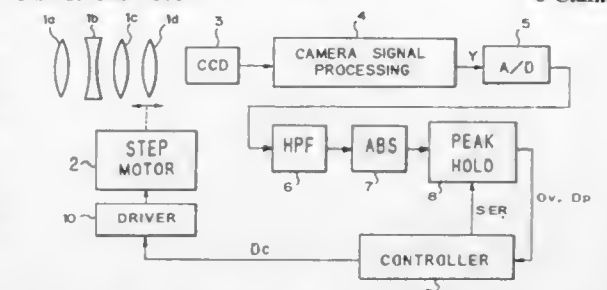
This application Jan. 11, 1995, Ser. No. 371,481

Claims priority, application Japan, Jun. 2, 1992, 4-141468

Int. Cl.⁶ H04N 5/232

U.S. Cl. 348—353

6 Claims



1. An auto-focusing apparatus which obtains an evaluation value from a contrast component of a video signal representing an image on a screen, and which performs a focus adjustment of a focus lens so that the evaluation value will be at a maximum value, comprising:

measurement frame setting means for setting a first frame and a second frame which are substantially centered at the center of said screen with said second frame being smaller than said first frame;

evaluation value generating means for obtaining a first evaluation value and a second evaluation value from a first position in said first frame and from a second position in said second frame, respectively;

means for detecting whether said second evaluation value is generated;

means responsive to the absence of said second evaluation value for setting a third frame, wherein said third frame is offset from the center of said screen and excludes a portion of the screen surrounding said first position for which said first evaluation value is based, and for generating a third evaluation value from said third frame;

means also responsive to the absence of said second evaluation value for selecting either said first evaluation value or said third evaluation value whichever is based on a position nearer to the center of said screen; and

means for effecting said focus adjustment based on said second evaluation value when detected or, in the absence of said second evaluation value, based on the selected first or third evaluation value.

5,512,950

SOLID STATE IMAGER DEVICE AND DRIVING METHOD THEREOF

Takashi Watanabe, Soraku, and Akihira Tokuno, Higashiosaka, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Aug. 10, 1994, Ser. No. 288,462

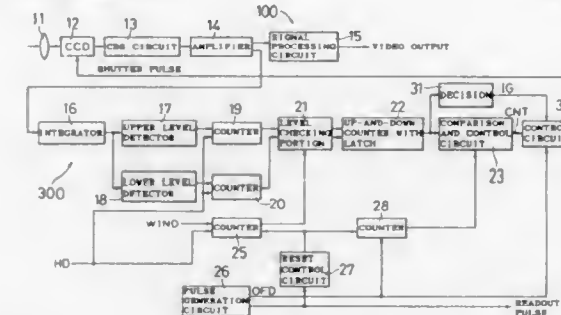
Claims priority, application Japan, Oct. 8, 1993, 5-252801;

Mar. 17, 1994, 6-047405

Int. Cl.⁶ H04N 5/335

U.S. Cl. 348—297

5 Claims



1. A driving method of solid state imager device having a first layer of a second conductivity type formed on a semiconductor substrate of a first conductivity type and a light receiving portion formed on a surface side of the first layer, which comprises

controlling an exposure time by applying a predetermined voltage to the semiconductor substrate and sweeping out a signal charge accumulated in the light receiving portion into the semiconductor substrate,

wherein, on the assumption that an effective exposure period is a period ranging from last application of the predetermined voltage to the semiconductor substrate to reading out the signal charge accumulated in the light receiving portion, an application period of the predetermined voltage to the semiconductor substrate exists only within a horizontal blanking period when the effective exposure period is beyond a vertical blanking period, and the application period of the predetermined voltage to the semiconductor substrate covers the entire effective horizontal scanning period in the vertical scanning period when the effective exposure period is within the vertical blanking period.

5,512,952

PICTURE SIGNAL ENCODING AND/OR DECODING APPARATUS

Ryuichi Iwamura, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 942,927, Sep. 10, 1992, abandoned.

This application Aug. 12, 1994, Ser. No. 289,999

Claims priority, application Japan, Sep. 20, 1991, 3-270286; Sep. 20, 1991, 3-270393; Sep. 27, 1991, 3-277312

Int. Cl.⁶ H04N 7/50

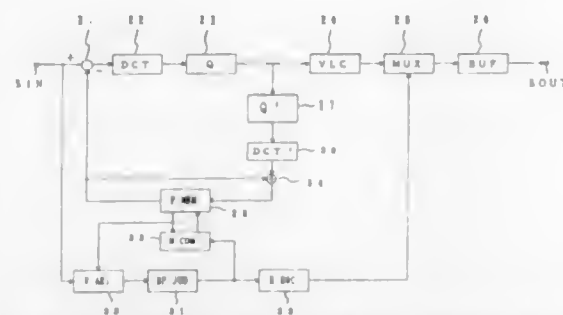
U.S. Cl. 348—416

19 Claims

1. Apparatus for compressing a motion picture signal, the motion picture signal being divided into blocks including a current block, the apparatus comprising:

motion detecting means for segmenting the current block into subblocks numbering at least four, and for calculating, from a prediction picture and each of the subblocks constituting the current block, a motion vector for each of the subblocks constituting the current block;

subtracting means for subtracting the current block from a prediction block of the prediction picture to provide a prediction error block;



means for orthogonally transforming the prediction error block to provide transform coefficients;

means for quantizing the transform coefficients to provide quantized transform coefficients;

means for coding the quantized transform coefficients to provide coded quantized transform coefficients;

local decoding means for locally decoding the quantized transform coefficients to provide a block of an additional prediction picture;

representative motion vector generating means, operating when a difference between motion vectors of at least two of the subblocks constituting the current block, is below a predetermined threshold, for generating, from the motion vectors of the subblocks constituting the current block, at least one or more representative motion vectors, a single one of said at least one or more representative motion vectors representing said motion vectors below the predetermined threshold, said at least one or more representative motion vectors collectively representing the motion vectors of all the subblocks constituting the current block, the representative motion vector generating means generating fewer representative motion vectors than a number of subblocks constituting the current block; and

motion compensating means for producing the prediction block from the prediction picture, the prediction block being constituted of a prediction subblock corresponding to each of the subblocks constituting the current block, the motion compensating means producing each prediction subblock by applying motion compensation to the prediction picture in response to a motion vector derived from the prediction subblock from the at least one or more representative motion vectors.

5,512,953

METHOD AND APPARATUS FOR CONVERSION OF COMPRESSED BIT STREAM REPRESENTATION OF VIDEO SIGNAL

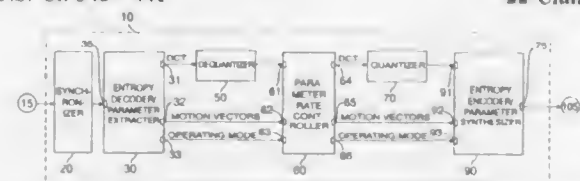
Dror Nahumi, Wayside, N.J., assignor to AT&T Corp., Murray Hill, N.J.

Filed Aug. 9, 1994, Ser. No. 287,990

Int. Cl.⁶ H04N 7/01; 7/015; 7/26

U.S. Cl. 348-441

22 Claims



1. A method for converting a first compressed bit stream representation of a video signal that is encoded using a first video transmission standard to a second compressed bit stream representation of the video signal that is encoded using a second video transmission standard, comprising the steps of:

receiving the first compressed bit stream,

wherein said first compressed bit stream is comprised of a plurality of entropy encoded bits that is encoded using the first video transmission standard;

identifying a plurality of bits in the first compressed bit stream which comprise a reference and an incoming image frame;

entropy decoding the plurality of bits;

converting the plurality of bits to a plurality of bits encoded using the second video transmission standard; and,

entropy encoding the converted plurality of bits to form the second compressed bit stream representation of the reference and the image frame.

5,512,954

TELEVISION RECEIVER WITH DECODER FOR DECODING CODED DATA FROM A VIDEO SIGNAL

Peter Shintani, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

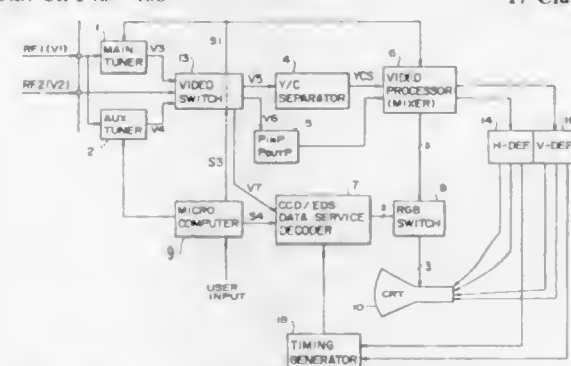
Filed Sep. 27, 1994, Ser. No. 312,587

Claims priority, application Japan, Sep. 27, 1993, 5-263006

Int. Cl.⁶ H04N 5/45

U.S. Cl. 348-468

17 Claims



10. A television circuit, comprising in combination:

a television receiver having at least three video signal sources for receiving first, second and third video signals;

a first tuner producing said first video signal;

a second tuner producing said second video signal;

means for receiving said third video signal from an external video source;

a closed caption/extended data services decoder for extracting and decoding coded data as closed caption data or extended data services data from said video signals;

a multiple picture processor for producing a secondary picture, based on a first selected one of said first, second and third video signals, to be merged with a main picture, based on a second selected one of said first, second and third video signals, for display on a video display;

a video processing circuit for receiving said video signals and processing said video signals for display on said video display; and

switching means for receiving said first, second and third video signals and supplying a third selected one of said first, second and third video signals to said decoder for extracting and decoding said coded data, for supplying said second selected one of said first, second and third video signals to said video processing circuit, and for supplying said first selected one of said first, second and third video signals to said multiple picture processing circuit,

wherein said main picture, said secondary picture and said coded data, extracted from said third selected one of said video signals, are combined so as to be displayed simultaneously on the video display.

5,512,955

A TV RECEIVER FOR RECEIVING A BROADCAST SIGNAL AND STATION INFORMATION

Kenichiro Toyoshima, and Hirofumi Usui, both of Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan

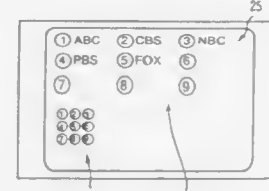
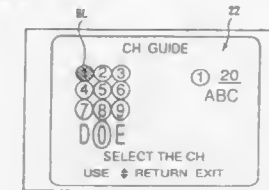
Filed Dec. 29, 1994, Ser. No. 366,354

Claims priority, application Japan, Dec. 31, 1993, 5-350425

Int. Cl.⁶ H04N 5/50

U.S. Cl. 348-569

10 Claims



1. A method for entering channel representative information provided by a broadcasting signal that has been received by a television signal receiving apparatus and setting a plurality of channels in response thereto, comprising:

a first step for initiating channel setting by a CPU contained in said television signal receiving apparatus in response to an initiating signal;

a second step for setting a start channel number in a counter;

a third step for selecting a channel from the broadcast signal in accordance with the channel number in the counter;

a fourth step for judging whether the selected channel is an active channel;

a fifth step for extracting an information signal from the selected channel if the selected channel has been judged active in the prior step; and

a sixth step for writing information represented by the information signal and the channel number of the selected channel to a memory.

5,512,956

ADAPTIVE SPATIAL-TEMPORAL POSTPROCESSING FOR LOW BIT-RATE CODED IMAGE SEQUENCES

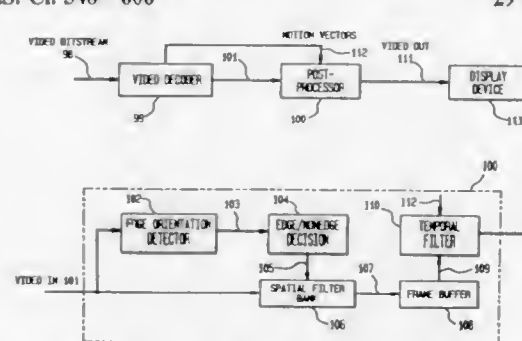
Li Yan, Holmdel, N.J., assignor to AT&T Corp., Murray Hill, N.J.

Filed Feb. 4, 1994, Ser. No. 191,685

Int. Cl.⁶ H04N 5/213

U.S. Cl. 348-606

29 Claims



1. A filtering system for reducing artifacts in motion video sequences generated by block-based motion-compensated transform coding from a video decoder, comprising:

a postprocessor connected to said video decoder, said postprocessor including: an edge orientation detector; a spatial filter

bank, said spatial filter bank being configured to receive information from said edge orientation detector, said filter bank comprising a one-dimensional filter utilizing said information to generate spatially filtered video sequences; and a motion-compensated temporal filter, said motion-compensated temporal filter receiving spatially filtered video sequences generated by said spatial filter bank, said motion-compensated temporal filter being configured to generate temporally filtered video sequences from said spatially filtered video sequences; and

a frame memory in communication with said spatial filter bank, said frame memory being arranged to receive spatially filtered video sequences from said spatial filter bank.

14. A system for filtering decoded noise-contaminated signals for video communication, comprising:

a computer processor;

means for filtering spatial artifacts from decoded noise-contaminated signals, said means for filtering spatial artifacts comprising an edge detector and a one-dimensional filter;

means for storing signals from said decoded noise-contaminated signals for at least a current frame, a prior frame and a future frame;

means for calculating a best matching frame from said prior frame and a motion-compensated frame;

means for calculating an intermediate weighted average frame from said current frame and a best matching frame such that the motion-compensated frame is given less weight as the difference between said intermediate weighted average frame and said motion-compensated frame increases; and

means for calculating a filtered frame from a weighted average of the intermediate weighted average current frame and said future frame, such that said future frame is given less weight as the difference between said intermediate weighted average current frame and said future frame increases.

21. A method of processing and displaying decoded video image sequence signals generated by block-based motion-compensated transform coding, comprising the steps of:

detecting the edge orientation of a pixel of said video image sequences;

filtering spatial artifacts from said video image sequences using a one-dimensional filter for pixels determined to have an orientation in an edge region of said video sequence signals;

storing at least a current frame, an adjacent prior frame and an adjacent future frame from said video image sequence signals;

calculating a temporally filtered frame from a weighted average of said adjacent future frame, said current frame and a motion-compensated adjacent prior frame; and

displaying said temporally filtered frame.

5,512,957

METHOD AND APPARATUS FOR COMBATING CO-CHANNEL NTSC INTERFERENCE FOR DIGITAL TV TRANSMISSION

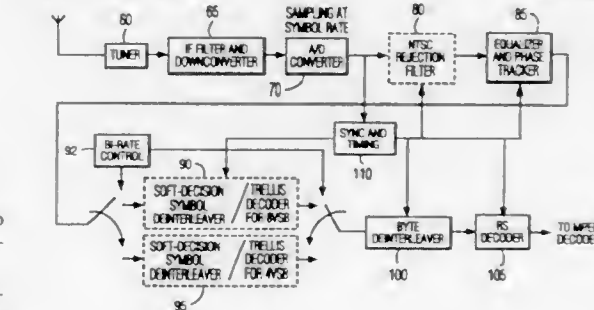
Samir N. Hulyalkar, White Plains, N.Y., assignor to Philips Electronics North America Corp., New York, N.Y.

Continuation-in-part of Ser. No. 197,773, Feb. 10, 1994. This application Apr. 20, 1994, Ser. No. 230,360

Int. Cl.⁶ H04N 5/455

U.S. Cl. 348-607

9 Claims



1. A filtering system for reducing artifacts in motion video sequences generated by block-based motion-compensated transform coding from a video decoder, comprising:

a postprocessor connected to said video decoder, said postprocessor including: an edge orientation detector; a spatial filter

1. A television receiver comprising:
means for receiving a transmitted signal having an encoded digital television signal component encoded using a subset limited trellis code, and a co-channel interference component;
means for flattening the frequency spectrum of the co-channel interference component to produce a filtered encoded digital television signal from the transmitted signal, said means for flattening including a prediction filter having predetermined coefficients; and
decoder means for decoding the filtered encoded digital television signal.

8. A television receiver comprising:
means for receiving a transmitted signal having an encoded digital television signal component encoded using a subset limited code which has had its symbols interleaved at a transmitter and a co-channel interference component;
means for flattening the frequency spectrum of the co-channel interference component to produce a filtered encoded digital television signal from the transmitted signal, said means for flattening including a prediction filter having predetermined coefficients;
symbol de-interleaving means for de-interleaving the symbols of the filtered encoded digital television signal to produce a de-interleaved digital television signal; and
decoder means for decoding the de-interleaved digital television signal.

5,512,958 SYSTEM FOR CONTROLLING THE EFFECTS OF NOISE IN TELEVISION RECEIVERS

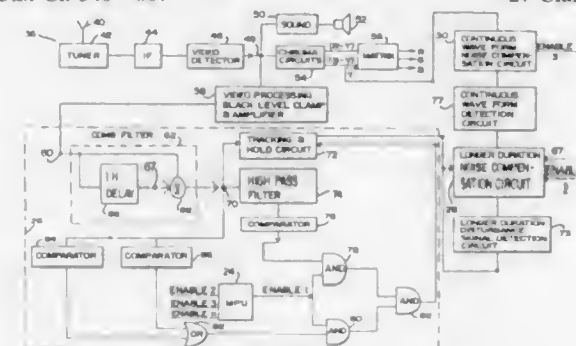
Theodore S. Rzeszewski, Lombard, Ill., assignor to Matsushita Electric Corporation of America, Franklin Park, Ill.

Filed Apr. 29, 1994, Ser. No. 235,500

Int. Cl.⁶ H04N 5/21

U.S. Cl. 348—607

27 Claims



1. A circuit for controlling the effects of noise signals in television receivers, the circuit comprising:
input circuitry that receives an RF television signal and generates a composite baseband signal;
at least one noise compensation circuit that receives said composite baseband signal and compensates for noise in said composite baseband signal; and
a user-controlled control circuit, coupled to said at least one noise compensation circuit, and capable of selectively enabling said at least one noise compensation circuit.

5,512,959 METHOD FOR REDUCING ECHOES IN TELEVISION EQUALIZER VIDEO SIGNALS AND APPARATUS THEREFOR

Viviana D'Alto, Milan; Fabrizio Airolidi, Feriolo di Baveno; Fabio Scalise, and Maria G. Podestà, both of Milan, all of Italy, assignors to SGS-Thomson Microelectronics, S.r.l., Agrate Brianza, Italy

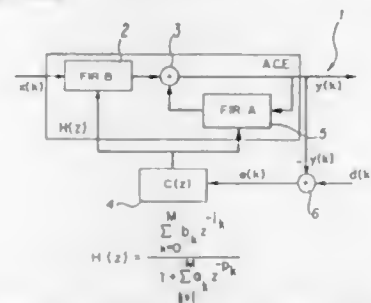
Filed Jun. 8, 1994, Ser. No. 255,436

Claims priority, application European Pat. Off., Jun. 9, 1993, 93832053

Int. Cl.⁶ H04N 5/21

U.S. Cl. 348—614

20 Claims



1. An adaptive method for suppressing video signal echoes in a television equalizer including digital filters having coefficients which are updated in an adaptive and iterative manner using a modified least mean square (LMS) algorithm until an output error signal is gradually reduced, the output error signal being a difference between a reference output signal and an actual output signal from the equalizer, the method comprising the steps of:

- receiving an input signal;
- computing a difference between the input signal and the reference output signal;
- processing the input signal using the LMS algorithm having a variable convergence factor for a predetermined number of iterations;
- processing the input signal by applying a combing technique to a filter having K*N coefficients in order to select K comb filters having N coefficients each;
- applying the LMS algorithm having a variable convergence factor to each comb filter for a predetermined number of iterations;
- collecting resulting configurations of the comb filter coefficients and selecting a subfilter with N largest modulo coefficients;
- updating values of the N selected coefficients by reiterating the LMS algorithm with variable convergence factor to the subfilter for a limited number of iterations;
- clearing all of the coefficients with a lower modulo value than a predetermined threshold value;
- selecting a group of F coefficients by reiterating the LMS algorithm with variable convergence factor until the output error signal becomes smaller than a predetermined value; and
- processing the input signal using the F coefficients provided by step (j).

5,512,960 ADAPTIVE TYPE COLOR DEMODULATION APPARATUS FOR PAL SYSTEM

Takahisa Hatano, Sapporo, Japan, assignor to Mitsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Mar. 31, 1995, Ser. No. 414,440

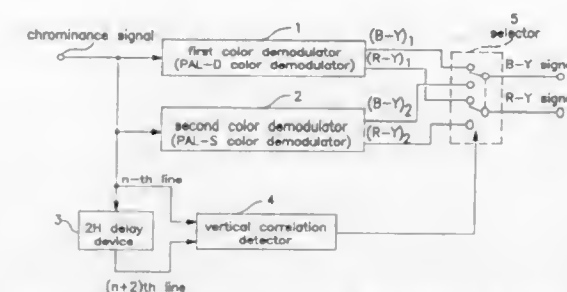
Claims priority, application Japan, Mar. 31, 1994, 6-061916

Int. Cl.⁶ H04N 9/66

U.S. Cl. 348—640

14 Claims

1. An adaptive type color demodulation apparatus for a PAL system transmission having a plurality of scanning lines, each of said scanning lines having a PAL system chrominance signal, said adaptive type color demodulation apparatus comprising:



first color demodulation means for demodulating the PAL system chrominance signal using at least two scanning lines of the plurality of scanning lines and for producing a first output signal;
second color demodulation means for demodulating the PAL system chrominance signal from at least one of the plurality of scanning lines to produce a second output signal;
vertical correlation detecting means for detecting a vertical correlation between two PAL system chrominance signals separated by two horizontal periods to produce a detected result; and
selecting means for selecting one of the first output signal of said first color demodulation means and the second output signal of said second color demodulation means in response to the detected result of said vertical correlation detecting means.

5,512,961 METHOD AND SYSTEM OF ACHIEVING ACCURATE WHITE POINT SETTING OF A CRT DISPLAY

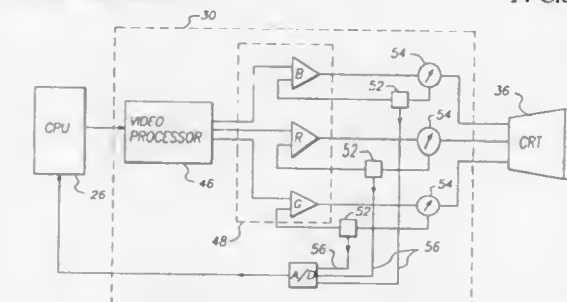
Richard D. Capps, Sr., San Jose, Calif., assignor to Apple Computer, Inc., Cupertino, Calif.

Filed Mar. 24, 1993, Ser. No. 36,349

Int. Cl.⁶ H04N 9/31

U.S. Cl. 348—658

14 Claims



1. A calibration system for accurately displaying color images on a computer display, comprising:
processor means external to the computer display for generating color digital video signals;
control means external to the computer display and connected to the processor means for receiving digital video signals and responsively generating analog video signals;
display means, including amplifier means and electrode means, coupled to the control means for receiving said analog video signals and responsively amplifying said analog video signals to produce analog voltages and displaying video images;
current sensing means coupled between the amplifier means and the electrode means, for measuring beam currents resulting from the analog voltages and generating beam current measurements;
color measurement means for generating tristimulus value measurements of the displayed images, and for transmitting the tristimulus value measurements to the processor means which divides the tristimulus value measurements by the beam current measurements to obtain normalized tristimulus value measurements; and

memory means connected to the processor means for storing the normalized tristimulus value measurements and the current measurements transmitted by the color measurement means.

5,512,962 MOTION VECTOR DETECTING APPARATUS FOR MOVING PICTURE

Hideki Homma, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Continuation of Ser. No. 248,239, May 24, 1994, abandoned.

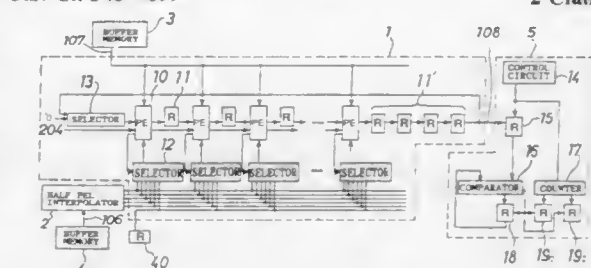
This application Jul. 5, 1995, Ser. No. 498,191

Claims priority, application Japan, May 25, 1993, 5-144422

Int. Cl.⁶ H04N 7/28

U.S. Cl. 348—699

2 Claims



1. A motion vector detection apparatus for a moving picture wherein each frame of a moving picture composed of a plurality of successive moving picture frames is divided into a plurality of blocks each including a plurality of picture elements and a correlation value between an image in a certain block in a present frame and an image in a reference frame different from the present frame is calculated to estimate a motion vector of the moving picture, comprising:

- a first storage means for storing data of picture elements of a search area within the reference frame;
- a second storage means for storing data of picture elements of an object block for motion vector detection in the present frame;
- a half picture element interpolation circuit comprising a plurality of output sections for computing interpolated data by interpolating half picture elements in horizontal and vertical directions into the data of picture elements stored in said first storage means, supplying said interpolated data to said plurality of output sections, and outputting said interpolated data in parallel from said plurality of output sections;
- a motion vector detection circuit including M, serially connected stages, each of said stages comprises a processor element, each of said processor elements including picture element selection means for selecting data of picture elements from said output sections of said half picture element interpolation circuit, absolute value calculation means for calculating absolute values of differences between the picture element data selected by said picture element selection means and picture element data read out from said second storage means, and addition means for adding the absolute values from said absolute value calculation means, said addition means of said processor elements successively accumulating the absolute values of the differences to produce a sum total of the absolute values, said sum total being outputted from the processor element at the last stage of said motion vector detection circuit; and
- a minimum value detector for detecting a minimum value of the output of said motion vector detection circuit and outputting the value of a candidate vector which corresponds to the thus detected minimum value as a motion vector.

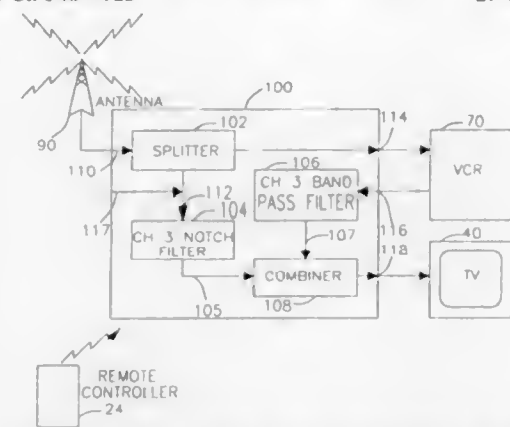
5,512,963

APPARATUS AND METHODS FOR PROVIDING COMBINING MULTIPLE VIDEO SOURCES

Roy J. Mankovitz, 18057 Medley Dr., Encino, Calif. 91316
Filed Jan. 5, 1995, Ser. No. 369,532

Int. Cl.⁶ H04N 5/44

U.S. Cl. 348—725 27 Claims



1. An apparatus for connecting video components, the apparatus comprising:

means for notch filtering frequencies of a first channel from a first video source, the first video source having a plurality of channels, to form a notch filter output having each of the plurality of channels except the frequencies of the first channel;

means for bandpass filtering a second video source to pass only frequencies in a second channel in the second video source having the same frequencies as the frequencies of the first channel to form a bandpass filter output; and

means for summing the notch filter output and the bandpass filter output to form a summed output.

5,512,964

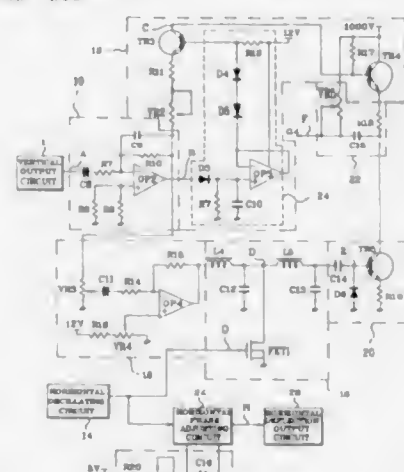
DYNAMIC FOCUSING CIRCUIT HAVING A PSEUDO HORIZONTAL OUTPUT CIRCUIT TO ELIMINATE PHASE DEVIATION IN A FOCUS SIGNAL

Kang H. Kim, Seoul, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Seoul, Rep. of Korea
Filed Apr. 5, 1994, Ser. No. 223,283

Claims priority, application Rep. of Korea, Apr. 16, 1993, 93-6388

Int. Cl.⁶ H04N 3/26

U.S. Cl. 348—806 7 Claims



1. A dynamic focusing circuit generating a dynamic focus signal by use of a sawtooth wave signal generated from a vertical output

circuit and a rectangular wave signal generated from a horizontal oscillating circuit, said dynamic focusing circuit comprising:

a vertical parabola wave output circuit for generating a vertical parabola wave signal after integrating and amplifying said sawtooth wave signal and eliminating a DC component from said sawtooth wave signal;

a first amplifying circuit for amplifying said vertical parabola wave signal;

a vertical-modulating and horizontal-size-adjusting circuit for modulating amplitude of said vertical parabola wave signal by comparing said vertical parabola wave signal with a predetermined variable reference voltage;

a pseudo horizontal output circuit for generating a pseudo horizontal wave signal whose amplitude is determined by a level of said variable reference voltage, wherein a wave signal formed by said rectangular wave signal is mixed with a wave signal supplied by said vertical-modulating and horizontal-size-adjusting circuit and thereby said rectangular wave signal is combined with said vertical parabola wave signal;

a second amplifying circuit for amplifying said pseudo horizontal wave signal;

a focus signal output circuit for varying DC voltage level of a dynamic focus signal consisting of a vertical frequency component generated from said first amplifying circuit and a horizontal frequency component generated from said second amplifying circuit;

a horizontal phase control circuit for controlling phase of said rectangular wave signal; and

a duty adjusting circuit coupled to said horizontal phase control circuit for varying duty of said rectangular wave signal.

5,512,965

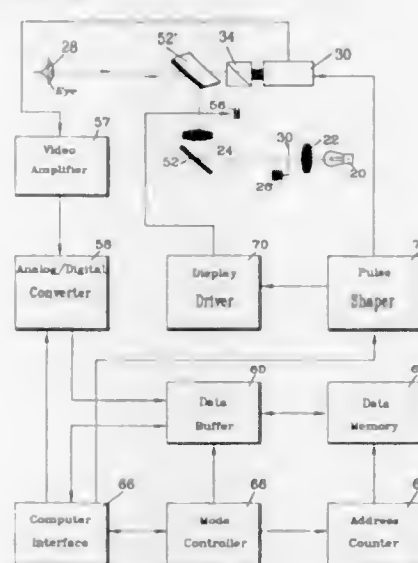
OPHTHALMIC INSTRUMENT AND METHOD OF MAKING OPHTHALMIC DETERMINATIONS USING SCHEIMPLUG CORRECTIONS

Richard K. Snook, Tucson, Ariz., assignor to Orbtek, Inc., Salt Lake City, Utah

Continuation-in-part of Ser. No. 80,497, Jun. 24, 1993. This application Oct. 26, 1994, Ser. No. 329,238

Int. Cl.⁶ A61B 3/10

U.S. Cl. 351—205 25 Claims



1. An ophthalmic instrument for aiding in determining one or more physical characteristics of the anterior segment of the eye, comprising:

a) light projector means including a slit means for illuminating a defined area of the cornea;

b) means for making Scheimplug corrections with respect to the illuminated area of the cornea to obtain correct plane of focus;

c) imaging means for providing a television image of selected portions of the illuminated area of the eye as illuminated by the projector means;

d) means cooperatively located with respect to the projector means for receiving the image of the selected portions of the eye and for generating and transmitting signals representative of the image of the eye in digital format;

e) analysis means receiving the signals representative of the image for detecting and storing relative brightness levels within the defined area and which brightness levels are directly correlated to the one or more physical characteristics to be determined.

5,512,966

OPHTHALMIC PACHYMER AND METHOD OF MAKING OPHTHALMIC DETERMINATIONS

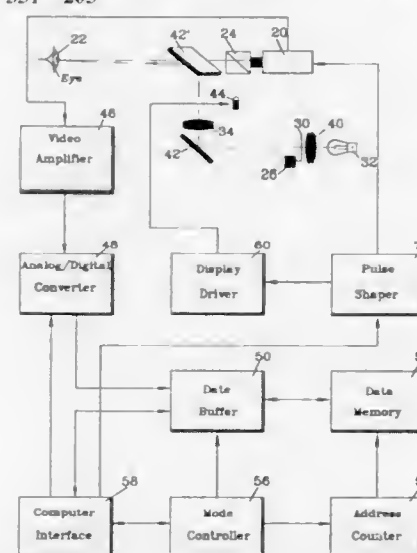
Richard K. Snook, Houston, Tex., assignor to Orbtek, Inc., Utah

Continuation of Ser. No. 80,497, Jun. 24, 1993, abandoned.

This application Apr. 10, 1995, Ser. No. 418,563

Int. Cl.⁶ A61B 3/10

U.S. Cl. 351—205 48 Claims



1. An ophthalmic pachymeter for aiding in determining one or more physical characteristics of the anterior segment of the eye, comprising:

a) light projector means including a slit means for illuminating defined areas of the cornea;

b) imaging means for providing a television image of selected portions of the illuminated areas of the eye as illuminated by the projector means;

c) means for causing a movement of the slit means relative to the anterior segment of the eye to obtain a series of selected images of the eye;

d) video means cooperatively located with respect to the projector means for receiving the images of the selected portions of the eye and for generating and transmitting a video signal representative of the images of the eye;

e) converter means for converting portions of the video signal into digital format; and

f) an analysis means for detecting and storing relative brightness levels within the defined areas and which brightness levels are directly correlated to the one or more physical characteristics to be determined.

5,512,967

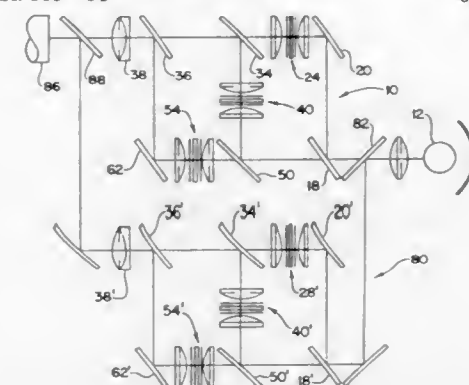
PROJECTOR

William K. Bohannon, San Diego, Calif., assignor to Proxima Corporation, San Diego, Calif.

Filed Sep. 28, 1993, Ser. No. 128,548

Int. Cl.⁶ G03B 21/00

U.S. Cl. 353—31 69 Claims



65. In a combination for providing an image for projection, first means for providing light,

second means for pre-polarizing the light in a particular plane,

third means for providing for the pre-polarized light a plurality of paths each receiving the pre-polarized light in a particular range of wavelengths, each of the paths including an individual one of a plurality of mirrors and an individual one of a plurality of dichroic means,

a plurality of fourth means each including a liquid display panel for selectively modulating the range of wavelength components in individual ones of the different paths, and

fifth means for combining the pre-polarized light in the different paths after the selective modulation of the ranges of wavelengths in such paths by the individual ones of the liquid crystal display panels in such paths,

the mirrors, the dichroic means and the liquid crystal display panels having particular dispositions relative to one another to provide equal distances between the first and fifth means in the different paths and individual one of the mirrors, the dichroic means and the liquid display means being changed from such particular dispositions to enhance the compactness of the combination without materially affecting the quality of the image provided by the fifth means in accordance with the selective modulations of the individual wave length components in the different paths,

the pre-polarizer means being operative to split the pre-polarized light into two parts,

the third, fourth and fifth means being operative on one part of the light, and

means for processing the other part of the light independently of the operation of the third, fourth and fifth means.

5,512,968

MULTIPLE PROJECTION TELEVISION SYSTEM

Kanehiro Hagiwara; Yasushi Ichihara; Mitsuyoshi Mitake; Takashi Furuno; Saori Kishida; Jun Iizuka, and Youichi Fujikawa, all of Tokyo, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Jun. 2, 1995, Ser. No. 458,815

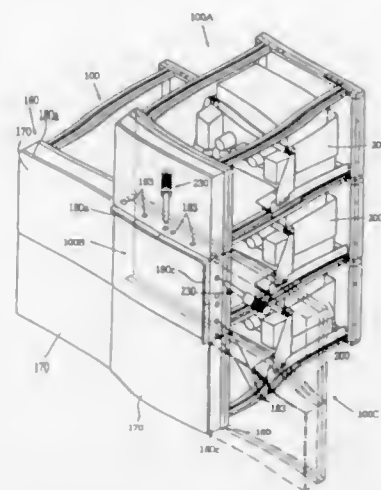
Claims priority, application Japan, Aug. 6, 1994, 6-126622; Aug. 6, 1994, 6-126623

Int. Cl.⁶ G03B 21/00

U.S. Cl. 353—094 6 Claims

1. A multiple projection television system comprised of a plurality of projection units stacked in matrix to form a large television screen, comprising:

each of the projection units having a cabinet, a projector provided in the cabinet, and a screen secured to a front portion of the cabinet;



- a mounting frame provided in the cabinet for slidably mounting the projector for movement in forward and rearward directions;
- a back of the cabinet being opened so as to allow removing of the projector from the cabinet; and the screen being detachably secured to the cabinet so as to allow removing of the projector from the cabinet.

5,512,969

WATER-RESISTANT CAMERA HOUSING

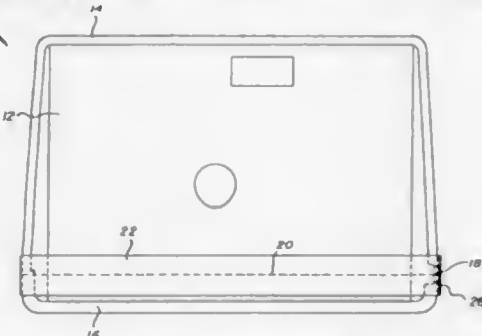
Clark E. Harris, Fairport, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 14, 1995, Ser. No. 388,072

Int. Cl.⁶ G03B 17/08

U.S. Cl. 354-64

2 Claims



1. A water-resistant camera housing comprising a pair of housing sections, and a waterproof sealing band covering a seam between said housing sections to provide a water-resistant seal for said seam, is characterized in that:

said pair of housing sections are joined at an integral flexible hinge in line with said seam to constitute a single-piece housing; and

said sealing band has a pair of opposite end portions that are located adjacent one another over said flexible hinge.

5,512,970

FILM LOADING APPARATUS USING PLANET GEAR

Takashi Kamoda, Omiya, and Takashi Mashiko, Ibaraki, both of Japan, assignors to Fuji Photo Optical Co., Ltd., Omiya, Japan

Filed Apr. 19, 1995, Ser. No. 423,459

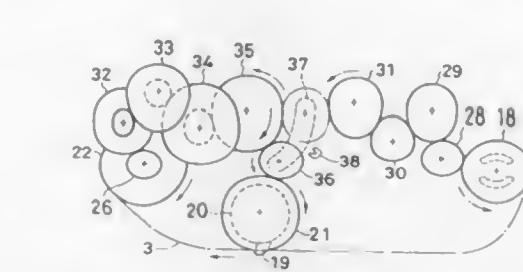
Claims priority, application Japan, Apr. 25, 1994, 6-110496

Int. Cl.⁶ G03B 1/18

U.S. Cl. 354-173.1

4 Claims

4. A film loading apparatus using a planet gear comprising:



- a one-tooth sprocket which engages a perforation of a film for the purpose of initial film feeding;
- a feeding gear integrally provided with said one-tooth sprocket;
- a fork gear which engages the take-up shaft of a film patron;
- a rewinding gear connected to said fork gear via a gear train;
- a motor for winding said film around a spool for every exposure;
- a sun gear connected to the pinion of said motor via a gear train;
- a planet gear connected to said sun gear in such a manner as to move between the position at which said planet gear meshes with said feeding gear and the position at which said planet gear meshes with said rewinding gear by changing the direction of rotation of said planet gear; and
- a stopper member provided at the position at which said stopper member checks the movement of said planet gear when said planet gear is disengaged from said feeding gear and sent flying toward said rewinding gear at the time of initial film feeding and at which said stopper member engages said planet gear when said planet gear is reversely rotated and moved toward said rewinding gear.

5,512,971

METHOD OF AND APPARATUS FOR TRANSFERRING FILM

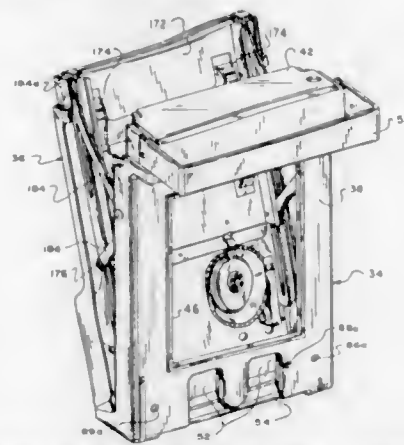
Philip R. Norris, North Reading; Frederick Slavitter, Needham; Kenneth G. Shown, Southbridge, and Timothy J. Feehan, Dorchester, all of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Sep. 8, 1994, Ser. No. 302,603

Int. Cl.⁶ G03D 17/00; 13/08

U.S. Cl. 354-311

45 Claims



1. Apparatus for use in shuttling at least a photosensitive film unit housed in a film container, wherein the container includes an exposing opening, between an image recording apparatus whereat a film unit can be exposed, and a film processing apparatus wherein the film can be removed for processing, said film shuttling apparatus comprising:

a portable lighttight housing assembly which removably receives the film container therein, said housing assembly includes an exposure aperture registerable with the container exposing opening when the container is received within said housing assembly for allowing exposure of a film unit by image bearing light presented at the exposing opening;

said housing assembly being cooperable with an image recording apparatus in an exposing mode of operation, and with a film processing apparatus in a processing mode of operation; blocking means coupled to said housing assembly and operable automatically for changing conditions between light blocking and unblocking conditions relative to said exposure aperture, wherein when in said unblocking condition image bearing light can expose the film unit; and,

controlling means operatively connected to said blocking means and being actuatable when in operative relation with the image recording apparatus for changing conditions of said blocking means between said light blocking and unblocking conditions for allowing and preventing exposure of a film unit.

5,512,973

AUTOMATIC FOCUSING APPARATUS

Yosuke Kusaka; Masaru Muramatsu; Ken Utagawa, all of Yokohama, and Shozo Yamano, Tokyo, all of Japan, assignors to Nikon Corporation, Tokyo, Japan

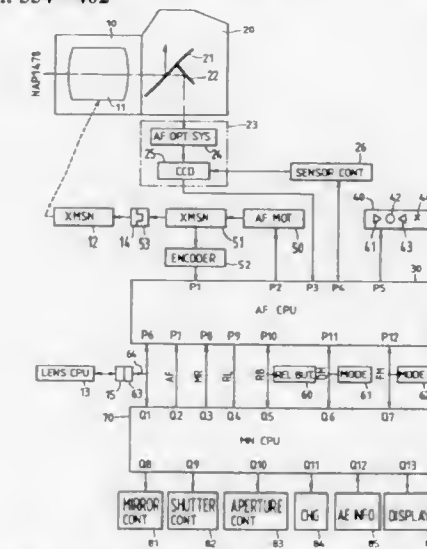
Division of Ser. No. 825,810, Jan. 21, 1992, abandoned, which is a continuation of Ser. No. 727,382, Jul. 5, 1991, abandoned, which is a continuation of Ser. No. 453,203, Dec. 26, 1989, abandoned, which is a continuation of Ser. No. 350,463, May 11, 1989, abandoned. This application May 17, 1995, Ser. No. 443,353

Claims priority, application Japan, May 13, 1988, 63-116171; Jul. 20, 1988, 62-179112; Oct. 3, 1988, 63-250600

Int. Cl.⁶ G03B 13/36

U.S. Cl. 354-402

11 Claims



1. An automatic focusing apparatus comprising:
- focusing means for repetitively calculating a defocus amount corresponding to a difference between an image plane of a photographing lens and a prospective focal plane;
- acceleration information calculating means for calculating information associated with an acceleration of movement of the image plane with respect to the prospective focal plane, upon movement of an object, on the basis of the repetitively calculated defocus amounts;
- pursuit correction amount calculating means for calculating a pursuit correction amount for correcting a variation in defocus amount caused by movement of the object on the basis of the defocus amount and the information associated with the acceleration; and
- drive control means for controlling a drive operation of said photographing lens on the basis of the defocus amount and the pursuit correction amount.

5,512,974

TARGET FOLLOW-UP DEVICE AND CAMERA COMPRISING THE SAME

Hiroyuki Abe; Masaru Muramatsu, both of Kawasaki; Tetsuro Goto, Funabashi, and Tsutomu Narisawa, Kitaadachigun, all of Japan, assignors to Nikon Corporation, Tokyo, Japan

Division of Ser. No. 114,148, Sep. 1, 1993, Pat. No. 5,392,088.

This application Aug. 16, 1994, Ser. No. 291,603

Claims priority, application Japan, Sep. 4, 1992, 4-237390; Sep. 22, 1992, 4-252737; Jun. 24, 1993, 5-153332

Int. Cl.⁶ G03B 17/00; H04N 5/232

U.S. Cl. 354-430

5 Claims

1. A target follow-up device, having:
- an imaging device which outputs input image data having a plurality of color components;

5,512,972

PHOTOGRAPHIC PROCESSING APPARATUS

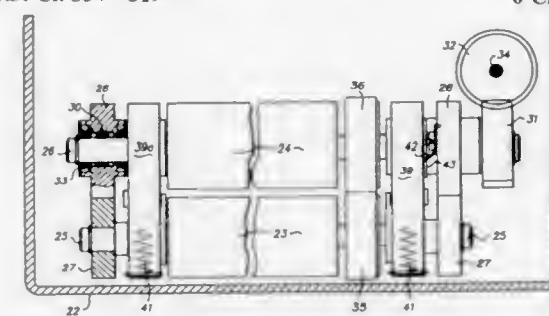
Albrecht Domen, Bornem; Bart Verlinden, Tongeren; Bart Verhoest, Kontich, and Freddy Van Humbeeck, Keerbergen, all of Belgium, assignors to AGFA-Gevaert N.V., Mortsel, Belgium

Filed Apr. 29, 1994, Ser. No. 235,781

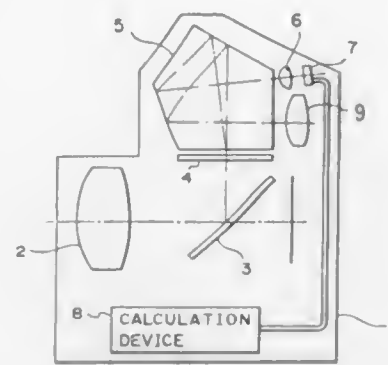
Int. Cl.⁶ G03D 3/08

U.S. Cl. 354-319

6 Claims



1. Apparatus for processing photographic sheet material including at least two rollers rotatable on respective shafts, support means for one of said shafts permitting movement of said shaft toward and away from the other of said shafts to bring said rollers into and out of peripheral contact with one another, means biasing said shafts toward one another, and means for moving said shafts away from one another to separate said two rollers from said peripheral contact, said means for moving said shafts comprising cam means and cooperating cam follower means operable upon displacement of said cam means into engagement with said cam follower means to move said one shaft away from the other said shaft, said cam means being mounted on one of said shafts for normal free-wheeling movement on said shaft without displacement of said cam means and said cam follower means being carried by the other of said shafts, and actuating means for temporarily securing said cam means to said one shaft for rotation therewith and consequential displacement into engagement with said cam follower means to effect separation of said rollers.



- a memory circuit which, based upon the output from said imaging device, records image data of a target to be followed up as reference data;
- a calculation circuit which calculates the amount of correlation between said input image data and said reference image data; and
- a position detection circuit which, based upon said amount of correlation, detects the position of said target;
- a color selection circuit which variably selects at least one color from a plurality of colors contained in common by said input image data and said reference image data prior to the calculation of said amount of correlation by said calculation circuit; wherein said calculation circuit calculates said amount of correlation for the color component selected by said color selection circuit.

5,512,975

HEAT EXHAUST DUCT FOR IMAGE FORMING APPARATUS OPERABLE IN A VERTICAL OR HORIZONTAL POSITION

Kunhiro Kitsu, Inagi; Kaneatsu Uchiyama, Kawasaki; Nobuyuki Tanaka, Kawasaki, and Hiroyuki Kawai, Kawasaki, all of Japan, assignors to Fujitsu Limited, Kanagawa, Japan

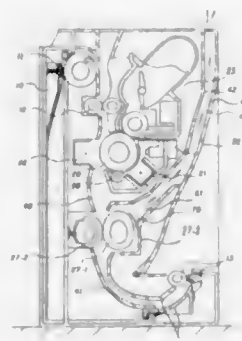
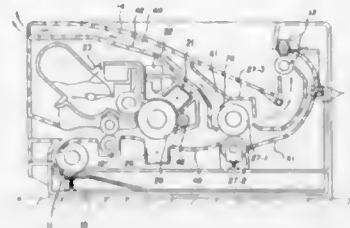
Filed Aug. 17, 1994, Ser. No. 291,861

Claims priority, application Japan, Nov. 29, 1993, 5-326045

Int. Cl.⁶ G03G 21/00

U.S. Cl. 355—200

21 Claims



1. An image forming apparatus for forming a toner image on a sheet both in a horizontal installation and in a vertical installation of said apparatus, comprising:

- an image forming unit for forming the toner image on a rotary photosensitive body assuming an endless-shape and then transferring the toner image onto the sheet;
- a thermal fixing unit, positioned under said image forming unit when said image forming apparatus is installed vertically, for thermally fixing the toner image on the sheet fed from above; and
- an exhaust duct for guiding a gas in an interior of said thermal fixing unit in an oblique upper direction from said thermal fixing unit in order to exhaust the interior of said thermal fixing unit.

5,512,976

IMAGE FORMING APPARATUS HAVING ROTATION RESISTANCE ADJUSTING MEANS FOR ADJUSTING ROTATION RESISTANCE ON A PHOTORESENSITIVE DRUM

Tadao Kamano, Shizuoka, Japan, assignor to Kabushiki Kaisha TEC, Shizuoka, Japan

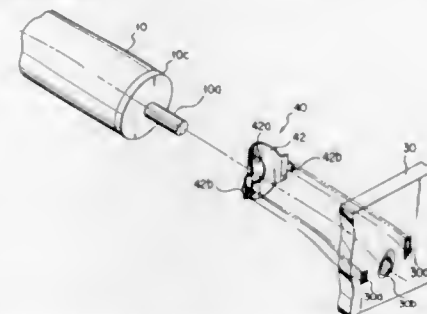
Filed Mar. 21, 1995, Ser. No. 407,917

Claims priority, application Japan, Mar. 29, 1994, 6-059459

Int. Cl.⁶ G03G 15/00

U.S. Cl. 355—200

2 Claims



1. An image forming apparatus comprising:

- a photosensitive drum rotated at a predetermined speed in a predetermined direction, said photosensitive drum having two side surfaces and an image forming region on an outer circumferential surface of said photosensitive drum, and said photosensitive drum including a rotational center shaft projecting out from at least one of both side surfaces of said photosensitive drum;
- rotation supporting means for rotatably supporting said photosensitive drum;
- a charger, optical image forming means, development means, transfer means and a cleaner, which are arranged along the outer circumferential surface of said photosensitive drum in a rotational direction of said photosensitive drum; and
- rotation resistance adjusting means for applying a rotation resistance on a region of said photosensitive drum located outside of the image forming region, and for adjusting a value of the rotation resistance applied on said photosensitive drum, said rotation resistance adjusting means having an abutment member abutted to the region of the photosensitive drum located outside of the image forming region of the photosensitive drum, and the abutment member of said rotation resistance adjusting means including a substantially U-shaped elastic member having a throughhole at a top thereof through which the rotational center shaft of said photosensitive drum is passed and being fixed at both ends thereof, and wherein the abutment member is abutted at its top portion to at least one of the side surfaces of said photosensitive drum while the rotational center shaft is passed through the throughhole, so that the abutment member applies a rotational friction resistance on said photosensitive drum;

- the charger uniformly charging the image forming region of the outer circumferential surface of said photosensitive drum at a predetermined voltage while said drum is rotating, the optical image forming means applying light on the image forming region of the charged outer circumferential surface of said

5,512,978

REPLENISHING SYSTEM

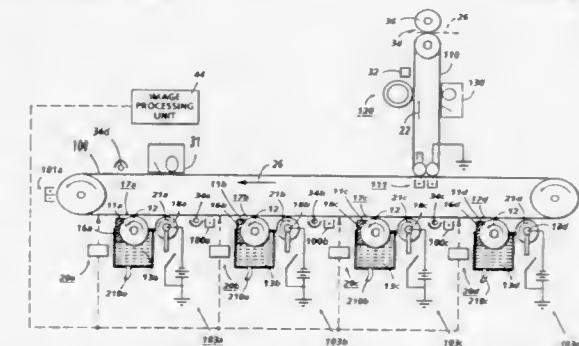
Ralph A. Mosher, Rochester; Rasio Moser; James R. Larson, both of Fairport, and John S. Berkes, Webster, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Jun. 5, 1995, Ser. No. 463,226

Int. Cl.⁶ G02G 15/10

U.S. Cl. 355—203

17 Claims



- photosensitive drum and forming an electrostatic latent image thereon in accordance with an image forming signal supplied to the optical image forming means, the development means including a development roller abutted to the image forming region of the circumferential surface of the photosensitive drum and rotated in an opposite direction to the rotating direction of said photosensitive drum, the development roller supplying toner to the image forming region of the circumferential surface of said photosensitive drum so as to develop the electrostatic latent image on the image forming region of the circumferential surface of said photosensitive drum with the toner, the transfer means transferring a developed toner image on the image forming region of the circumferential surface of said photosensitive drum to an image recording medium supplied to the transfer means, and the cleaner removing toner remaining on the image forming region of the circumferential surface of said photosensitive drum after the developed toner image is transferred, from the circumferential surface of said photosensitive drum;

- at least one of the rotation supporting means, the charger, the optical image forming means, the transfer means and the cleaner including rotation resistance member for applying a rotation resistance on said photosensitive drum in an opposite direction to a direction of a rotation resistance applied from the development roller to the photosensitive drum; and

- a value of frictional torque T3 applied from the rotation resistance adjusting means to said photosensitive drum being so set that a relationship "T1<T2+T3" is satisfied, where T1 is a frictional torque applied from the development roller to said photosensitive drum, and T2 is a frictional torque applied from the rotation resistance member to said photosensitive drum.

9. An electrophotographic printing machine for producing an image on a recording sheet, having means for recording a latent image and means for developing the latent image with liquid developer composed of a first vapor pressure carrier fluid component and a second vapor/pressure carrier fluid component in a carrier fluid mixture, said developing means, comprising:
- means for measuring concentrations of the first vapor pressure carrier fluid component and the second vapor pressure carrier fluid component in a carrier fluid mixture.

5,512,979

COPYING MACHINE WITH ENCRYPTION FUNCTION

Hiideki Imai, Yokohama, Japan, assignor to Pumpkin House Incorporated, Kanagawa, Japan

PCT No. PCT/JP93/01513, § 371 Date Apr. 21, 1995, § 102(e)

Date Apr. 21, 1995, PCT Pub. No. WO94/09591, PCT Pub. Date Apr. 28, 1994

PCT Filed Oct. 20, 1993, Ser. No. 424,279

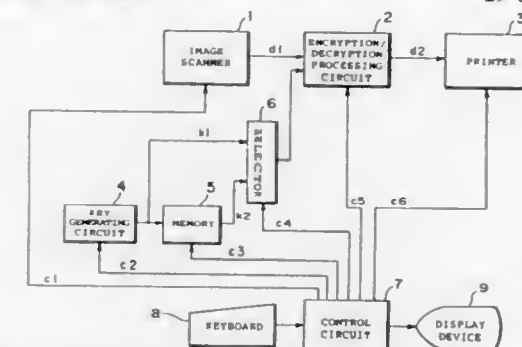
Claims priority, application Japan, Oct. 21, 1992, 4-323542;

Oct. 26, 1992, 4-327142; Oct. 26, 1992, 4-327143; Oct. 26, 1992, 4-327144; Oct. 28, 1992, 4-329813; Nov. 2, 1992, 4-333411

Int. Cl.⁶ G03G 21/00

U.S. Cl. 355—201

29 Claims



26. A cryptographic apparatus comprising:
- reading means for reading information and a first code indicating limits to be enciphered from a first medium which is provided with the information and the first code;
- enciphering means for enciphering information, the limits of which are indicated by the first code, of the information read by said reading means using a given encryption key; and
- writing means for writing or printing on a second medium at least information enciphered by said enciphering means together with a second code indicating limits of the enciphered information.

5,512,979

SYSTEM FOR REMOTE DIAGNOSIS OF IMAGE FORMING APPARATUS, INCLUDING INTELLIGENT COMMUNICATIONS CONTROL FOR DATA THEREFROM

Masaaki Ogura, Kawasaki, Japan, assignor to Ricoh Co., Ltd., Tokyo, Japan

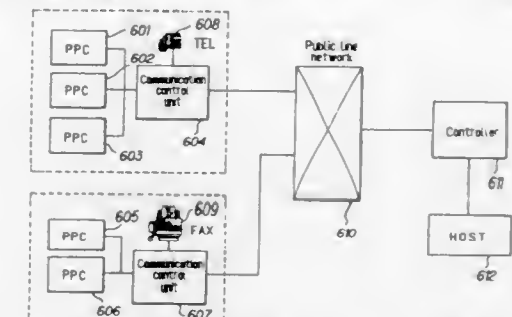
Filed Jul. 25, 1994, Ser. No. 280,921

Claims priority, application Japan, Jul. 26, 1993, 5-203591

Int. Cl.⁶ G03G 15/00

U.S. Cl. 355—204

11 Claims



11. A communication controller used for a remote diagnosis apparatus which provides centralized control via a communication line over data concerning an image forming apparatus, the communication controller being connected to said image forming apparatus and providing control for data communications from said image forming apparatus over the communication line, the communication controller comprising:

- a counter for counting times of recalling; and

- a controller for sending a call again when the particular data cannot be transmitted, and for setting said counter to a particular counting number when said controller receives new data to be transmitted while waiting for an opportunity to send a call again.

5,512,980

METHOD OF AND APPARATUS FOR DETECTING
TONER EMPTYYoshio Yamaguchi, and Toshio Tooda, both of Kawasaki,
Japan, assignors to Fujitsu Limited, Kawasaki, Japan

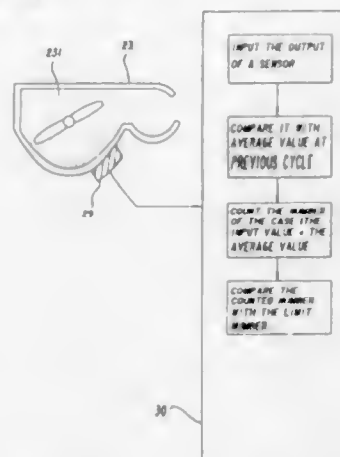
Filed Sep. 2, 1994, Ser. No. 300,349

Claims priority, application Japan, Oct. 22, 1993, 5-287654

Int. Cl.⁶ G03G 15/06

U.S. Cl. 355—206

29 Claims



1. A method for detecting a toner empty condition from an output of detecting means for detecting toners in a toner hopper, said method comprising the steps of:

inputting the output of said detecting means a predetermined time intervals;

comparing a detected value relative to an input value with an average value of the detected values during a prior detection cycle;

counting the number of times the detected value is smaller than the average value during an instant detection cycle to obtain a count value;

comparing the count value with a predetermined value; and
generating a toner empty output signal when the count value is larger than the predetermined value.

5,512,981

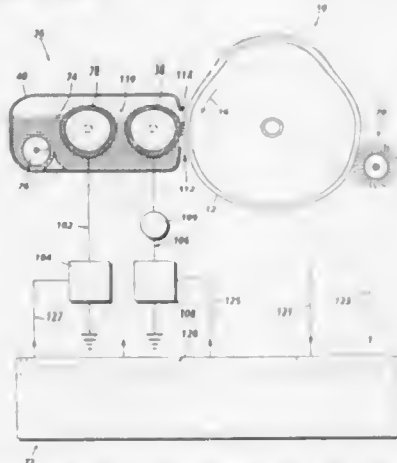
HYBRID DEVELOPMENT TYPE
ELECTROSTATOGRAPHIC REPRODUCTION MACHINE
HAVING A WRONG-SIGN TONER PURGING MODEMark J. Hirsch, Fairport, N.Y., assignor to Xerox Corporation,
Stamford, Conn.

Filed Jun. 7, 1995, Ser. No. 473,179

Int. Cl.⁶ G03G 21/14;15/06

U.S. Cl. 355—208

12 Claims



8. In an electrophotographic reproduction machine including an image bearing member, latent image devices for forming on the

image bearing member electrostatic latent images having a first polarity, and a hybrid development unit for applying to the latent images correct-sign toner particles having a second polarity relatively opposite to the first polarity, a method of automatically purging from the hybrid development unit wrong-sign toner particles having a third polarity relatively the same as the first polarity, the purging method comprising the steps of:

(a) counting and accumulating a number of image forming events performed by the reproduction machine for comparing to a stored predetermined number of such events;

(b) changing relative electrical bias values for a magnetic roll and for a donor roll within a housing of the development unit from imaging bias values to wrong-sign toner purging bias values so as to cause wrong-sign toner particles to transfer from the magnetic roll to the donor roll;

(c) producing an electrostatic field on the image bearing member for causing wrong-sign toner particles to transfer from the donor roll to the image bearing member; and

(d) operating a cleaning device in contact with the image bearing member for removing wrong-sign toner particles from the image bearing member.

5,512,982

IMAGE-FORMING APPARATUS WITH A
PHOTOSENSITIVE MEMBER AND A CHARGING
DEVICE HAVING AN OSCILLATORY VOLTAGE
SOURCEMasashi Takahashi; Shigeru Fujiwara, both of Kanagawa;
Minoru Yoshida, Tokyo, and Takeshi Watanabe, Chiba, all
of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki,
Japan

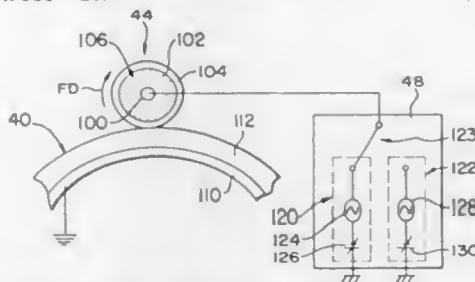
Filed Jun. 1, 1994, Ser. No. 252,179

Claims priority, application Japan, Jul. 13, 1993, 5-173058

Int. Cl.⁶ G03G 15/02

U.S. Cl. 355—219

7 Claims



1. An image-forming apparatus for forming an image by using a photosensitive member, comprising:
means for charging a photosensitive member;
means for relatively moving the charging means and the photo-sensitive member;

first applying means for applying to the charging means a first oscillatory voltage such that a V_p/f ratio is about less than 0.08 mm/cycle, wherein the V_p represents a relative moving speed between the charging means and the photosensitive member and the f represents a frequency of the first oscillatory voltage;

second applying means for applying a second oscillatory voltage to the charging means such that a V_p/f ratio is about from 0.08 to 0.42 mm/cycle;

means for alternatively setting the image-forming apparatus to a normal mode and a halftone mode, the normal mode being for a character image and the halftone mode being for a halftone image;

means for connecting the first supplying means to the charging means when the normal mode is set, and connecting the second applying means to the charging means when the halftone mode is set;

means for exposing the charged photosensitive member to form an electrostatic latent image; and

means for developing the electrostatic latent image.

5,512,983

ELECTROPHOTOGRAPHING APPARATUS WITH FIRST
AND SECOND CHARGE DEVICESSatoru Fukushima, Kawasaki, and Makoto Ohki, Yokohama,
both of Japan, assignors to Canon Kabushiki Kaisha,
Tokyo, Japan

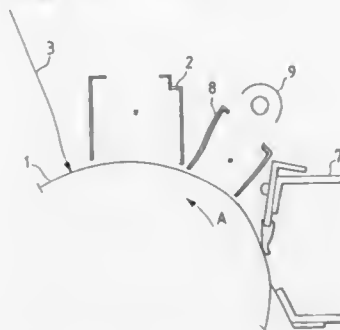
Filed Jul. 6, 1994, Ser. No. 267,902

Claims priority, application Japan, Jul. 8, 1993, 5-193078

Int. Cl.⁶ G03G 15/24

U.S. Cl. 355—220

18 Claims

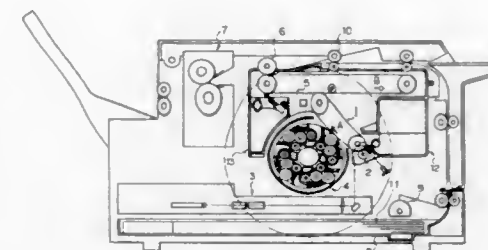


1. An electrophotographic apparatus, comprising:
a photosensitive body;

first charge means for performing a first charge process to form an image on said photosensitive body, said first charge means having a polarity;

transfer charge means for transferring the image formed on said photosensitive body onto a transfer material, said transfer charge means being applied a current of opposite polarity to the charge polarity of said first charge means; and

potential applying means for setting said photosensitive body at a predetermined potential after the image is transferred by said transfer charge means and before a next first charge process is performed by said first charge means, said potential applying means comprising second charge means, to which a DC voltage of the same polarity as the charge polarity of said first charge means is applied for charging said photosensitive body at the charge position, and exposure means for exposing said photosensitive body at the charge position, wherein the charging by said second charge means and the exposure by said exposure means are performed simultaneously.



edge of said disk portion, said hollow cylindrical portion being formed with an opening.

5,512,985

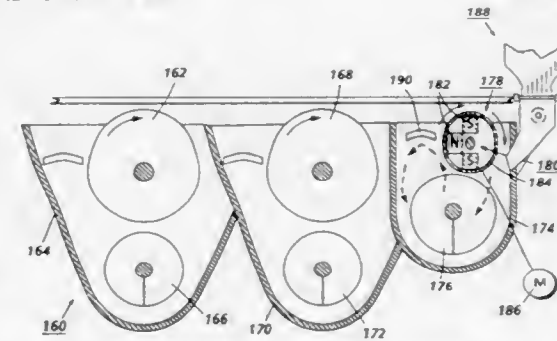
DEVELOPER AT MODIFICATION USING A VARIABLE
SPEED MAGNETIC ROLLER IN AN ADMIX HOUSINGLarry G. Hogestyn, Ontario, N.Y., assignor to Xerox Corpora-
tion, Stamford, Conn.

Filed Dec. 19, 1994, Ser. No. 359,257

Int. Cl.⁶ G03G 21/00;15/00

U.S. Cl. 355—245

2 Claims



1. Developer A, modification apparatus comprising:

an admix channel;

an admix auger in said channel;

developer material comprising carrier beads and toner;

means for adding fresh toner to said channel;

means including a stationary magnet arrangement, a rotatable shell encircling said arrangement and a trim bar adjacent said admix auger for varying the A_i of said developer, A_i being proportional to:

$$\text{Tribo} \cdot (TC + C_0)$$

where Tribo is the average charge to mass ratio of toner, TC is the toner concentration in percent by weight, and C_0 is a constant; and
a variable speed motor operatively coupled to said shell for effecting rotation thereof at different speeds whereby a more constant A_i is provided throughout various environmental zones.

5,512,984

REVOLVER TYPE DEVELOPING DEVICE FOR AN
IMAGE FORMING APPARATUSNoriyuki Kimura, Kawasaki; Minoru Suzuki, Yokohama, and
Takatsugu Fujishiro, Tokyo, all of Japan, assignors to Ricoh
Company, Ltd., Tokyo, Japan

Filed Aug. 9, 1994, Ser. No. 287,418

Claims priority, application Japan, Aug. 9, 1993, 5-217000;
Aug. 9, 1993, 5-217001Int. Cl.⁶ G03B 15/01;15/88

U.S. Cl. 355—245

25 Claims

1. A revolver type developing device for developing a latent image electrostatically formed on an image carrier of an image forming apparatus by moving a plurality of developing units, one at a time, to a developing position facing said image carrier, said device comprising:

a casing rotatable about a shaft;

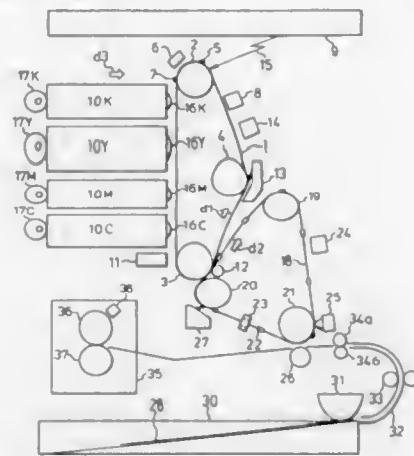
a cover member;

a plurality of developing units accommodated in said casing and rotatable about said shaft, said plurality of developing units being selectively brought to the developing position for developing the latent image; and

a pair of end wall members provided at longitudinally opposite ends of said plurality of developing units, said pair of end walls each comprising a disk portion at least partially disposed inside of said cover member, and a hollow cylindrical portion extending outward in a longitudinal direction from an

5,512,986
ELECTROPHOTOGRAPHY APPARATUS
 Yuuji Toyomura, Fukuoka, and Toshiyuki Mouri, Kurume, both of, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

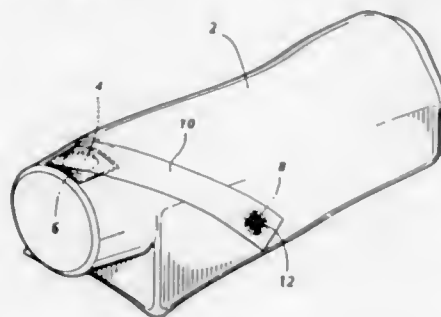
Filed Dec. 9, 1993, Ser. No. 164,186
 Claims priority, application Japan, Dec. 11, 1992, 4-331530
 Int. Cl.⁶ G03G 21/00
 U.S. Cl. 355—246 19 Claims



1. An electrophotography apparatus comprising:
 latent image formation means for forming a latent image on a photosensitive member;
 development means for developing said latent image to a toner image with toner;
 transfer means for transferring said toner image onto a transfer member;
 density detection means for detecting a density of a toner image transferred onto said transfer member; and
 gradation correction means for correcting gradation of a toner image to be formed, said gradation correction means correcting said gradation by referring to an output value of said density detection means at an instance when said density detection means detects said toner image of saturation density transferred onto said transfer member.

5,512,987
SEALING STRIP ADHERING METHOD
 Daniel C. Miller, Fairport, and Carlton W. Campbell, Webster, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed May 25, 1994, Ser. No. 248,781
 Int. Cl.⁶ G03G 15/06
 U.S. Cl. 355—260 6 Claims

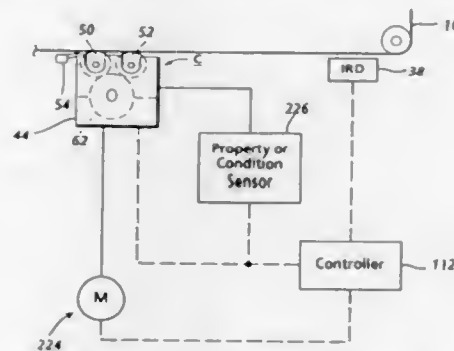


1. A method comprising:
 (a) selecting a flexible strip which has an adhesive material on a part of the first side, thereby defining an adhesive coated portion on the first side, and the second side of the strip being free of any adhesive material; and
 (b) applying heat and pressure to the adhesive coated portion on the first side, by pressing a heating element directly against

the adhesive coated portion on the first side, to adhere a part of the adhesive free second side to a strip attachment region on a member, wherein there is absent any adhesive material disposed between the adhered part of the adhesive free second side and the strip attachment region.

5,512,988
APPARATUS AND METHOD FOR CONTROLLING DEVELOPMENT OF DEVELOPER MATERIAL ON A PHOTORECEPTIVE MEMBER
 Patricia J. Donaldson, Pittsford, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Oct. 31, 1994, Ser. No. 332,153
 Int. Cl.⁶ G03G 15/06
 U.S. Cl. 355—260 23 Claims

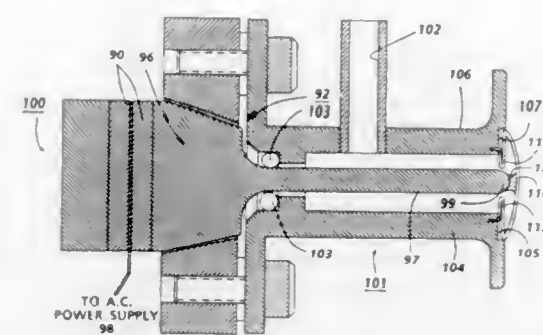


1. In a printing machine with a photoreceptor for developing an image with developer material including plural properties, controllable printing machine components including respective setpoints for changing development of the photoreceptor with the developer material, and a control system communicating with selected ones of the controllable printing machine components, the control system including an apparatus for measuring one of the plural properties and the control system detecting an amount of developer material developed in a selected area of the photoreceptor with the detected amount of developer material being represented by a first value, an improved said control system comprising:
 a replaceable cartridge, adapted for use with the printing machine, including;
 a container for storing a selected developer material different from a developer material previously in the printing machine, and
 a programmable memory unit communicating with the control system and being programmed with a second value reflecting a desired amount of the selected developer material to be developed on the photoreceptor, said control system reading the second value and determining if a difference exists between the first and second values;
 when a difference exists between the first value and the second value, and when the difference is greater than a selected magnitude, adjusting the setpoint of one of the controllable printing machine components; and
 wherein said control system includes a controller, said controller adjusting a magnitude of the second value to accommodate for a change in one of the plural properties.

5,512,989
RESONATOR COUPLING COVER FOR USE IN ELECTROSTATOGRAPHIC APPLICATIONS
 David B. Montfort, Penfield, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Oct. 31, 1994, Ser. No. 332,316
 Int. Cl.⁶ G03G 15/14
 U.S. Cl. 355—273 28 Claims

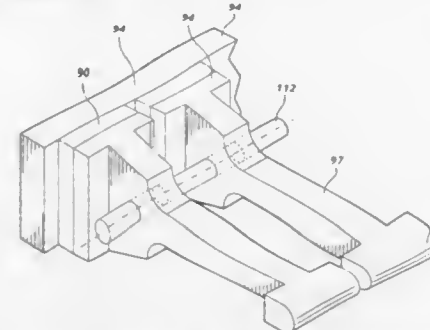
1. A resonator assembly for applying uniform vibratory energy to an adjacent surface, comprising:



a vibratory energy producing element for generating the vibratory energy;
 a waveguide member coupled to said vibratory energy producing element for directing the vibratory energy to the adjacent surface;
 a coupling cover interposed between said vibratory energy producing element and the adjacent surface; and
 an adhesive layer situated between said waveguide member and said coupling cover for providing an adhesive bond therebetween.

5,512,990
RESONATING ASSEMBLY HAVING A PLURALITY OF DISCRETE RESONATOR ELEMENTS
 David M. Friel, Webster; Charles A. Radulski, Macedon, and David B. Montfort, Penfield, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 27, 1994, Ser. No. 365,377
 Int. Cl.⁶ G03G 15/14
 U.S. Cl. 355—273 27 Claims

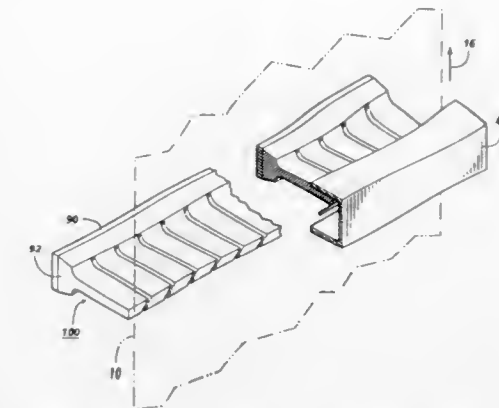


1. A resonating assembly for applying substantially uniform vibratory energy to an adjacent surface, comprising:
 a plurality of discrete resonator elements arranged along a substantially common plane, substantially parallel to the adjacent surface;
 a backplane member having said plurality of discrete resonator elements mounted thereon; and
 an alignment rod extending along a longitudinal axis adapted for receiving each of said plurality of discrete resonator elements in a manner that permits each discrete resonator element to function independently.

5,512,991
RESONATOR ASSEMBLY HAVING AN ANGULARLY SEGMENTED WAVEGUIDE MEMBER
 David B. Montfort, Penfield, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Nov. 14, 1994, Ser. No. 338,722
 Int. Cl.⁶ G03G 15/14
 U.S. Cl. 355—273 16 Claims

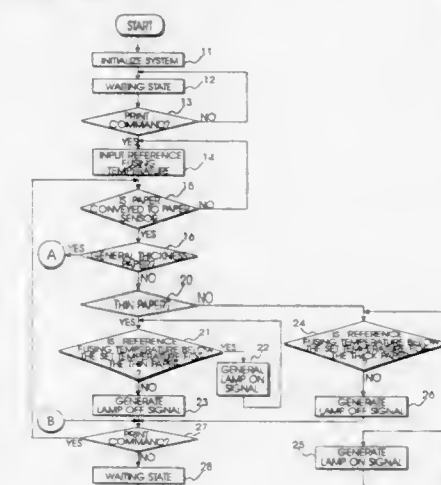
1. A system for enhancing transfer of toner from an image bearing member moving in a process direction, comprising:



a resonator assembly adapted to contact the image bearing member, generally transverse to the process direction of movement thereof, for applying uniform vibratory energy thereto, including:
 a vibratory energy producing element for generating the vibratory energy; and
 a waveguide member coupled to said vibratory energy producing element for directing the vibratory energy to the image bearing member, said waveguide member being divided along a longitudinal axis thereof for forming a plurality of waveguide segments, each waveguide segment being separated by a segmentation slot having an orientation generally non-parallel to the process direction of movement of the image bearing member.

5,512,992
APPARATUS AND METHOD FOR CONTROLLING FUSING TEMPERATURE
 Seong-Ho Kim, Seoul, and Joong-Ki Kwon, Kyungki-do, both of, Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Filed May 31, 1994, Ser. No. 252,003
 Claims priority, application Rep. of Korea, May 31, 1993, 9532-1993; Dec. 31, 1993, 31805-1993
 Int. Cl.⁶ G03G 15/20
 U.S. Cl. 355—285 20 Claims



1. An apparatus for controlling a fusing temperature in a system using an electrophotographic developing process, said apparatus comprising:
 a fusing lamp for generating heat to execute a fusing operation;
 fusing temperature detecting means for detecting the fusing temperature of a heat roller;
 sensing means for sensing a thickness of an incoming sheet of paper;
 controlling means for controlling said system by:

initializing said system and maintaining said system in a waiting state;
determining whether a print command has been entered by a user;

after said print command has been entered, adjusting the fusing temperature of said heat roller to a reference fusing temperature internally stored in said controlling means, said reference fusing temperature representing the fusing temperature for printing said sheet of paper exhibiting one of a first thickness and a thickness observed from a previous fusing operation;

enabling conveyance of said sheet of paper to said sensing means; and

comparing said reference fusing temperature with a corresponding preset temperature for said sheet of paper exhibiting one of first, second and third different thicknesses for enabling printing said sheet of paper after the thickness of said sheet of paper has been sensed by said sensing means, to thereby generate a control signal to control the fusing temperature of said heat roller; and

means for driving said fusing lamp to execute said fusing operation in dependence upon said control signal from said controlling means.

5,512,993

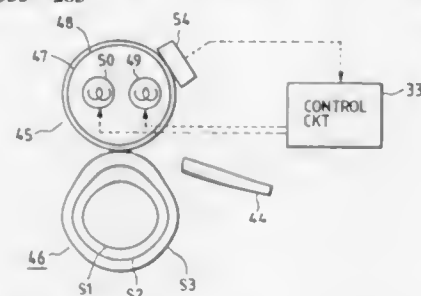
IMAGE HEATING DEVICE CAPABLE OF

CONTROLLING ACTIVATION OF PLURAL HEATERS
Saitiro Endo, Tokyo; Yoshikuni Toyama; Hisaaki Senba, both of Yokohama; Hisatsugu Tahara, Kawasaki; Hiroshi Matsumoto, Kawasaki, and Keisuke Hasegawa, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 37,418, Mar. 26, 1993, abandoned.

This application Nov. 1, 1994, Ser. No. 331,873

Claims priority, application Japan, Mar. 31, 1992, 4-104016; Jun. 26, 1992, 4-191375; Jun. 26, 1992, 4-191376; Jun. 30, 1992, 4-173267; Jun. 30, 1992, 4-173268; Jul. 7, 1992, 4-179894
Int. Cl.⁶ G03G 15/20

U.S. Cl. 355—285



1. An image heating device comprising:
a heating member including a first heater and a second heater of a heat distribution different from that of said first heater;
a back up member forming a nip with said heating member; and
power supply control means for time-shared controlling of electric power supply to said first and second heaters, wherein said power supply control means is adapted to control a time-shared ratio of energization time of said first heater to said second heater in accordance with a number of image heating operations.

SEPARATING APPARATUS INCLUDING MESH DEVICE FOR SEPARATING RECOVERED RESIDUAL MATTER

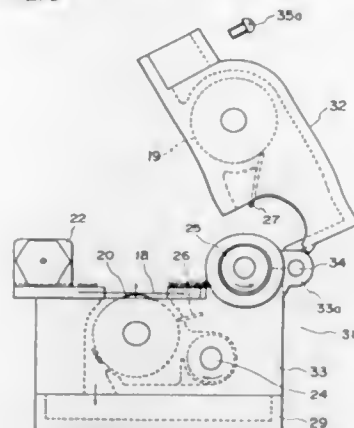
Michiro Kolke, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 27, 1994, Ser. No. 266,452

Claims priority, application Japan, Jun. 29, 1993, 5-159050
Int. Cl.⁶ G03G 21/10

U.S. Cl. 355—298

13 Claims



1. A separating apparatus for separating residual matter removed from an image bearing member into developer and other foreign matter, comprising:

a first unit to which residual matter removed from said image bearing member is conveyed;
a mesh member for allowing only developer contained in said residual matter to pass therethrough;
vibration applying means for applying vibration to said mesh member; and
a second unit for receiving developer conveyed from said first unit through said mesh member;
wherein said first unit and said second unit are separable from each other with said mesh member disposable therebetween.

5,512,995

NON-UNIFORM SCRAPER BLADE LOAD TO INCREASE DETONING ROLL LIFE

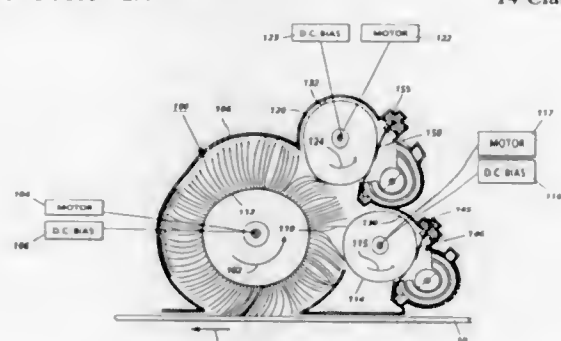
Dennis G. Gerbas, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Aug. 22, 1994, Ser. No. 293,971

Int. Cl.⁶ G03G 21/00

U.S. Cl. 355—299

14 Claims



1. An apparatus for removing particles from a surface, comprising:

a blade having a free end in contact with the surface and a fixed end opposite said free end, said free end having an edge for cleaning, said free end applying a non-uniform normal force on the surface which compensates for a non-uniform coefficient of friction across the surface to produce a substantial uniform frictional force on the surface preventing non-uniform wear along the surface; and

a blade holder coupled to the fixed end of said blade, said blade holder having a crown to create an angle Θ on each of two sides of said blade holder to reduce the load applied by said blade on the surface in crowned regions.

5,512,996

ELECTROPHOTOGRAPHIC APPARATUS INCORPORATING OFFSET STACKING

Carlo Fareé, Milano, Italy, assignor to Bull IIN Information Systems Italia S.p.A., Torino, Italy

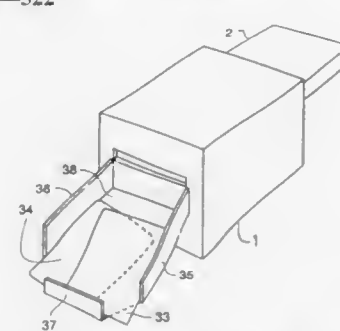
Filed Jul. 6, 1994, Ser. No. 271,157

Claims priority, application European Pat. Off., Jul. 15, 1993, 93830303

Int. Cl.⁶ G03B 15/00

U.S. Cl. 355—322

17 Claims



1. An electrophotographic apparatus incorporating a sorter device, wherein a fixing station imparts a forward speed, along an outgoing path of travel in a forward direction, to a print carrier with two side bands extending along said forward direction, one side of the print carrier having an image fixed thereon, characterized in that said apparatus comprises:

first and second friction entrainment rollers adapted to be driven independently and being arranged axially along a transverse direction to said outgoing path and respectively juxtaposed to third and fourth freely rotating pressure rollers, said print carrier being conveyed to said rollers to interpose said two side bands between said first and third rollers and said second and fourth rollers, respectively, with the side having the image fixed thereon in contact with said third and fourth rollers;

a first means for imparting a first peripheral velocity to said first roller;

a second means for imparting to said second roller a second peripheral velocity different than said first peripheral velocity and selected from at least two velocities;

a control means for controlling said second means to impart to said second roller a selected one of said at least two velocities; and
a print carrier collecting bin.

5,512,997

DISTANCE MEASURING DEVICE

Kimiaki Ogawa, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 20, 1993, Ser. No. 169,200

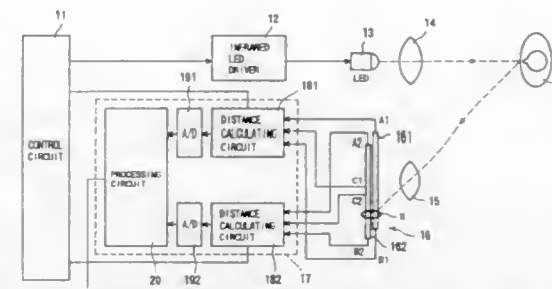
Claims priority, application Japan, Dec. 19, 1992, 4-356025; Oct. 26, 1993, 5-290066

Int. Cl.⁶ G01C 3/00; G03B 3/00

U.S. Cl. 356—3.04

20 Claims

1. A device for measuring a subject distance between an optical apparatus and a subject, said device comprising:
means for emitting a beam of light towards said subject;
a plurality of line sensors arranged parallel to one another and offset from each other in a longitudinal direction by a predetermined amount, said plurality of line sensors receiving light reflected from said subject and for sensing a position at which an image of said reflected light is formed;



means for obtaining a subject distance data based on said position and to output said subject distance data as analog distance data;

means for converting said analog distance data to digital distance data with a predetermined converting step; and
means for processing said digital distance data to obtain said subject distance with a resolution higher than a resolution of said predetermined converting step.

5,512,998

CONTACTLESS METHOD AND SYSTEM FOR DETERMINING STATIC AND DYNAMIC CHARACTERISTICS OF TARGET OBJECTS

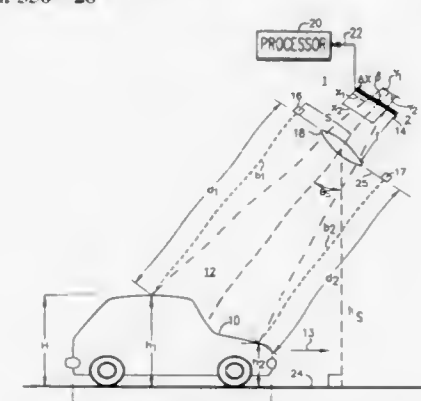
Jeffrey J. Puschell, Albuquerque, N.M., assignor to The Titan Corporation, San Diego, Calif.

Filed Jun. 22, 1994, Ser. No. 263,575

Int. Cl.⁶ G01P 3/36

U.S. Cl. 356—28

19 Claims



1. A system for determining characteristics of a target object moving through a given region in a predetermined direction, the system comprising

an array of detector elements aligned in the predetermined direction and facing the given region for detecting electromagnetic radiation of a predetermined wavelength received from the given region and for providing signals representative of said radiation detected by the detector elements;

a pair of sources of radiation of said predetermined wavelength disposed adjacent opposite ends of the array of detector elements for propagating said radiation along a respective pair of fixed paths into the given region so that said radiation is reflected from the given region generally toward the array of detector elements;

a lens disposed for collecting and focussing said radiation reflected from the given region upon the array of detector elements; and

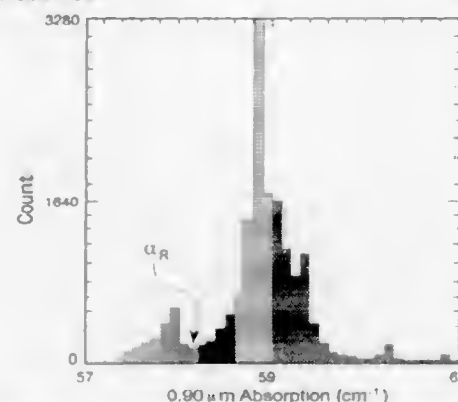
a processor coupled to the detector elements and adapted for processing the signals provided by the detector elements to determine at least one dynamic characteristic of a target object moving through a given region in a predetermined direction.

5,512,999
METHOD FOR NONDESTRUCTIVE MEASUREMENT OF
DISLOCATION DENSITY IN GAAS

David C. Look, Dayton; Millard G. Mier, Yellow Springs; John R. Sizelove, Dayton, and Dennis C. Walters, Fairborn, all of Ohio, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.
Filed Mar. 6, 1995, Ser. No. 399,246
Int. Cl.⁶ G01N 21/88; 21/35

U.S. Cl. 356—30

3 Claims



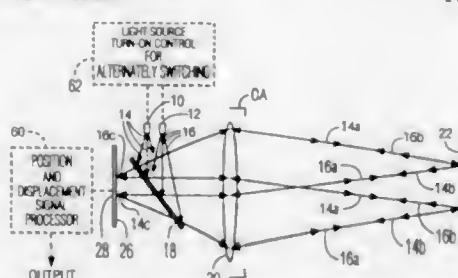
1. A method for nondestructively producing a map of dislocation density in an unetched n+ type GaAs wafer, comprising the steps of:

- focusing a light source of a predetermined wavelength at a plurality of points on said GaAs surface;
- detecting the fractional transmission (T) of light through said GaAs surface at said plurality of points;
- calculating from the detected value of T a value of the absorption coefficient (α) at each of said plurality of points;
- dividing the values of α into equal segments bounded by the minimum and the maximum values of α ;
- plotting a histogram of the number of values of α in each segment versus the value of α at the midpoint of the segment;
- selecting a reference point value from said histogram approximately at a point at which the first minimum value of α occurs following the first maximum value of α ; and
- generating a dislocation density map of said plurality of points such that the values of α that are less than the reference point value are in contrast with the values of α that are greater than the reference point value.

5,513,000
AUTOCOLLIMATOR
Stephen R. Smith, Lawrenceville, and John L. Lowrance, Princeton, both of N.J., assignors to Princeton Scientific Instruments Inc., Monmouth Junction, N.J.
Filed Jul. 26, 1993, Ser. No. 96,550
Int. Cl.⁶ G01B 11/26; G01C 1/00

U.S. Cl. 356—152.2

17 Claims



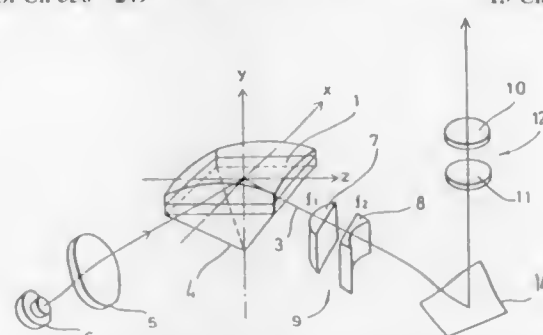
1. An autocollimator for providing an output signal indicative of the angular displacement of a light reflector, the autocollimator comprising two sources of light for producing two light beams and means for directing said two light beams from said two sources onto a light reflector, means causing reflection of said two light

beams from said reflector along different return light paths towards a position sensitive light detector means for providing an output signal indicative of the receipt thereon of a light beam and the position of the light beam thereon, and means for identifying each one of said two light beams being received by said light detector means for producing a signal indicative of the angular displacement of the light reflector in response to each one of said two light beams being incident on said detector means, wherein the angular displacement of the reflector is determined even when only one of the two light beams is incident thereon, wherein the two beams increase the range of measurable angular displacement which the light reflector undergoes.

5,513,001
TILT ANGLE AUTOMATIC COMPENSATOR IN ALL
DIRECTIONS
Fumio Ohtomo; Hiroo Sugai; Ikuro Ishinabe; Takaaki Yamazaki, and Junichi Kodaira, all of Tokyo, Japan, assignors to Kabushiki Kaisha TOPCON, Tokyo, Japan
Filed Jul. 11, 1994, Ser. No. 256,661
Claims priority, application Japan, Nov. 12, 1992, 4-327291; Nov. 12, 1992, 4-327293
Int. Cl.⁶ G01C 9/18

U.S. Cl. 356—249

13 Claims

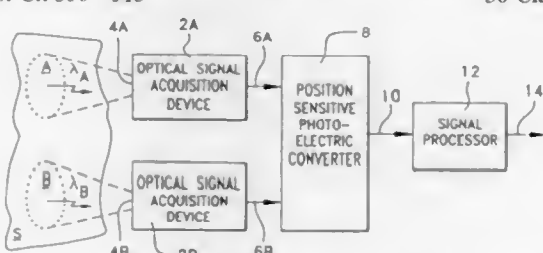


1. A tilt angle automatic compensator, comprising a container where a transparent liquid to form a free liquid surface is sealed, a light projection system for projecting a light beam toward the free liquid surface at a predetermined angle so that it is totally reflected from the free liquid surface along an optical path, and an optical system, arranged at a predetermined position along the optical path of the totally reflected light beam after passing through the container with sealed liquid, for equalizing in all directions change of the reflection angle of the reflected beam corresponding to change of incident angle of the incident beam.

5,513,002
OPTICAL CORONA MONITORING SYSTEM
Vincent F. Shapanus, Towson, and Kevin J. Phipps, Baltimore, both of Md., assignors to The A.R.T. Group, Inc., Towson, Md.
Filed Mar. 17, 1994, Ser. No. 210,027
Int. Cl.⁶ G01J 3/30

U.S. Cl. 356—313

36 Claims



1. Apparatus for monitoring the condition of electrical equipment by detection of light emitted from a plurality of different areas in said equipment, comprising:

a plurality of optical signal acquisition devices each of which is formed from at least one optical fiber strand, each of said plurality of optical acquisition devices being disposed to acquire light from a different one of said plurality of areas in said equipment and to separately convey said acquired light to a detector;

said detector having a position-sensitive photoelectric sensor with a plurality of different sensing areas, each of said sensing areas being disposed to receive light acquired from a different one of said plurality of different areas in said equipment by a corresponding one of said plurality of optical signal acquisition devices, said position-sensitive photoelectric sensor producing electrical output signals representing the intensity of light received from each one of said plurality of different areas in said equipment; and

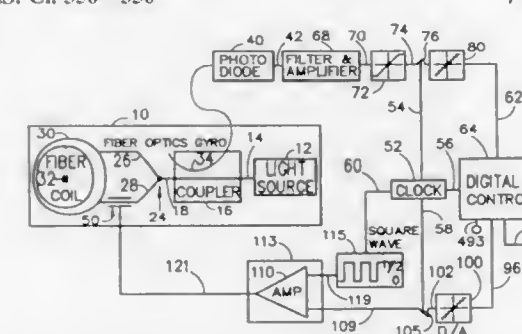
a signal processor, coupled to said detector, for receiving said electrical output signals from said position-sensitive photoelectric sensor, said signal processor including corona discharge detection means for determining, in the absence of an arc, whether a corona discharge event has occurred in any of said plurality of different areas in said equipment;

said signal processor further including corona discharge location means, responsive to said corona discharge detection means, for associating one of said plurality of different areas in said equipment with each corona discharge event detected by said corona discharge detection means and for producing a processor output conveying location information corresponding to each corona discharge event detected by said corona discharge means.

5,513,003
FIBER OPTIC GYRO DIGITAL CONTROL WITH RATE
EXTENSION
Avery A. Morgan, St. Petersburg, Fla., assignor to Honeywell Inc., Minneapolis, Minn.
Filed Jun. 6, 1994, Ser. No. 254,804
Int. Cl.⁶ G01C 19/64

U.S. Cl. 356—350

7 Claims



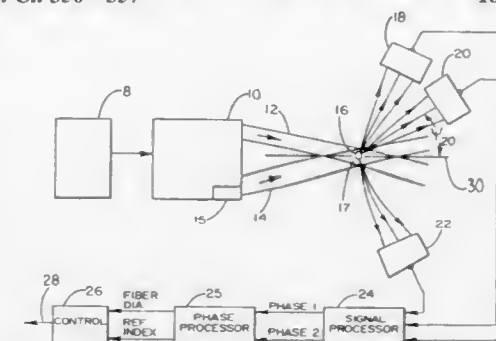
1. In a digitally operated fiber optics gyro system including a light source, a light conducting coil, a splitter to direct the light from the light source to both ends of the coil so that the beams travel in opposite direction through the coil and when subjected to rotation produce a Sagnac phase difference, an optic device to produce a phase change difference in the counter rotating beams, the optic device being driven by a ramp signal which has a periodic 2π reset which produces a $2\pi/SF$ rate limit, a light sensor for receiving the light from the coil and producing an output indicative of the magnitude of light received which magnitude changes with the rate of rotation, the gyro also including a digital controller for producing a signal indicative of the angle of rotation of the gyro and a signal to produce the ramp input to the optic device, apparatus for eliminating the $2\pi/SF$ rate limit comprising:

- means supplying the output of the light sensor to the digital controller;
- means for storing the number of 2π resets; and
- means combining the light sensor output with the number of 2π resets to produce a signal indicative of the true rate of rotation.

5,513,004
DEVICE FOR INTERFEROMETRIC MEASUREMENTS
WITH COMPENSATION FOR TILT AND POSITION OF
MEASURED CYLINDRICAL OBJECTS
Amir A. Naqwi, Shoreview, and Leslie M. Jensen, Vadnais Heights, both of Minn., assignors to TSI Incorporated, St. Paul, Minn.
Filed Aug. 12, 1994, Ser. No. 289,910
Int. Cl.⁶ G01B 9/02

U.S. Cl. 356—357

18 Claims



1. An apparatus for non-contact measurement of objects, including:

- a source of coherent energy and a beam-forming means for generating two linearly propagating beams of the coherent energy;
 - a beam guide means for orienting the beams at a predetermined beam angle relative to one another to define a beam plane, said beams interfering with one another over a measuring region at their intersection;
 - a support means for positioning the beam plane with respect to an object to cause the object and the measuring region to intersect one another, whereby the object scatters the coherent energy;
 - a detection means for providing first and second different phase values based on detecting the scattered coherent energy at respective and different first and second locations spaced apart from the measuring region;
 - a means for providing a third phase value; and
 - a processing means for combining each of the first and second different phase values with the third phase value to generate respective first and second phase shift values, and for determining a dimension of the object based on the first and second phase shift values;
- wherein the first and second locations are selected for angular positioning relative to one another and wherein the third phase value is selected with reference to the first and second phase values, such that the ratio ρ of the first phase shift value to the second phase shift value is greater than 0.5 and less than 1.

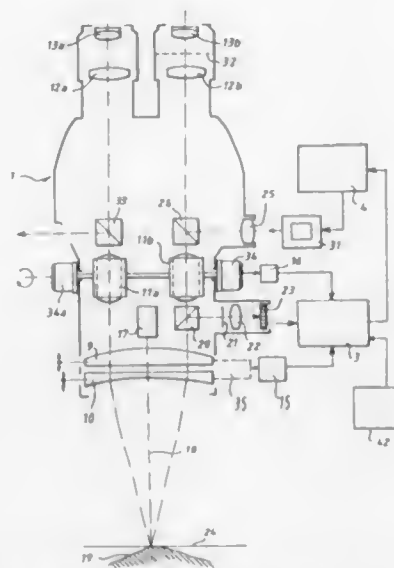
5,513,005
METHOD OF OPERATING A SURGICAL MICROSCOPE
ARRANGEMENT FOR COMPUTER-SUPPORTED
STEREOTACTIC MICROSURGERY ON A PATIENT
Werner Müller, Essengen, and Joachim Luber, Essingen/Forst, both of Germany, assignors to Carl-Zeiss-Stiftung, Heidenheim, Germany
Continuation of Ser. No. 961,339, Oct. 15, 1992, Pat. No. 5,359,417. This application Oct. 11, 1994, Ser. No. 321,309
Claims priority, application Germany, Oct. 18, 1991, 41 34 481.2

The portion of the term of this patent subsequent to Oct. 25, 2011, has been disclaimed.

Int. Cl.⁶ G01B 11/14; G06F 15/00; A61B 19/00
U.S. Cl. 356—375

2 Claims

1. A method of operating a surgical microscope arrangement for computer-supported stereotactic microsurgery patient having a patient coordinate system having known points located at respec-



tive positions in an object plane, the arrangement including: a multi-link stand and said surgical microscope having magnifying optics defining optical axis and a field of view plane and being mounted on said multi-link stand and said surgical microscope being equipped with optical means operatively connected thereto, and sensor means on said multi-link stand for supplying signals indicative of actual spatial coordinates and orientation of said surgical microscope, the method comprising the steps of:

- obtaining a defined position of selected ones of said known points on said optical axis under direct visual control through said magnifying optics and said selected ones of said known points having coordinates;
- measuring the position of said selected ones of said known points in the patient coordinate system in relation to said surgical microscope by said optical means;
- determining said actual spatial coordinates and the orientation of said surgical microscope by said sensor means;
- determining an absolute position and orientation of the patient in space from said selected ones of said known points which have been measured and said signals of said sensor means;
- correlating the observed field of view with corresponding diagnostic data;
- superposing an image from preoperative diagnostic data on said field of view and while taking into account the magnification of said magnifying optics; and,
- said image having coordinates corresponding to said coordinates of said selected ones of said known points.

5,513,006

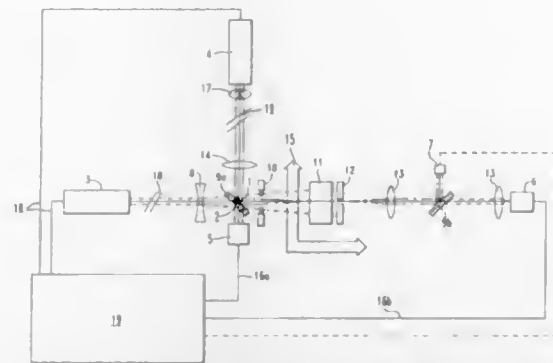
PHOTO-THERMAL SENSOR INCLUDING AN EXPANSION LENS IN A LIGHT BEAM PATH THROUGH A SAMPLE FOR DETERMINING THE CONCENTRATION OF A COMPOUND IN THE SAMPLE
Torsten Schulz, Karlsruhe, and Werner Faubel, Eggenstein-L., both of, Germany, assignors to Kernforschungszentrum Karlsruhe GmbH, Karlsruhe, Germany
Filed Jan. 26, 1995, Ser. No. 378,566
Claims priority, application Germany, Sep. 18, 1992, 42 31 214.0

Int. Cl.⁶ G01N 21/00

U.S. Cl. 356—432

11 Claims

1. A photo-thermal sensor for determining a concentration of a compound in a sample, comprising:
 - an excitation light source for generating a first light beam extending along a first light beam path through said sample and having a wave length at which light is well absorbed by the sample compound to be determined, said sample being disposed at a predetermined location;
 - a modulator disposed in said first light beam path.



an optical lens system arranged so as to be disposed in said first light beam path after said modulator such that said first light beam is constricted where it passes through of said sample, a probe light source for generating a second light beam of a coherent light extending along a second path, said probe light source being so arranged that said second light beam extends at a right angle to said first light beam and intersects said first light beam at a predetermined point,

- a lens arranged in said second light beam path for expanding said second light beam to such a degree that said second light beam has a radius at the sample location which is at least five times as large as the radius of said first light beam,
- a beam divider having opposite sides and being arranged at the point of intersection of said first and second light beams such that the first light beam emitted from the excitation light source, after passing through the modulator and the optical lens system, is deflected at one side of the beam divider and the second beam emitted from the probe light source reaches the opposite side of said beam divider and is transmitted through said beam divider whereby a first part of said first light beam as well as part of said second light beam coincide on said sample,
- a first photo-sensitive detector arranged in the first light beam path behind said sample for receiving a second part of said first light beam after its passage through said sample,
- a diaphragm arranged in the first beam path immediately after said sample and a second beam divider arranged in said first beam path after said diaphragm for partially reflecting the first light beam,
- a second photo sensitive detector arranged in a part of said first beam path after said first beam divider for receiving said part of said first light beam, which passes through said first beam divider and
- an evaluation unit in communication with said first and second photo-sensitive detectors for determining and indicating the concentration of the compound to be determined in said sample.

5,513,007

IMAGE PROCESSING APPARATUS AND IMAGE PROCESSING METHOD

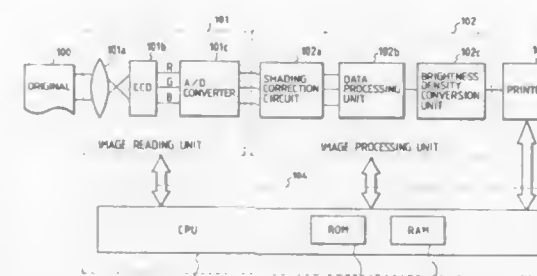
Akin Ito, Machida; Hiroyuki Ichikawa, and Satoru Kutsuwade, both of Kawasaki, all of, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed May 17, 1993, Ser. No. 62,336

Claims priority, application Japan, May 19, 1992, 4-126161
Int. Cl.⁶ H04N 1/387

U.S. Cl. 358—296

18 Claims

1. An image processing apparatus comprising:
 - discrimination means for discriminating a predetermined color in an input image;
 - first image processing means for performing first image processing on a first area of the input image according to a result of discrimination by said discrimination means;
 - setting means for setting a density of an output image relative to a density of the input image; and



second image processing means for performing second image processing on a second area of the input image in accordance with the density set by said setting means, the second image processing performed by said second image processing means comprising density conversion in accordance with the density set by said setting means, whereby a density of the second area of the input image is converted to a density of a corresponding area of the output image; wherein the first area is different from the second area.

5,513,008

VARIABLE LENGTH CODING METHOD USING DIFFERENT BIT ASSIGNING SCHEMES FOR LUMINANCE AND CHROMINANCE SIGNALS

Yukari Arano, and Ken Onishi, both of Nagakakyō, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 665,581, Mar. 5, 1991, abandoned.

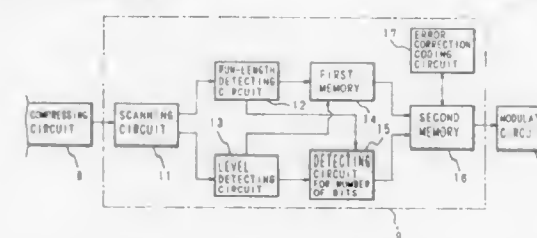
This application Apr. 6, 1994, Ser. No. 223,838

Claims priority, application Japan, Mar. 5, 1990, 2-54003;
Apr. 4, 1990, 2-90949

Int. Cl.⁶ H04N 9/79; 7/12; 5/78; H03M 7/40

U.S. Cl. 358—310

16 Claims



1. A variable length coding method for coding an analog signal containing a first analog signal and a second analog signal, whose frequency components are different, to a digital signal, comprising the steps of:

- (a) obtaining a first block having a predetermined number of sample signals and a first length in a horizontal direction, by sampling said first analog signal at a first sampling frequency;
- (b) obtaining a second block having the predetermined number of sample signals and a second length in the horizontal direction, larger than said first length, by sampling said second analog signal at a second sampling frequency;
- (c) coding said first block using a first bit map table; and

(d) coding said second block using a second bit map table, different from said first bit map table, wherein a greater number of bits are assigned to said second block as a result of said second length.

5,513,009

HIGH-DEFINITION PICTURE SIGNAL RECORDING/REPRODUCING APPARATUS FOR RECORDING AND REPRODUCING A HIGH-DEFINITION PICTURE SIGNAL CONTROLLED ITS AMPLITUDE LEVEL

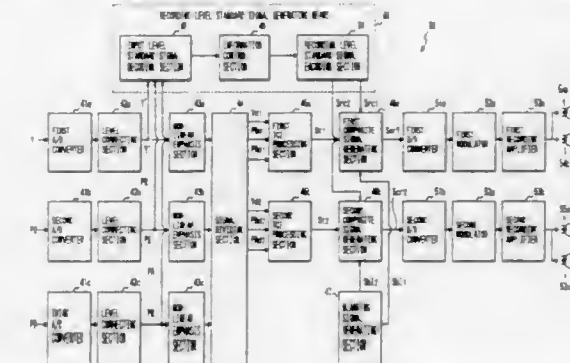
Yutaka Ichino, and Masahiko Turuta, both of Yokohama, Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan
Filed Apr. 7, 1994, Ser. No. 224,493

Claims priority, application Japan, Apr. 7, 1993, 5-105149

Int. Cl.⁶ H04N 5/76; 5/78; 9/79

U.S. Cl. 358—335

22 Claims



1. A high-definition picture signal recording apparatus for recording a high-definition picture signal in which an input level standard signal indicating an amplitude level of the high-definition picture signal is added to a particular horizontal scanning line, comprising:

- level correcting means for correcting the amplitude level of the high-definition picture signal to a corrected level according to an input level reference signal of the input level standard signal added to the particular horizontal scanning line of the high-definition picture signal;
- recording level reference signal generating means for generating a recording level reference signal according to the input level reference signal of the input level standard signal interposed in the high-definition picture signal of which the amplitude level is corrected by the level correcting means;
- high-definition picture signal processing means for processing the high-definition picture signal of which the amplitude level

is corrected by the level correcting means by deleting line signals of the high-definition picture signal allocated to peripheral horizontal scanning lines placed at upper and lower peripheral portions of an image plane and deleting the input level reference signal of the input level standard signal interposed in the high-definition picture signal, a recording picture signal, being generated from the high-definition picture signal processing means;

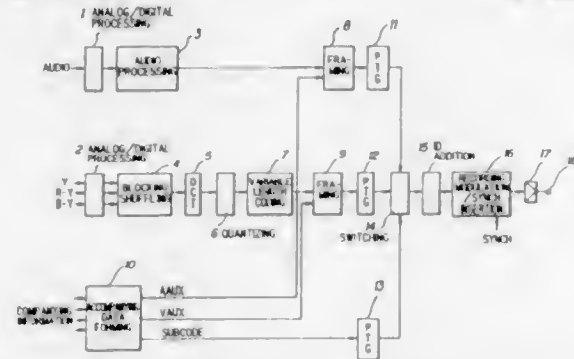
composite signal generating means for interposing the recording level reference signal generated from the recording level reference signal generating means in the recording picture signal generated from the high-definition picture signal processing means to generate a composite signal; and
recording means for recording the composite signal generated from the composite signal generating means on a recording medium.

5,513,010
DIGITAL VIDEO SIGNAL RECORDING AND REPRODUCING APPARATUS THAT RECORDS AND REPRODUCES BOTH STILL AND MOVING PICTURES
 Teruhiko Kori; Ken Iizuka, both of Kanagawa, and Masaki Oguro, Tokyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Aug. 16, 1994, Ser. No. 291,540
 Claims priority, application Japan, Aug. 16, 1993, 5-222843
 Int. Cl. H04N 5/78

U.S. Cl. 358—341

29 Claims



1. An apparatus for recording digital video signals in the form of coded signals representing a recording format which includes a video signal recording area for recording video information, representing one of moving picture information and still picture information, and for recording respective accompanying signals and a subcode signal recording area for recording subcode information, said apparatus comprising:

generating means for generating accompanying video signals and subcode signals, said subcode signals including location information for locating a portion of said video information on a recording medium;

framing means for framing digital video signals and said accompanying video signals to form blocks of associated video signals having a first predefined format; and

combining means for combining, in a predetermined order, said blocks of associated video signals with said subcode signals to form combined signals such that when said combined signals are recorded in a plurality of tracks on a recording medium, at least a respective portion of said subcode signals is recorded on a first track and at least on a second track.

5,513,011
METHOD AND APPARATUS FOR RECORDING OR REPRODUCING VIDEO DATA ON OR FROM STORAGE MEDIA

Mitsujiro Matsumoto; Kensuke Satoh, and Kiyoshi Uchimura, all of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jan. 25, 1994, Ser. No. 186,076
 Claims priority, application Japan, Jan. 25, 1993, 5-009736;
 Jan. 25, 1993, 5-009738

Int. Cl. H04N 5/91; 5/76; G11B 5/00; 5/09

U.S. Cl. 358—341

8 Claims

1. A video recording and reproducing method comprising steps of:

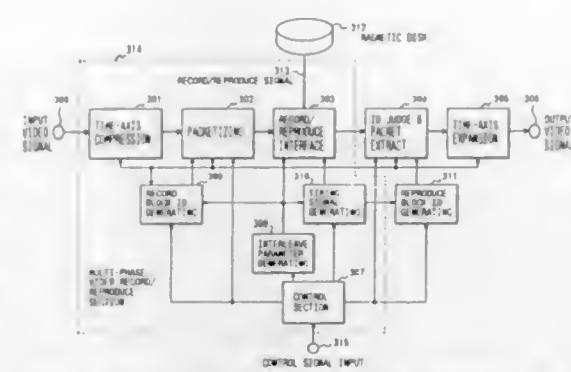
dividing a video signal into k video blocks in a time-axis direction, wherein k is an integer not less than 2;

finding a block skip interval s which is an integer satisfying an equation $s = (pk+1)/n$ when p is an integer not less than 1 and n is an integer not less than 2;

interleaving said k video blocks in order of

$$i = \{s(j-1)\} \bmod k + 1$$

wherein i is an integer satisfying a relation $1 \leq i \leq k$ and representing a block number of said video signal, and j is an



integer satisfying a relation $1 \leq j \leq k$ and representing an allocation block number on a storage medium; and allocating thus interleaved video blocks on said storage medium.

5,513,012
IMAGE FORMING APPARATUS HAVING DENSITY CORRECTION FOR IMAGE FORMATION

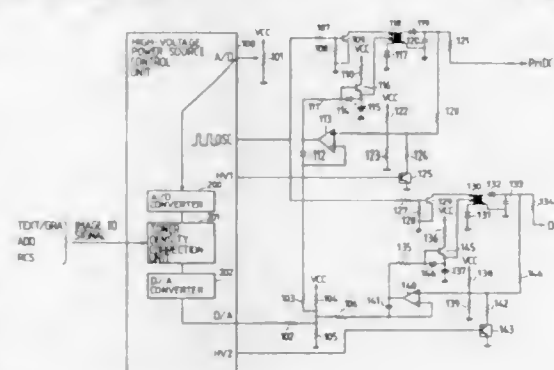
Makoto Takeuchi, Yokohama; Akio Noguchi, Ebina; Yukihide Ushio, Tokyo; Shimpei Matsuo, Tokyo; Seiji Uchiyama, Tokyo; Kazuro Yamada, Machida; Yoji Serizawa, Tokyo, all of Japan, and Yoji Serizawa, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 24, 1991, Ser. No. 734,905
 Claims priority, application Japan, Jul. 26, 1990, 2-196127;
 Jul. 26, 1990, 2-196128

Int. Cl. H04N 1/21; 1/32

U.S. Cl. 358—401

8 Claims



1. A printer apparatus comprising:

input means for inputting an image signal and image type information of the image signal;

discriminating means for discriminating image type information input by said input means in accordance with a signal other than the image signal to be recorded;

image forming means for forming an image on the basis of image type information, the image being formed with an optical reflective density which is adjustable; and

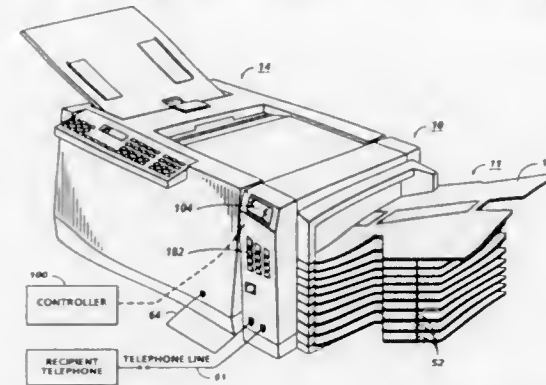
density adjusting means for adjusting the optical reflective density for image formation by said image forming means in accordance with the discriminated image type information, wherein said discriminating means discriminates whether the image information which is supplied by said input means indicates a text image or another image as the image type information.

5,513,013
FACSIMILE OUTPUT JOB SORTING UNIT AND SYSTEM
 Youti Kuo, Penfield, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Aug. 24, 1992, Ser. No. 933,640
 Int. Cl. H04M 11/00

U.S. Cl. 358—448

25 Claims



1. An apparatus for separating the physical outputted job sheets sequentially outputted by the output of a facsimile receiving apparatus into separate job sheets sets for separate designated recipients of faxed documents transmitted thereto, comprising:

a facsimile receiver output job sorting accessory unit, said accessory unit including;

sheet input means positionable at said sheet output of said facsimile receiving apparatus to sequentially receive said output sheets therefrom and feed them in a sheet feeding path into said input means;

plural discrete facsimile output sheet collection bins, control means for electronically assigning discrete bin numbers to respective said discrete facsimile output sheet collection bins, and for variably electronically assigning said discrete bin numbers to discrete designated facsimile recipients;

optical sensing means in said sheet input means and operatively connecting with said control means for detecting uniquely marked area encoding corresponding to a said bin number on a facsimile output sheet in said feeding path in said input means and for determining if a said detected encoding corresponds to a said bin number so designated for a facsimile recipient.

and sheet bin selection and feeding means, controlled by said determination of said optical sensing means and said control means, for selectively feeding sequential facsimile output sheets from said sheet input means to designated said facsimile output sheet collection bins subsequent to a said detection by said optical sensing means and said control means of said marked area encoding of a facsimile output sheet corresponding to a said assigned bin number for a said designated facsimile recipient.

5,513,014
VIDEO PRINTER
 Izumi Kariya, and Hidehiko Funayama, both of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Aug. 25, 1994, Ser. No. 295,440
 Claims priority, application Japan, Aug. 31, 1993, 5-216315
 Int. Cl. H04N 1/40; 1/407; 1/23

U.S. Cl. 358—448

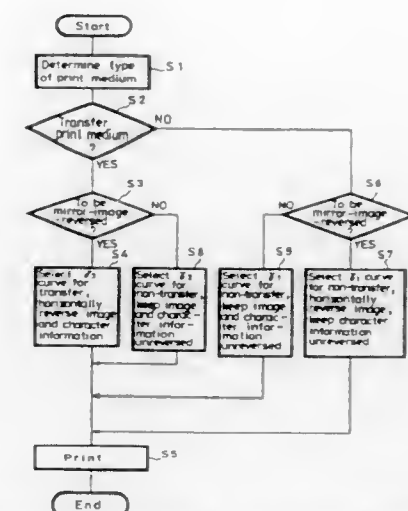
5 Claims

1. A video printer for transferring an image from an ink ribbon to a print sheet, comprising:

print medium detecting means for detecting a type of a print medium and outputting medium data indicative of the detected type;

memory means for storing image data to be printed;

input means for inputting reversal information indicating whether the image data stored in said memory means are to be reversed or not;



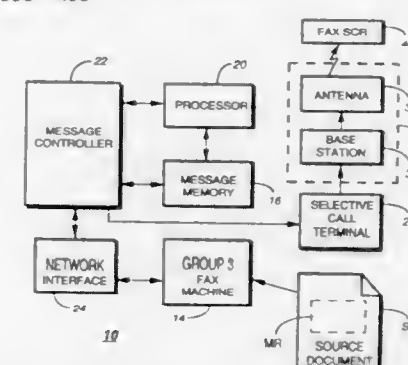
reversing means for selectively outputting the image data stored in said memory means and reversed image data which are a reversal of the image data stored in said memory means; adjusting means for adjusting image density of said image data with image density adjusting data selected from a plurality of sets of image density adjusting data each having a different image density characteristic, and outputting the image data with the adjusted image density; a print head for transferring an image represented by the image data with the adjusted image density to the print medium with an ink ribbon; and control means for controlling said reversing means based on said reversal information and controlling said adjusting means to select the image density adjusting data based on both said reversal information and said medium data.

5,513,015
SYSTEM AND METHOD FOR SEGMENTING IMAGE OF A FACSIMILE MESSAGE FOR TRANSMISSION TO SELECTIVE CALL RECEIVER

Noah P. Orlan, 9573 Tavernier Dr., Boca Raton, Fla. 33496
 Filed Aug. 11, 1994, Ser. No. 288,855
 Int. Cl. H04N 1/387; 1/41

U.S. Cl. 358—453

19 Claims



1. A method for communicating a facsimile message to one or more of a plurality of facsimile selective call receivers each storing a facsimile codebook which is optimized for an image having a maximum resolution and width, the method comprising steps of: segmenting an image of the facsimile message into a plurality of subimages which have a width less than or equal to the width for which the facsimile codebook is optimized when the image of the facsimile message has a width greater than the width for which the facsimile codebook is optimized; separately compressing each subimage on the basis of said facsimile codebook to generate a compressed subimage for each subimage; and

generating a paging signal including information representative of the plurality of compressed subimages; receiving the paging signal at a facsimile selective call receiver; extracting the information representative of the compressed subimages from the paging signal; and decompressing each compressed subimage on the basis of the facsimile codebook.

5,513,016 METHOD AND APPARATUS FOR PROCESSING IMAGE SIGNAL

Yoshiaki Inoue, Kanagawa, Japan, assignor to Fujitsu Photo Film Co., Kanagawa, Japan

Continuation of Ser. No. 779,319, Oct. 18, 1991, abandoned.

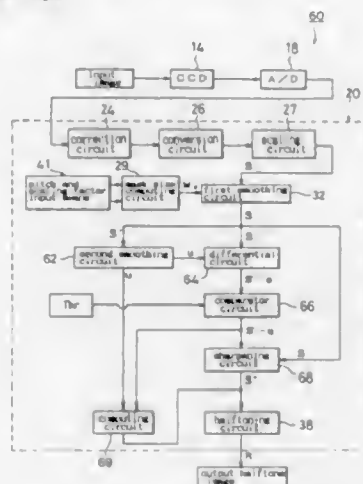
This application Jun. 6, 1994, Ser. No. 254,421

Claims priority, application Japan, Oct. 19, 1990, 2-281079; Oct. 19, 1990, 2-281080

Int. Cl. H04N 1/40

U.S. Cl. 358—456

21 Claims



1. A method for processing image signals comprising the steps of:

- determining an averaging mask size in accordance with a pitch of a periodic pattern in image information corresponding to said image signals, respectively;
- smoothing said image information containing said periodic pattern to obtain a first unsharpness signal;
- sharpening said first unsharpness signal to obtain a second unsharpness signal and halftoning said second unsharpness signal to form a halftone image signal, wherein said smoothing step is performed with reference to said averaging mask size.

5,513,017

AUTOMATIC DOCUMENT IMAGING MODE SELECTION SYSTEM

Kurt T. Knodt, Rochester; James R. Graves, Ontario; John E. Gauronski, Rochester; Herbert J. Raymor, Holcomb; Randall P. Cole, Webster; K. U. Filomena, Fairport; Frank J. DeNunzio, Webster; David E. Crocker, Fairport, and Simon J. Barnett, Macedon, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

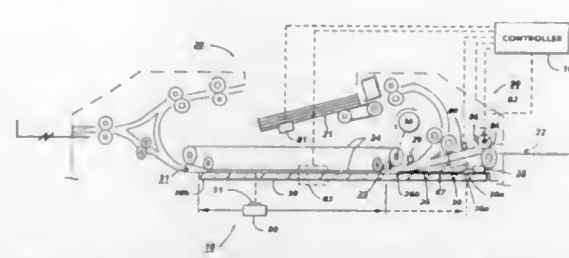
Filed Sep. 28, 1990, Ser. No. 590,580

Int. Cl. H04N 1/40

U.S. Cl. 358—471

8 Claims

1. In a document handler for an imaging station with image scanning means, said document handler having plural different operating modes, and said document handler having plural different document inputs for the placement of documents in said document handler to be imaged at said imaging station; said plural document inputs including: means for opening said document



handler for manual placement of a document on said imaging station, a document stacking tray of an automatic document separator/feeder for placement of documents therein, and a semi-automatic document feeding input slot;

the improvement comprising automatic mode selection means for the automatic selection of one of said plural operating modes of said document handler;

said automatic mode selection means being controlled by a pre-programmed response to the combinations of the presence of absence of plural control signal inputs from, respectively:

- first sensor means for sensing the input of a document to said stacking tray of said automatic document separator/feeder;
- second sensor means for sensing the input of a document to said semi-automatic document feeding input slot;
- third sensor means for detecting said opening of said document handler;

user input means for manually selecting additional user-selectable document modes and providing respective said control signals therefore;

memory means for retaining said signal from said third sensor means and providing another said control signal input to said automatic mode selection means indicating that said third sensor means has not been actuated by the operating of said document handler since the last operation of said image scanning means;

and selectable means for optically detecting the absence of a document at said imaging station with said scanning means;

said selectable means for optically detecting the absence of a document at said imaging station with said scanning means only being activated in response to a limited number of said combinations of said input signals in said automatic mode selection means;

said automatic mode selection means further including pre-programmed mode priority selections for resolving mode selection conflict where more than one said sensor means is simultaneously activated.

5,513,018

DIGITAL IMAGE FORMING APPARATUS HAVING A FUNCTION OF COMPENSATING SHADINGS USING A WHITE REFERENCE PLATE

Hiroyuki Nisimura, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

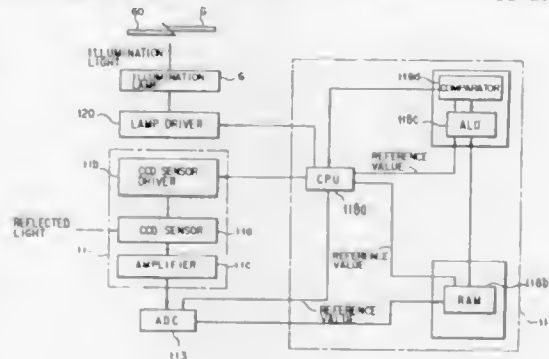
Filed Mar. 24, 1993, Ser. No. 36,326

Claims priority, application Japan, Sep. 14, 1992, 4-244717

Int. Cl. H04N 1/00; 1/04; G06K 9/00

U.S. Cl. 358—474

12 Claims



1. An image scanning apparatus, comprising:

means for sequentially illuminating target areas while scanning said target areas;

means for producing an image signal representative of the shade of darkness of areas obtained by sequentially illuminating the areas by said illuminating means during a first illumination, the target areas including a reference area of predetermined shade of darkness and an area of an original to be read;

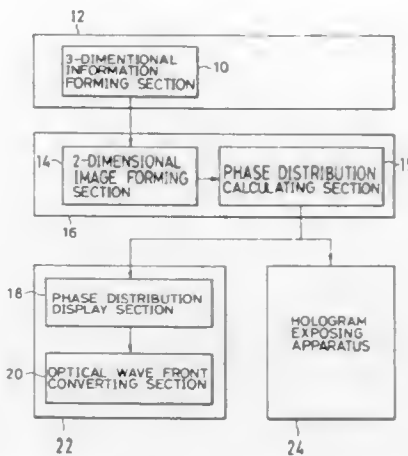
means for setting a light quantity of the illuminating means on the basis of the image signal corresponding to the reference area so that said light quantity is in a proper light quantity during said first illumination of said illuminating means;

means for storing sequential data representative of the light quantity obtained by said sequentially illuminating means;

means for comparing present light quantity data with previous light quantity data stored in said storing means to obtain a difference between said present data and said previous data;

and

means for adjusting the light quantity of the illuminating means after a second illumination of said illuminating means such that said light quantity, when said difference falls within a set range, remains the same and said light quantity is only changed to a proper light quantity by illuminating said reference area by said illuminating means when said difference is out of said set range.



phase distribution calculating means for calculating a phase distribution at a hologram forming surface from said plurality of 2-dimensional images formed by said image forming means;

hologram expressing means for expressing the phase distribution obtained by said phase distribution calculating means onto the hologram forming surface; and

wave front converting means for irradiating a reference light to the phase distribution expressed by said hologram expressing means and converting the reference light into the optical wave front, thereby displaying a solid image.

5,513,019

SEMI-TRANSPARENT REFLECTIVE LAYER FOR A PHASE HOLOGRAM

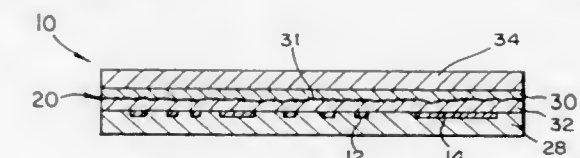
Peter Cueli, Belle Mead, N.J., assignor to Crown Roll Leaf, Inc., Paterson, N.J.

Continuation-in-part of Ser. No. 48,769, Apr. 16, 1993, Pat. No. 5,351,142. This application Oct. 26, 1993, Ser. No. 143,542

Int. Cl. B42D 15/00; G03H 1/00; G02B 5/32; 5/28

U.S. Cl. 359—2

23 Claims



1. A phase hologram, comprising:

(a) a substrate having a holographic microtexture embossed therein on at least a portion of a surface thereof; and

(b) a reflective layer of a mixture of tin tungsten oxide and zinc sulfide deposited upon said embossed microtexture said reflective layer having a refractive index different from that of said substrate and being at least semi-transparent.

5,513,020

STEREOSCOPIC DISPLAY APPARATUS USE A HOLOGRAPHIC PHASE DISTRIBUTION FORMED FROM TWO-DIMENSIONAL IMAGES

Masayuki Kato, Hirokazu Arikate, Manabu Ishimoto, Noriko Sato, and Masato Nakashima, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Aug. 31, 1993, Ser. No. 113,897

Claims priority, application Japan, Sep. 18, 1992, 4-248988

Int. Cl. G03H 1/08

U.S. Cl. 359—9

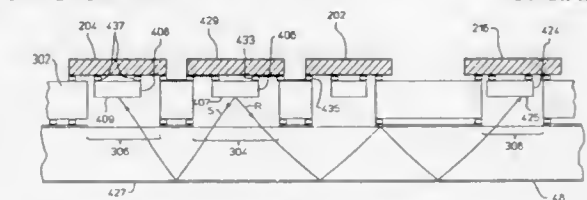
23 Claims

22. A stereoscopic display apparatus of a hologram, comprising: 3-dimensional information forming means for classifying a plurality of objects to be displayed into groups and forming 3-dimensional information;

image forming means for forming a plurality of 2-dimensional images for each of said plurality of objects classified into the groups from the 3-dimensional information formed by said 3-dimensional information forming means;

U.S. Cl. 359—15

18 Claims



5,513,022

METHOD AND APPARATUS FOR DIRECT TRANSMISSION OF AN OPTICAL IMAGE

Jung Y. Son; Hyung W. Jeon; Yong J. Choi, all of Seoul, Rep. of Korea, and Vladimir I. Bobrinev, Moscow, Russian Federation, assignors to Korea Institute of Science and Technology, Seoul, Rep. of Korea

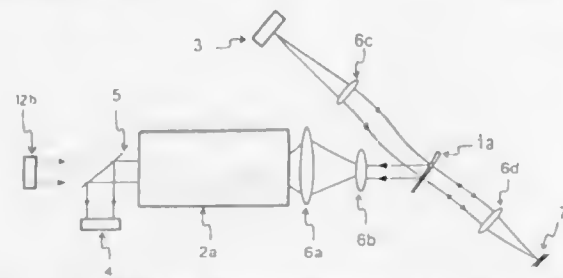
Filed Sep. 20, 1994, Ser. No. 309,089

Claims priority, application Rep. of Korea, Dec. 30, 1993, 93-31238

Int. Cl.⁶ G02B 5/32

U.S. Cl. 359—16

25 Claims



1. An apparatus for direct transmission of an optical image comprising:

- a first lens means for collimating light from said optical image into a first parallel beam;
- a transmission medium for transmitting optical signals;
- a holographic storage medium containing information on distortion of said transmission medium;
- a mirror;
- a second lens means for focusing said first parallel beam passing through said holographic storage medium onto the surface of said mirror and collimating a beam reflected from said mirror into a second parallel beam, the direction of propagation of said second parallel beam being opposite to that of said first parallel beam;
- a third lens means for directing a phase conjugate wave reproduced from said holographic storage medium by said second parallel beam to said transmission medium; and
- an image display for displaying said optical signals transmitted through said transmission medium.

5,513,023

POLARIZING BEAMSPLITTER FOR REFLECTIVE LIGHT VALVE DISPLAYS HAVING OPPOSING READOUT BEAMS ONTO TWO OPPOSING SURFACES OF THE POLARIZER

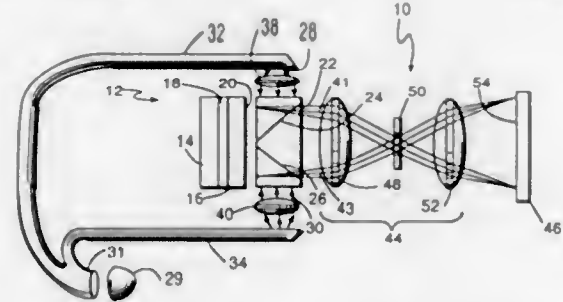
Victor J. Fritz, Chino Hills, and Ronald S. Gold, Fullerton, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Oct. 3, 1994, Ser. No. 316,763

Int. Cl.⁶ G02F 1/1335; 1/1343

U.S. Cl. 359—40

14 Claims



1. An image display system for projecting an image intensity pattern, comprising:

- a polarizer having first and second polarizing surfaces;
- a light source for projecting opposing readout beams onto respective polarizing surfaces of said polarizer, said surfaces

reflecting either the S or P polarized components of said readout beams and passing the other components; and a reflective light valve cell positioned to impart said image intensity pattern onto said reflected components' polarizations and reflecting them towards said polarizer, said polarizer spatially modulating said reflected components' intensities in accordance with their polarization modulations.

5,513,024

LIQUID CRYSTAL DISPLAY AND METHOD FOR MAKING THE SAME

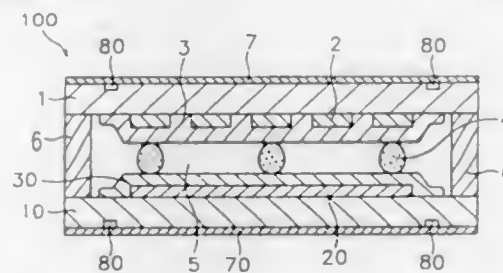
Jin-Kyu Kang, Kyunggi-do, Rep. of Korea, assignor to Samsung Display Devices Co., Ltd., Kyunggi-do, Rep. of Korea
Filed Nov. 1, 1993, Ser. No. 146,911

Claims priority, application Rep. of Korea, Dec. 4, 1992, 92-23338

Int. Cl.⁶ G02F 1/1335; 1/1333

U.S. Cl. 359—62

9 Claims



1. A liquid crystal display comprising:
- a pair of soda lime glass substrates, each of said substrates having an open groove at an outer surface thereof;
 - a plurality of spacers disposed between said substrates;
 - a sealant for sealing said substrates; and
 - a liquid crystal between said substrates.

5,513,025

IMAGE DISPLAY APPARATUS

Rikuji Watanabe; Katsuya Fujisawa, and Ikuo Onishi, all of Kurashiki, Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan

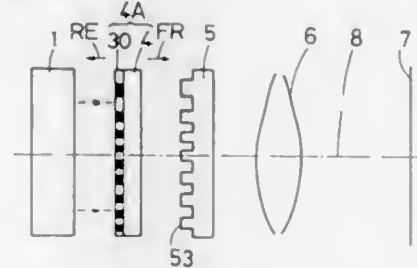
Filed Apr. 27, 1993, Ser. No. 52,832

Claims priority, application Japan, Apr. 28, 1992, 4-136312; Apr. 29, 1992, 4-137931; May 1, 1992, 4-139993; Mar. 31, 1993, 5-074455; Apr. 14, 1993, 5-087665

Int. Cl.⁶ G02F 1/1335; 1/137; G02B 27/46; 5/18

U.S. Cl. 359—68

8 Claims



1. An image display apparatus which comprises:
- a monochromatic image display device including a plurality of dot-shaped picture elements arranged in a two-dimensional pattern; and
 - a diffraction grating disposed on an optical path through which imagewise rays of light emerging from the image display device travel, said diffraction grating having a spatial cut-off frequency which is chosen to lie between the Nyquist fre-

quency and a sampling frequency, both being determined by an interval between the picture elements in the image display device.

5,513,026

METHOD OF PRODUCING A LIQUID CRYSTAL DISPLAY WITH A SPACER

Takumi Suzuki, Atsugi; Reiko Kameyama; Sumio Kamoi, both of Yokohama; Hisashi Kikuchi, Atsugi; Satoshi Komori, Yamato; Tomomi Suetake, Isehara, and Yumi Matsuki, Yamato, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

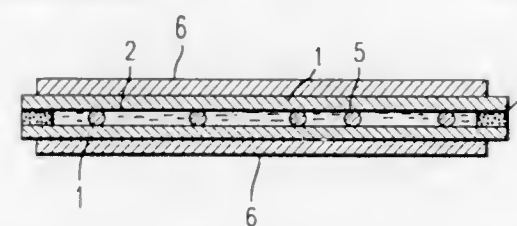
Division of Ser. No. 182,401, Jan. 18, 1994. This application
Feb. 15, 1995, Ser. No. 389,216

Claims priority, application Japan, Jan. 18, 1993, 5-5521;
Jan. 29, 1993, 5-13654; Aug. 24, 1993, 5-209139

Int. Cl.⁶ G02F 1/1339

U.S. Cl. 359—81

5 Claims



1. A method of producing an LCD having at least a first polymer film substrate and a second polymer film substrate, comprising the steps of:

- forming transparent electrodes on each of respective facing surfaces of said first and second polymer film substrates, a first of the facing surfaces of said first polymer film substrate having a greater area occupied by the transparent electrodes than a second of the facing surfaces of the second polymer film substrate;
- covering said transparent electrodes with an alignment coating;
- spraying a spacer between said facing surfaces of said first and second polymer film substrates onto the first face of the first polymer film substrate; and
- filling a gap between said facing surfaces of said first and second polymer film substrates which is formed when said LCD has edges thereof adhered together with liquid crystals.

5,513,027

LIQUID CRYSTAL DISPLAY DEVICE CAPABLE OF DISPLAYING CHANGEABLE SYMBOLS USING TWO SUBSTRATES

Daniel Paratte, Neuchâtel, Switzerland, assignor to ETA Sa Fabriques d'Ebauches, Grenchen, Switzerland
Filed Oct. 28, 1994, Ser. No. 331,098

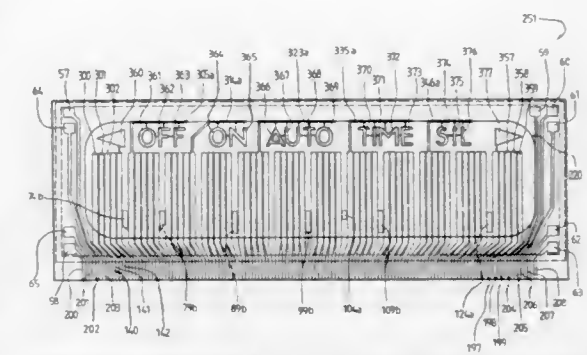
Claims priority, application France, Nov. 4, 1993, 93 13121

Int. Cl.⁶ G02F 1/1343

U.S. Cl. 359—87

3 Claims

1. A display device comprising:
- a first substrate and a second substrate spaced apart and facing each other,
 - a liquid crystal film switchable being two states which are optically perceptible, said film being enclosed in the space delimited by said first and second substrates,
 - at least a first display electrode formed on the face of said first substrate which faces said second substrate,
 - a set of elongated display electrodes formed on the face of said first substrate facing said second substrate, and
 - a set of elongated counter-electrodes formed on the face of said second substrate facing said first substrate, said counter-electrodes being superposed with said elongated display electrodes so as to be capable of displaying therewith symbols



which are changeable by selective application of a switching voltage therebetween, said elongated display electrodes being juxtaposed in a first general direction across substantially the entire length of said first substrate, said counter-electrodes being juxtaposed across substantially the entire width of said second substrate and substantially their whole length in a second general direction perpendicular to said first general direction so as to create a matrix of display elements for forming said changeable display symbols, said counter-electrodes being also superposed with said first display electrode so as to create therewith a fixed display symbol when a switching voltage is applied therebetween, and the distance separating each adjacent counter-electrode being substantially less than the width of said first display electrode.

5,513,028

LIQUID CRYSTAL DISPLAY WITH DISPLAY AREA HAVING SAME HEIGHT AS PERIPHERAL PORTION THEREOF

Koichi Sono, Hiratsuka; Mamoru Miyawaki, Isehara; Akira Ishizaki, Atsugi; Katsuhisa Ogawa, Machida; Katsuhito Sakurai, Hadano; Shigetoshi Sugawa, Atsugi, and Shigeki Kondo, Hiratsuka, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 21,549, Feb. 24, 1993, abandoned.

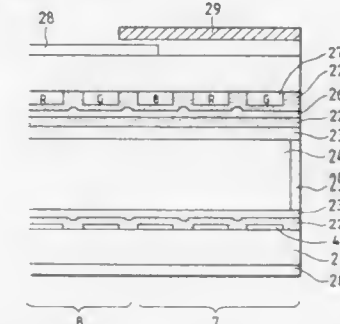
This application Apr. 10, 1995, Ser. No. 419,762

Claims priority, application Japan, Feb. 27, 1992, 4-075574;
Jan. 18, 1993, 5-021641

Int. Cl.⁶ G02F 1/1343

U.S. Cl. 359—87

17 Claims



1. A liquid crystal display device, comprising:
- a pixel electrode substrate having a display area and a non-display area adjacent said display area, wherein said non-display area comprises an electrically insulated dummy part not used as said display area, and wherein said dummy part has a height substantially the same as that of said display area and has a layer structure which is the same as that of a pixel in said display area.

5,513,029

METHOD AND APPARATUS FOR MONITORING PERFORMANCE OF OPTICAL TRANSMISSION SYSTEMS

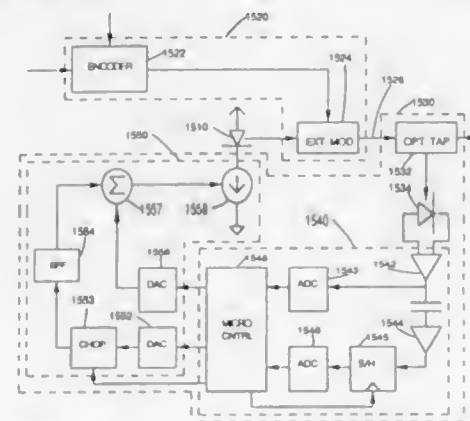
Kim B. Roberts, Kanata, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed Jun. 16, 1994, Ser. No. 261,350

Int. Cl.⁶ H04B 10/16; 10/18

U.S. Cl. 359—177

32 Claims



1. A method for monitoring the performance of an optical amplifier, comprising:
 - modulating an optical signal with a low frequency dither signal to provide a modulated optical signal having a known modulation depth, the low frequency dither signal encoding the known modulation depth;
 - tapping a portion of the optical signal at an optical output of an optical amplifier;
 - measuring a total power of the tapped portion of the optical signal, detecting the low frequency dither signal in the tapped portion of the optical signal to determine the known modulation depth and measuring a dither amplitude of the tapped portion of the optical signal; and
 - estimating signal and noise components of the tapped portion of the optical signal based on the measured dither amplitude, the measured total power and the known modulation depth.

5,513,030

OPTICAL PULSE RETIMING AND RESHAPING CIRCUIT

Richard E. Epworth, Sawbridgeworth, United Kingdom, assignor to Northern Telecom Limited, Quebec, Canada

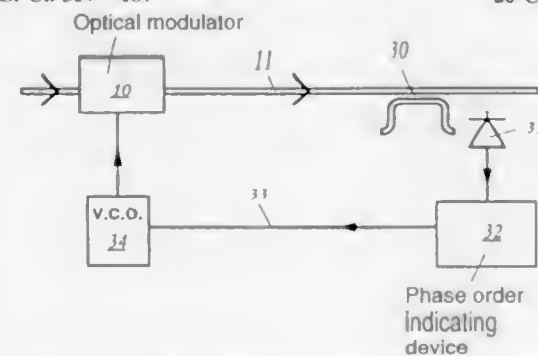
Filed Oct. 7, 1993, Ser. No. 133,446

Claims priority, application United Kingdom, Dec. 23, 1992, 9226767

Int. Cl.⁶ H04B 10/04

U.S. Cl. 359—187

20 Claims



1. An optical pulse retiming and reshaping circuit including a phase-locked loop comprising:
 - an optical modulator having an optical input, an optical output, and having a modulation control input;

an electrical oscillator having a phase/frequency control signal input, and an output connected to the modulation control input of the modulator;

means optically coupled with the modulator, which means is provided with an electrical output at which is generated by said means an electrical signal which is a measure of the mean optical power transmitted by, or intercepted by, the modulator; and

a phase order indicating device having an input connected to the output of said means, and an output connected to the phase/frequency control signal input of the oscillator.

5,513,031

ADJUSTABLE OPTICAL COMPONENT

Raymond Vuilleumier, Fontainemelon, Switzerland; Karsten Kralczek, Waldbronn, and Axel Wiese, Karlsruhe, both of, Germany, assignors to Hewlett-Packard Company, Palo Alto, Calif.

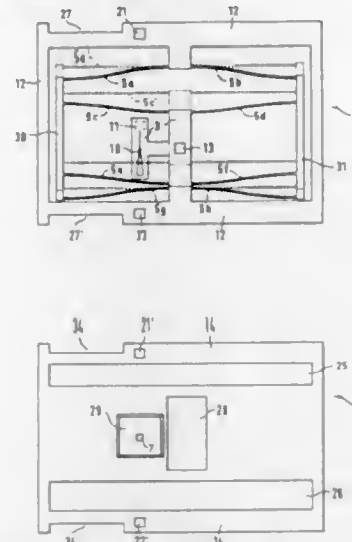
Filed May 17, 1994, Ser. No. 245,243

Claims priority, application European Pat. Off., Jun. 9, 1993, 93109248

Int. Cl.⁶ G02B 26/02

U.S. Cl. 359—227

13 Claims



1. An adjustable optical component comprising:
 - a) a movable member for providing an optical function, said movable member having a portion which exhibits a planar shape and comprised of a base material which enables said movable member to exhibit rigidity in a direction normal to said planar shape,
 - b) resilient suspension means, for connecting the movable member to a frame, wherein
 - c) the movable member and the resilient suspension means mainly consist of microstructures made of a common base material.

5,513,032

ACTIVELY PUMPED FARADAY OPTICAL FILTER

Richard I. Billmers, Bensalem; Vincent M. Contarino, Warrington; David M. Allocca, Warminster; Martin F. Squicciarini, Lansdale, and William J. Scharpf, Bensalem, all of Pa., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 3, 1995, Ser. No. 440,724

Int. Cl.⁶ G02F 1/03

U.S. Cl. 359—244

9 Claims

1. An actively pumped optical filter for filtering incident light energy having a plurality of polarizations, comprising:

5,513,034

INFRARED OPTICAL SYSTEM

Hillary G. Sillitto, Mid Calder; Alison B. Lessels, Freuchie, both of, United Kingdom; Evan S. Cameron, Penetanguishene, Canada, and Thomas B. Wilson, Edinburgh, United Kingdom, assignors to GEC Marconi Avionics (Holdings) Limited, Middlesex, United Kingdom

PCT No. PCT/GB92/00486, § 371 Date Apr. 5, 1994, § 102(e) Date Apr. 5, 1994, PCT Pub. No. WO92/16864, PCT Pub. Date Oct. 1, 1992

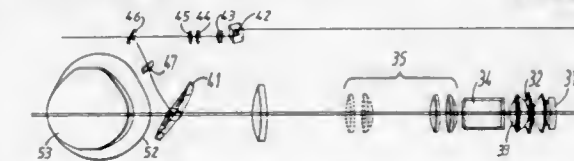
PCT Filed Mar. 18, 1992, Ser. No. 119,110

Claims priority, application United Kingdom, Mar. 22, 1991, 9106163

Int. Cl.⁶ G02B 13/14; 23/02

U.S. Cl. 359—351

10 Claims



1. An optical arrangement comprising;
 - an infrared imaging system operating in conjunction with a first beam having wavelengths less than 15 microns;
 - a coherent infrared source generating a second beam having wavelengths shorter than the first beam wavelengths;
 - an objective lens arrangement including an objective lens having a hole formed in one side of the objective lens;
 - a partially reflective member located between the objective lens arrangement and the imaging system, and between the objective lens arrangement and the infrared source; and
 - a T.V. camera for receiving an image through the objective lens hole,
- wherein the first beam is directed to the imaging system from a region being imaged, and the second beam is directed from the infrared source to the region being imaged, the respective beams being directed to the partially reflective member so that the respective beams pass through the objective lens along substantially the same optical path as each other.

5,513,033

OPTICAL FIBRE AMPLIFIER

Terry Bricheno, Moorland View; Alan Fielding, Bishop's Stortford, and Sandra Davis, Fir Cottage, all of, United Kingdom, assignors to Northern Telecom Limited, Montreal, Canada

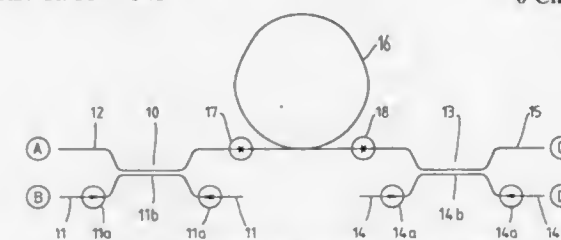
Filed May 20, 1993, Ser. No. 65,220

Claims priority, application United Kingdom, Jun. 27, 1992, 9213713

Int. Cl.⁶ G02B 6/26

U.S. Cl. 359—341

6 Claims



1. An optical fibre amplifier including a first length of single mode optical fibre laterally optically coupled in a first coupling region with a second length of single mode optical fibre, and in a second coupling region with a third length of single mode optical fibre, wherein said second and third lengths of optical fibre have substantially matching index profiles that are mismatched with respect to that of said first length of optical fibre, thereby providing said first length of optical fibre with a spot size mismatched with respect to that of said second and third lengths of optical fibre, and wherein included in said first length of optical fibre, between said first and said second coupling regions, is a length of optical fibre that is rendered optically amplifying to light of a first frequency when optically pumped with light of a second frequency, and wherein each of said first and second coupling regions is provided by a 2x2 tapered fused fibre coupler in which one of the two constituent fibres of that coupler is tapered more than the other by an amount providing the two constituent fibres with substantially matching propagation constants within its coupling region.

5,513,035

INFRARED POLARIZER

Yoshito Miyatake, Neyagawa, and Shinya Sannohe, Osaka, both of, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Division of Ser. No. 888,773, May 27, 1992, Pat. No.

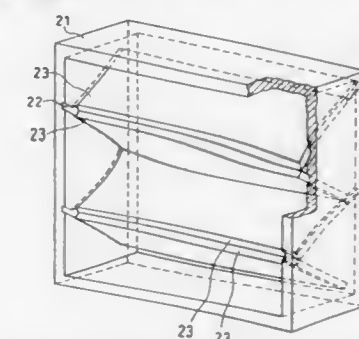
5,357,370. This application Aug. 24, 1994, Ser. No. 294,951

Claims priority, application Japan, May 29, 1991, 3-124312

Int. Cl.⁶ G02B 1/08; 1/10; 5/30; 27/28

U.S. Cl. 359—352

18 Claims



1. A polarizer comprising: at least one polarization-selective mirror including a substrate made of a substance which is substantially transparent to infrared radiation, and optical thin films with a higher refractive index than that of said substrate disposed on opposite surfaces of said substrate, said at least one mirror being obliquely arranged with respect to a given optical axis such that a transmittance of the polarizer for P polarized light incident upon the polarizer along said optical axis is at a maximum value.

5,513,036

PROJECTION SCREEN

Hiroshi Watanabe; Makoto Honda; Hiroshi Kojima, and Satoshi Nakamae, all of Tokyo, Japan, assignors to Dai Nippon Printing Co., Ltd., Japan

Filed Aug. 30, 1994, Ser. No. 297,822

Claims priority, application Japan, Aug. 31, 1993, 5-237146

Int. Cl.⁶ G03B 21/28

U.S. Cl. 359—457

9 Claims



1. A projection screen for a rear projection type television set, having a plurality of lens sheets arranged in the order of a lenticular lens sheet, a linear Fresnel lens sheet, and a circular Fresnel lens sheet when seen from a viewer's side, wherein a lens angle ψ of said linear Fresnel lens sheet is obtained in accordance with the following expressions:

$$\tan \psi = (\sin \theta_1 - \sin \theta_2) / ((n_L^2 - (\sin \theta_1)^2)^{1/2} - \cos \theta_2) \quad (1)$$

$$S = ((v - PJ) \cos \phi) / (f_1^2 + (v - PJ)^2)^{1/2} - \quad (2)$$

$$(\sin \phi) (n_c^2 - (v - PJ)^2 / (f_1^2 + (v - PJ)^2))^{1/2}$$

$$\sin \theta_1 = S \cos \phi + \sin \phi (1 - S^2)^{1/2} \quad (3)$$

$$\theta_2 = \tan^{-1} ((v - h_f) / f_2) \quad (4)$$

$$h_f \leq 0$$

where:

θ_1 : Incident light angle
 θ_2 : Outgoing light angle
 ψ : Linear Fresnel lens angle
 n_L : Linear Fresnel lens refractive index
 ϕ : Circular Fresnel lens angle
 v : Vertical coordinate value of linear Fresnel lens
 n_c : Circular Fresnel lens refractive index
 f_1 : Projection distance
 f_2 : Vertical light converging distance
 PJ : Vertical coordinate value of light source (A) (CRT)
 h_f : Vertical coordinate value of image formation point.

5,513,037

REAR-PROJECTION SCREEN AND A REAR PROJECTION IMAGE DISPLAY EMPLOYING THE REAR-PROJECTION SCREEN

Takahiko Yoshida, Minra; Koji Hirata, Kamakura; Hiroki Yoshikawa, Hiratsuka; Masayuki Muranaka, Yokohama; Isao Yoshizaki, Yokohama, and Atsuo Osawa, Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 938,861, Sep. 1, 1992, Pat. No. 5,400,114. This application Nov. 9, 1994, Ser. No. 336,528

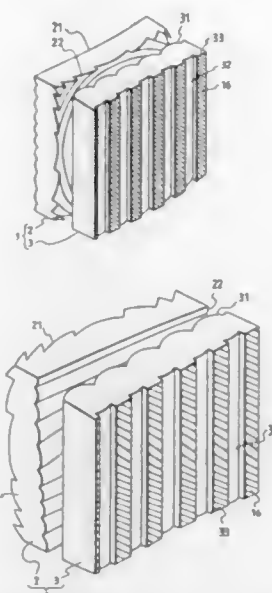
Claims priority, application Japan, Sep. 5, 1991, 3-252831; Oct. 28, 1991, 3-307230; Dec. 24, 1991, 3-355569; Jun. 1, 1992, 4-140388

Int. Cl.⁶ G03B 21/60

U.S. Cl. 359—457

6 Claims

1. A lenticular lens sheet for a rear-projection screen, said lenticular lens sheet comprising an entrance surface formed by contiguously and horizontally arranging a plurality of vertically elongate lenticular lenses, a refracting power of a portion of each



of said vertically elongate lenticular lenses, remote from an optical axis of said vertically elongate lenticular lenses, being smaller than the refracting power around the optical axis.

5,513,038

ANTIREFLECTIVE FILM AND OPTICAL ELEMENTS HAVING THE SAME

Jun Abe, Hachioji, Japan, assignor to Nikon Corporation, Tokyo, Japan

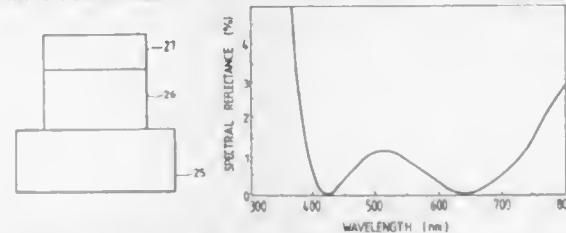
Filed Jun. 24, 1993, Ser. No. 81,189

Claims priority, application Japan, Jul. 24, 1992, 4-198815

Int. Cl.⁶ G02B 1/10

U.S. Cl. 359—580

14 Claims



1. An antireflective film comprising:
 a film composed of an inorganic chemical compound comprising Mg, Si, O and F; and
 a film composed of an inorganic chemical compound comprising Zr, Si and O.

5,513,039

ULTRAVIOLET RESISTIVE COATED MIRROR AND METHOD OF FABRICATION

Samuel Lu, Agoura; Ming-Jau Sun, Woodland Hills; Alan F. Stewart, Thousand Oaks, all of Calif., and Anthony W. Louderback, Eugene, Oreg., assignors to Litton Systems, Inc., Woodland Hills, Calif.

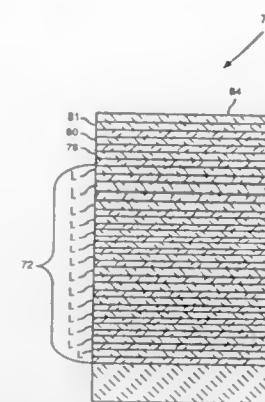
Filed May 26, 1993, Ser. No. 67,385

Int. Cl.⁶ G02B 1/10

U.S. Cl. 359—584

8 Claims

1. A mirror for reflecting a selected frequency of light, comprising:
 a substrate;
 a first set of layers of a first dielectric material comprised of titanium dioxide, TiO₂, and having a refractive index n_1 coated upon the substrate to a thickness equal to one quarter



of the wavelength corresponding to the selected frequency in the first dielectric material;

a second set of layers of a second dielectric material comprised of silica, SiO₂, and having a refractive index n_2 coated upon the first set of layers to a thickness equal to one quarter of the wavelength corresponding to the selected frequency in the second dielectric material, the layers of the first and second materials being applied alternately to produce a stack of layers of the first and second materials;

a layer of a third dielectric material that comprises a mixture of SiO₂ and HfO₂ coated upon one layer of the second set of layers; and

a layer of a fourth dielectric material that comprises Al₂O₃ coated upon the layer of the third dielectric material.

5,513,040

OPTICAL DEVICE HAVING LOW VISUAL LIGHT TRANSMISSION AND LOW VISUAL LIGHT REFLECTION

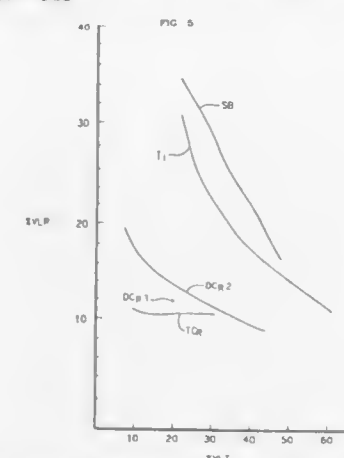
Peter Y. Yang, San Diego, Calif., assignor to Deposition Technologies, Inc., San Diego, Calif.

Filed Nov. 1, 1994, Ser. No. 332,922

Int. Cl.⁶ G02B 1/10; G02B 39/00; C03C 27/04

U.S. Cl. 359—585

16 Claims



1. A solar control film having low visible light transmittance and low visible light reflectance comprising:

a first sheet of transparent substrate material having thereon a thin, incoherent, transparent film of metal effective to partially block visible light transmittance and having a preselected low visible light reflectance;

a second sheet of transparent substrate material having thereon a thin, incoherent, transparent film of metal effective to partially block visible light transmittance and having a preselected low visible light reflectance; and

a layer of adhesive bonding said first and second sheets to one another with the films of metal facing one another and separated and optically decoupled from one another.

the bonded sheets forming a composite film having a combined visible light transmittance blocking effect equal approximately to the sum of the blocking effects of the incoherent films and visible light reflectance substantially equal to the visible light reflectance of just one of the incoherent films, the visible light reflectance of each incoherent film being such that the visible light reflectance of the composite film does not exceed about 12% when visible light transmittance is about 50% or less, does not exceed about 15% when visible light transmittance is about 35% or less and does not exceed about 20% when visible light transmittance is about 25% or less.

5,513,041

VISUAL DISPLAY APPARATUS COMPRISING A DECENTERED CORRECTING OPTICAL SYSTEM

Takayoshi Togino, Koganei, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

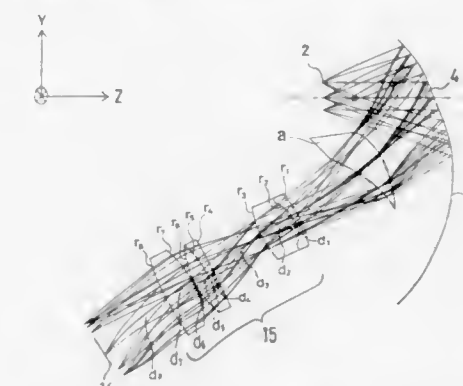
Filed Feb. 9, 1994, Ser. No. 193,858

Claims priority, application Japan, Feb. 9, 1993, 5-021208; Oct. 28, 1993, 5-270768

Int. Cl.⁶ G02B 27/14; 17/00

U.S. Cl. 359—631

14 Claims



1. A visual display apparatus comprising:
 an image display device for forming an image for observation, a relay optical system for relaying a real image from said image display device;

an ocular concave reflecting optical system for projecting the real image relayed by said relay optical system as an enlarged image and for reflectively bending rays emitted from said image display device; and

a decentered correcting optical system disposed between said relay optical system and said ocular concave reflecting optical system and having a lens surface decentered with respect to an optical axis formed by said relay optical system wherein a surface of said decentered correcting optical system that is the closest to said ocular concave reflecting optical system is convex toward said ocular concave reflecting optical system.

5,513,042

LENS SYSTEM WITH MASTER LENS SYSTEM AND CONVERSION LENS

Masami Itoh, Higashi Kurume, and Shuichi Kikuchi, Yokohama, both of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Jun. 6, 1994, Ser. No. 254,565

Claims priority, application Japan, Jun. 29, 1993, 5-159743

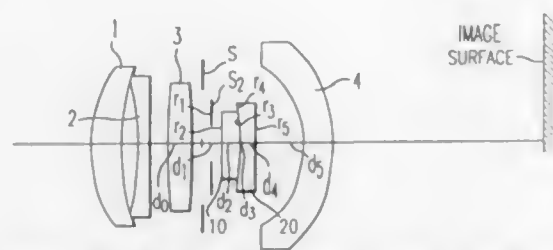
Int. Cl.⁶ G02B 15/02

U.S. Cl. 359—674

12 Claims

1. A lens system comprising:

a master lens system comprising a first lens, a second lens, a third lens, and a fourth lens, which are sequentially arranged from an object side of said lens system to an image side thereof, and a first diaphragm which is arranged between said third lens and said fourth lens.



wherein said first lens is a positive meniscus lens having a convex surface toward the object side, said second lens is a negative lens, said third lens is a positive lens, and said fourth lens is a negative meniscus lens having a concave surface toward the object side; and a conversion lens system,

wherein said conversion lens system is arranged in such a manner that said conversion lens system can be inserted and removed between said third lens and said fourth lens of the master lens system, and

wherein when said conversion lens system is inserted and removed between said third lens and said fourth lens of the master lens system, relative positions of said respective first, second, third and fourth lenses of the master lens system are fixed, and a focal length of said lens system becomes shorter than a focal length of said master lens system.

5,513,043

REAL IMAGE TYPE VARIABLE POWER FINDER

Tetsuya Abe, Hokkaido; Sachio Hasushita, and Takayuki Ito, both of Tokyo, all of Japan, assignors to Asahi Kogaku Kogyo Kaisha, Tokyo, Japan

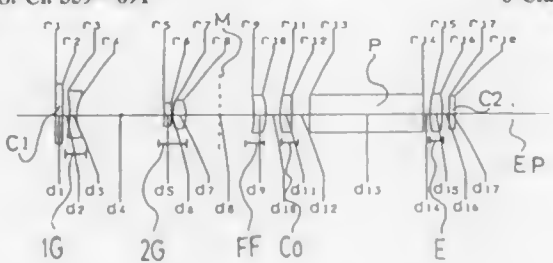
Filed Feb. 3, 1995, Ser. No. 383,380

Claims priority, application Japan, Feb. 4, 1994, 6-012977

Int. Cl.⁶ G02B 15/14; 23/00

U.S. Cl. 359-691

8 Claims



1. A real image type variable power finder comprising: an objective lens system, a condenser lens and an ocular lens system, arranged in this order from an object side; an image erecting optical system;

said objective lens system comprising a first lens group having a negative power and a second lens group having a positive power in this order from the object side, so that said first and second lens groups can be moved to vary a magnification;

said second lens group comprising a negative lens and a positive lens in this order from the object side; and, said variable power finder satisfies the following relationships:

$$2.5 < f_2/f_1 < 4.0$$

$$-0.7 < f_3/f_1 < -0.3 \quad (f_1 < 0)$$

$$0.4 < f_4/f_2 < 0.8$$

$$-0.3 < f_3/f_{2-1} < -0.05 \quad (f_{2-1} < 0)$$

wherein

f_1 designates a focal length of said ocular lens system; f_2 designates an effective focal length of a lens system including said objective lens system and said condenser lens at a wide angle extremity;

f_1 designates a focal length of said first lens group of said objective lens system; f_2 designates a focal length of said second lens group of said objective lens system; f_{2-1} designates a focal length of said negative lens of said second lens group of said objective lens system.

5,513,044

RESETTING MECHANISM FOR ELECTRONIC THEODOLITE

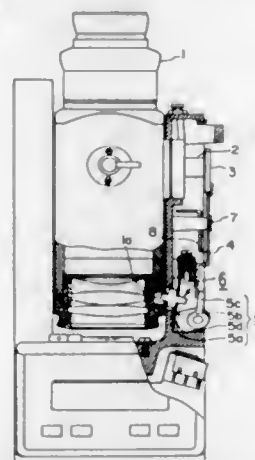
Akio Kubo, 655, Yamanouchi Kamakura shi Kanagawa ken, Japan

Filed Dec. 6, 1993, Ser. No. 163,305

Int. Cl.⁶ G02B 15/14; 23/08

U.S. Cl. 359-704

2 Claims



1. A resetting mechanism for an electronic theodolite comprising: horizontal shaft means for vertically rotating a telescope; a first cam provided at one end of the horizontal shaft; a lock lever, the first cam limiting the position of the lock lever; a second cam locked or released by the lock lever; a lock member operated by the second cam; means for resetting a telescope's position when the telescope is rotated to a fully down locked position; the telescope having a concave locking recess for locking it in the reset position by the lock member, the first cam having a projection portion contoured to press the lock lever when the telescope is turned fully down; the second cam having a stepped portion locked by the lock lever when the lock lever is not pressed by the first cam, a cam portion on said second cam which presses the lock member when said second cam is rotated; and means for turning on or off a power switch of the electronic theodolite in accordance with a rotation of said second cam; the lock member having a projection piece for engaging the concave lock recess of the telescope when the lock member is pressed by the second cam.

5,513,045

FAST ASPHERICAL LENS SYSTEM

Takayuki Ito, and Yasuyuki Sugano, both of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 16, 1994, Ser. No. 260,829

Claims priority, application Japan, Jun. 16, 1993, 5-145130

Int. Cl.⁶ G02B 13/04

U.S. Cl. 359-750

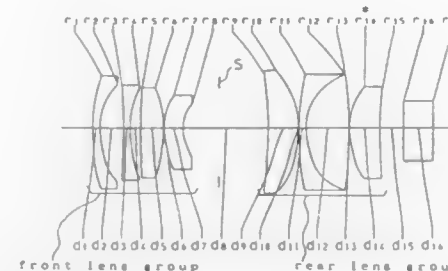
9 Claims

1. An aspherical lens system comprising:

a front lens group having a negative power, a diaphragm, and a rear lens group having a positive power, located in this order from an object side of the lens system, at least one lens having diverging aspherical surface is provided, in which the following conditions are satisfied;

$$-0.6 < 1/f_1 < -0.2$$

(1)



$$3.0 < \Sigma d_{F+S} / f < 8.0$$

(2)

$$3.0 < \Sigma d_R / f < 6.0$$

(3)

$$-0.9 < \Delta I_{ASP} < -0.1$$

(4)

wherein, f represents a focal length of the entire lens system, f_F represents a focal length of the front lens group, Σd_{F+S} represents a sum of the thickness of the front lens group and the distance between the front lens group and the rear lens group, Σd_R represents a thickness of the rear lens group,

ΔI_{ASP} represents an aberration factor of the aspherical surface term of the third-order spherical aberration factor of the aspherical lens (aberration factor when the reduced focal length is 1.0).

5,513,046

LARGE APERTURE RETROFOCUS LENS

Nobuaki Toyama, Saitama, Japan, assignor to Fuji Photo Optical Co., Ltd., Ohmiya, Japan

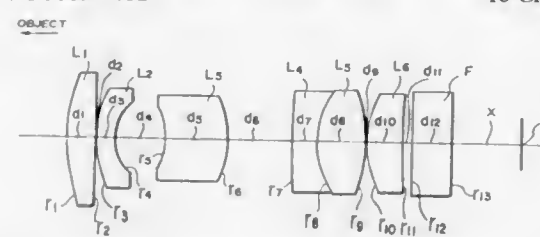
Filed Jun. 7, 1994, Ser. No. 255,705

Claims priority, application Japan, Jun. 8, 1993, 5-137098

Int. Cl.⁶ G02B 13/04

U.S. Cl. 359-752

10 Claims



1. A large aperture retrofocus lens system consisting of: a first lens L_1 having a positive refracting power, a second lens L_2 having a negative refracting power, a third lens L_3 which is a meniscus lens concave toward the object side, a fourth lens L_4 having a negative refracting power, a fifth lens L_5 having a positive refracting power and a sixth lens L_6 having a positive refracting power, the first to sixth lenses being arranged in this order from the object side.

5,513,047

ACTUATOR FOR AN OPTICAL HEAD

Tsutomu Matsui, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed May 18, 1994, Ser. No. 245,476

Claims priority, application Japan, May 18, 1993, 5-115078; Jun. 7, 1993, 5-135494

Int. Cl.⁶ G02B 7/02; G11B 7/00

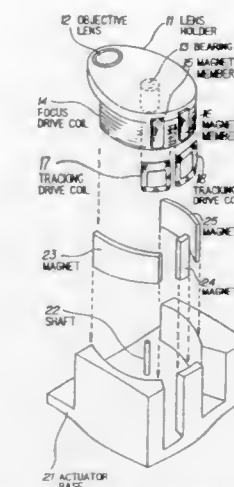
U.S. Cl. 359-824

9 Claims

1. An actuator for an optical head, comprising:

a lens holder for holding an objective lens;

a focus drive coil disposed on an outer periphery of said lens holder, said focus drive coil for generating a magnetic flux passing therethrough in a direction of a focus adjustment;



first and second tracking drive coils provided on said focus drive coil, said first and second tracking drive coils for generating magnetic fluxes passing therethrough in a direction orthogonal to said direction of said focus adjustment;

an actuator base having a shaft for supporting said lens holder, said lens holder adapted to be moved down and up along said shaft and rotated around said shaft;

a first magnet provided on said actuator base for applying a magnetic field to said first and second tracking drive coils, said first magnet facing adjacent half portions of said first and second tracking drive coils; and

second and third magnets provided on said actuator base for applying magnetic fields to said focus drive coil and said first and second tracking drive coils, said second magnet facing an outer half portion of said first tracking drive coil and a first predetermined portion of said focus drive coil, said third magnet facing an outer half portion of said second tracking drive coil and a second predetermined portion of said focus drive coil, said magnetic field of said first magnet being opposite in direction to said magnetic fields of said second and third magnets, and said outer half portions of said first and second tracking drive coils being opposite to said adjacent half portions thereof;

said focus drive coil and said first and second tracking drive coils cooperate with said first, second and third magnets to move said lens holder up and down said shaft and to rotate said lens holder about said shaft.

5,513,048

TELESCOPIC SIDE VIEW MIRROR FOR AUTOMOBILES

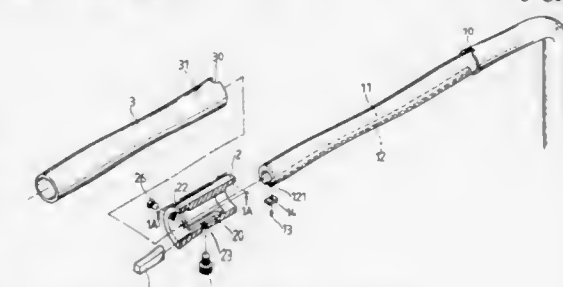
Ming-En Chen, P.O. Box 82-144, Taipei, Taiwan

Filed Apr. 27, 1995, Ser. No. 429,557

Int. Cl.⁶ A45D 40/00; B60R 1/02; G02B 7/18; G09F 15/00

U.S. Cl. 359-881

5 Claims



1. A telescopic side view mirror comprising:

a housing;

a fixing tubular member formed with an inner tubular member having a longitudinal groove at a bottom;

a stopper being fixedly mounted in the longitudinal groove of said inner tubular member;
 an outer tubular member extending into said housing and fixedly mounted therein, said outer tubular member being formed with a hole close to an end thereof;
 a tubular connector fitted in said housing and formed with a slot having a first threaded hole engaged with a first bolt, a second threaded hole aligned with the hole of said outer tubular member, and two protuberances one close to an end thereof, said tubular connector being engaged at an end with said outer tubular member and at another end with said inner tubular member; and
 a positioning member fitted between the slot of said tubular connector and the longitudinal groove of said inner tubular member.

5,513,049

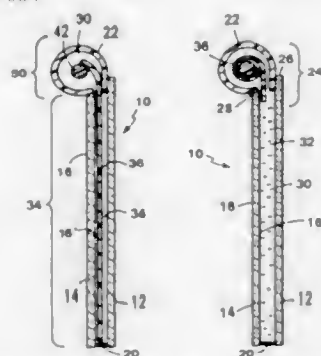
DAY-NIGHT REAR VIEW MIRROR

G. Brandt Taylor, Berlin, Mass., assignor to Day-Night Mirrors, Inc., Berlin, Mass.

Filed Jan. 12, 1995, Ser. No. 371,820

Int. Cl. G02B 5/26; 26/02; 5/08

U.S. Cl. 359—884



1. A day-night mirror assembly for a vehicle, said mirror assembly comprising:
 a first sheet of transparent material;
 a second sheet disposed adjacent and generally parallel to said first sheet, said second sheet having a first light reflective surface facing said first sheet;
 said first sheet and said second sheet joined along a predetermined peripheral region by a first wall of resilient material;
 a second wall of flexible material joining said first sheet and said second sheet along opposed edge regions of said first sheet and said second sheet;
 said first sheet, said second sheet, said first wall and said second wall defining a chamber;
 a predetermined volume of translucent liquid disposed within said chamber to occupy, in use, at least a region between said first sheet and said second sheet;
 a third sheet positioned within said chamber and disposed for movement between an active position, in which said third sheet is located generally between said first sheet and said second sheet, and an inactive position, in which said third sheet is removed from between said first sheet and said second sheet, said third sheet having a second light reflective surface facing said first sheet when said third sheet is in said active position, said second light reflective surface differing in light reflectivity from said first light reflective surface; and
 an actuator for selective movement of said third sheet between said active position and said inactive position.

5,513,050

Patent Not Issued For This Number

5,513,051
 IMAGE SIGNAL RECORDING AND REPRODUCING APPARATUS HAVING A QUASI-FIXED HEAD
 Jin-Koo Lee, and Kye-Chul Choi, both of Seoul, Rep. of Korea, assignors to Daewoo Electronics Co., Ltd., Seoul, Rep. of Korea

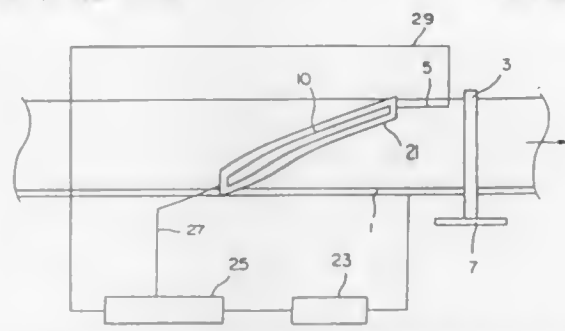
Filed Dec. 29, 1993, Ser. No. 176,478

Claims priority, application Rep. of Korea, Feb. 5, 1993, 93-01594

Int. Cl. G11B 21/04

U.S. Cl. 360—77.16

9 Claims



1. An apparatus for recording and reproducing an image signal on and from tracks of a tape, said apparatus comprising:
 a head array having blocks of a plurality of head gaps which are arranged in a stepwise manner and having an inclination with a predetermined angle to the tape;
 a servo control means for moving said head array downwards and upwards so as to scan said tape, said servo control means having an actuator attached to said head array, a phase comparator for comparing a phase between said head array and said tracks of said tape to produce a comparison result and a piezo driving means for supplying a driving voltage to said actuator in accordance with the comparison result, said actuator reciprocating said head array upwards and downwards periodically; and
 a signal processing apparatus for recording said image signal on said tracks of said tape by said head array and reproducing said image signal from said tracks of said tape in which said image signal is recorded.

5,513,052

BRAKE MECHANISM FOR TAPE PLAYER

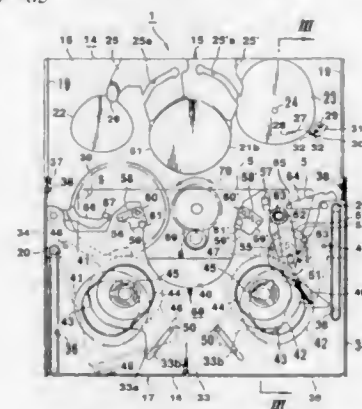
Masato Yamaguchi, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 967,386, Oct. 27, 1992. This application Sep. 8, 1994, Ser. No. 303,139

Claims priority, application Japan, Nov. 5, 1991, 3-315166 Int. Cl. G11B 5/027

U.S. Cl. 360—85

4 Claims



1. A recording and reproducing apparatus for use with a tape cassette including a generally rectangular casing having a mouth opening along a side of the casing, first and second rotatable reels

spaced apart within the casing, a magnetic tape wound on said reels, and fixed tape guides in said casing for directing the tape between said reels in a run extending across said mouth, said apparatus comprising:

- a fixed chassis;
 a head drum rotatably mounted on said fixed chassis and carrying a plurality of heads for recording or reproducing a signal on a magnetic tape when the magnetic tape is wrapped about at least a portion of the circumference of said head drum;
 a movable chassis having means thereon defining a cassette chamber dimensioned to receive said casing of the tape cassette and including rotatable first and second spool tables for engagement with said first and second reels of the tape cassette received in said cassette chamber;
 means mounting said movable chassis for rectilinear sliding movements relative to said fixed chassis between a first position, in which said cassette chamber is relatively remote from said head drum for receiving or discharging said tape cassette, and a second position, in which said head drum extends into said mouth of the cassette casing in said chamber and deflectingly bears against said run of the tape extending thereacross for wrapping said tape about at least said portion of the circumference of the head drum;
 a rotary member mounted rotatably on said movable chassis and being coupled with one of said spool tables so as to prevent relative rotation of said rotary member and said one spool table in respect to each other, said rotary member having a brake drum surface thereon;
 a brake member including a resilient brake arm having one end fixed to said fixed chassis and another free end secured to a brake shoe, said brake arm being dimensioned and disposed so that, with said movable chassis in said first position, said brake shoe is spaced from said brake drum surface and, upon said sliding movement of the movable chassis toward said second position, said brake drum surface is urged against said brake shoe in opposition to a resisting force exerted by said resilient brake arm; and
 tape drive means including a rotatably driven capstan mounted on said fixed chassis, and a pinch roller rotatably mounted on said movable chassis for pressing said tape against said rotatably driven capstan when said movable chassis is in said second position so that said tape is then driven by said capstan against a soft braking action resulting from the urging of said brake drum surface against said brake shoe.

inserting direction of said horizontal portion and extends in the vertical direction, and a descending inclined portion which is continuously formed from a lower end of said initial descending portion and extends downward as said descending inclined portion slopes from said lower end of said initial descending portion toward said rear side and

- (i) a second guide groove which is formed on the rear side of said first guide groove and comprises a lead-in portion extending in said first direction and a descending inclined portion which is continuously formed from one end on a rear side of said lead-in portion and slopes in a lower direction as said descending inclined portion approaches said rear side;
 a cam member which is supported at one of said side walls of said casing member so as to be movable in said first direction and comprises
 (i) a third guide groove having a first inclined portion formed so as to slope upwardly as said first inclined portion approaches the rear side along said first direction and
 (ii) a fourth guide groove which is formed on a rear side of said third guide groove and has a second inclined portion formed so as to slope upwardly as said second inclined portion approaches the rear side along said first direction and an engaging portion formed so as to extend almost downward from an upper edge of said second inclined portion; and
 a cassette holder which can hold said cassette and has
 (i) a first engaging member engageable with said first guide groove of said side wall through said third guide groove of said cam member and
 (ii) a second engaging member engageable with said second guide groove of said side wall through said fourth guide groove of said cam member,
 wherein when said second engaging member is located to said lead-in portion at said second guide groove, said cassette holder is set to a state in which the rear side in said first direction is inclined so as to be directed upwardly from the front side, and
 when said first engaging member of said cassette holder is located at a position defined by an edge portion on the rear side of said horizontal portion of said first guide groove and an upper edge portion of said third guide groove, said second engaging member is located at a position defined by an edge portion on the rear side of said lead-in portion of said second guide groove and a coupling portion of an upper end of said second inclined portion of said fourth guide groove and an upper end of said engaging portion.

5,513,053

COMBINATION CASING MEMBER, CAM MEMBER AND CASSETTE HOLDER FOR A CASSETTE LOADING MECHANISM

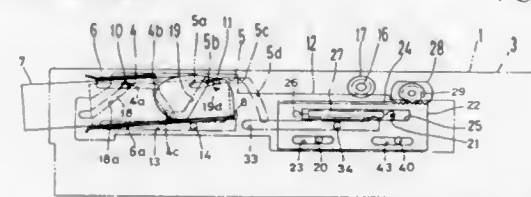
Toshiya Kurokawa, Chiba, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Oct. 19, 1994, Ser. No. 325,070

Claims priority, application Japan, Oct. 22, 1993, 5-287701 Int. Cl. G11B 33/00

U.S. Cl. 360—96.5

7 Claims



1. A cassette loading apparatus for loading a cassette at a position between an inserting position and a loading position, comprising:
 a casing member having first and second side walls, in which at least one of said side walls has
 (i) a first guide groove comprising a horizontal portion extending in a first direction which coincides with an inserting direction of said cassette, an initial descending portion which is continuously formed from one end on a rear side in said

5,513,054

DISC APPARATUS HAVING IMPROVED CONSTRUCTION FOR GUIDING MOVEMENT OF OPERATING MEMBER FOR DISC ROTATION

Takashi Watanabe, Ichikawa, Japan, assignor to Teac Corporation, Tokyo, Japan

Continuation of Ser. No. 142,495, Oct. 22, 1993, abandoned.

This application Apr. 25, 1995, Ser. No. 430,128

Claims priority, application Japan, Nov. 6, 1992, 4-297302

Int. Cl. G11B 17/04; 17/022

U.S. Cl. 360—99.06

8 Claims

1. A disc apparatus comprising:
 a holder for inserting therein a cartridge containing a disc having a planar disc surface;
 a sliding member having an operating member under the control of a user with the operating member extending outwardly from the sliding member along a direction substantially parallel to the planar disc surface, wherein said sliding member slides along a direction in response to insertion of the cartridge into said holder so as to move said holder into a loading position, wherein said sliding member slides along another direction in response to operation of said operating member by the user so as to move said holder into an insertion/ejection position, and wherein said disc apparatus accesses the disc in a condition in which said holder is in said loading position and the user either takes out the cartridge from said disc

the arrangement, when in use under normal operating conditions acting as an LC filter having a first high frequency break-point which

- (a) is determined by
 - (i) the first capacitance,
 - (ii) the capacitance of any additional capacitor optionally connected in parallel with the voltage clamping device, and
 - (iii) the inductance, and
- (b) is in the range of from 1 kHz to 10 Mhz, and the arrangement, when in use while the arrangement is subjected to a voltage transient sufficient to cause the voltage clamping device to conduct, acting as an LC filter having a second high frequency break point which is lower than the first high frequency break point and which is determined by the second capacitance and the inductance.

5,513,060

SERIES PROTECTION CIRCUIT

André Bremond, Veretz, France, assignor to SGS-Thomson Microelectronics S.A., Saint-Genis Pouilly, France

Continuation of Ser. No. 987,661, Dec. 9, 1992, abandoned.

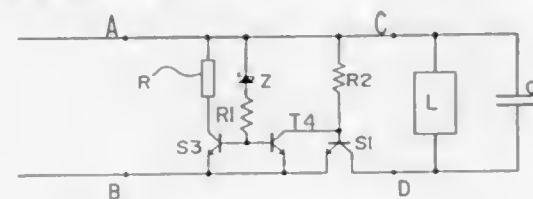
This application Oct. 28, 1994, Ser. No. 331,275

Claims priority, application France, Dec. 10, 1991, 91 15673

Int. Cl.⁶ H02H 9/00

U.S. Cl. 361—58

22 Claims



1. An overvoltage protection circuit for protection of a load, the load connected to the first and second terminals of a supply line, the circuit comprising:

- a first switch having a control terminal, the first switch connected in series between the second terminal and the load, the first switch being normally closed allowing current to run therethrough;
- a triggering circuit, connected between the first and second terminals, including an overvoltage detector, coupled between the first and second terminals, and a second switch, responsive to the overvoltage detector and disposed between the control terminal of the first switch and one of the first terminal and the second terminal;
- a first resistor having a resistance value approximately equal to an impedance of the load; and
- a third switch connected in series with the first resistor, the third switch and first resistor connected between the first and second terminals, each of the first switch and the third switch enabling current to flow therethrough when the respective switch is closed and preventing current from flowing therethrough when the respective switch is open, the first and third switches controlled by triggering circuit such that when the overvoltage detector detects an overvoltage, the first switch is opened and third switch is closed.

5,513,061 APPARATUS AND METHOD FOR DISTRIBUTING ELECTRICAL POWER

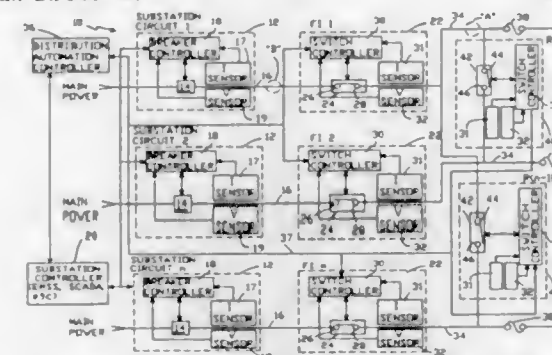
Lawrence J. Gelbman, West Islip; Phillip B. Andreas, East Northport, and Werner J. Schweiger, East Patchogue, all of N.Y., assignors to Long Island Lighting Company, Hicksville, N.Y.

Filed Dec. 9, 1993, Ser. No. 164,905

Int. Cl.⁶ H02H 3/07

U.S. Cl. 361—63

11 Claims



1. Apparatus for distributing electrical power from power substation circuits wherein each substation circuit includes feeder conductors and a circuit breaker assembly located at said substation configured to open when current flowing through the conductors exceeds a predetermined value, said apparatus comprising:

- at least one fault isolating switch member positionable in series with the feeder conductors of each substation circuit so as to define a line side and a load side, each said at least one isolating switch member having current sensing means operatively associated therewith for measuring current values on said load side of said isolating switch member and for providing information indicating the measured current values; and
- isolating switch actuating means associated with a corresponding said at least one fault isolating switch member for determining if said measured current value exceeds a predetermined value and for selectively actuating, in response to the information indicating the measured current values from the corresponding fault detecting means, said at least one fault isolating switch member when said measured current value exceeds said predetermined value, said isolating switch actuating means having a predetermined time delay before actuating said at least one fault isolating switch member, such that said time delay corresponds with the opening of the substation circuit breaker assembly, wherein each isolating switch actuating means operates independent of information from other fault isolating switch members.

5,513,062

POWER SUPPLY FOR A REDUNDANT COMPUTER SYSTEM IN A CONTROL SYSTEM

Jürgen Paul, Stutensee, and Anton Paltek, Baden-Baden, both of Germany, assignors to Landis & Gyr Business Support AG, Zug, Switzerland

Filed Feb. 25, 1994, Ser. No. 201,543

Claims priority, application Switzerland, Mar. 5, 1993, 00663/93

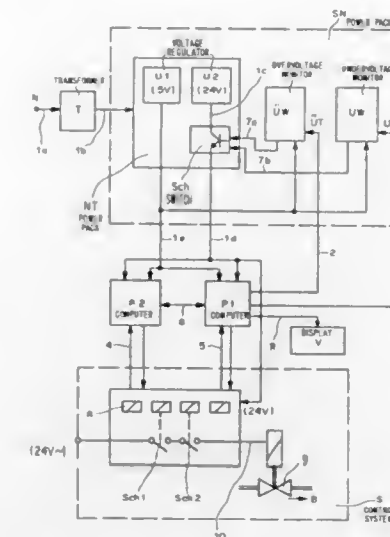
Int. Cl.⁶ H02H 3/24

U.S. Cl. 361—90

17 Claims

1. A power supply for a redundant computer system for a control system, having first and second computer units connected in parallel to said control system, said computer units perform mutual verification so that safety action can be exerted on said control system in case of a malfunction, comprising,

- a self-monitoring power pack unit as a common power supply connected by a voltage distribution line and a signal path to said computer units, and connected to said control system by said voltage distribution line, wherein said self-monitoring power pack unit further comprises,



a power pack, having a constant voltage regulator having a regulated voltage and a stabilization circuit for a distribution or supply voltage,

an undervoltage monitor for monitoring said regulated voltage, an overvoltage monitor for monitoring said regulated voltage, and

wherein said power pack and said monitors interact so that an autonomous safety action is exerted on said control system in case of an overvoltage or an undervoltage,

and wherein said power pack further comprises a switch connected to said computer units by said voltage distribution line, to said stabilization circuit by an electric supply line, and to said voltage monitors indicating an overvoltage or an undervoltage and wherein said switch shuts off voltage supply on said voltage distribution line to said control system in case of a malfunction.

5,513,063

COMBINED ELECTRICAL PLUG AND CIRCUIT BREAKER

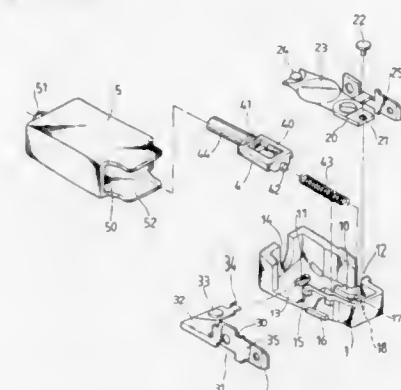
Well S. Wu, P.O. Box 82-144, Taipei, Taiwan

Filed Dec. 6, 1993, Ser. No. 161,668

Int. Cl.⁶ H02H 5/04

U.S. Cl. 361—105

1 Claim



- 1. A combined electrical plug and circuit breaker comprising: a body portion (1) formed with a seat (10) and a slot (11) at a bottom thereof, a first opening (12) at one side thereof, a second opening (13) at another side thereof, and a notch (14) at an end side thereof, said body portion (1) being formed at said one side with two upper protuberances (15) and a raised elongated member (16) below said upper protuberances (15), said seat (10) being formed with a groove (17) and a first hole (18);

5,513,064

METHOD AND DEVICE FOR IMPROVING I/O ESD TOLERANCE

John F. Schreck, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 229,066, Apr. 18, 1994, abandoned,

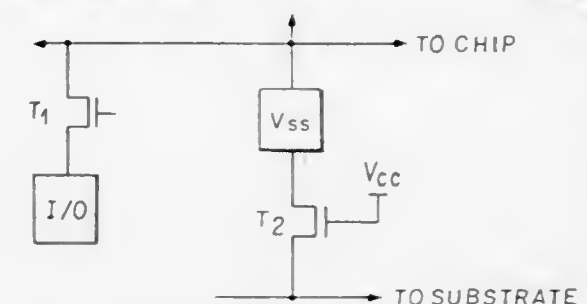
which is a continuation of Ser. No. 806,525, Dec. 13, 1991,

abandoned. This application Mar. 6, 1995, Ser. No. 401,040

Int. Cl.⁶ H02H 9/00

U.S. Cl. 361—250

3 Claims



- 1. A semiconductor protection circuit comprising: a lightly doped region of a first conductivity type at a face of a substrate;
- a field effect transistor, formed in said lightly doped region and having heavily doped source and drain terminals of a second conductivity type;
- a bond pad coupled to one of said source and drain terminals;
- an internal reference bus coupled to another of said source and drain terminals;
- an external reference bus coupled to said substrate; and
- a resistive device for coupling said internal reference bus to said external reference bus.

5,513,065

COMMUNICATION CONNECTOR WITH CAPACITOR LABEL

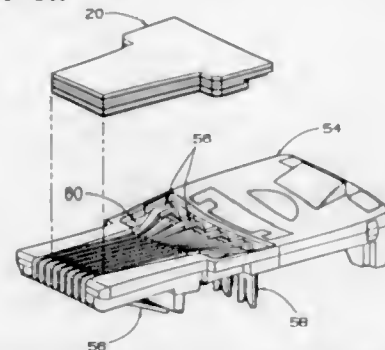
Jack E. Caveney, Hinsdale; Christopher J. Hayes, Indian Head Park; Joseph Rincluso, Melrose Park; Andrew J. Stroede, Mokena; and Donald C. Wiencek, Tinley Park, all of Ill., assignors to Panduit Corp., Tinley Park, Ill.

Filed Dec. 23, 1992, Ser. No. 997,277

Int. Cl.⁶ H01G 4/35

U.S. Cl. 361—311

31 Claims



20. A communication connector including a plurality of contact pairs for conductive connection to respective communication signal wire pairs, comprising:

an ungrounded common conductive lamina disposed closely adjacent to and spaced from more than one contact of the contact pairs having contacts disposed in a substantially parallel array having a length and width and extending across the width of the array and along a portion of the length of the array of the contact pairs an amount such that crosstalk is reduced between the contact pairs.

5,513,066

VIDEO RECORDING TRAVELING CART

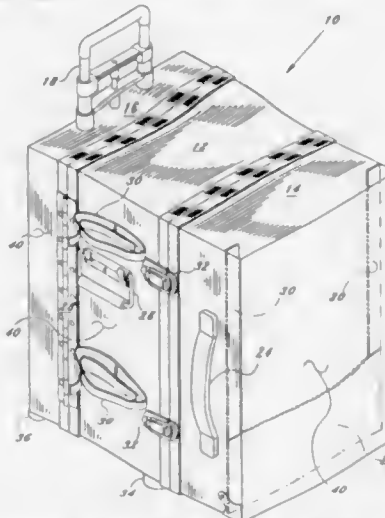
Jessica R. Berman, North Miami Beach, Fla., assignor to Video Express System, Inc., Miami Beach, Fla.

Filed Aug. 5, 1994, Ser. No. 286,518

Int. Cl.⁶ G03B 29/00

U.S. Cl. 361—625

4 Claims



1. A recording equipment travel cart for moving recording equipment conveniently between locations, said cart comprising: a rear bay having a top side, a bottom end, and an interior side, said rear bay having a contractible handle connected to its top side which may be contracted into said rear bay for hiding and protecting said handle, said rear bay for housing a plurality of cables for use with said recording equipment; at least two casters rotatably connected to said bottom end of said rear bay for transporting said cart;

a main bay having a rear side connected to said rear bay interior side by piano hinges, said main bay having a front side, a left side and a right side, at least one handle rotatably connected individually to said right side and said left side, said main bay for storing a connection panel, said main bay having a front surface;

a front bay connected to said main bay front surface by releasable fasteners, said front bay for storing recording equipment, said connection panel interfacing said cables to said recording equipment, said front bay having side panels, said side panels having at least one handle connected thereto for pulling said cart on said casters; and said front bay, said main bay, and said back bay being substantially rectangular in cross section.

5,513,067

APPARATUS HAVING A SLIDER BUTTON AND ROTATING BODY FOR EJECTING A FUNCTION-AID UNIT FROM AN INFORMATION PROCESSING SYSTEM

Yoshihisa Ishihara; Tetsuroh Sasakawa, both of Kanagawa, and Takane Fujino, Atsugi, all of Japan, assignors to International Business Machines Corporation, Armonk, N.Y.

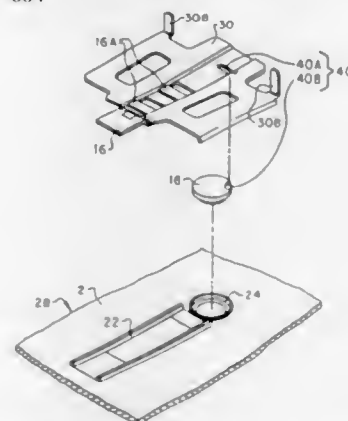
Filed Apr. 28, 1994, Ser. No. 234,697

Claims priority, application Japan, Apr. 27, 1993, 5-100616

Int. Cl.⁶ G06F 1/16; H05K 7/10; H01R 13/62

U.S. Cl. 361—684

4 Claims



3. An apparatus for ejecting a function-aid unit which can be connected or disconnected to or from a connector on the side of an opposing apparatus from said apparatus comprising:

an extracting member for moving said function-aid unit so that said function-aid unit can be pulled out of said connector;

a manipulation section provided on a bottom surface of said apparatus which acts on said extracting member to move said function-aid unit, wherein the manipulation section includes a slider button for causing said function-aid unit to be extracted from said connector by moving said extracting member when slid in a direction of extraction, and wherein the manipulation section includes a rotating body for causing said function-aid unit to be extracted from said connector by moving said extracting member when turned from said opposing apparatus.

5,513,068

COMPUTER CASE WITH ADJUSTABLE DRIVE HOUSING FOR INTERCHANGEABLE DESKTOP/TOWER CONFIGURATION AND CONTROL PANEL ATTACHABLE TO THE DRIVE HOUSING

Joseph G. M. P. Girard, Richmond, Canada, assignor to Seanix Technology Inc., British Columbia, Canada

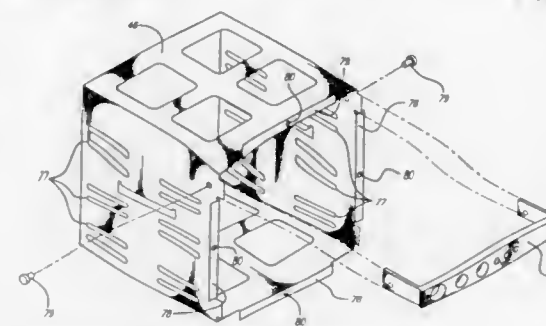
Filed May 27, 1994, Ser. No. 250,066

Claims priority, application Canada, Jun. 1, 1993, 2097476

Int. Cl.⁶ G06F 1/16; H05K 7/14

U.S. Cl. 361—685

6 Claims



1. A personal computer case comprising:

(a) a rectangular front panel having a pair of long sides and a pair of short sides;

(b) a drive housing attachable to said case in:

(i) a desktop position in which drives mounted in said housing extend parallel to said long sides; or in,

(ii) a tower position in which drives mounted in said housing extend parallel to said short sides; and,

(c) a control panel attachable to said drive housing, parallel to said drives.

5,513,069

ELECTRONIC APPARATUS WITH STORING PORTION INTO WHICH A DETACHABLE UNIT WITH A SLIDABLY ATTACHED UNIT HOLDER IS SLIDABLY CONNECTED

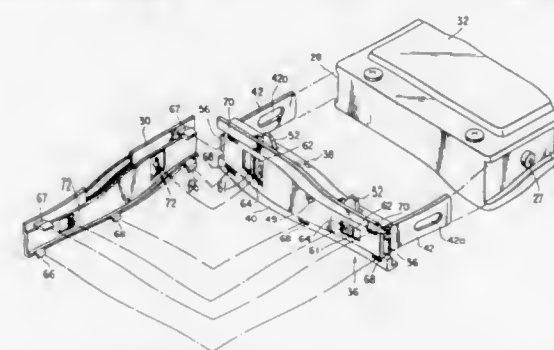
Keizo Ohgami, and Kazuo Akashi, both of Tokyo, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan. Continuation of Ser. No. 140,795, Oct. 21, 1993, Pat. No. 5,402,309, which is a continuation of Ser. No. 900,162, Jun. 17, 1992, Pat. No. 5,264,986. This application Jan. 9, 1995, Ser. No. 370,178

Claims priority, application Japan, Jun. 17, 1991, 3-144982

Int. Cl.⁶ G06F 1/16; H05K 7/14; 5/02

U.S. Cl. 361—685

8 Claims



1. An electronic apparatus comprising:

a body including a storing portion and an engagement portion;

a detachable unit detachably stored in the storing portion; and

a unit holder for holding the detachable unit in the storing portion, the unit holder being slidably connected to the detachable unit and including an engaging member movable between an engaging position wherein the engaging member engages the engagement portion to hold the detachable unit in

the storing portion and a release position wherein the engaging member is disengaged from the engagement portion.

5,513,070

DISSIPATION OF HEAT THROUGH KEYBOARD USING A HEAT PIPE

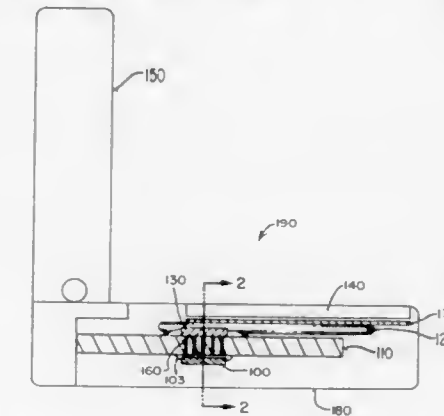
Hong Xie; Mostafa Aghazadeh; Gregory Turturro, and Chia-Pin Chiu, all of Chandler, Ariz., assignors to Intel Corporation, Santa Clara, Calif.

Filed Dec. 16, 1994, Ser. No. 357,449

Int. Cl.⁶ H05K 7/20

U.S. Cl. 361—700

19 Claims



1. An apparatus for removing heat from an electrical component, said component being mounted on a first surface of a circuit board, comprising:

a thermal via through said circuit board thermally coupled to said electrical component, said thermal via extending from said first surface to a second surface of said circuit board;

a heat conducting mass coupled to said second surface of said circuit board and thermally engaging said via;

a heat pipe thermally coupled to said heat conducting mass; and a heat dissipation plate thermally coupled to said heat pipe, said heat dissipation plate affixed beneath and substantially parallel to a keyboard.

5,513,071

ELECTRONICS HOUSING WITH IMPROVED HEAT REJECTION

Kerry D. LaViolette, Liverpool; Robert F. Uhl, Manlius, both of N.Y., and Lucius T. Vinkenleugel, Eindhoven, Netherlands, assignors to Philips Electronics North America Corporation, New York, N.Y.

Filed Nov. 28, 1994, Ser. No. 345,166

Int. Cl.⁶ H05K 7/20

U.S. Cl. 361—703

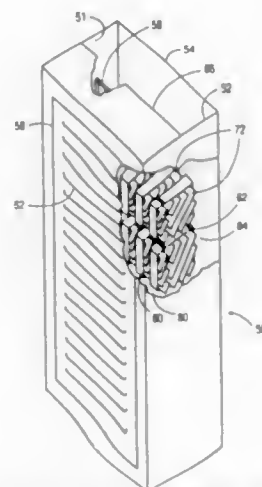
20 Claims

1. A heat-liberating equipment, comprising:

a rack including means for mounting heat-liberating units as a vertical stack in the rack, and means for at least partially enclosing said rack, and

a plurality of said heat-liberating units, mounted in said rack, each unit having a housing and at least one heat-liberating element mounted within said housing, each respective housing having a side surface extending generally vertically, each said side surface having a plurality of heat-dissipating fins protruding therefrom, each of said fins being inclined between approximately 30° and approximately 60° from vertical, and each of said fins having a respective lower end and an upper end,

said heat-liberating units being arranged such that said side surfaces are aligned vertically above each other with the respective fins being inclined in the same direction, said rack being arranged to define a first pathway for flow of surrounding air to said lower ends of said fins, and a second



pathway producing a chimney effect for upward flow of heated air from said upper ends, and the lower end of each of said fins being disposed remote from said second pathway, at a distance from the second pathway greater than the distance of the respective upper end from the second pathway.

5,513,072

POWER MODULE USING IMS AS HEAT SPREADER

Yoshiaki Imaji, Chiba; Satoshi Nakao, Mohara, and Hiroshi Sawano, Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

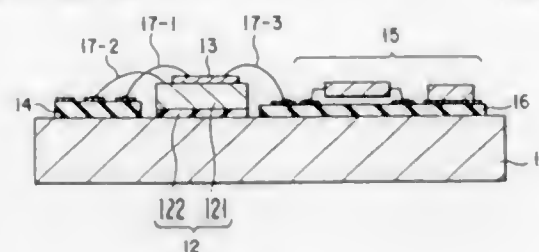
Filed Nov. 18, 1994, Ser. No. 344,656

Claims priority, application Japan, Nov. 18, 1993, 5-289251

Int. Cl.⁶ H05K 7/20

U.S. Cl. 361-707

6 Claims



1. A power module comprising:
 - a power semiconductor element;
 - a heat spreader using an IMS and mounting only said power semiconductor element;
 - a first circuit board situated adjacent to said heat spreader, and serving as a wiring section of said power semiconductor element;
 - a second circuit board, situated adjacent to said heat spreader, and mounting at least one semiconductor element which controls said power semiconductor element; and
 - a metal plate attached to a back surface of said heat spreader and each of said first and second circuit boards.

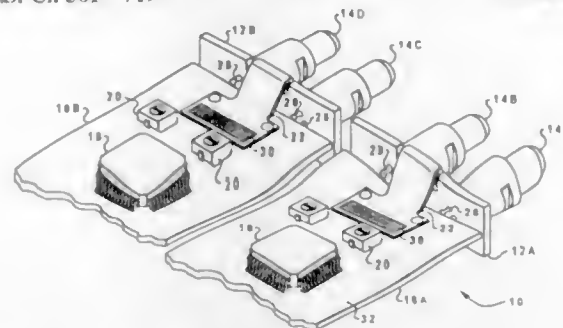
5,513,073
OPTICAL DEVICE HEAT SPREADER AND THERMAL ISOLATION APPARATUS

Timothy R. Block; David P. Galo; Charles J. Guenther, all of Rochester; Dennis L. Karst, Kasson; Thomas D. Kidd, Stewartville, and Michael W. Leddige, Rochester, all of Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 28, 1994, Ser. No. 228,972
Int. Cl.⁶ H05K 7/20

U.S. Cl. 361-719

14 Claims



1. Apparatus comprising:
 - a heat spreader card having a major surface and an opposite surface;
 - an optical transducing subassembly mounted to the major surface of the heat spreader card;
 - a circuit card for supporting electronics; and
 - a flexible cable attached to the major surface of the heat spreader card, routed to the opposite surface of the heat spreader card via a slot within the heat spreader card and attached to the circuit card, providing the sole direct mechanical attachment between the heat spreader card and the circuit card.

5,513,074

TANDEM CIRCUIT CARDS

Alan W. Ainsbury, Pickering, and Albert J. Kerklaan, Milton, both of Canada, assignors to International Business Machines Corporation, Armonk, N.Y.

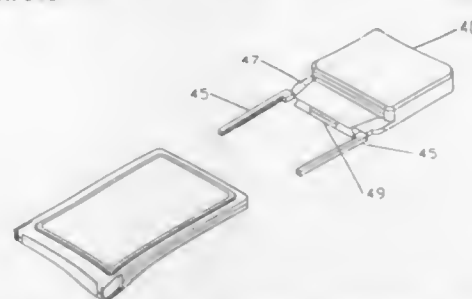
Filed Nov. 15, 1993, Ser. No. 152,786

Claims priority, application Canada, Nov. 16, 1992, 2083017

Int. Cl.⁶ H05K 1/11; 1/14

U.S. Cl. 361-737

22 Claims



1. An extension module for tandem connection to a base circuit card having rigid parallel sockets which extend along opposite side edges of the base circuit card in the direction of connecting said base card to said module, said parallel sockets having a substantially uniform cross-section throughout an entire length thereof and insertion apertures at a rearward end of said base circuit card, said extension module comprising:
 - (a) a module housing;
 - (b) a pair of spaced apart parallel rigid support fingers extending from said housing;
 - (c) said support fingers being configured for sliding insertion into said corresponding parallel sockets by having a substantially uniform cross-section throughout an entire length thereof which corresponds to the substantially uniform cross-section of said parallel sockets;

- (d) an electrical connector located between said support fingers adapted for mating connection with a corresponding electrical connector located at the rearward end of said base circuit card when said extension module is connected to said base circuit card;
- whereby when said extension module is connected to said base circuit card by substantially full insertion of said support fingers into said base circuit card sockets the engagement of said sockets with said fingers rigidly joins said extension module to said base card to form an integral extended circuit card.

5,513,075

MODULE FOR ELECTRICALLY CONNECTING CONDUCTOR WIRES TO CIRCUITS OF FLAT SURFACES SUCH AS SOLAR PANELS

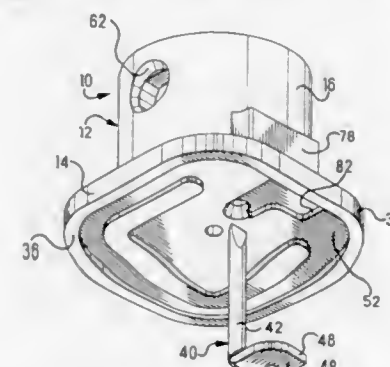
Harry M. Capper; Sam Denovich, both of Harrisburg, and James W. Robertson, Oberlin, all of Pa., assignors to The Whitaker Corporation, Wilmington, Del.

Continuation-in-part of Ser. No. 880,449, May 8, 1992, Pat. No. 5,321,577, and Ser. No. 59,789, May 7, 1993, Pat. No. 5,317,474, which is a continuation-in-part of Ser. No. 880,449, May 7, 0. This application Mar. 2, 1994, Ser. No. 204,975

Int. Cl.⁶ H01R 9/24; 4/24

U.S. Cl. 361-773

18 Claims



1. A conductor assembly for connecting at least one discrete conductor to a respective circuit of an article and that is mountable to a generally planar mounting surface of the article defining a connection site, comprising:
 - (a) a housing module having a base section defining a mounting face adapted to be mounted to said surface at said connection site with adhesive sealing material disposed between said mounting surface and said surface surrounding said connection site, said housing module including at least one housing section for a respective terminal, and an at least one said terminal disposed in a terminal-receiving cavity of a respective said housing section and having at least one conductor-terminating section exposed in a respective conductor-receiving opening of said housing section, with fluid sealing material disposed within said terminal-receiving cavity embedding said terminal, and said housing module further including an actuator adapted to move said terminal from a first unterminated position to a second terminated position upon insertion of an end of a said conductor into said conductor-receiving opening of said housing section;

- (b) a lead member affixed to said article in a manner defining an electrical connection thereof to each said circuit of said article to which a said discrete conductor is to be interconnected, each said lead member including a pin section extending orthogonally from a surface of said article to a free end; and said mounting face of said housing module including a pin-receiving opening orthogonal to the mounting face and associated with each said lead member adapted to receive thereinto said pin section thereof upon mounting said housing module to said article surface, said pin-receiving opening being in communication with said terminal-receiving cavity of a respective said housing section, said terminal-receiving cavity adapted to urge said pin section of a respective said lead member against a surface of a said terminal upon mounting of said housing module to said mounting surface at said connection site.

5,513,076

MULTI-LEVEL ASSEMBLIES FOR INTERCONNECTING INTEGRATED CIRCUITS

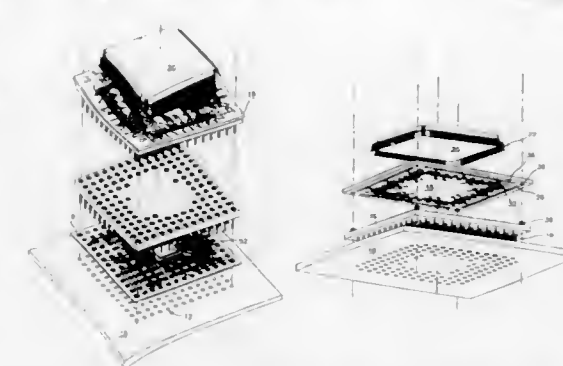
William E. Werther, Wood Ranch, Calif., assignor to Interconnect Systems, Inc., Simi Valley, Calif.

Continuation of Ser. No. 998,476, Dec. 30, 1992, Pat. No. 5,479,319. This application Jun. 7, 1995, Ser. No. 483,929

Int. Cl.⁶ H05K 1/11

U.S. Cl. 361-784

36 Claims



1. A multi-level electrical assembly for coupling at least one integrated circuit having a plurality of electrically conductive leads to at least one attachment area of a circuit board comprising:
 - (a) an interconnect board, comprising an electrically insulating printed circuit board having a top surface, a flat bottom surface, and a plurality of holes;

- (b) a pin carrier, comprised of an electrically insulating, homogeneous, plastic material, disposed generally parallel to the interconnect board and including a plurality of plastic locator posts that are aligned with the holes of the interconnect board;
- (c) a plurality of electrically conductive pins extending through the pin carrier and held by the pin carrier parallel to each other, perpendicular with the pin carrier, and in relative positions predetermined so as to align with receptacles of a circuit board and measured relative to the locator post;
- (d) a plurality of electrically conductive receiving devices comprising a first set of pads configured to receive leads of an integrated circuit supported on one of the surfaces of the interconnect board;
- (e) a second plurality of electrically conductive flat pads on the bottom surface of the interconnect board, each of which are placed at a measured position relative to the holes of the interconnect board;
- (f) a plurality of contacts comprising surface-attach joints that electrically couple ends of selected of the pins to the pads and physically holding the pin ends against the pads, wherein no portion of the pins extends beyond the flat bottom surface of the interconnect board; and
- (g) a plurality of electrically conductive pathways, at least in part supported by the interconnect board, at least some of which pathways electrically couple at least one of the contacts to at least one of the receiving devices.

5,513,077

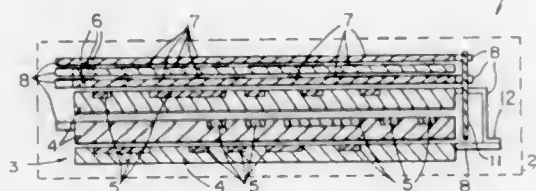
POWER DISTRIBUTION CENTER FOR MOTOR VEHICLE, PROVIDED WITH PRINTED CIRCUIT BOARDS, PRINTED CIRCUIT WEBS AND INTERMEDIATE INSULATIONS ARRANGED IN LAYERS
Hans P. Stribel, Nürtingen, Germany, assignor to Stribel GmbH, Nürtingen, Germany

Filed Dec. 23, 1993, Ser. No. 172,886

Claims priority, application Germany, Dec. 24, 1992, 42 44 064.5

Int. Cl.⁶ H05K 1/11; H01B 1/14; H01R 23/68; 23/70
U.S. Cl. 361—794

11 Claims



1. An arrangement for a motor vehicle for central connection of electrical components, the arrangement comprising a housing; a plurality of supply circuits and control circuits; a plurality of printed circuit webs and printed circuit boards, said supply circuits and said control circuits being formed so that said supply circuits are formed exclusively from said printed circuit webs and said control circuits are formed exclusively from said printed circuit boards, said printed circuit boards together with said printed circuit webs, and their intermediate insulations being assembled in a plurality of layers in a substantially identical surface configuration to form a printed circuit pack, said printed circuit boards and said printed circuit webs with said intermediate insulations being arranged in different planes in layers which are located irregularly relative to one another.

5,513,078

SHIELDED SWITCH

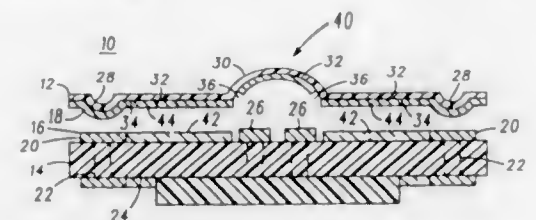
Dean M. Komrska, Buffalo Grove, and Dale G. Johnson, Lake Zurich, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 10, 1994, Ser. No. 336,962

Int. Cl.⁶ H05K 9/00

U.S. Cl. 361—816

12 Claims



1. An EMI shielded keypad comprising:
a printed circuit board including a first surface and a plurality of metal traces on the first surface; and
a cover attached to the first surface of the printed circuit board, the cover including:
a flexible, non-conductive, essentially planar surface having an attaching face;
a dome formed in the planar surface, convex relative the first surface, and centered over the plurality of metal traces; and
a conductive coating selectively applied on the attaching face of the planar surface such that a gap is provided in the conductive coating to provide electrical isolation of the portion of the conductive coating on the dome;
whereby pressing the dome towards the plurality of metal traces causes electrical coupling between the plurality of metal traces via the portion of the conductive coating on the dome coming into contact with the plurality of metal traces.

5,513,079

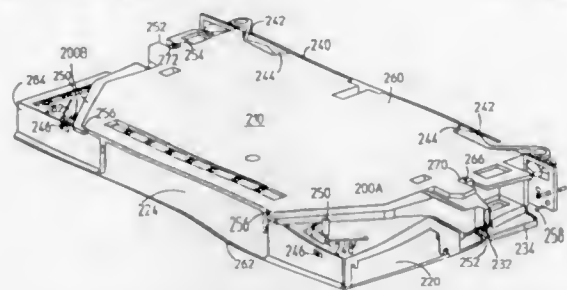
MASS TERMINATION OF SIGNALS FROM ELECTRONIC SYSTEMS TO DEVICES UNDER TEST
Robert A. Millard, Loveland, Colo., assignor to Hewlett-Packard Co., Palo Alto, Calif.

Filed Jan. 6, 1995, Ser. No. 369,823

Int. Cl.⁶ H05K 9/00

U.S. Cl. 361—823

11 Claims



1. A terminal block for electrically connecting signal inputs and outputs from a module in an electronics mainframe to external devices, said terminal block comprising:
a terminal block electrical connector for electrically connecting to an corresponding electrical connector in said module;
a terminal block housing unit for housing said terminal block electrical connector and for routing wires from said terminal block electrical connector to said external devices, said terminal block housing unit having a top side and a bottom side, a front side and a back side, and a first side and a second side, said terminal block electrical connector being fixedly mounted in said front side of said terminal block housing unit;
at least one lever for providing leverage against a leverage bearing surface on said module when said terminal block electrical connector is mated to or de-mated from said electrical connector of said module, said at least one lever being mounted either along said first side or said second side; and
at least one wire routing aperture in either said back side, said first side or said second side.

5,513,080

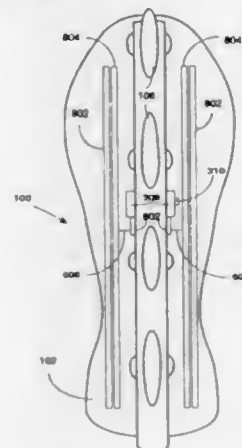
INDIRECT LIGHTING SYSTEM FOR ROLLER SKATES AND SKATEBOARDS

Thomas O. Magle, 741 SW. 9th St. #106, and Richard Earney, 978 SW. 10th Dr., Apt. 3, both of Pompano Beach, Fla. 33063
Filed Dec. 30, 1994, Ser. No. 366,874

Int. Cl.⁶ F21L 15/08

U.S. Cl. 362—103

17 Claims



1. A lighting kit for generating indirect lighting for roller skates, comprising:

5,513,083

ROTARY DEVICE OF A PROJECTOR

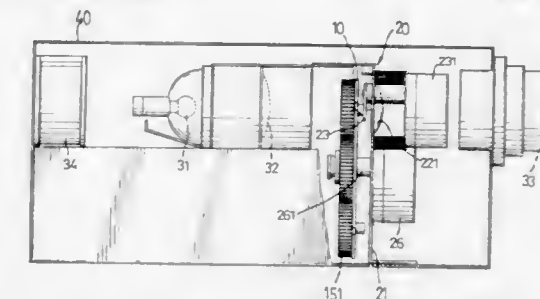
Ming C. Chang, No. 10, Alley 48, Lane 5, Sheng Li St., Yung Kang City, Taiwan

Filed Apr. 14, 1995, Ser. No. 421,762

Int. Cl.⁶ F21V 17/02

U.S. Cl. 362—284

4 Claims



1. A rotary device of a projector, said projector comprising a tube having a first end and a second end, a light source disposed to a first end of said tube, a first lens, a second lens disposed in the tube and a third lens disposed to the second end of the tube, said rotary device disposed in said tube and located between said first lens and said second lens;

said rotary device comprising a plate and a board, said plate having a first side and a second side, said first side thereof having a main gear rotatably disposed to a center thereof and at least two holes defined in said plate, a tubular portion extending horizontally from said first side of said plate corresponding to each of said holes and an inner periphery thereof defining each of said corresponding holes, a ring element rotatably engaged to an outer periphery of said tubular portion and having a toothed portion defined in an outer periphery thereof engaged to said main gear;
said board having a first side and a second side and disposed beside said plate, a motor disposed to said second side of said board and having a shaft extending through both said plate and said board and fixedly engaged to said main gear, said board having at least one stop arrangement formed on a periphery thereof, said board having an opening defined therein, said opening coinciding with each of said holes in sequence when said plate rotates about said shaft; and
a first one-way stop disposed to said board and engaged to said stop arrangement of said plate.

5,513,081

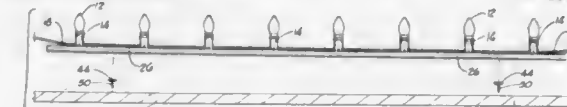
MULTIPLE LIGHT INSTALLATION AND STORAGE SYSTEM

Thomas L. Byers, 5480 Stewart Dr., Mustang, Okla. 73064
Filed Apr. 27, 1995, Ser. No. 429,895

Int. Cl.⁶ F21V 21/08

U.S. Cl. 362—145

20 Claims



1. A light track installation system, comprising:
at least one extruded track channel of selected length, said track channel having a base, opposite side tines disposed upward and in parallel, and a central snap channel formed in said base and opening downward;
an electrical supply cord disposed along said track channel;
a plurality of spaced lamp sockets electrically connected to said electrical supply cord and each secured in snap-fit between the opposite side tines of said track channel; and
plural snap buttons mounted along a selected site to receive said track channel central snap channel in secure affixture thereby to support the electrical supply cord and spaced lamp sockets at the selected site.

5,513,082

SMALL LAMP SOCKET DEVICE FOR PANEL/PRINTED BOARD

Yoichi Asano, Akita, Japan, assignor to Oshino Electric Lamp Works, Ltd., Tokyo, Japan

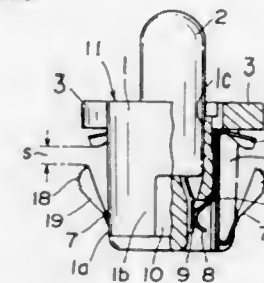
Filed Jul. 27, 1995, Ser. No. 508,567

Claims priority, application Japan, Dec. 16, 1994, 6-313487

Int. Cl.⁶ H01R 33/00

U.S. Cl. 362—226

6 Claims



1. A small lamp socket device for a panel with at least a single fitting hole, comprising:
an insulating socket main body for receiving therein a small lamp;
contact portions of a metal spring for a pattern face, said contact portions serving as terminals, and
snap portions of a metal spring for clamping and contacting said panel, said snap portions serving as terminals,
said contact portions and said snap portions being disposed at upper and lower positions of side walls of said insulating socket main body in such a fashion as to project and oppose one another in a spaced confronting relation,
said snap portions having resilience to come into and out from said socket main body, said panel being clamped by said contact portions and said snap portions after passing through said fitting hole of said panel.

5,513,084

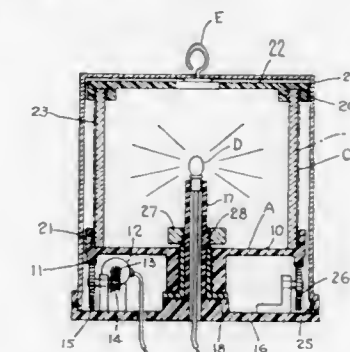
HOLIDAY LIGHTING DECORATION AND METHOD
Ted L. Simpson, 231 Banbury Rd., Columbia, S.C. 29210

Filed Jul. 10, 1995, Ser. No. 499,866

Int. Cl.⁶ F21V 21/30

U.S. Cl. 362—284

5 Claims



1. A decoration for a Christmas tree comprising:

a motor driven carousel;
a series of transparent images for display upon said carousel;
a transparent hollow support carried by said carousel defining an upright receptacle on said support for positioning said series of transparent images thereabout;
a Christmas tree light centrally carried within said hollow support;
said images being of such size and disposed in said receptacle in a configuration as to be effectively illuminated by a standard Christmas tree light bulb; and
a hanger for suspending said carousel from the Christmas tree; whereby personalized images may be displayed on an illuminated decoration.



5,513,085

RETRACTABLE LIGHT AND MOTION DETECTOR

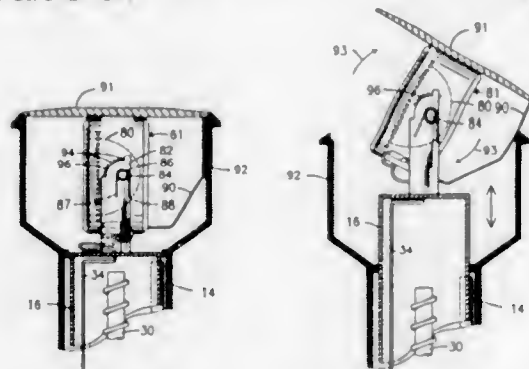
Steven M. Bourne, 6800 298th Ave. North, Clearwater, Fla. 34621

Continuation-in-part of Ser. No. 10,139, Jan. 28, 1993, abandoned. This application Apr. 13, 1994, Ser. No. 275,851

Int. Cl.⁶ F21V 21/22

U.S. Cl. 362—286

3 Claims



1. A mounting means for a retractable light, comprising:
an elongate main housing;
an elongate telescoping housing telescopically mounted within said main housing;
means for extending and retracting said telescoping housing with respect to said main housing;
a lamp enclosure formed at an upper end of said main housing;
a pivotally mounted lamp connected to said telescoping housing; said lamp being fully disposed within said lamp enclosure when said telescoping housing is fully retracted with respect to said main housing;
bias means associated with a lamp housing for urging said lamp to pivot;
retainer means associated with a closure means and said lamp housing for preventing pivoting of said lamp when said lamp is fully disposed within said lamp enclosure;
said retainer means permitting pivoting of said lamp when said lamp emerges from said enclosure upon extension of said telescoping housing from said main housing; and
stop means associated with said lamp housing for controlling the amount of pivoting of said lamp after it emerges from said lamp enclosure.

5,513,086

ULTRAVIOLET-REDUCED HALOGEN LAMP

Cheng-hsiung Ho, 14F-4, No. 1, Paoshen Rd., Yungbo City, Taipei, Taiwan

Filed Mar. 2, 1995, Ser. No. 397,403

Int. Cl.⁶ F21V 9/00

U.S. Cl. 362—293

1 Claim

1. A halogen lamp comprising a base defining a central cavity, two apertures in communication with the central cavity and an

annular groove, a halogen lamp bulb including two pins projecting therefrom wherein the lamp bulb is received in the central cavity while the pins are inserted through the apertures, a lens including an annular edge and a mixture of aluminum oxide and silica coated on an internal surface of the lens, wherein the halogen lamp bulb is received in the lens while the annular edge is received in the annular groove.

5,513,087

ARCJET STARTUP USING A SHUNT OUTPUT HIGH VOLTAGE PULSE CIRCUIT

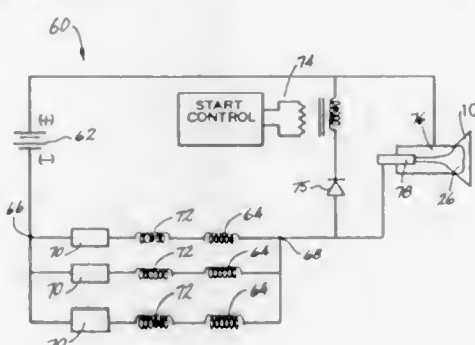
Robert J. Kay, Kirkland, Wash., assignor to Olin Corporation, Redmond, Wash.

Filed Jul. 15, 1993, Ser. No. 92,299

Int. Cl.⁶ H02M 3/00

U.S. Cl. 363—13

21 Claims



1. A power supply, comprising:
(a) a direct current power source;
(b) one or more parallel low impedance inductors having a common input and a common output, said common input in series with said direct current power source and said common output in series with a device to be powered;
(c) one or more constant current power control units in series with said low impedance inductors; and
(d) one or more high impedance inductors that are magnetically saturated during steady state operation of said power supply,

said high impedance inductors in series with said low impedance inductors and with said constant current power control units.

5,513,088

UNINTERRUPTIBLE OFF-LINE, ISOLATED FLYBACK TOPOLOGY SWITCH-MODE POWER SUPPLY

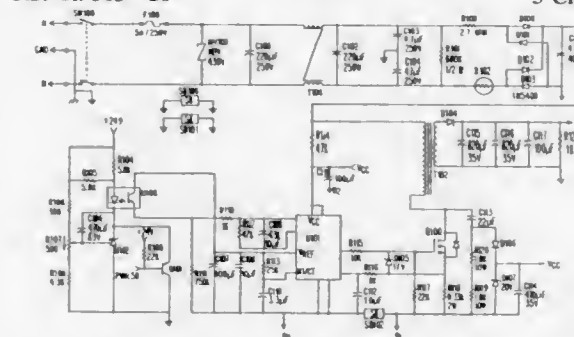
Floyd Williamson, 312 Autumn Ln., Madison, Ala. 35758

Continuation of Ser. No. 261,082, Jun. 13, 1994, abandoned, which is a continuation of Ser. No. 76,057, Jun. 14, 1993, abandoned, which is a continuation of Ser. No. 895,232, Jun. 8, 1992, abandoned, which is a continuation of Ser. No. 715,824, Jun. 14, 1991. This application Sep. 26, 1994, Ser. No. 312,168

Int. Cl.⁶ H02M 3/335

U.S. Cl. 363—20

3 Claims



1. An all-ranging DC output uninterruptible switched mode power supply of off-line isolated flyback topology comprising:

a switched mode power supply means including a transformer having primary and secondary windings and an isolated flyback converter including a main power switch; said transformer storing energy in its primary when the switch is conductive and transferring energy to the secondary winding of said transformer when nonconductive;

output filter means to rectify and filter the transformer output pulses to produce DC voltages;

pulse-width modulated control circuit means to sense the output voltage level and adjust the duty cycle of the power switch to control the output voltage by accepting feedback from the output, comparing the feedback to a set point and generating an error signal which provides the basis for modulating the width of the output pulse by adjusting the conduction time of the power switch;

a pulse-width modulated control circuit start-up circuit comprising a resistor and first and second capacitors, with a start-up time delay being a function of an RC time constant formed by a resistance of the resistor and a capacitance of the second capacitor; and

snubber circuit means for permitting the slow decay of current in the transformer, the snubber circuit means including said second capacitor that stores sufficient energy to power the pulse-width modulated control circuit when charged by current from the transformer during a flyback period of the transformer, wherein the capacitance of the second capacitor is at least ten times greater than a capacitance of the first capacitor such that the second capacitor stores said sufficient energy, wherein the capacitance of the second capacitor is such that the start-up time delay is maintained at a reasonable value.

5,513,089

SWITCHING POWER SOURCE CONTROL CIRCUIT FOR CONTROLLING A VARIABLE OUTPUT TO BE A TARGET VALUE BY THINNING-OUT SWITCHING PULSES

Sukebisa Sudo, Yokohama; Hitokatsu Hashimoto, Tokyo; Junichi Sasaki, Sendai, and Tsuneo Ikenoue, 14-6, Ichiban-cho 1-chome, Aoba-ku, Sendai-shi, Miyagi 980, all of Japan, assignors to Hiyoshi Electric Works Co., Ltd., Kanagawa; Micron Instrument Inc., Tokyo; Tohoku Ricoh Co., Ltd., Miyagi, and Tsuneo Ikenoue, Miyagi, all of Japan

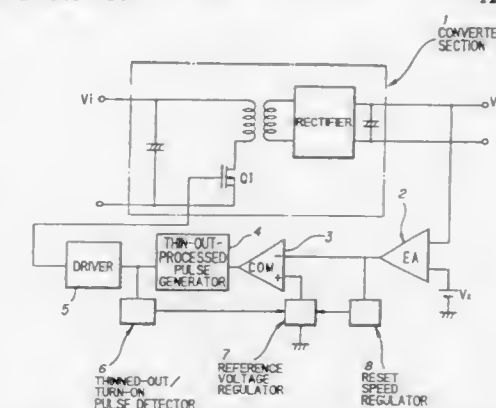
Filed Jun. 15, 1994, Ser. No. 261,893

Claims priority, application Japan, Jun. 18, 1993, 5-147756

Int. Cl.⁶ H02M 3/335; G05F 1/40

U.S. Cl. 363—21

12 Claims



1. A switching power source control circuit comprising:

a voltage conversion means for converting an input voltage of said switching power source on the basis of thin-out-processed pulses obtained by thinning-out continuous switching pulses to be supplied to a switching element and for outputting the thus converted voltage;

an error detection means for detecting an error of the output voltage of said voltage conversion means from a target value which is set in advance so that the switching pulses are thinned out so as to control an output value of said switching power source to be said target value;

a reference voltage regulation means for generating a variable reference voltage for performing thin-out operation;

a comparison means for comparing an output voltage of said error detection means with the reference voltage outputted from said reference voltage regulation means to thereby generate an output signal for performing the switching pulse thin-out operation in accordance with a voltage difference between the output voltage of said error detection means and the reference voltage of said reference voltage regulation means;

a thin-out-processed pulse generation means for generating said thin-out-processed pulses on the basis of the output signal of said comparison means;

a control means for performing control to change said reference voltage supplied from said reference voltage regulation means to said comparison means so as to make it difficult to perform next thin-out operation to prevent continuous rest of switching pulses when thin-out operation is performed once by said thin-out-processed pulse generation means with a thin-out rate in a range of from 0 to 1/2;

a driving means for outputting driving pulses for driving said switching element on the basis of the thin-out-processed pulses generated from said thin-out-processed pulse generation means; and

a reset speed regulation means for changing the speed of resetting of the reference voltage regulated by said reference voltage regulation means in accordance with a change in output of said error detection means.

5,513,090 HYBRID SERIES ACTIVE, PARALLEL PASSIVE, POWER LINE CONDITIONER FOR HARMONIC ISOLATION BETWEEN A SUPPLY AND A LOAD

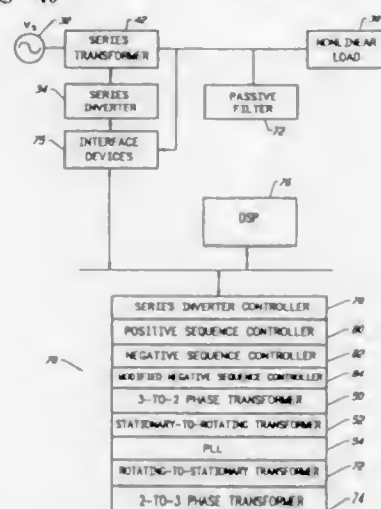
Subhashish Bhattacharya, and Deepakraj M. Divan, both of
Madison, Wis., assignors to Electric Power Research Insti-
tute, Inc., Palo Alto, Calif.

Filed Nov. 15, 1994, Ser. No. 340,152

Int. Cl.⁶ H02M 1/12; H02J 1/02

U.S. Cl. 363—40

7 Claims



1. A power line conditioner, comprising:
an active filter connected to a power distribution network, said
power distribution network including a voltage source and a
load, said voltage source inducing unbalanced supply currents
in said power distribution network; and
an active filter controller coupled to said active filter and said
power distribution network, said active filter controller includ-
ing
means for identifying a negative sequence fundamental com-
ponent signal and a positive sequence fundamental compo-
nent signal in said unbalanced supply currents,
means for adding said negative sequence fundamental compo-
nent signal and said positive sequence fundamental compo-
nent signal to form an active filter reference signal, and
means for applying said active filter reference signal to said
active filter, causing said active filter to operate as a har-
monic isolator between said voltage source and said load.

5,513,091 VOLTAGE TRANSFORMING CIRCUIT Hideaki Uchida, Sagami, and Kouji Ohashi, Yokohama, both of Japan, assignors to Kahushiki Kaisha Toshiba, Kawasaki, Japan

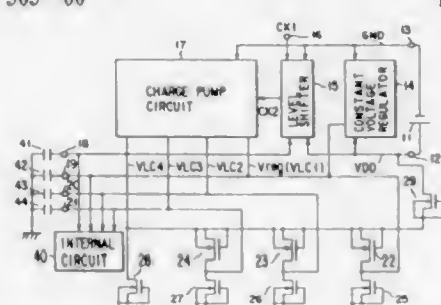
Filed Mar. 23, 1995, Ser. No. 409,092

Claims priority, application Japan, Mar. 29, 1994, 6-058411

Int. Cl.⁶ H02M 3/18; H03K 3/01

U.S. Cl. 363—60

14 Claims



1. A voltage transforming circuit comprising:

a constant-voltage regulator circuit for receiving a first voltage
from a voltage source and outputting a second voltage having
the same polarity as the first voltage and a predetermined
absolute value lower than the first voltage;
a step-up circuit, having a plurality of output terminals, for
receiving the second voltage and a first synchronization sig-
nal, the step-up circuit stepping up the absolute value of the
second voltage and controlling the operation of charging
capacitors, thereby outputting from the output terminals a
plurality of stepped-up voltages of the same polarity having
absolute values higher than the second voltage;
a level shifter circuit for receiving a second synchronization
signal which uses the first voltage as one of logic levels, and
receiving that one of the stepped-up voltages which has a
highest absolute value higher than that of the first voltage, the
level shifter circuit shifting the voltage of the one of logic
levels to the highest absolute value of the stepped-up voltages,
thereby creating the first synchronization signal; and
a one-way conductive element connected between the voltage
source and that one of the output terminals of the step-up
circuit from which the stepped-up voltage of the highest
absolute value is output, so that a voltage substantially equal
to the first voltage can be applied to the one of the output
terminals immediately after the first voltage is applied to the
constant-voltage regulator circuit.

5,513,092 PRECISION REGULATED LOW LOSS HIGH-POWER POWER SUPPLY

Klaus Goebel, Rheinstetten-Nwr., Germany, assignor to Bruker
Analytische Messtechnik GmbH, Rheinstetten, Germany

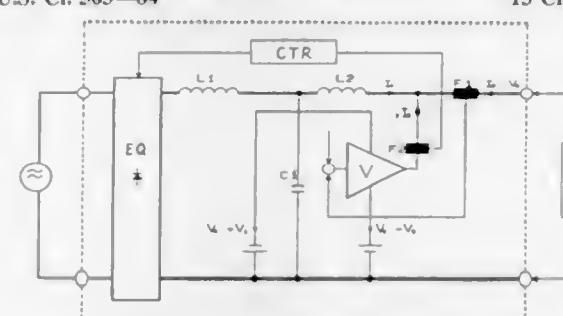
Filed Jul. 19, 1994, Ser. No. 277,260

Claims priority, application Germany, Jul. 19, 1993, 43 24
150.6

Int. Cl.⁶ H02M 5/42

U.S. Cl. 363—84

13 Claims



1. In an improved power supply of the kind having an AC
current input and an output, the output having an output line at an
output potential (V_o) and a return line at zero potential, the power
supply being adapted to supply a regulated output DC current to a
load, with a bi-polar controller, having an output generating a
control current, and a first sensor, the controller and the first sensor
being adapted to control, via the control current, an instantaneous
value, measured by the first sensor, of a control variable to a
predetermined setting within a tolerance of less than 0.1% at 1 Hz,
and with an adjustable rectifier means, a filter capacitor, and a
storage inductor connected between the rectifier means and the
filter capacitor, whereby the control current is electrically con-
nected to the output line of the power supply output, the improve-
ment comprising a decoupling inductor means adapted to AC
decouple the controller output from the filter capacitor, a first
potential means for supplying a first potential (V_o+V_1) to the
controller, a second potential means for supplying a second poten-
tial (V_o-V_2) to the controller, a second sensor for measuring the
control current and for generating a second sensor output signal,
and a control unit being connected to the second sensor and to the
adjustable rectifier means, the control unit being adapted to regu-
late, using the second sensor output signal, the adjustable rectifier
means to minimize a mean value of the control current.

5,513,093 REDUCED OPEN CIRCUIT VOLTAGE POWER SUPPLY AND METHOD OF PRODUCING THEREFOR

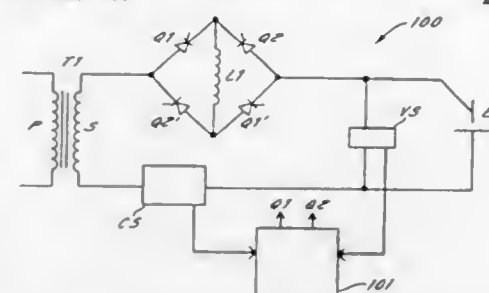
Doo J. Corrigan, Appleton, Wis., assignor to Miller Electric
Mfg. Co., Appleton, Wis.

Filed Mar. 11, 1994, Ser. No. 212,195

Int. Cl.⁶ H02M 5/42; B23K 9/10

U.S. Cl. 363—85

29 Claims



1. An ac power supply for providing an ac signal to a first and a
second output terminal, and having a reduced open circuit voltage
comprising:

a source of ac current connected to the output terminals, includ-
ing at least one first polarity switch and at least one opposite
polarity switch;
an open circuit sensor; and
a control circuit, connected to the source of ac current and to the
open circuit sensor, wherein the control circuit includes a
disabling circuit which disables the at least one first polarity
switch, causing the current source to provide a dc open circuit
voltage having a reduced average magnitude.

5,513,094 SWITCH-MODE POWER SUPPLY FOR BRIDGED LINEAR AMPLIFIER

Gerald R. Stanley, Osceola, Ind., assignor to Crown Interna-
tional, Inc., Elkhart, Ind.

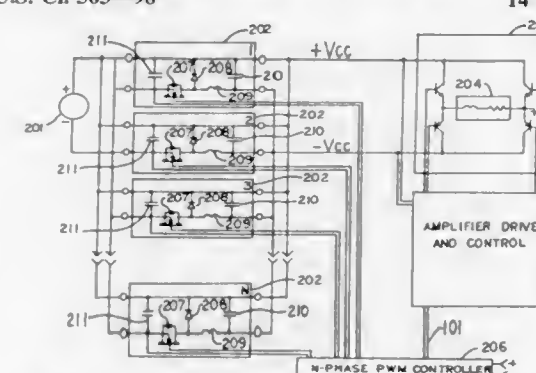
Continuation of Ser. No. 160,068, Nov. 30, 1993, abandoned.

This application Mar. 27, 1995, Ser. No. 413,192

Int. Cl.⁶ H02M 3/24; G05F 1/40

U.S. Cl. 363—98

14 Claims



4. An amplifier power supply circuit comprising a power ampli-
fier having a power input, a plurality of pulse width modulated
switch-mode power converter means connected in parallel and
adapted for connection to a DC power supply, each converter
means for tracking the power demand for said amplifier, generator
means for producing a plurality of identical modulating voltage
wave forms except for equal time delays, means for converting
said wave forms into a plurality of pulse width drive signals to
sequentially switch said converter means, all said converter means
collectively for outputting current from said power supply to said
amplifier power input when each converter means is switched on.

5,513,095 FLEXIBLE AUTOMATION SYSTEM FOR VARIABLE INDUSTRIAL PROCESSES

Manfred Pajonk, Bochum, Germany, assignor to Siemens
Aktiengesellschaft, München, Germany

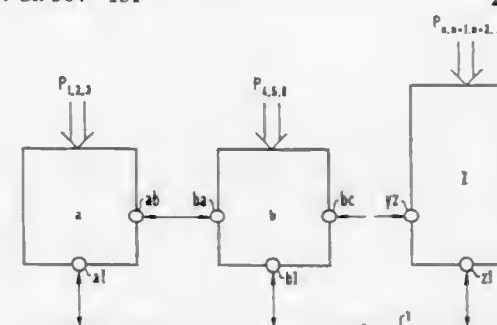
Continuation of Ser. No. 874,266, Apr. 24, 1992, abandoned,
which is a continuation-in-part of Ser. No. 568,352, Aug. 15,
1990. This application Jun. 21, 1993, Ser. No. 80,731

Claims priority, application European Pat. Off., Aug. 16,
1989, 89115130

Int. Cl.⁶ G05B 15/00; 19/02

U.S. Cl. 364—131

2 Claims



1. A flexible automation system for variable industrial processes
comprising:

a plurality of programmable controllers being linked via a con-
nection sub-system, individually-coded digital or analog pro-
cess variables being selectively assigned to the programmable
controllers, the programmable controllers storing respective
changeable-by-demand code lists of the process variables, the
programmable controllers being coupled to at least one input
device for selecting the process variables via the code lists,
for accepting the process variables, for passing the process
variables between the programmable controllers, and for
acknowledging the process variables stored in the code lists,
in order to build up a free routing procedure,

wherein each programmable controller has programs using
directly or indirectly the process variables, first communica-
tion interfaces in the connection sub-systems having physical
and logical definitions that are specified for said program-
mable controllers for retrieving said process variables and
wherein when one of said programmable controllers calls a
process variable that is only indirectly retrievable, said one
programmable controller communicates a request to a source
programmable controller in which said indirectly retrievable
process variable is directly retrievable, said source program-
mable controller, on the basis of that request, communicating
the actual value of the requested process variable to said one
programmable controller requesting said indirectly retrievable
process variable.

5,513,096 MULTI-AXIS MOTION CONTROLLER AND LID DISPENSER

Richard J. Casler, Jr., Newtown, Conn.; Kenneth E. Daggett,
Murrysville, Pa.; Jeffrey R. Davis, Sandy Hook, and George
E. Riehm, New Fairfield, both of Conn., assignors to Con-
necticut Innovations, Inc., Rocky Hill, Conn.

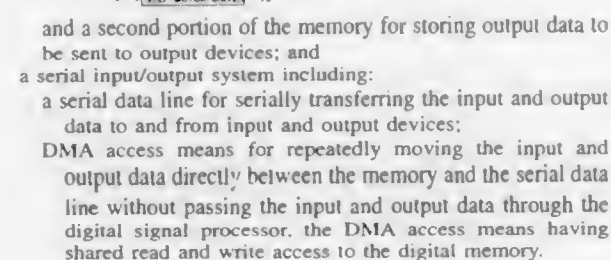
Filed Jul. 10, 1992, Ser. No. 911,718

Int. Cl.⁶ G06F 15/46

U.S. Cl. 364—140

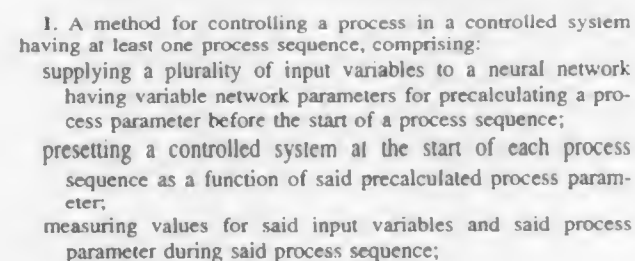
24 Claims

1. A multi-axis motion controller comprising:
a digital signal processor operable in a standalone mode to run a
motion control application program for controlling motion
along multiple axes;
a digital memory organized in a shared memory architecture for
shared read and write access by the digital signal processor
and at least one other device, including a first portion of the
memory for storing input data received from input devices



Otto Gramckow, Erlangen; Thomas Martinetz, and Thomas Poppe, both of München, all of, Germany, assignors to Siemens Aktiengesellschaft, München, Germany
Filed May 16, 1994, Ser. No. 243,646
Claims priority, application European Pat. Off., May 17, 1993, 93108017

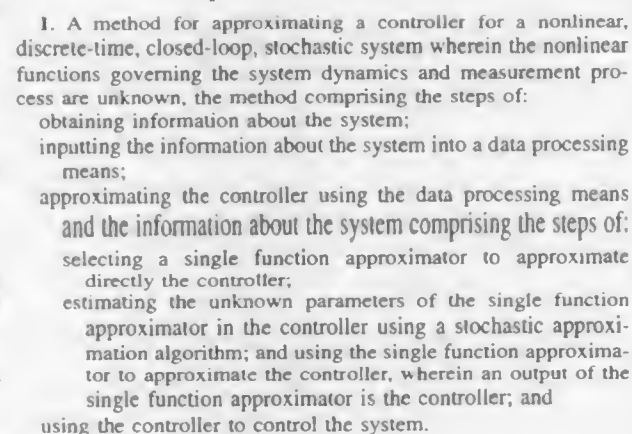
U.S. Cl. 364-148 15 Claims



supplying said measured input variable values after said process sequence to said neural network;
calculating in said neural network a network response based on the measured input variables;
calculating a deviation between said network response and said measured process parameter; and
adapting said network parameters in said neural network to reduce said deviation wherein said adapting step takes place on-line, such that after each measuring step the measured input variable values and process parameter obtained are used for adaptation of the network parameters.

James C. Spall, Ellicott City, and John A. Cristion, Columbia,
both of Md., assignors to The Johns Hopkins University,
Baltimore, Md.
Continuation of Ser. No. 73,371, Jun. 4, 1993, abandoned.
This application Dec. 27, 1994, Ser. No. 364,069

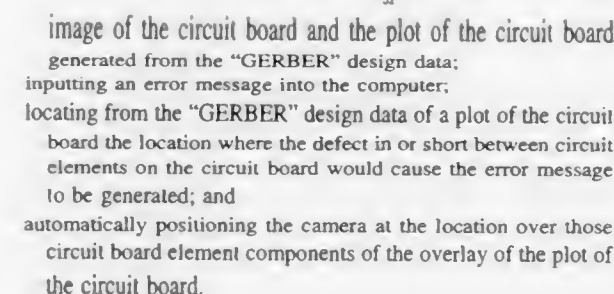
U.S. Cl. 364—158 10 Claims



U.S. Cl. 364—167.01 5 Claims

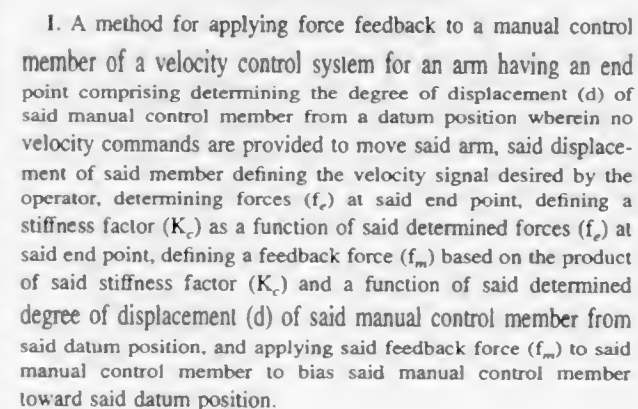
1. A method for repairing or reworking a circuit board utilizing a camera including a lens system and a computer including a CPU and memory means having "GERBER" design data related to a plot or layout of a circuit board under investigation stored therein, the method comprising the steps of:

- positioning a circuit board in a predetermined location beneath the camera;
- positioning the camera relative to said circuit board to a desired position over the circuit board;
- focusing the camera on the circuit board;
- digitizing the camera image and supplying the digitized representation of the camera image to the computer;
- overlaying said digitized image on a circuit board plot generated by the "GERBER" design data for said desired position;
- establishing on a visual display coupled to the computer an overlay in registry between the plot of the digitized camera

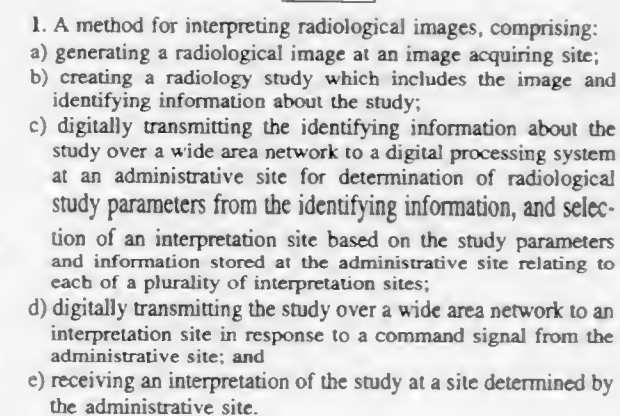


Niall R. Parker, Abbotsford; Peter D. Lawrence, and Septimiu E. Salcudean, both of Vancouver, all of, Canada, assignors to The University of British Columbia, Vancouver, Canada

U.S. Cl. 364—167.01 12 Claims



U.S. Cl. 364-401 22 Claims

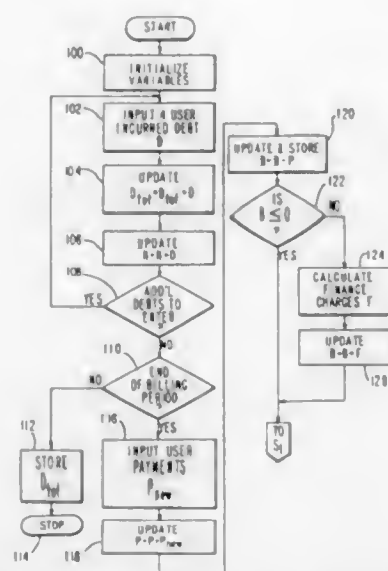
Int. Cl.⁶ G06F 19/00

U.S. Cl. 364-408 4 Claims

1. A data processing method of implementing an award to an authorized user of a credit card who incurs debts on the card, said award comprising an opportunity to recover at least a portion and potentially in excess of a total amount of the incurred debts and said potential recovery being wholly unrelated in amount to debts actually incurred and to payments actually tendered by the user of the credit card, comprising the steps of:

storing in a data processing device an amount of each of one or more debts incurred on the credit card by an authorized user of the card;

summing in the data processing device the amounts of said stored one or more incurred debts to define a total amount of the authorized user's charged purchases and incurred debts and storing said total amount in the data processing device;



defining and storing in the data processing device a due date by which payment of said total amount is due;
storing in the data processing device a payment amount received in payment of the authorized user's stored incurred debts;
comparing, in the data processing device, the stored total amount and the stored payment amount to determine whether payment of said total amount has been received by the due date and, if not,

- calculating and storing in the data processing device a finance charge on an unpaid portion of said total amount, and
- adding in the data processing device said stored finance charge to said stored total amount of the authorized user's entered incurred debts to redefine said total amount, and storing said redefined total amount in the data processing device;

defining and storing in the data processing device a number representing a monetary amount for which the user earns a coupon redeemable by the user for a lottery ticket comprising a statistically-calculatable chance for an award to the user of a sum of money unrelated in amount to the total amount of the user's incurred debts and to the payment amount;
calculating in the data processing device a quantity of coupons earned by the user by dividing one of the stored payment amount and the stored total of the user's incurred debts and finance charges by said stored conversion number to define a numerical result, said quantity comprising an integer portion of said numerical result;
printing a plurality of coupons each indicating thereon redeemability of said each coupon for a lottery ticket, said coupon plurality being defined by said quantity; and
distributing to the user said plurality of coupons redeemable for at least one lottery ticket.

5,513,103

METHOD OF ACQUIRING AND DISSEMINATING HANDICAPPING INFORMATION

Cary Charlson, 963 Auburn View, Cincinnati, Ohio 45206

Continuation of Ser. No. 639,798, Jan. 10, 1991, abandoned.

This application Nov. 23, 1994, Ser. No. 344,359

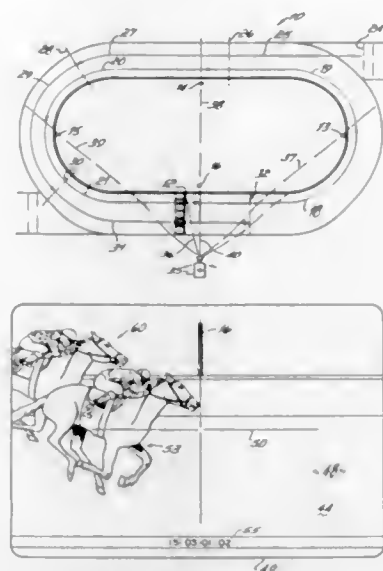
Int. Cl.⁶ G06F 19/00

U.S. Cl. 364-411

13 Claims

1. A method of acquiring handicapping information for thoroughbred racehorses comprising the steps of:

- indexing a camera to marked, measured split positions along a racetrack during a race as a plurality of racehorses proceed around the racetrack, the split positions defining segments of the racetrack, the camera remaining aimed at each split position to record on video recording media each of said race-



horses upon arrival at the respective split position and correlating time code information with the video recording media during camera indexing and recording;

- subsequently reviewing the video recording media to identify each of said racehorses at each split position and to determine, using said correlated time code information, an elapsed time for each of said racehorses to traverse each segment of the racetrack; and
- calculating the average speeds of said racehorses for each segment of the racetrack traversed during the race, based on the elapsed times obtained from the reviewing step for the respective segments and the measured distances of the segments, thereby to obtain, for each of said racehorses, a plurality of average speeds equal in number to the segments.

5,513,104

VEHICLE AUTOMATIC TRANSMISSION WITH VALVE DUTY FACTOR CONTROL

Teiji Tsutsui, Himeji, and Sinji Watanabe, Amagasaki, both of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 5, 1993, Ser. No. 102,268

Claims priority, application Japan, Aug. 10, 1992, 4-212944

Int. Cl.⁶ B60K 41/08

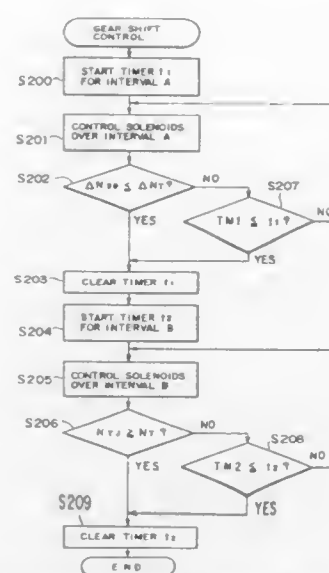
U.S. Cl. 364-424.1

8 Claims

1. A controller device for a vehicle automatic transmission (2) including: at least one friction element (2A) whose engagement/disengagement state is changed during a gear shifting operation; and actuator means (3) for engaging and disengaging said friction element in response to a control signal; said controller device comprising:

- rotational speed sensor means (4b) for detecting a rotational speed of an input shaft (26) of said automatic transmission;
- first shift control means, coupled to said rotational speed sensor means, for controlling said actuator means in accordance with a first control method over a first control interval (A), wherein said first control interval is initiated in response to a shift command and terminated in response to an earliest one of a change in said rotational speed of said input shaft of said automatic transmission being detected, and a length of said first control interval exceeding a first predetermined upper limit (TM1; TM3); and

second shift control means for controlling said actuator means in accordance with a second control method over a second control interval (B) beginning at a termination of said first control interval, wherein said second control interval is terminated in response to an earliest one of said rotational speed of said input shaft of said automatic transmission reaching a predetermined level corresponding to a completion of said



gear shifting operation, and a length of said second control interval exceeding a second predetermined upper limit (TM2; TM4-TM3).

5,513,105

VEHICLE SECURITY SYSTEM

Daniel K. Kronos, 33902-B Golden Lantern, Dana Point, Calif.

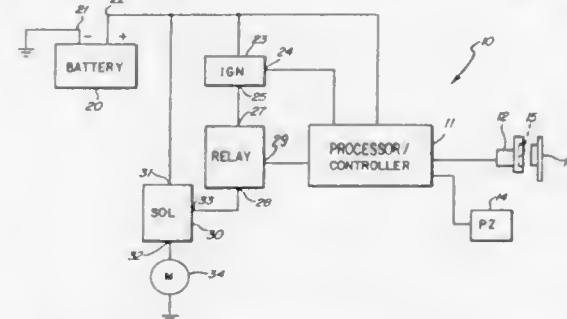
92629-2320

Filed May 31, 1994, Ser. No. 251,213

Int. Cl.⁶ B60R 25/04

U.S. Cl. 364-424.01

14 Claims



13. For use in a vehicle, a vehicle security system comprising: a number transmitting key having a key number;
means for coupling to said key and reading the key number thereof;
means for preventing the starting and operation of said vehicle;
indicator means for indicating information to a vehicle user;
timing means for timing the duration of coupling of said key to said means for coupling; and
processor means responsive to said timing means and said means for coupling to receive user input information based solely upon coupling of said number transmitting key to said means for coupling, the duration of said coupling and said key number to configure said vehicle security system in a selected one of a plurality of operating modes.

5,513,106

SYSTEM FOR CONTROLLING LOCOMOTION OF A WALKING ROBOT HAVING A SENSOR FOR DETECTING EXTERNALLY EXERTED FORCES

Ryutaro Yoshino, and Hideo Takahashi, both of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 994,616, Dec. 21, 1992, abandoned.

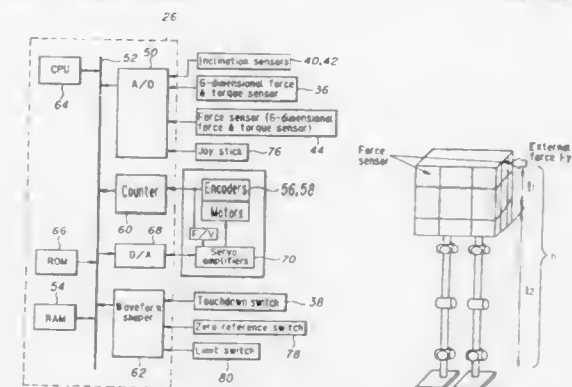
This application Nov. 22, 1994, Ser. No. 343,206

Claims priority, application Japan, Dec. 20, 1991, 3-355919

Int. Cl.⁶ G06F 7/70; B25J 5/00; G05B 19/04

U.S. Cl. 364-424.02

16 Claims



1. A system for controlling the locomotion of a legged walking robot having a body link and articulated leg linkages each connected to the body link through a first joint and having at least a second joint of the type having:
actuator means for driving the joints; and
control means for determining a control value of the actuator means for each of the joints based on locomotion data including a landing position of a lifted leg linkage;
wherein the improvement comprises:
a cover supported by an external force sensor on the body link, with the force sensor linked to the control means, for detecting an external force exerted on the body link; and
said control means adjusts the control value for at least one of the joints of a lifted leg linkage in response to the detected external force to shift the landing position of the lifted leg linkage in a direction in which the external force acts.

5,513,107

METHODS AND APPARATUS FOR CONTROLLING OPERATING SUBSYSTEMS OF A MOTOR VEHICLE

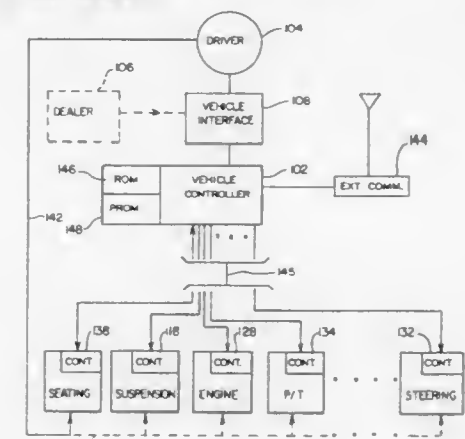
Joseph Gormley, Livonia, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Dec. 17, 1992, Ser. No. 992,371

Int. Cl.⁶ G06F 17/00

U.S. Cl. 364-424.05

2 Claims



1. An integrated control system for a motor vehicle comprising:

vehicle controller means for controlling and configuring operating characteristics of said motor vehicle in response to control signals, said vehicle controller means comprising memory means for storing vehicle control characteristic parameters selected by said control signals;

suspension control means connected to and configured by said vehicle controller means for controlling a suspension subsystem of said motor vehicle in response to said vehicle control characteristic parameters;

engine control means connected to and configured by said vehicle controller means for controlling an internal combustion engine of said motor vehicle in response to said vehicle control characteristic parameters;

power train control means connected to and configured by said vehicle controller means for controlling a power train connected between said internal combustion engine and driven wheels of said motor vehicle in response to said vehicle control characteristic parameters;

steering control means connected to and configured by said vehicle controller means for controlling a steering subsystem of said motor vehicle in response to said vehicle control characteristic parameters; and

input means for generating said control signals, at least some of said vehicle control characteristic parameters being stored and selected as a plurality of ranges with each of said ranges having a plurality of subrange values which are stored and selected within said ranges, currently selected subrange values within a range defining the value of the range, said input means further providing for generation of selection signals for selecting said ranges and said subrange values within said ranges.

5,513,108

SYSTEM FOR CONTROLLING SUSPENSION IN ACCORDANCE WITH ROAD CONDITIONS

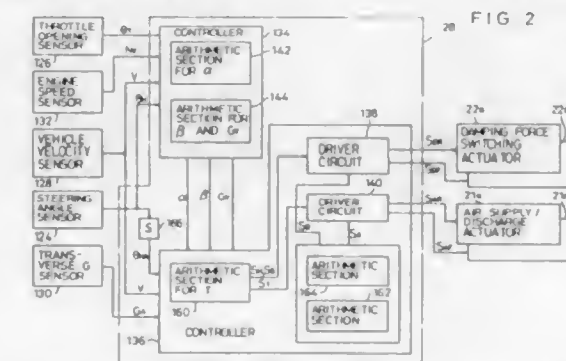
Naohiro Kishimoto, Hiroaki Yoshida, both of Okazaki, and Kichiro Yamada, Nagoya, all of Japan, assignors to Mitsubishi Jidosha Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 12, 1993, Ser. No. 16,978

Claims priority, application Japan, Feb. 14, 1992, 4-028,398
Int. Cl.⁶ B60G 17/00

U.S. Cl. 364-424.05

24 Claims



1. A suspension control system of a motor vehicle running on a road, said motor vehicle having a vehicle body, front wheels, and rear wheels, said system comprising:

suspensions for connecting the vehicle body with the wheels, including a front group of front-wheel suspensions providing a front roll stiffness on the front side of the vehicle body, and a rear group of rear-wheel suspensions providing a rear roll stiffness on the rear side of the vehicle body;

detecting means for detecting movement states of the vehicle body and outputting respective detection signals;

first output means for calculating a total roll stiffness of the whole vehicle body in response to the detection signals from the detecting means and delivering a first control signal, indicative of required front and rear roll stiffnesses in accordance with a result of the calculation of the first output means;

arithmetic means for calculating a first state variable indicative of a flexure degree of the road and a second state variable indicative of a gradient of the road in accordance with the detection signals from the detecting means and outputting the results of the calculation of the arithmetic means;

second output means for delivering a second control signal to the control means in accordance with the calculation results from the arithmetic means to vary the front and rear roll stiffnesses, thereby modifying a steering characteristic of the motor vehicle; and

control means for independently controlling the front and rear roll stiffnesses provided by the front and rear groups of suspensions in accordance with the first control signal and the second control signal.

5,513,109

AIR BAG SYSTEM HAVING A CONTROL SYSTEM FOR DETERMINING THE EXACT INFLATING TIME OF AN AIR BAG

Hiromichi Fujishima, Toyota, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Continuation of Ser. No. 19,442, Feb. 18, 1993, abandoned.

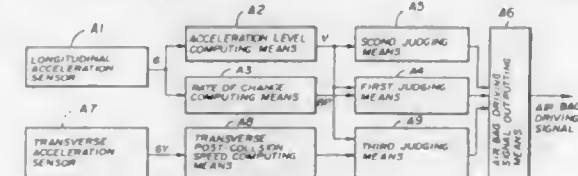
This application Mar. 31, 1995, Ser. No. 415,204

Claims priority, application Japan, Jun. 22, 1992, 4-163125

Int. Cl.⁶ B60R 21/32

U.S. Cl. 364-424.05

15 Claims



10. An air bag system comprising:

an air bag driving apparatus including an air bag and means for inflating said air bag upon receipt of an air bag driving signal; and

an air bag control system comprising:

a first acceleration sensor which detects an acceleration of the body of an automobile in a longitudinal direction and outputs a first acceleration signal,

an acceleration level computing means, coupled to said first acceleration sensor, for computing a degree of acceleration and a longitudinal post-collision speed by using said first acceleration signal,

a rate of change computing means, coupled to said first acceleration sensor, for computing the rate of change of said first acceleration signal and detecting a predetermined characteristic of said rate of change, and outputting first resultant data,

a first judging means, coupled to said acceleration level computing means and said rate of change computing means, for judging an occurrence of a collision of said automobile by using said degree of acceleration, said longitudinal post-collision speed and said first resultant data, and outputting a first judgment result,

a second judging means, coupled to said acceleration level computing means, for computing the period of time during which said degree of acceleration exceeds a predetermined value for a first predetermined period of time and judging an occurrence of a collision of said automobile by using said degree of acceleration, said longitudinal post-collision speed, said rate of change and said period of time, and outputting a second judgment result,

a second acceleration sensor which detects an acceleration in the transverse direction of said body of said automobile and outputs a second acceleration signal,

a transverse post-collision speed computing means, coupled to said second acceleration sensor, for computing a transverse post-collision speed by using said second acceleration signal and deriving a factor from said transverse post-collision speed,

a third judging means, coupled to said transverse post-collision speed computing means and said acceleration level computing means, for judging the occurrence of a collision of said automobile by using said degree of acceleration, said longitudinal post-collision speed, said range of change and said factor of said transverse post-collision speed, said third judging means outputting a third judgment result, and

an air bag driving signal outputting means, coupled to said first, said second and said third judging means, for determining an occurrence of a collision of said automobile based on said first, said second and said third judgment results and outputting said air bag driving signal to said air bag driving apparatus.

5,513,110

NAVIGATION SYSTEM AND PATH SEARCH METHOD USING HIERARCHIZED ROAD DATA

Takehiro Fujita, Kokubunji, and Takashi Nomura, Chigasaki, both of Japan, assignors to Xanavi Informatics Corporation, Zama, and Hitachi, Ltd., Tokyo, both of Japan

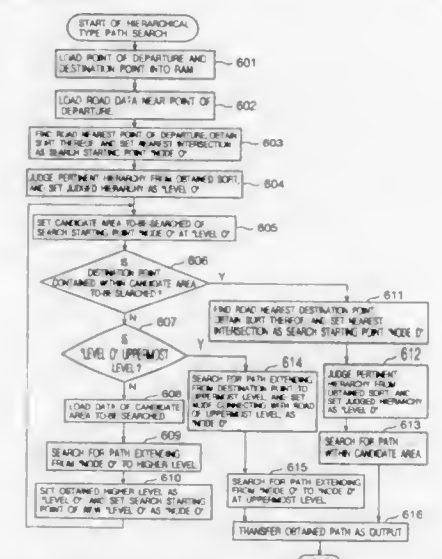
Filed Jul. 8, 1994, Ser. No. 272,493

Claims priority, application Japan, Jul. 9, 1993, 5-170643

Int. Cl.⁶ G06F 16/00

U.S. Cl. 364-449

6 Claims



1. A navigation system for installation on a vehicle for providing a recommendable path from a departure point or a current position of the vehicle to a destination point, comprising:

storage means for storing therein road data representing roads of an area, wherein said road data comprises road shape data and network data, said road shape data representing sorts and shapes of said roads, and said network data comprising node data representing intersections and link data representing connections between the intersections,

said roads being classified into a plurality of hierarchies in accordance to the type of roads, said road data being divided into a plurality of hierarchized data, each hierarchized data corresponding to one of said hierarchies, each said hierarchized data being divided into a plurality of data units, each said data unit of a hierarchized data corresponding to a management area representing a particular geographical area of predetermined extent and shape;

position means for detecting said current position of the vehicle; set input means for accepting setting of said destination point; and

path search means for searching for a recommended path which extends from a given point of departure or said current position of the vehicle to the destination point.

said path search means making a search for said recommended path in such a way that said path search means searches

partial paths of said recommended path in the respective hierarchies sequentially, each of said partial paths being searched on the basis of the road data units corresponding to the combination of the management area contained in a search area of the hierarchy in which the partial path is to be searched, and the hierarchy in which the partial path is to be searched, each of said partial paths being formed of the road or roads in the hierarchy in which the partial path is to be searched, and said search area of the hierarchy being an area having a breadth predetermined so that the search area of a higher hierarchy has a broader breadth.

5,513,111

VEHICLE LOCATING AND COMMUNICATING METHOD AND APPARATUS

Larry C. Wortham, Garland, Tex., assignor to Highway Master Communications, Inc., Dallas, Tex.

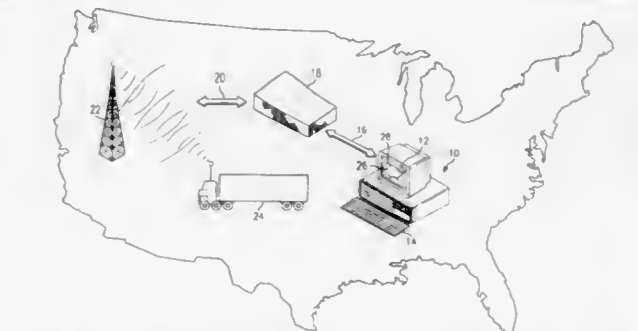
Continuation of Ser. No. 178,022, Jan. 6, 1994, Pat. No. 5,398,190, which is a continuation of Ser. No. 920,644, Jul. 28, 1992, Pat. No. 5,299,132, which is a continuation of Ser. No. 642,436, Jan. 17, 1991, Pat. No. 5,155,689. This application

Jul. 22, 1994, Ser. No. 279,211

Int. Cl.⁶ G01S 3/02

U.S. Cl. 364-460

24 Claims



1. A system for locating vehicles using a cellular network, the cellular network comprising a plurality of cellular telephone systems, comprising:

a cellular telephone in at least one vehicle that reads a system identification number emitted by a serving cellular telephone system operating in an area including the location of the vehicle, the cellular telephone transmits the received system identification number; and

a remote host controller coupled with the cellular network, the remote host controller receives the system identification number transmitted by the cellular telephone, the remote host controller comprising a first memory containing geographical coordinates corresponding to system identification numbers for cellular telephone systems in the cellular network, the remote host controller determines the geographic location of the vehicle in response to an interrogation of the first memory with the transmitted system identification number.

5,513,112

DATABASE SYSTEM

William J. Herring, Brentwood, and MacKenny L. Trim, Horncurch, both of, United Kingdom, assignors to Neopost Limited, Essex, United Kingdom

Filed Oct. 6, 1993, Ser. No. 132,306

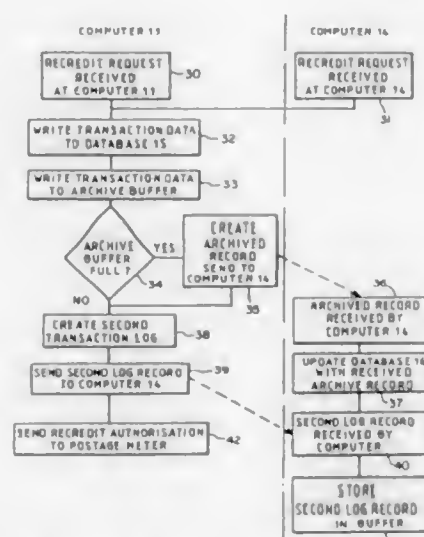
Claims priority, application United Kingdom, Oct. 9, 1992, 9221215

Int. Cl.⁶ G07B 17/02

U.S. Cl. 364-464.02

9 Claims

1. A dual database system including first means for processing transactions and for writing transaction records in respect of said transactions in a first database; second means for entering and storing records in a second database to correspond to said first



database; said first means being operative to create an archived record from a group of said transaction records and to send said archived record to said second means; said first means being operative to create a transaction log record in respect of each transaction relating to critical information and to transmit each said transaction log record to said second means; said second means including transaction log storage means and being operative to store received transaction log records in said transaction log storage means; said second means being operative to update said second database from said archived record sent by said first means and received by said second means; and said second means being operative in response to failure of said first means to send an archived record in respect of new transactions processed by said first means immediately prior to said failure of said first means to utilise said transaction log records stored in said transaction log storage means to update said second database in respect of each transaction record relating to critical data of said new transactions so that the second database contains records of all transactions relating to critical information processed by said first means.

5,513,113

METHOD OF AND DEVICE FOR CORRECTING POSITION OF CUTTING-EDGE OF TOOL IN NUMERICALLY CONTROLLED MACHINE TOOL

Yasuaki Okada, Kagamihara; Shinji Yoshikawa, Inuyama, and Eihiro Urano, Yokohama, all of Japan, assignors to Murata Kikai Kabushiki Kaisha, Kyoto, and Nissan Motor Co., Ltd., Yokohama, both of Japan

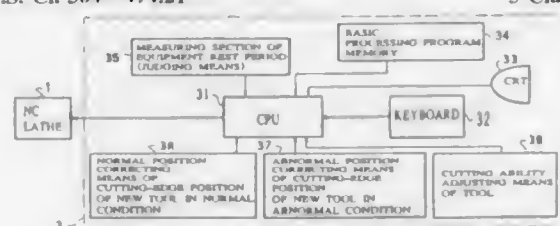
Filed Dec. 20, 1994, Ser. No. 359,900

Claims priority, application Japan, Dec. 27, 1993, 5-346949

Int. Cl. G05B 19/404

U.S. Cl. 364-474.21

5 Claims



1. A method of correcting a cutting-edge position of a tool installed in a numerically controlled machine having a bed, a main spindle table fixed on the bed, a main spindle rotatably supported by the main spindle table for carrying a work to be machined, a tool table movably mounted on the bed, a tool for machining the work and a cutting-edge detecting sensor mounted on either the main spindle table or the bed for detecting a position of a cutting-edge of the tool, said numerically controlled machine tool being operated in accordance with a basic processing program into which

a difference between a movement amount of the tool table and a predetermined standard dimension is provided as a cutting-edge position correction value, the movement amount of the tool table being at a distance necessary to bring the cutting-edge of the tool into contact with the cutting-edge detecting sensor, the method comprising the steps of:

judging whether a temperature of the main spindle table is in a normal condition or an abnormal condition when exchanging an old tool for a new tool;

in the normal condition,

regarding the movement amount of the tool table as a normal movement amount of the tool table having the new tool; and

providing a difference between the normal movement amount and the predetermined standard dimension into the basic processing program, as the cutting-edge position correction value for the new tool; or

in the abnormal condition,

regarding the movement amount of the tool table as an abnormal movement amount of the tool table having the old tool; replacing the predetermined standard dimension with the abnormal movement amount as a newly determined standard dimension;

establishing a difference between the newly determined standard dimension and a position of a cutting-edge of the new tool as the cutting-edge position correction value for the new tool;

regarding a machined dimensional change, which can be obtained from a relationship thereof with wear amount of cutting-edge by preceding experiments, as a cutting ability correction value of the new tool; and

providing the cutting-edge position correction value for the new tool and the cutting ability correction value thereof into the basic processing program.

5,513,114

APPARATUS FOR AND METHOD OF COMPENSATING FOR POSITIONING ERROR

Kouki Matsumoto, Aichi, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

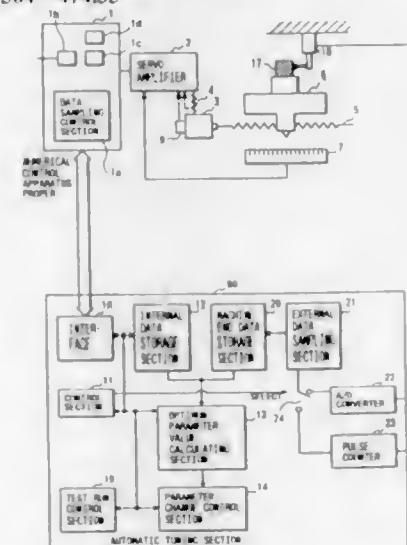
Filed Aug. 17, 1993, Ser. No. 107,374

Claims priority, application Japan, Aug. 19, 1992, 4-220161

Int. Cl. G06F 17/00

U.S. Cl. 364-474.35

13 Claims



1. A servo control apparatus comprising:

a rotatable motor;

a workpiece position detection means for detecting a position of said workpiece;

a ballscrew rotating with a rotation of said motor;

a table, coupled to said ballscrew and supporting a workpiece, moving in a table travel direction in response to the rotation of said ballscrew;

table position detecting means for detecting a position of said table;

position command means for outputting a position command signal for specifying the position of said table;

travel direction reversing timing signal generating means for generating a travel direction reversing timing signal indicating a reversal of travel direction of said table;

machine deformation error storage means for storing a machine deformation error indicated by the magnitude of a change in difference between the position of said workpiece and the position of said table as detected by said table position detecting means at the reversal of said table travel direction;

position command compensating means for combining said machine deformation error stored in said machine deformation error storage means with said position command signal from a point of time based on said travel direction reversing timing signal to compensate said position command signal;

motor driving means for rotating said motor so that the detection output of said table position detecting means matches the output of said position command compensating means; and first change slowing means for receiving the machine deformation error stored in the machine deformation error storage means and outputting to said position compensating means, a signal based on said received machine deformation error that rises slowly with time.

5,513,115

CLAMP CONTROL FOR INJECTION MOLDING MACHINE

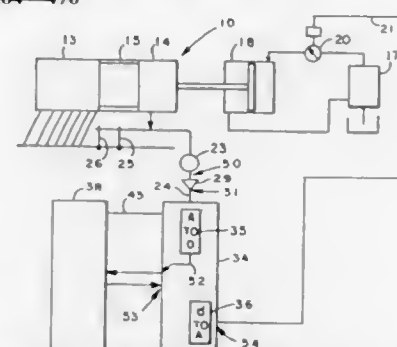
Thomas H. Richards, Brunswick Hills; Thomas C. Bulgrin, Columbia Sta., and Alexander M. Galan, Parma, all of Ohio, assignors to Van Dorn Demag Corporation, Strongsville, Ohio

Continuation of Ser. No. 296,658, Aug. 26, 1994, which is a continuation-in-part of Ser. No. 247,082, May 20, 1994, Pat. No. 5,456,870. This application Aug. 23, 1995, Ser. No. 518,249

Int. Cl. B29C 45/76

U.S. Cl. 364-476

3 Claims



1. A method for controlling the molding cycle of an injection molding machine having a plurality of controls, each control regulating one or more states of the molding cycle and a change in the output of any specific control representing a state transition indicative of the progression of the molding cycle through a specific phase of the molding cycle, the method comprising the steps of:

a) initially evaluating a first set of normal equations by means of a programmable logic controller periodically scanning said first set of equations;

b) generating a variable control signal for each control indicative, upon variation, of the occurrence of a sensed event during the molding cycle; at least one variable control signal for one specific control evaluated by said programmable logic controller performing said first set of normal equations and

generating an output signal for actuating said control upon the occurrence of a change in said variable control signal;

c) evaluating a second set of normal equations in lieu of said first set of normal equations when said first set of normal equations evaluated by said programmable logic controller causes generation of said output signal for actuation of said specific control whereby said state of said molding cycle is changed; and

d) sequentially evaluating subsequent sets of normal equations in lieu of previously evaluated sets of normal equations once a specific variable control signal causes the programmable logic controller performing sets of normal equations associated with that variable control signal to generate an output signal to, in turn, change the output of the control associated therewith until the molding cycle is completed whereby the scan time of said programmable controller is reduced and the response time of the control is increased.

5,513,116

COMPUTER CONTROLLED MACHINE FOR VENDING PERSONALIZED PRODUCTS OR THE LIKE

Stephen P. Buckley, Kansas City; Richard A. Robinson, Parkville; Kurt A. Pfahl, Leawood; Arthur E. Doerflinger, Kansas City, all of Mo.; Thomas B. Banks, Prairie Village, and Lynn Vandemark, Shawnee, both of Kans., assignors to Hallmark Cards Incorporated, Kansas City, Mo.

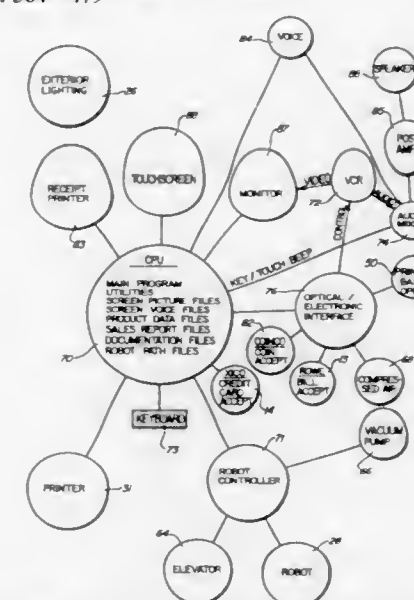
Division of Ser. No. 282,013, Dec. 8, 1988, Pat. No. 5,036,472.

This application Jul. 25, 1991, Ser. No. 735,985

Int. Cl. G06F 17/00

U.S. Cl. 364-479

21 Claims



11. Apparatus for the on-site reproduction and vending of social expression cards in response to a plurality of input data set items provided by a customer, comprising:

information storage and retrieval means for storing, referencing, and retrieving a plurality of social expression card designs, each of said social expression card designs being uniquely identified by a plurality of special occasion parameters;

querying means for querying the customer to select from among the plurality of input data set items, where all of said plurality of input data set items are special occasion parameters that identify types of social expression card designs;

display means for displaying those social expression card designs that have special occasion parameters that match those special occasion parameters selected by the customer;

reproducing means for reproducing special expression card designs in tangible form; and

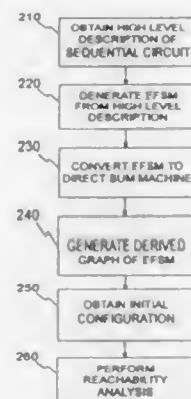
5,513,122 METHOD AND APPARATUS FOR DETERMINING THE REACHABLE STATES IN A HYBRID MODEL STATE MACHINE

Kwang-Ting Cheng, Santa Barbara, Calif., and Anjur S. Krishnakumar, Rocky Hill, N.J., assignors to AT&T Corp., Murray Hill, N.J.

Filed Jun. 6, 1994, Ser. No. 254,218
Int. Cl.⁶ G05B 19/045; G06F 11/26

U.S. Cl. 364—489

20 Claims



14. An apparatus for validating a high-level specification of a sequential circuit design, the high-level specification including both arithmetic variables and Boolean variables, the apparatus comprising:

- a storage means for storing a high-level specification of a sequential circuit design;
- an interactive means for receiving input from a human operator;
- a computer processor connected to the storage means and further connected to the interactive means, said computer processor operable to generate a direct sum EFSM from the high-level specification and further operable to symbolically execute the direct sum EFSM; and
- means connected to the computer processor for communicating the results of the symbolic execution of the direct sum EFSM to a human operator.

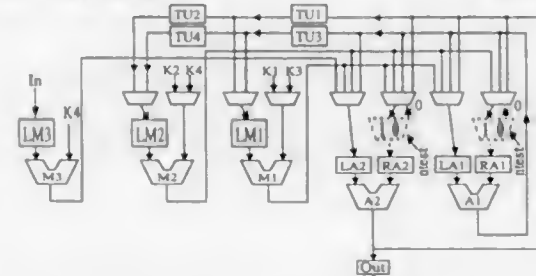
5,513,123 NON-SCAN DESIGN-FOR-TESTABILITY OF RT-LEVEL DATA PATHS

Sujit Dey, and Miodrag Potkonjak, both of Plainsboro, N.J., assignors to NEC USA, Inc., Princeton, N.J.

Filed Jun. 30, 1994, Ser. No. 268,823
Int. Cl.⁶ G06F 17/50

U.S. Cl. 364—489

14 Claims



1. A method of non-scan design-for-testability of circuits comprising the steps of:
defining a circuit to be synthesized functionally in terms of a register-transfer level data path;
modifying the register-transfer level data path by adding observable points and controllable points to render the circuit to be k-level controllable and/or observable; and

synthesizing the circuit including the modifications to enable the circuit to be tested at-speed.

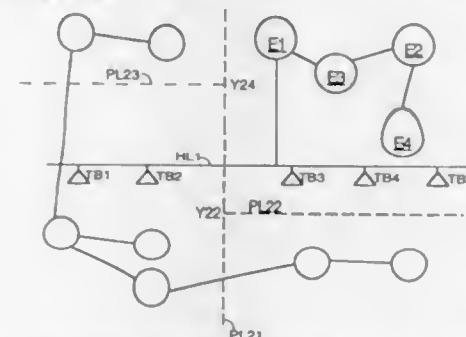
5,513,124 LOGIC PLACEMENT USING POSITIONALLY ASYMMETRICAL PARTITIONING METHOD

Stephen M. Trimberger, San Jose, and Mon-Ren Chene, Cupertino, both of Calif., assignors to Xilinx, Inc., San Jose, Calif.

Continuation-in-part of Ser. No. 784,844, Oct. 30, 1991, Pat. No. 5,224,056. This application Mar. 12, 1993, Ser. No. 30,517
Int. Cl.⁶ G06F 17/50

U.S. Cl. 364—491

10 Claims



1. A partitioning method for placing a circuit design into a programmable integrated circuit device having a distribution of physical resources along a horizontal or vertical line, the circuit design comprising a plurality of circuit elements, some of which are to be distributed to said physical resources along a horizontal or vertical line, the method comprising:

- identifying specific circuit elements of the plurality of circuit elements to be placed along a horizontal or vertical line;
- attaching weights to lines connected to said circuit elements identified as elements to be placed along a horizontal or vertical line, said weights related to the disadvantage of placing said elements on opposite sides of a cut line parallel to said horizontal or vertical line; and
- partitioning the plurality of circuit elements according to a min-cut procedure such that a cost of crossing said cut line is determined using those of said weights which are attached to lines crossing said cut line.

5,513,125 PROCESS FOR DETERMINING THE PERCENTAGE OF COMBUSTIBLE GASES IN A GAS MIXTURE AS WELL AS THEIR CLASSIFICATION ACCORDING TO GAS CLASS FACTORS

Wolfgang Kauschke, Kourou, French Guiana, assignor to Drägerwerk AG, Lübeck, Germany

Filed Apr. 5, 1994, Ser. No. 223,442

Claims priority, application Germany, Apr. 8, 1993, 43 11 605.1

Int. Cl.⁶ G06G 7/75

U.S. Cl. 364—498

10 Claims

1. Process for determining the percentage of combustible gases in air using a detection element catalytically supporting the combustion, the detection element being incorporated in a measuring circuit, the process comprising the steps of:
cyclically heating the detection element during a heating phase by applying a voltage according to a predetermined current-voltage excitation function;
representing by a response function the course over a period of time a value of a signal created by the detection element and detected by the measuring circuit in the presence of the gas to be determined;
providing the excitation function with a pattern such that the response function passes through a maximum;

determining the time interval from the start of the rise of the response function until the maximum is reached;
comparing said time interval with a time interval limit; and
sending a class gas factor, with which the determination of the percentage of the gas to be determined is coupled with classification of the detected gas, to the evaluation circuit;
determining the percentage of gas to be detected by an evaluating circuit using characteristic properties appearing in the pattern of the response function.

5,513,126 NETWORK HAVING SELECTIVELY ACCESSIBLE RECIPIENT PRIORITIZED COMMUNICATION CHANNEL PROFILES

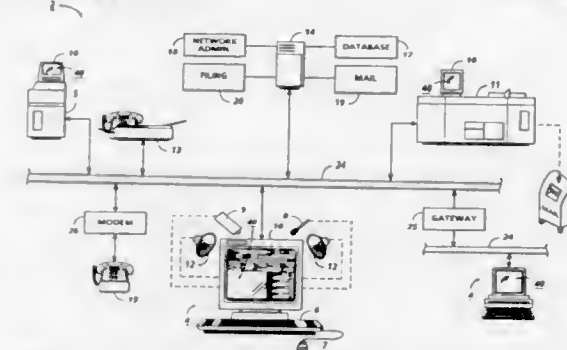
Larry E. Harkins, Rochester; Ken Hayward, Brockport; Thomas J. Herceg, Pittsford; Jonathan D. Levine, Rochester, and David M. Parsons, Fairport, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Oct. 4, 1993, Ser. No. 130,828

Int. Cl.⁶ H04L 12/28

U.S. Cl. 364—514 A

45 Claims



14. A network comprising a plurality of components including data memory devices, data display devices, and a data printer device interconnected over a network channel, the network being accessible by a plurality of subscribers, means for setting a priority for modes of receiving data relative to the components for a first subscriber, means for storing said priority for modes of receiving data in a memory device, and means for automatically invoking said priority for modes of receiving data for the first subscriber upon a second subscriber identifying data to be sent to said first subscriber whereby data is transmitted to the first subscriber in accordance with said priority for modes of receiving data.

5,513,127 CONTROL SYSTEMS EMPLOYING A DATA MODEL IN A NETWORK ENVIRONMENT

Bengt E. I. Gard, Tullinge; Lars G. V. Eneroth, Bandhagen; Stefan D. Larsen, Sodertalje, and Tord R. Nilsson, Stockholm, all of Sweden, assignors to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden

Continuation of Ser. No. 757,330, Sep. 10, 1991, abandoned.

This application Sep. 22, 1994, Ser. No. 312,009

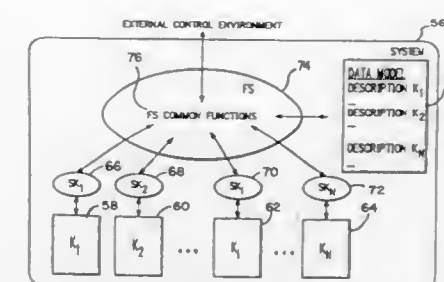
Int. Cl.⁶ G06F 9/455; 13/00

U.S. Cl. 364—514 C

16 Claims

1. A control system for a communication network including a plurality of components exhibiting at least some common behavior, said communication network having a network control function, certain ones of said plurality of components having an individual control function exhibiting uncommon control behavior, said control system comprising:

- first means for controlling network operations using said network control function by transmitting control orders to effectuate the establishment of a network communications connection between at least two of the components in accordance with the common behaviors of the connected components; and



second means for controlling network operations using said network control function comprising:

a data model including information regarding uncommon behavior of the individual control functions of said plurality of components;

means for accessing said data model to extract information as to uncommon behavior of said plurality of components;

means for interpreting the information extracted from said data model to tailor the transmitted control orders to account for the uncommon behavior of the individual control function for a given one of the components and effectuate the establishment of a network communications connection between that given component having uncommon behavior and another one of the components in the network.

5,513,128 MULTISPECTRAL DATA COMPRESSION USING INTER-BAND PREDICTION

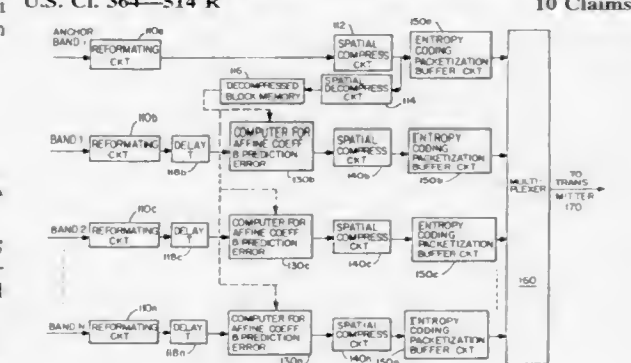
Ashok K. Rao, Germantown, Md., assignor to Comsat Corporation, Bethesda, Md.

Filed Sep. 14, 1993, Ser. No. 120,508

Int. Cl.⁶ H04N 11/02; H04J 15/00

U.S. Cl. 364—514 R

10 Claims



1. A method of compressing a multi-spectral data stream corresponding to an image for a selected one of transmission, as a limited bandwidth transmission using a predetermined band, and data storage, said method comprising the steps of:

- (a) dividing said image into a plurality of pixel blocks P in each of a plurality of N bands, where both P and N are integers greater than one;
- (b) selecting one of said N bands as an anchor band; and
- (c) computing prediction coefficients for relating intensities of each respective pixel in each of said P pixel blocks in each remaining one of N-1 bands to corresponding pixel in said anchor band.

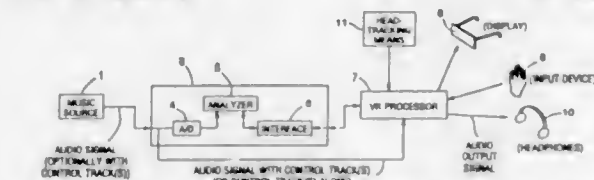
5,513,129
METHOD AND SYSTEM FOR CONTROLLING
COMPUTER-GENERATED VIRTUAL ENVIRONMENT IN
RESPONSE TO AUDIO SIGNALS

Mark Bolas; Ian E. McDowall, both of Palo Alto, and Michael N. Bolas, Los Angeles, all of Calif., assignors to Fakespace, Inc., Menlo Park, Calif.

Filed Jul. 14, 1993, Ser. No. 91,650
Int. Cl. G06F 17/00

U.S. Cl. 364-578

23 Claims



1. A method for controlling production of a virtual environment by a virtual reality computer system, including the steps of:

- processing music signals to generate control signals having music and/or control information; and
- operating the virtual reality computer system in response to the control signals to generate said virtual environment.

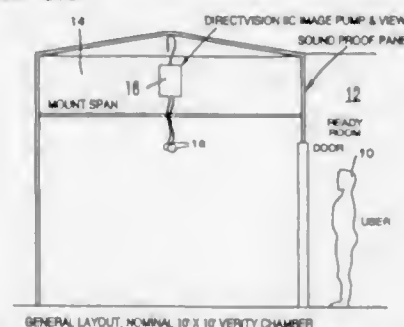
5,513,130
METHODS AND APPARATUS FOR GENERATING AND
PROCESSING SYNTHETIC AND ABSOLUTE REAL TIME
ENVIRONMENTS

Scott D. Redmond, San Francisco, Calif., assignor to Redmond Productions, Inc., San Francisco, Calif.

Continuation-in-part of Ser. No. 483,547, Feb. 22, 1990, Pat. No. 5,255,211. This application Oct. 18, 1993, Ser. No. 138,658
Int. Cl. G06F 17/00

U.S. Cl. 364-578

1 Claim



1. A method for generating and processing synthetic and absolute real time remote environments for interaction with a user comprising the steps of:

- storing high resolution digital image, sound and position coordinate data and retrieving the stored data, compressing data for storage in image files, said image files including data for recreating images of absolute objects, data to recreate at least one primitive image basic model and data for recreating predefined images, recreating absolute sounds from the digital sound data, and selectively combining an image of at least a portion of said user within an environment constructed from said primitive basic model and from said recreated predefined images;
- non-intrusively sensing the position and movement of the user's body within a three dimensional matrix;
- processing user body position and movement data;
- receiving processed user body position and movement data and generating images of interactive body parts of said user in response to said data, and further generating real time absolute and synthetic environment output in response to preselected commands and parameters stored in said data storage and retrieval means;
- inputting absolute and synthetic environment output to the user's biological senses via three dimensional visual input to

the user's eyes, multi-dimensional sound input to the user's ears, and tactile input to the user's hands, feet and at least one other body part; and

- verbally communicating with the user to and from a primary control means, whereby a user's selection of a synthetic or absolute environment, or a combination thereof, is communicated to the primary control means to enable the user to interact with the selected, generated and continually processed synthetic and absolute environment output.

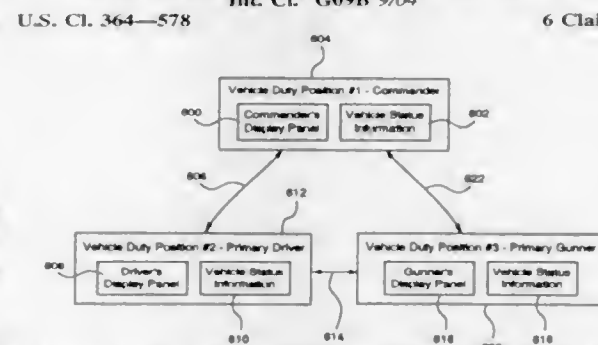
5,513,131
METHOD AND SYSTEM FOR SIMULATING A VEHICLE
Robert M. Wilkinson, Romeo; Ann L. Davies; Henry E. Davies, both of Lake Orion, and Barbara A. Osborn, Auburn Hills, all of Mich., assignors to General Dynamics Land Systems, Inc., Warren, Mich.

Division of Ser. No. 997,874, Dec. 29, 1992, Pat. No. 5,444,624. This application Mar. 21, 1995, Ser. No. 407,926

Int. Cl. G09B 9/04

U.S. Cl. 364-578

6 Claims



4. In a dynamically reconfigurable network, including at least one computer system, a system for simulating a vehicle including a plurality of vehicle duty positions having corresponding display panels using a computer system that is in communication with the network, the system comprising:

- means for storing display information for defining all the display panels;
- means for assigning at least two vehicle duty positions to each of at least one simulated vehicle;
- means for linking each of the assigned vehicle duty positions together over the network based on the step of assigning to form said each of at least one simulated vehicle;
- means for storing vehicle status information based on the steps of assigning and linking;
- means for modifying the display information for each display panel based on the vehicle status information; and
- means for displaying the modified display panel associated with each of the assigned vehicle duty positions.

5,513,132
ZERO LATENCY OVERHEAD SELF-TIMED ITERATIVE
LOGIC STRUCTURE AND METHOD

Ted E. Williams, Santa Clara County, Calif., assignor to Hal Computer Systems, Inc., Campbell, Calif.

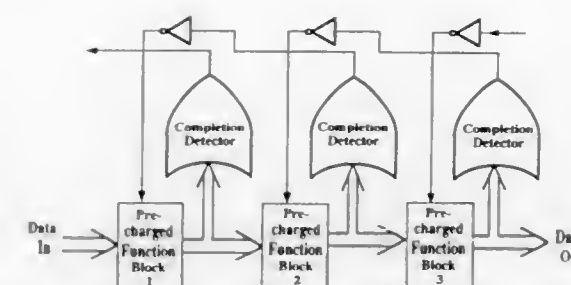
Continuation of Ser. No. 782,844, Oct. 24, 1991, abandoned, which is a continuation of Ser. No. 595,350, Oct. 10, 1990, Pat. No. 5,121,003. This application Apr. 5, 1993, Ser. No. 42,459

Int. Cl. G06F 7/00; 7/52

U.S. Cl. 364-715.01

52 Claims

21. An apparatus for computing a logical or arithmetic result from input data, said apparatus comprising:
a plurality of function blocks for generating a functional output in response to at least one functional input, said functional input comprising at least one input signal;
each of said plurality of function blocks including a reset port for receiving a reset signal, an input port for receiving said at



least one functional input, storage means for storing said functional output, and an output port for communicating said functional output;

said plurality of function blocks arranged in pair-wise-relative leading and trailing order, wherein said output port of one of said trailing function blocks is coupled directly to said input port of at least one of said leading function blocks, and wherein said input port of one of said leading function blocks is coupled directly to said output port of at least one of said trailing function blocks;

said plurality of function blocks being interconnected without interposing a separately controlled storage element between any of said function blocks; and

control means coupled with each said pair-wise-relative trailing function blocks for generating said reset signal to select the operational phase of said trailing function blocks in response to characteristics of said functional output of at least one of said pair-wise-relative leading function blocks.

5,513,133
COMPACT MICROELECTRONIC DEVICE FOR
PERFORMING MODULAR MULTIPLICATION AND
EXPONENTIATION OVER LARGE NUMBERS

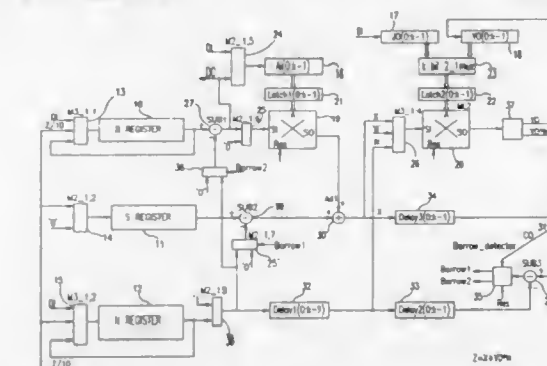
Carmi D. Cressel, Kibbutz Urim; David Hendel, Raanana; Itai Dror; Isaac Hadad, both of Beer-Sheva, and Benjamin Arazi, Omer, all of Israel, assignors to Fortress U&T Ltd., Beer-Sheva, Israel

Filed Nov. 18, 1993, Ser. No. 154,220

Claims priority, application Israel, Nov. 30, 1992, 103921; Feb. 16, 1993, 104753; Sep. 6, 1993, 106923
Int. Cl. G06F 7/52; 7/38

U.S. Cl. 364-754

21 Claims



1. Microelectronic apparatus for performing modular multiplication of a multiplier by a multiplicand, the apparatus comprising:
first (B), second (S) and third (N) main switched and clocked serial-in serial-out registers respectively operative to store the multiplier, a partial result and a modulus;

a first multiplying device in which the multiplicand resides and which is operative, for each of a plurality of portions of the multiplicand in turn, to receive the multiplier from the B register, to multiply the multiplier by a current portion of the multiplicand, and to generate an output comprising a product of said multiplication;

a serial adder operating on the output of the first multiplying device and a limited congruence of the partial result residing in the S register and operative to provide an output;

a second multiplying device receiving, in a first phase, the output of the serial adder and a Montgomery constant and receiving, in a second phase, the modulus from the N register, and operative, in the first phase, to compute a first phase product of the Montgomery constant by a portion of the output of the serial adder and, in the second phase, to multiply the modulus by the first phase product, thereby to generate a second phase output which, when combined with the serial adder output, generates said partial result; and

a subtractor for subtracting the modulus from the contents of the S register, to produce a limited congruence thereof

wherein, after the plurality of portions of the multiplicand have been processed by the first multiplying device, said partial result constitutes a limited congruence of a result of performing said modular multiplication of said multiplier by said multiplicand.

5,513,134
ATM SHARED MEMORY SWITCH WITH CONTENT
ADDRESSING

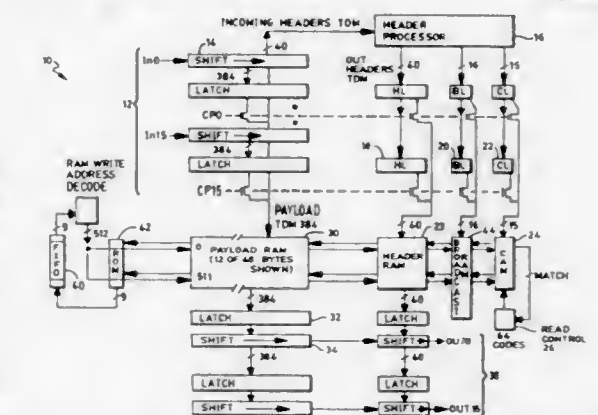
Michael Cooperman, Framingham; Phillip Andrade, Lexington, and Richard W. Sieber, Attleboro, all of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed Feb. 21, 1995, Ser. No. 391,009

Int. Cl. G11C 13/00

U.S. Cl. 365-49

9 Claims



1. An asynchronous transfer mode shared memory switch comprising:

- means to receive serially a fixed plurality of cells of digital data packets during a specific time period, each packet having a header;
- means to process and temporarily store the header of each said cell;
- means to temporarily store the data bits of each said cell;
- means to assign an arrival number to each cell during processing of said header;
- means to extract the output destination and priority of each cell from said headers;
- a content addressable memory for storing the arrival number, output destination and priority of each data cell;
- means to temporarily store the header and broadcast bits of each said cell;
- means to provide available addresses in said random access memory for the transfer of said cells from said temporary storage to said random access memory, and to store said addresses in said content addressable memory associated with the arrival number, output destination and priority of said data cells;
- a read control means for providing sequentially, in order of priority, arrival numbers, priorities and destination addresses,

to said content addressable memory for determining the order in which cells of data are read from said random access memory;

means to output said cells of data from said random access memory under control of said content addressable memory.

5,513,135

SYNCHRONOUS MEMORY PACKAGED IN SINGLE/ DUAL IN-LINE MEMORY MODULE AND METHOD OF FABRICATION

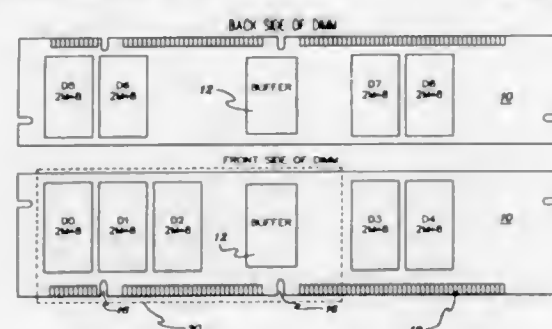
Timothy J. Dell, Colchester; Lina S. Farah, Burlington; George C. Feng, and Mark W. Kellogg, both of Essex Junction, all of Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 2, 1994, Ser. No. 349,154

Int. Cl.⁶ G11C 5/06

U.S. Cl. 365—52

25 Claims



1. A dual in-line memory module (DIMM) comprising: a printed circuit board having a front side and a back side and 168 connector pin locations corresponding to 168 pin connectors of a standard dynamic random access memory (DRAM) DIMM interface;
- multiple standard synchronous dynamic random access memories (SDRAMs) mounted on said front side and said back side of said printed circuit board; and
- means for electrically connecting said multiple SDRAMs to said 168 connector pin locations such that a functional DIMM is defined for said SDRAMs.

5,513,136

NONVOLATILE MEMORY WITH BLOCKS AND CIRCUITRY FOR SELECTIVELY PROTECTING THE BLOCKS FOR MEMORY OPERATIONS

Mickey L. Fandrich, Placerville; Virgil N. Kynett, El Dorado Hills; Salim B. Fedel, Folsom, and Thomas C. Price, Fair Oaks, all of Calif., assignors to Intel Corporation, Santa Clara, Calif.

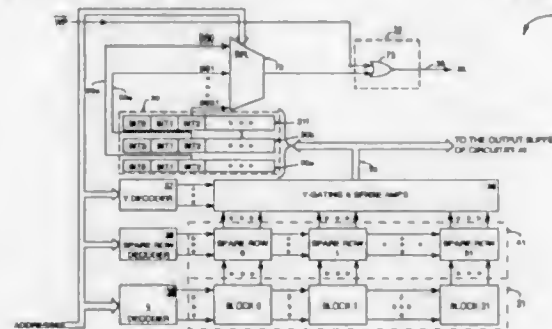
Continuation of Ser. No. 127,776, Sep. 27, 1993, abandoned.

This application Dec. 19, 1994, Ser. No. 358,978

Int. Cl.⁶ G11C 16/06

U.S. Cl. 365—185.04

6 Claims



1. A memory device, comprising:

- (A) a first nonvolatile memory cell that is adjacent to and corresponds to a first block of a nonvolatile memory array, wherein the first nonvolatile memory cell stores a first datum indicating the first block is locked;
- (B) a first register that receives and stores the first datum when a read operation is performed on the first nonvolatile memory cell, wherein the first register does not decode the first datum;
- (C) a second nonvolatile memory cell that is adjacent to and corresponds to a second block of the nonvolatile memory array, wherein the second nonvolatile memory cell stores a second datum indicating that the second block is locked;
- (D) a second register that receives and stores the second datum when the read operation is performed on the second nonvolatile memory cell, wherein the second register does not decode the second datum; and
- (E) block lock circuitry that provides a block lock signal to a control circuit upon receiving an enable signal, the enable signal comprising the first datum from the first register when the first block is addressed and the second datum from the second register when the second block is addressed, and wherein when the block lock signal is received by the control circuit, the control circuit prevents programming and erasure of the respective one of the first and second blocks that is addressed.

5,513,137

FLASH MEMORY HAVING TRANSISTOR REDUNDANCY

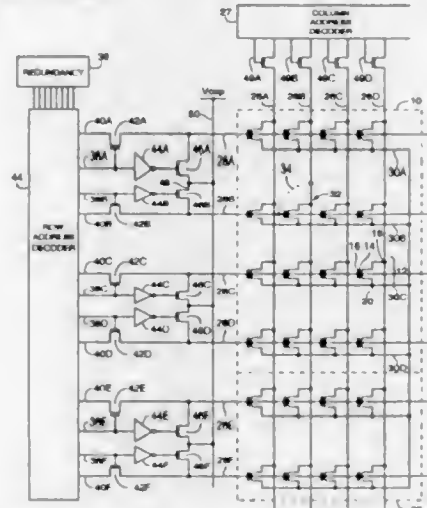
Roger R. Lee, and Fernando Gonzalez, both of Boise, Id., assignors to Micron Technology, Inc., Boise, Id.

Filed Feb. 23, 1995, Ser. No. 393,584

Int. Cl.⁶ G11C 11/34

U.S. Cl. 365—185.09

20 Claims



1. A memory device responsive to first and second voltage signals comprising:
 - a) at least one redundant row line having a plurality of transistors and a pass transistor;
 - b) a plurality of primary row lines coupled with said first and second voltage signals, each primary row line having a plurality of memory transistors, each primary row line responsive to a redundancy signal and having associated therewith:
 - i) a primary redundancy signal path for carrying said redundancy signal;
 - ii) a pass transistor which electrically couples said redundancy signal path and said primary row line such that a third potential on said redundancy signal path deactivates said pass transistor and a fourth potential on said redundancy signal path activates said pass transistor,
- wherein said third potential on said redundancy signal path ties said row line to said first voltage signal and said fourth potential on said redundancy signal path ties said row line to said second voltage signal.

5,513,138

MEMORY CARD HAVING A PLURALITY OF EEPROM CHIPS

Katsuhiko Manabe, Machida, and Hiroki Fukuoka, Kawasaki, both of Japan, assignors to Ricoh Co., Ltd., Tokyo, Japan

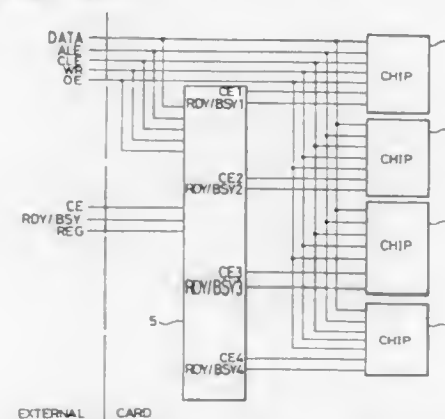
Filed Apr. 7, 1994, Ser. No. 224,270

Claims priority, application Japan, May 13, 1993, 5-111632

Int. Cl.⁶ G11C 11/34

U.S. Cl. 365—185.33

23 Claims



1. A memory card having a plurality of EEPROM chips each capable of reading and writing data in a memory block unit; the memory card comprising:
 - means for controlling plural parallel writing operations in the block unit to perform data writing operations at a sufficient speed to write compressed moving pictures in real time;
 - means for selecting each of the plurality of EEPROM chips so that the plurality of EEPROM chips are automatically switched at data writing and reading times so as to reduce a load on a systematic side; and
 - means for receiving an output signal from each of the plurality of EEPROM chips, configured to provide at least one signal indicative of the data writing operations to an exterior portion of the memory card to permit external monitoring as to whether the data writing operations are performed for each of the EEPROM chips.

5,513,139

RANDOM ACCESS MEMORY WITH CIRCUITRY FOR CONCURRENTLY AND SEQUENTIALLY WRITING-IN AND READING-OUT DATA AT DIFFERENT RATES

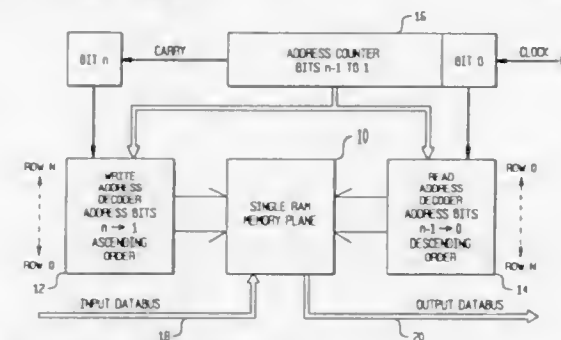
Donald S. Butler, Scottsdale, Ariz., assignor to General Instruments Corp., Hatboro, Pa.

Filed Nov. 4, 1994, Ser. No. 334,598

Int. Cl.⁶ G11C 7/00

U.S. Cl. 365—189.04

11 Claims



5. A combination comprising a memory array of cells arranged in "r" rows and "c" columns, each row of cells connected to a write row line and a read row line; where "r" and "c" are integers greater than 2;

a write address decoder having "r" write address outputs, one write address output corresponding to each write row line of the memory array and being connected thereto;

a read address decoder having "r" read address outputs, one read address output corresponding to each read row line of the memory array and being connected thereto;

means coupled to the write address decoder and to the read address decoder for generating signals at the outputs of the write and read address decoders for energizing the outputs of the write address decoder and its corresponding write row lines, sequentially, in a first direction at a rate of Fs and for generating signals energizing the outputs of the read address decoder and its corresponding read row lines, sequentially, in a second direction, opposite to said first direction, at a rate of nFs; where n is an integer.

5,513,140

DATA OUTPUT BUFFER

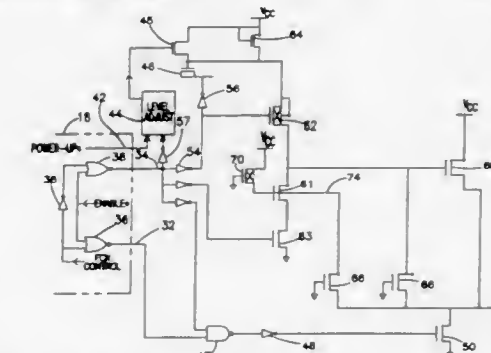
Todd Merritt, Boise, Id., assignor to Micron Technology, Inc., Boise, Id.

Filed Jun. 1, 1994, Ser. No. 252,421

Int. Cl.⁶ G11C 11/40

U.S. Cl. 365—189.05

20 Claims



18. For use in a semiconductor circuit device, a tri-state output buffer responsive to a control signal generated in the semiconductor circuit device, the output buffer comprising:
 - a power supply signal providing at least one voltage level with respect to common;
 - an output terminal;
 - a pull-up node;
 - a pull-down node;
 - a first circuit responding to the control signal by providing a first control voltage on the pull-up node;
 - a second circuit responding to the control signal by providing a second control voltage on the pull-down node;
 - a pull-up transistor, responsive to the voltage on the pull-up node and coupled between the power supply signal and the output terminal;
 - a pull-down transistor, responsive to the voltage on the pull-down node and coupled between common and the output terminal;
 - a bias circuit, responsive to a voltage level on the output terminal being at a level substantially below common, constructed and arranged to bias the pull-up node downwardly and away from the voltage level provided by the power supply signal; and
 - a disable circuit, responsive to the voltage level on the output terminal being at a level substantially below common, constructed and arranged to disable the circuit providing the control voltage on the pull-up node;
- wherein the pull-up transistor provides a high-level signal at the output terminal, the pull-down transistor provides a low-level signal at the output terminal, and the bias circuit in combination with the disable circuit respond to the voltage level on the output terminal being at a level substantially below common by preventing current flow from the power supply signal to the output terminal.

5,513,141

SINGLE PORT REGISTER

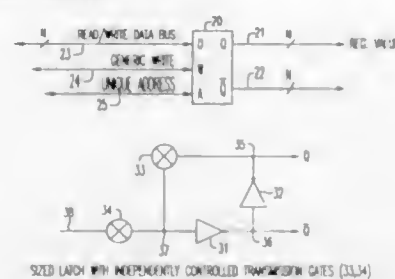
Glen E. Offord, Macungie, Pa., assignor to AT&T Corp., Murray Hill, N.J.

Filed Feb. 3, 1995, Ser. No. 383,161

Int. Cl.⁶ G11C 7/00

U.S. Cl. 365—189.05

5 Claims



FUNCTION	SWITCHES
ADDRESS VALID (WRITE)	ON
ADDRESS VALID (READ)	OFF
ADDRESS INVALID (HOLD)	OFF

1. An integrated circuit having a data register that communicates with a read/write data bus, said register having a write input and an address input, and having a register output for providing a register output signal;

wherein said data register provides a signal on said data bus to said register output when a write signal is supplied to said write input and an address signal is supplied to said address input, and further provides said register output signal to said data bus when said address signal is supplied to said address input and said write signal is not supplied to said write input; and wherein the data register holds its present value when an address signal is not supplied to said address input.

5,513,142

SEMICONDUCTOR MEMORY DEVICE FOR MAINTAINING LEVEL OF SIGNAL LINE

Kazutami Arimoto, Shigeaki Tomishima, and Hideto Hidaka, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

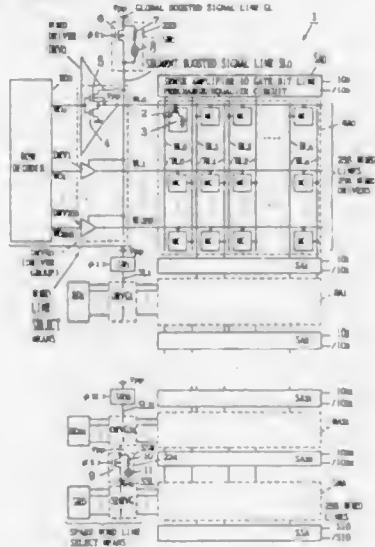
Filed Dec. 16, 1994, Ser. No. 357,007

Claims priority, application Japan, Dec. 28, 1993, 5-337106

Int. Cl.⁶ G11C 13/00

U.S. Cl. 365—189.11

41 Claims



30. A semiconductor memory device comprising:
a submemory array having a plurality of memory cells connected to a plurality of word lines;

wherein said submemory array comprises a plurality of memory cell groups, each of said plurality of memory cell groups including a predetermined number of said plurality of word lines;

a spare memory array having a plurality of spare memory cells connected to a plurality of spare word lines;

wherein said spare memory array comprises a spare memory cell group, said spare memory cell group including a predetermined number of said plurality of spare word lines;

a global boosted line to which a boosted potential higher than a power supply potential is supplied;

a plurality of segment boosted lines each provided corresponding to each of said plurality of memory cell groups;

a spare segment boosted line provided corresponding to said spare memory cell group;

a row decoder for selecting any of said plurality of word lines;

a spare row decoder for selecting any of said plurality of spare word lines;

a plurality of first switching transistors, each connected between each of said plurality of segment boosted lines and said global boosted line;

for selecting an electrical connection of each of said plurality of segment boosted lines with said global boosted line;

a second switching transistor connected between said spare segment boosted line and said global boosted line for selecting an electrical connection of said spare segment boosted line with said global boosted line;

a plurality of word drivers, each connected between each of said plurality of segment boosted lines and said plurality of word lines for transmitting the potential of a segment boosted line connected to said global boosted line according to an output of said row decoder to any of said predetermined number of word lines included in each memory cell group;

a plurality of spare word drivers, each connected between said spare segment boosted line and each of said plurality of spare word lines, for transmitting the potential of a spare segment boosted line connected to said global boosted line according to an output of said spare row decoder to any of said predetermined number of spare word lines included in a corresponding spare memory cell group; and

a plurality of fuses provided corresponding to each of said plurality of first switching transistors to be programmed to always turn off each of said plurality of first switching transistors.

5,513,143

DATA CACHE MEMORY INTERNAL CIRCUITRY FOR REDUCING WAIT STATES

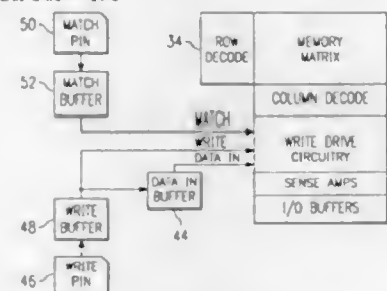
David C. McClure, Carrollton, Tex., assignor to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.

Filed Jul. 31, 1992, Ser. No. 923,856

Int. Cl.⁶ G11C 7/00

U.S. Cl. 365—195

14 Claims



1. A data cache memory, comprising:
a memory matrix of the data cache memory which stores a data of the data cache memory, wherein said memory matrix has a plurality of rows and columns and a plurality of memory cells;

a decode logic coupled to said memory matrix which provides decoding ability for the plurality of rows and columns of said memory matrix;

a plurality of data input-output buffers coupled to said memory matrix through which the data is written to or read from said memory matrix thus providing the data cache memory with an interface ability;

a write driver circuitry, connected to said decode logic, having a write input signal, a match input signal, and a data input signal, wherein the write driver circuitry allows the data cache memory to interface with an external circuitry; and

means, included in said write driver circuitry, for preventing completion of a write cycle from a microprocessor until a valid match signal is received.

5,513,144

ON-CHIP MEMORY REDUNDANCY CIRCUITRY FOR PROGRAMMABLE NON-VOLATILE MEMORIES, AND METHODS FOR PROGRAMMING SAME

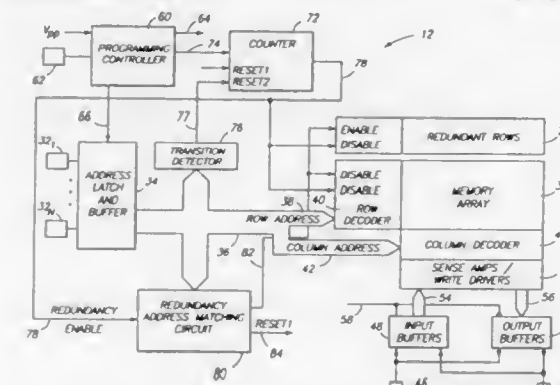
James E. O'Toole, Boise, Id., assignor to Micron Technology, Inc., Boise, Id.

Filed Feb. 13, 1995, Ser. No. 387,244

Int. Cl.⁶ G11C 29/00

U.S. Cl. 365—200

32 Claims



1. A programmable non-volatile memory device comprising:
a memory array of addressable memory cells for storing electronic data;

multiple redundant memory cells for replacing defective memory cells in the memory array;

an address buffer coupled to the memory array for holding a selected address to one or more memory cells in the memory array;

a data buffer coupled to the memory array for holding data to be input into the memory cells at the selected address;

a controller for initiating a programming cycle to program the memory array, one programming cycle including accessing the memory array at the selected address held in the address buffer and writing the data held in the data buffer into the memory cells at the selected address;

the controller, in the event that the data is not validly written into the addressed memory cells, repeatedly initiating the programming cycle for the addressed memory cells in an attempt to validly write the data into the addressed memory cells within the memory array;

a counter for counting a number of programming cycles that the controller initiates to the same address, the counter outputting a redundancy enable signal when the number of programming cycles reaches a predetermined number indicating that the addressed memory cells are defective;

a redundancy address matching circuitry operatively coupled to the counter and the address buffer for managing the replacement of defective memory cells in the memory array with the redundant memory cells, the redundancy address matching circuitry assigning the redundant memory cells for the defective memory cells upon receipt of the redundancy enable signal from the counter; and

the memory device subsequently routing the data to the redundant memory cells instead of the defective memory cells.

5,513,145

FIFO MEMORY DEVICE CAPABLE OF WRITING CONTIGUOUS DATA INTO ROWS

Hiroshi Hattori, and Junich Sugiyama, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Division of Ser. No. 31,121, Mar. 12, 1993, Pat. No. 5,412,611.

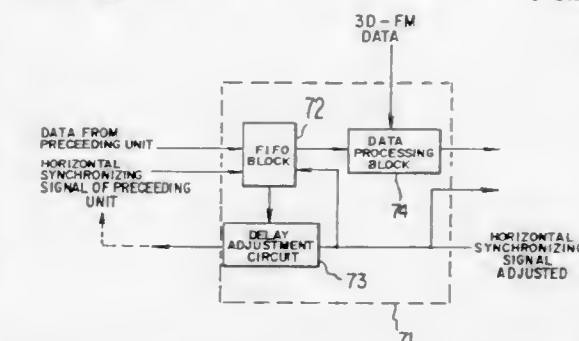
This application Feb. 21, 1995, Ser. No. 391,656

Claims priority, application Japan, Mar. 17, 1992, 4-060113; Oct. 15, 1992, 4-277434; Oct. 16, 1992, 4-278664

Int. Cl.⁶ G11C 8/00

U.S. Cl. 365—221

3 Claims



1. A FIFO synchronizing device for adjusting timing of data input to a current unit from a preceding unit at a preceding stage, said FIFO synchronizing device comprising:

FIFO memory means where the data input from the preceding unit is written and then read out in a first-in first-out manner, wherein write cycles of said FIFO memory means start in synchronization with a first synchronizing signal in said current unit and read cycles of said FIFO memory means start in synchronization with a second synchronizing signal provided from said preceding unit;

write counting means coupled to said FIFO memory means for counting write cycles of said FIFO memory means to obtain a write data count;

read counting means coupled to said FIFO memory means for counting read cycles of said FIFO memory means to obtain a read data count; and

synchronizing signal output means, coupled to said write counting means and said read counting means, for outputting a third synchronizing signal to said preceding unit which is generated therein based on the second synchronizing signal with timing adjustment according to a difference between the write data count and the read data count.

5,513,146

NONVOLATILE SEMICONDUCTOR MEMORY DEVICE HAVING A ROW DECODER SUPPLYING A NEGATIVE POTENTIAL TO WORD LINES DURING ERASE MODE

Shigeru Atsumi, and Sumio Tanaka, both of Tokyo, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Division of Ser. No. 918,027, Jul. 24, 1992, Pat. No. 5,392,253.

This application Dec. 19, 1994, Ser. No. 358,714

Claims priority, application Japan, Jul. 25, 1991, 3-186439

Int. Cl.⁶ G11C 8/00

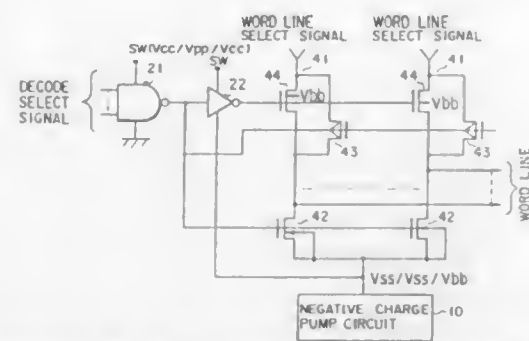
U.S. Cl. 365—185.23

17 Claims

1. A nonvolatile semiconductor memory device, comprising:
a memory cell array having a plurality of memory cells arranged in a row and column matrix;

first and second word lines each connected to the memory cells in a respective corresponding row of said matrix;

a negative charge pump circuit for generating a negative potential; and



a row decoder circuit, connected to said first and second word lines and said negative charge pump circuit, for applying the negative potential to said first and second word lines, comprising:

an address decoding circuit connected between a first power supply terminal and a second power supply terminal, said address decoding circuit receiving a plurality of row select signals and generating a selection signal at an output node thereof; and

a driver circuit including a first and second transistors each having a source, a drain, a gate and a substrate node, said drain of said first transistor being connected to said first word line, said drain of said second transistor being connected to said second word line, said sources of said first and second transistors being commonly connected to said negative charge pump circuit, said gates of said first and second transistors being commonly connected to said output node of said address decoding circuit, and said substrate nodes of said first and second transistors being connected to said negative charge pump circuit.

5,513,147

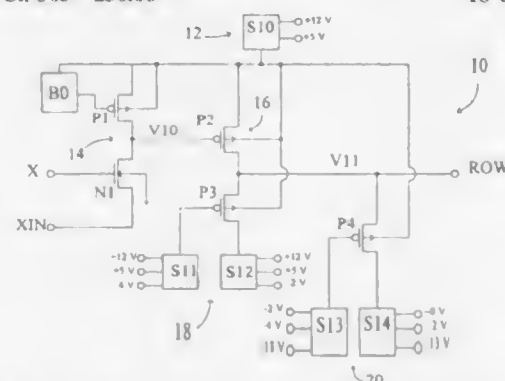
ROW DRIVING CIRCUIT FOR MEMORY DEVICES
Bruce L. Prickett, Jr., Fremont, Calif., assignor to Alliance Semiconductor Corporation, San Jose, Calif.

Filed Dec. 19, 1994, Ser. No. 359,052

Int. Cl. G11C 8/00

U.S. Cl. 365—230.06

18 Claims



1. In an integrated circuit having at least one row of memory cells, a row driving circuit for selecting and deselecting a row, comprising:

row pull-up driver means responsive to a row select signal for pulling a selected row to a positive supply voltage during a READ mode; and

row disable means responsive to a row deselect signal pulling a deselected row to a negative read deselect voltage during the READ mode.

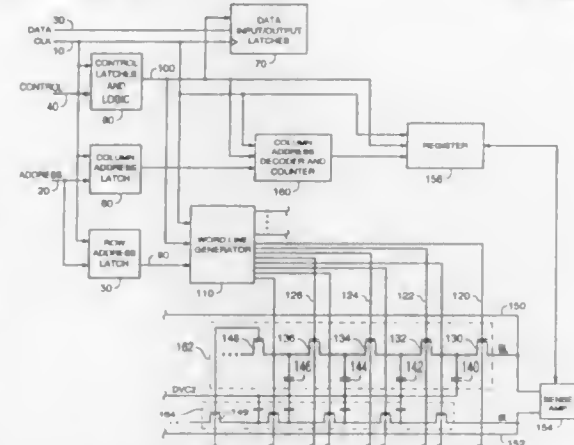
5,513,148
SYNCHRONOUS NAND DRAM ARCHITECTURE
Paul Zagar, Boise, Id., assignor to Micron Technology Inc., Boise, Id.

Filed Dec. 1, 1994, Ser. No. 348,552

Int. Cl. G11C 8/00

U.S. Cl. 365—233

16 Claims



1. An integrated circuit memory device comprising:
 - a) a clock node for receiving a clock signal;
 - b) a plurality of latches connected to said clock node for latching address signals, data signals and control signals into the memory device in synchronization with the clock signal;
 - c) a data latch connected to said clock node and to an output node of the memory device for latching an output signal to the output node in response to the control signals and in synchronization with the clock signal;
 - d) a plurality of word lines;
 - e) a word line activation circuit connected to said plurality of word lines, responsive to the control signals and the address signals for activating said plurality of word lines in a sequence;
 - f) a NAND structured memory cell connected to said plurality of word lines and to a bit line;
 - g) a sense amplifier connected to the bit line; and
 - h) a plurality of random access storage registers connected to said sense amplifier and to said data latch.

5,513,149

SOUND DAMPING ARRANGEMENT
Pekka Salmi, Vantaa; Jonas Packalén, Kalkstrand, and Antti Järvi, Espoo, all of, Finland, assignors to Kvaerner Masa-Yards OY, Helsinki, Finland

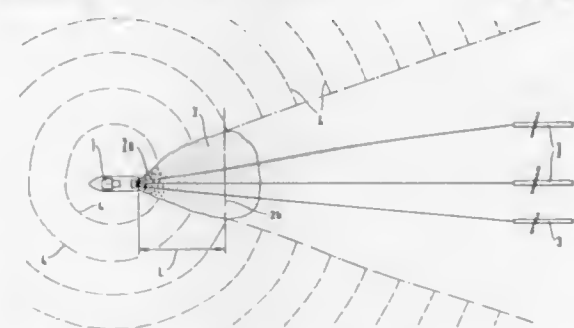
Filed Nov. 3, 1994, Ser. No. 334,263

Claims priority, application Finland, Nov. 22, 1993, 935186

Int. Cl. H04K 3/00

U.S. Cl. 367—1

24 Claims



1. A method of damping underwater sound emitted by a marine vessel driven by a propeller means that creates at least one turbulent propeller flow in the water, said method comprising introducing gas into the propeller flow in close proximity to the propeller means so that the turbulence of the propeller flow causes a strong

mixing of gas and water and formation of gas bubbles in the water behind the vessel as the vessel moves forward and the majority of gas bubbles behind the vessel have a diameter of from 1 to 20 mm.

5,513,151
TOWED HYDROPHONE STREAMER WITH INTEGRATED MODULE COUPLER

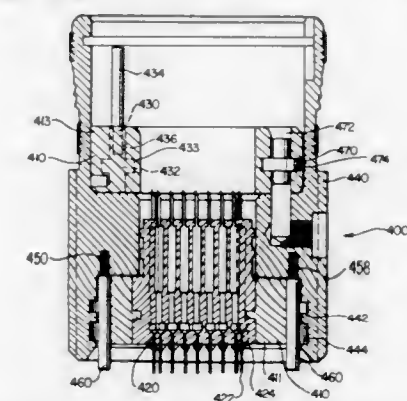
Charles L. Morningstar, deceased, late of Lewisville, and James K. Andersen, Trophy Club, both of Tex., assignors to Whitehall Corporation, Dallas, Tex.

Filed Nov. 21, 1994, Ser. No. 342,845

Int. Cl. H04R 13/00; H01R 13/62

U.S. Cl. 367—154

20 Claims



1. An integrated module coupler for a towed hydrophone streamer, comprising:

a coupler body having a plurality of axial bores and a plurality of tension member apertures therethrough;

a plurality of electrically-conductive pins disposed through said bores;

an insulating material, disposed between said plurality of pins and walls of said plurality of bores, for insulating said pins from said coupler body to thereby allow electrical signals to pass via said plurality of pins through said body;

means for retaining tension members within each of said tension member apertures, said retaining means allowing said tension members to terminate within said tension member apertures in an eye, said retaining means passing through each of said eyes to thereby engage said tension member; and

a coupler shell, coaxial with and capturing said coupler body to allow said coupler shell to engage a mating coupler shell of another coupler, towing forces transmittable between said coupler shell and said tension members via said coupler body and said retaining means.

5,513,150
METHOD OF DETERMINING 3-D ACOUSTIC VELOCITIES FOR SEISMIC SURVEYS

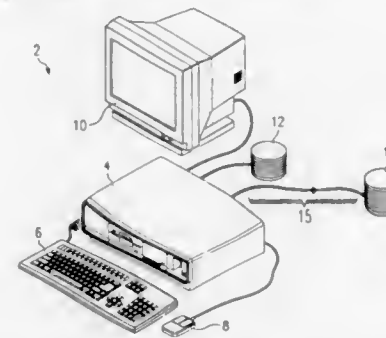
Charles J. Sicking, and Bruce S. Campbell, both of Plano, Tex., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed Jun. 30, 1993, Ser. No. 85,440

Int. Cl. G01V 1/28; 1/36

U.S. Cl. 367—73

18 Claims



1. A method of operating a computer to provide an acoustic velocity model for a portion of the earth corresponding to a seismic survey volume, using computer data representations of seismic signals corresponding to sensed acoustic energy reflected from sub-surface geologic features within the seismic survey volume, comprising the steps of:

loading, into a computer, horizon data corresponding to the seismic signals for a plurality of seismic shot lines within the seismic survey volume, in the form of survey location versus two-way time;

loading, into the computer, process velocity data corresponding to acoustic velocity as a function of two-way time for a plurality of survey locations;

operating the computer to display the horizon data and the process velocity data as a function of position along a first one of the plurality of seismic shot lines, in a cross-sectional orientation corresponding to a cross-section of the earth, and to display at least one interpreted velocity value for a second one of said plurality of seismic shot lines at a survey location at which the first and second ones of said plurality of seismic shot lines cross;

entering an interpreted velocity value into the computer for a selected two-way time horizon of the first one of the seismic shot lines;

operating the computer to display the process velocity data and the interpreted velocity value as a function of two-way time for a selected survey location of the first one of the plurality of seismic shot lines, by associating the interpreted velocity value with a two-way time corresponding to the selected two-way time horizon;

editing the process velocity data in such a manner as to create an edited process velocity function that matches the interpreted velocity value.

5,513,152
CIRCUIT AND METHOD FOR DETERMINING THE OPERATING PERFORMANCE OF AN INTEGRATED CIRCUIT

Frank W. Cabaniss, Columbia, S.C., assignor to AT&T Global Information Solutions Company, Dayton, Ohio

Filed Jun. 22, 1994, Ser. No. 263,628

Int. Cl. G04F 8/00; H01L 21/66; G06F 1/00

U.S. Cl. 368—118

20 Claims

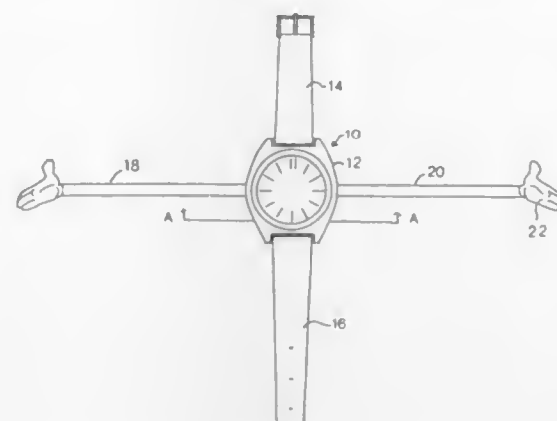
1. A circuit for determining the operating performance of an integrated circuit comprising:

a clock circuit which produces a clock signal;

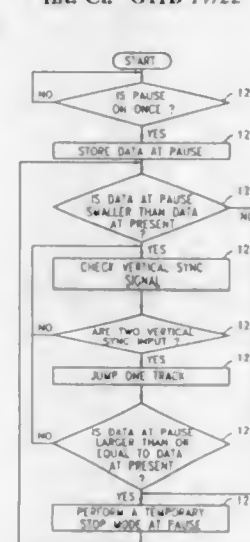
a first signal path through the integrated circuit and coupled at a first end to the clock circuit;

a second signal path through the integrated circuit and coupled at a first end to the clock circuit; and

a comparison circuit having first and second inputs coupled at second ends of the first and second signal paths for determining a time delay between the clock signal along the first signal path and the clock signal along the second signal path.



5,513,155

1st. CL⁶ G11B 1722

mounting the electroluminescent dial on the subdial such that the indicia are received by the apertures.

and first position
and not via

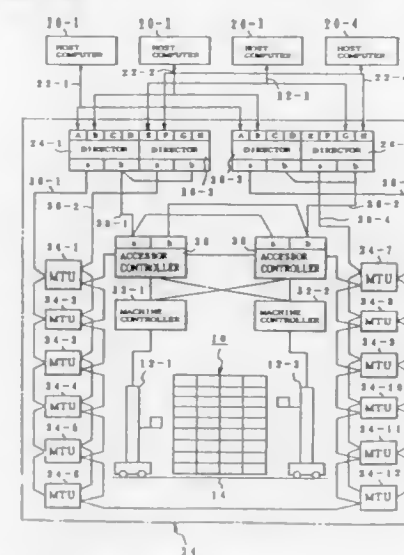
Reading out the second position information of the pickup does not pass the pause

to the comparison result

12 Claims

wherein said adjuncts each project from the watch body a sufficient distance to wrap substantially completely around a human wrist, to allow said watch body to be held on a wrist by said adjuncts.

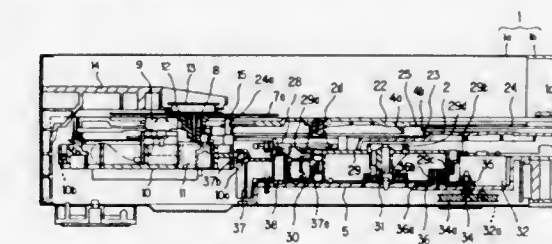
f) secondly reading out the second position information while the pickup travels along the reproduction direction from the jump destination; and



indicated by the moving command from the upper-order unit and a channel system which generated said moving command, first activation processing means for receiving the moving command from the upper-order unit, for registering the correspondence relation between said logical machine number address (#N) and the channel system into said machine number control table means, for notifying the reception of the moving

operating command to said medium conveying means that is vacant with reference to said executing state management table means in a state in which at least one medium conveyance information has been stored in said queuing table means.

U.S. Cl. 369—34



control means for controlling said rotary drive unit in response to a detection signal from said detection unit so that a moving speed of said transfer member is gradually decreased as said

transfer member nears one of said recording medium changing position and said recording and/or reproducing position.

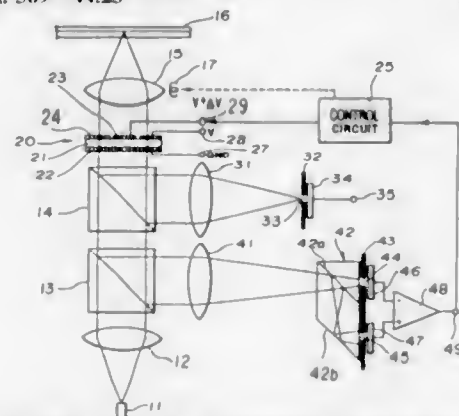
5,513,158
OPTICAL DISK PICKUP DEVICE WITH FOCUSING CORRECTION BY ELECTROSTRICTION
Kiyoshi Ohsato, Chiba, Japan, assignor to Sony Corporation, Japan

Continuation of Ser. No. 242,146, May 13, 1994, abandoned, which is a continuation of Ser. No. 975,507, Nov. 12, 1992, abandoned. This application Apr. 24, 1995, Ser. No. 427,159
Claims priority, application Japan, Nov. 20, 1991, 3-332451; Dec. 5, 1991, 3-348328

Int. Cl.⁶ G11B 7/135

U.S. Cl. 369-44.23

9 Claims



1. An optical pickup for recording/reproducing signals on or from an optical recording medium by radiating a light beam from a light source to the optical recording medium via an object lens, the optical pickup comprising:

co-focal point detecting optical means for receiving a return light from the optical recording medium along an optical axis, the co-focal point detecting optical means including light sensors at multiple points along the optical axis;

focusing error detection means for detecting a focusing error by signals from said co-focal point detecting optical means, said focusing error signal representing an amount of deviation of the focal point of said object lens along the optical axis; and an electrostriction device arranged in an outgoing light path from said light source to said recording medium, said electrostriction device having a central region and a peripheral region, and wherein the focusing error signal is applied between the central region and the peripheral region to produce a phase difference between the central region and the peripheral region in an amount corresponding to a voltage magnitude of the focusing error signal.

5,513,159
DEVICE FOR SELECTING MAGNETIC HEAD TO BE OPERATED TOGETHER WITH AN OPTICAL HEAD
Suguru Takishima, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 43,823, Apr. 7, 1993, Pat. No. 5,408,455.

This application Feb. 3, 1995, Ser. No. 383,379

Claims priority, application Japan, Apr. 8, 1992, 4-086831

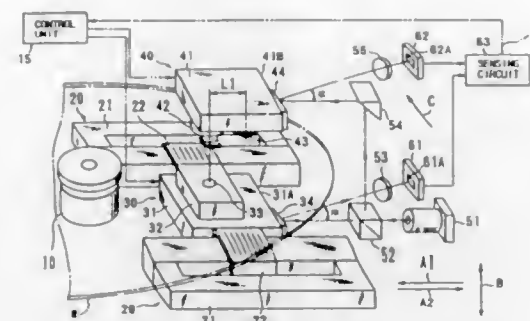
Int. Cl.⁶ G11B 7/085

U.S. Cl. 369-44.27

14 Claims

1. A device for selecting a magnetic head to be operated together with an optical head to record or reproduce a signal on a magneto-optical disc, comprising:

a first magnetic head and a second magnetic head, wherein each of said first and second magnetic heads have different capabilities, said first magnetic head and said second magnetic head being arranged along a radial direction with respect to said magneto-optical disc;



a carriage movable along the radial direction of said magneto-optical disc, said carriage carrying said first and second magnetic heads;
determining means for determining the type of magneto-optical disc being used; and
controlling means for controlling the position of said carriage based on the type determined by said determining means, whereby the position of said carriage is controlled so that said first or second magnetic head faces said optical head.

5,513,160
OPTICAL DISC AND CONTAMINATION DETECTION SYSTEM IN AN APPARATUS FOR RECORDING AND REPRODUCING THE SAME
Isao Satoh, Neyagawa; Yoshihisa Fukushima, Osaka; Yuji Takagi, Kadoma, and Yasushi Azumatani, Neyagawa, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Continuation of Ser. No. 642,050, Jan. 15, 1991, abandoned.

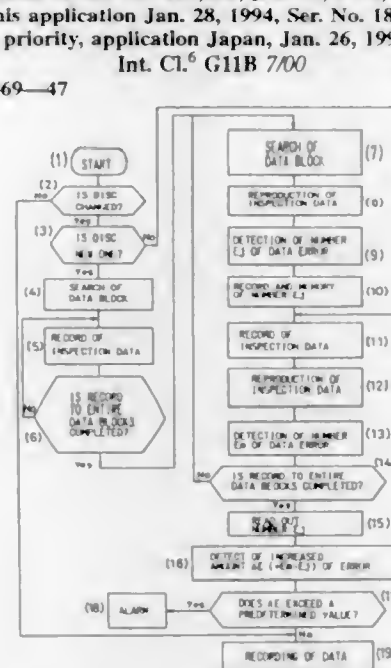
This application Jan. 28, 1994, Ser. No. 188,654

Claims priority, application Japan, Jan. 26, 1990, 2-017351

Int. Cl.⁶ G11B 7/00

U.S. Cl. 369-47

2 Claims



1. A contamination detection system within a recording and reproducing apparatus comprising: an optical disc having a recording area;

an optical head for emitting a laser light beam and for recording information on said optical disc and for reproducing said information from said optical disc;

control means for controlling said optical head to trace a predetermined track of said optical disc with said laser light beam; first dividing means for dividing said recording area of said optical disc into a block control table for recording disc control information, a substitution sector area for substituting a defect sector having a defect, a mapping sector area for

storing address map information for designating a correspondence between said defect sector and said substitution sector, and a plurality of data blocks, each data block having a data sector area for recording data and an inspection sector area for recording inspection data;

recording means for recording inspection data in said inspection sector area of each data block of a brand-new optical disc;

first comparing means for comparing reproduced inspection data of said brand-new optical disc with recording inspection data in each data block and for providing an indication of said comparison as a first number of data errors with respect to said each data block;

recording means for recording inspection data in said inspection sector areas of said optical disc when said optical disc is applied to successive use after detection of said first number of data errors;

second comparing means for comparing said first number of data errors with a second number of data errors based on reproduced inspection data in each data block after repetition of use of said optical disc;

first calculating means for calculating an increased amount of said data errors on the basis of a difference between said first number of data errors and said second number of data errors with respect to each data block;

third comparison means for comparing said increased amount of said data errors with a predetermined value; and
control means for recording data in said data sector in the event that said increased amount is smaller than said predetermined value.

5,513,161
OPTICAL RECORDING MEDIUM, RECORDING AND REPRODUCING METHOD AND TRACKING ERROR GENERATING METHOD
Hideyoshi Horimai, and Goro Fujita, both of Kanagawa, Japan, assignors to Sony Corporation, Japan

Continuation of Ser. No. 292,245, Aug. 17, 1994, abandoned, which is a division of Ser. No. 133,113, Oct. 12, 1993. This

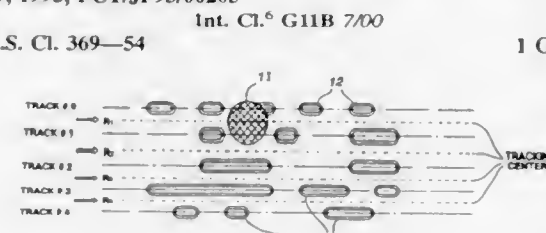
application Jan. 27, 1995, Ser. No. 380,245

Claims priority, application Japan, Feb. 19, 1992, 4-069736; May 25, 1992, 4-157434; Jun. 18, 1992, 4-182847; WIPO, Feb. 19, 1993, PCT/JP93/00205

Int. Cl.⁶ G11B 7/00

U.S. Cl. 369-54

1 Claim



1. A method for reproducing an optical recording medium wherein an n-th recording track is located at a distance from an (n-1)th recording track preceding said n-th recording track in a recording region which is narrower than the diameter of a spot of a light beam radiated on the recording area, with recording data obtained on logical processing with recording data recorded on the (n-1)th recording track being recorded on the n-th recording track, comprising

deciding whether data recorded on the (n-1)th recording track has been read correctly based on comparison between replay data of the (n-1)th recording track produced on scanning an (n-2)th recording track and the (n-1)th recording track on said recording region with a light beam and replay data of the (n-1)th recording track produced on scanning the (n-1)th recording track and the n-th recording track on said recording region with a light beam, said n-th recording region succeeding said (n-1)th recording track.

5,513,162
RECORDING APPARATUS HAVING A FUNCTION TO PREVENT RECORDING OF A SIGNAL INTO A SPECIFIC AREA OF A RECORDING MEDIUM
Yoshio Kishi, Kanagawa; Teruaki Higashihara, Tokyo, and Toshiyuki Arai, Kanagawa, all of Japan, assignors to Sony Corporation, Japan

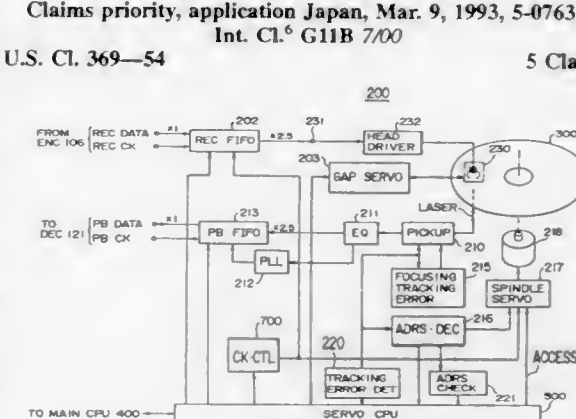
Filed Mar. 8, 1994, Ser. No. 207,830

Claims priority, application Japan, Mar. 9, 1993, 5-076329

Int. Cl.⁶ G11B 7/00

U.S. Cl. 369-54

5 Claims



1. An apparatus for recording signals onto a recording medium which has first and second predetermined contiguous areas and is accommodated in a housing having a single movably engaged indicating means for indicating one of first, second, and third modes corresponding to one of first, second, and third positions of said single movably engaged indicating means, respectively, wherein moving said indicating means on said housing from one of said positions to another of said positions permits said apparatus to be changed to any one of said first, second, and third modes from any other one of said first, second, and third modes, said apparatus comprising:

recording means for recording first and second kinds of signals into the first and second predetermined contiguous areas of the recording medium, respectively;

detecting means for detecting the mode indicated by the indicating means; and

controlling means for controlling said recording means in response to the detection by said detecting means such that writing operations into the first and second predetermined contiguous areas are enabled in the first mode, such that writing operations into the first predetermined contiguous area are enabled and writing operations into the second predetermined contiguous area are inhibited in the second mode, and such that writing operations into the first and second predetermined contiguous areas are inhibited in the third mode.

5,513,163
OPTICAL TAPE RECORDING/REPRODUCING APPARATUS
Keum-Mo Kim, Seoul, Rep. of Korea, assignor to Daewoo Electronics Co., Ltd., Seoul, Rep. of Korea

Filed Aug. 23, 1994, Ser. No. 294,451

Claims priority, application Rep. of Korea, Aug. 24, 1993, 93-16472

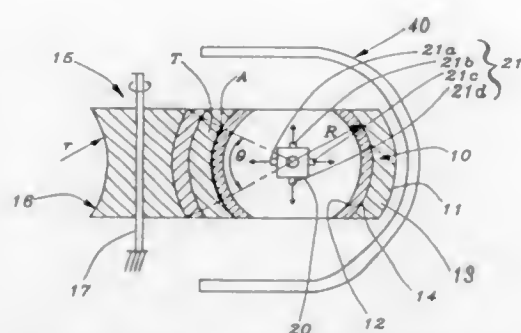
Int. Cl.⁶ G11B 7/00

U.S. Cl. 369-97

4 Claims

1. An optical tape recording/reproducing apparatus provided with a pair of take-up and supply reel pulleys connected to a driving mechanism for running an optical tape, guide means mounted on a deck for determining a running path of the tape and pickup means for recording information on the optical tape or reading information off the tape through the use of a laser beam, wherein said guide means comprises:

a transparent hollow drum having a spherical lateral surface, said drum horizontally and rotatably mounted on the deck, and a pinch roller having a concave lateral surface with a radius equal or greater than that of the spherical surface, said



pinch roller horizontally and rotatably mounted on the deck, adjacent the hollow drum, for maintaining a close contact between the optical tape and the spherical surface of the hollow drum; and

said pickup means comprises:

a laser source, a scanning device having four beam outlets arranged at a right angle with each other on a vertical plane which passes through the center of the pinch roller and the center of the hollow drum, said scanning device further having a plurality of beam splitters and mirrors for dividing a laser beam emitted from the laser source into four laser beams and outputting the four laser beams through the four beam outlets, said scanning device adapted to rotate about an axis perpendicular to the vertical plane for permitting the outputted laser beams to, one by one, scan the optical tape in close contact with the drum in a manner to vertically and pivotally pass over the surface of the tape, and a black body adapted to absorb the outputted laser beams except the beam scanning the optical tape.

5,513,164 OPTICAL RECORDING AND REPRODUCING APPARATUS

Masahiko Tanaka, Yokohama, and Toshihiro Sugaya, Ibaraki, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 118,336, Sep. 9, 1993, abandoned.

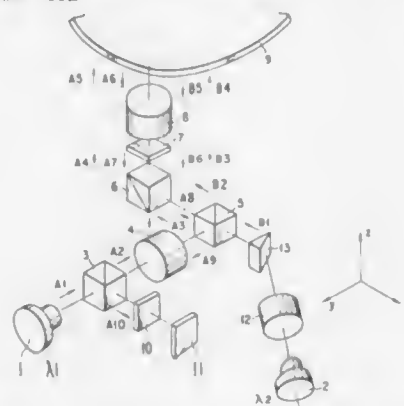
This application Mar. 17, 1995, Ser. No. 407,034

Claims priority, application Japan, Sep. 11, 1992, 4-243733; Mar. 15, 1993, 5-080112

U.S. Cl. 369—112

Int. Cl.⁶ G11B 7/00

30 Claims



1. An apparatus for optically recording and reproducing information on and from first and second media having first and second areal densities, respectively, the first density being higher than the second density, said apparatus comprising:

a first light source for emitting a first light beam having a first wavelength; a second light source for emitting a second light beam having a second wavelength; and an optical system for guiding said first and second light beams from said first and second light sources to an optical recording medium and guiding said first and second light beams upon reflection from

said optical recording medium to optical detecting means, said optical system including an objective lens for conversion said first and second light beams on said optical recording medium as a first light spot and a second light spot, respectively, wherein information is recorded only by said second light beam and reproduced only by said first light beam when said optical recording medium is said first medium, and information is recorded and reproduced only by said second light beam when said optical recording medium is said second medium.

5,513,165

METHOD FOR CONTROLLING THE FARM OF A MAGNETIC DOMAIN OF A MAGNETO-OPTICAL DISK USING PRE-WRITE TESTING

Hiroshi Ide, Kodaira; Fumiyoshi Kirino, Tokyo; Tsuyoshi Toda, Kodaira; Takeshi Maeda; Hiroyuki Tsuchinaga, both of Kokubunji; Fumio Kugiya, Hachioji; Kazuo Shigematsu, Saitama; Seichi Mita, Kanagawa; Atsushi Saito, Ichikawa, and Toshimitsu Kaku, Sagami, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

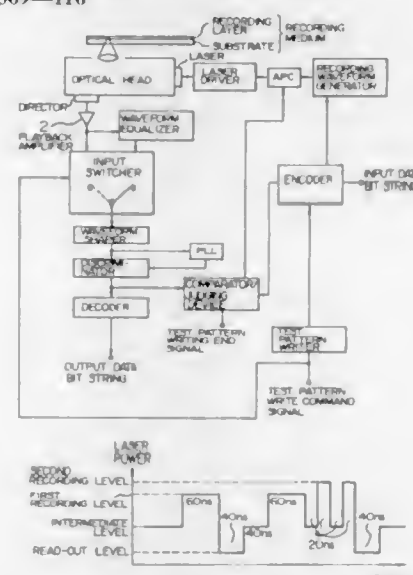
Continuation-in-part of Ser. No. 87,777, Jul. 9, 1993, which is a continuation-in-part of Ser. No. 720,706, Jun. 25, 1991. This application Nov. 10, 1993, Ser. No. 149,931

Claims priority, application Japan, Jun. 29, 1990, 2-170052; Nov. 11, 1991, 3-294145; Feb. 13, 1992, 4-026508; Feb. 13, 1992, 4-026509; Feb. 13, 1992, 4-026511; Apr. 21, 1992, 4-100897; Nov. 12, 1992, 4-302174; Dec. 28, 1992, 4-347689; Jan. 11, 1993, 5-002343

Int. Cl.⁶ G11B 7/00; 7/12

U.S. Cl. 369—116

23 Claims



2. An optical recording control method comprising the steps of: recording a predetermined recording pattern on a magneto-optical recording disk by a predetermined recording pulse before recording user data on said disk;

obtaining a reproduced signal based on said recording pattern thus recorded from said disk;

detecting an edge shift amount of a recording mark between said reproduced signal and said recording pattern;

correcting said predetermined recording pulse by changing an energy level of said predetermined recording pulse in accordance with said edge shift amount; and

recording said user data by said corrected recording pulse; wherein at least a plurality of recording marks are recorded on said disk by said recording pattern, said plurality of recording marks are reproduced, and said recording pulse is corrected on the basis of a reproduced signal indicative of a length of said recording mark.

5,513,166

OPTICAL RECORDING AND REPRODUCING APPARATUS FOR CONTROLLING A LASER DRIVER CURRENT ACCORDING TO TEST DATA ON THE DISC

Kenji Tokumitsu, and Fumihito Harigai, both of Odawara, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

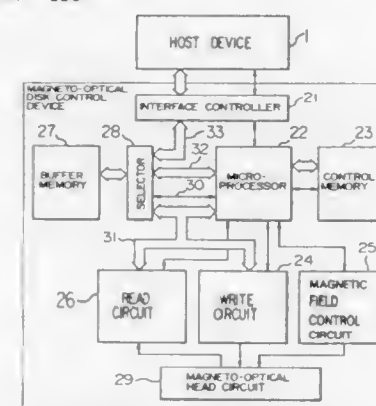
Filed Apr. 18, 1994, Ser. No. 229,317

Claims priority, application Japan, Apr. 22, 1993, 5-096119

Int. Cl.⁶ G11B 7/00

U.S. Cl. 369—116

20 Claims



1. An optical information recording method of performing the pre-write testing of test-data for an optical recording medium connected to a host, comprising:

- receiving an instruction for pre-write testing of test data inclusive of two predetermined continuous signals from instruction means independently from a write command from said host;
- supplying different laser driving currents for plural ones of pre-write testing areas of said optical recording medium to an optical information recording head in accordance with said pre-write testing instruction to perform the pre-write testing of said test data;
- reproducing the respective pre-write data to determine a difference in a voltage level between the two continuous signals of each test data;
- setting the laser driving current supplied for the pre-write testing of the test data indicative of the smallest value of said difference, as a laser driving current which is to be supplied to said optical information recording head when the recording of user data is to be performed; and
- setting a time interval until the next pre-write testing of test data is executed in accordance with a difference between the laser driving current set at the time of the previous pre-write testing and the laser driving current set at the time of the present pre-write testing.

5,513,167 OPTICAL RECORDING APPARATUS

Toshiki Udagawa; Shunji Yoshimura, and Masumi Ohta, all of Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 743,351, Aug. 2, 1991, abandoned.

This application May 31, 1994, Ser. No. 250,931

Claims priority, application Japan, Dec. 17, 1990, 1-330838

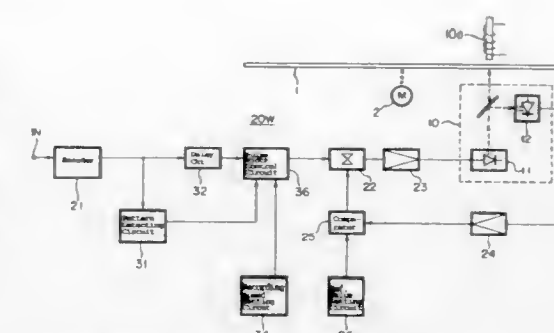
Int. Cl.⁶ G11B 7/00

U.S. Cl. 369—116

4 Claims

1. An optical recording apparatus wherein a modulation signal based on recording data is supplied to light intensity modulating means of a laser light source and a light beam for the laser light source is radiated on an optical recording medium to record data thereon, comprising:

pattern detecting means for detecting a pulse pattern of the modulation signal based on the recording data; and control means for providing amplitude correction data to said laser light source when said pattern detecting means detects a plurality of signal pulses with an interval less than or equal to a predetermined value, wherein said control means comprises



means for decreasing the amplitude of a succeeding signal pulse based on a detected output from said pattern detecting means, and recording speed setting means for setting a rotating speed of the recording medium as it is rotating and producing a speed signal having a value directly related to the rotating speed of the recording medium, whereby said control means further controls an amplitude of the succeeding signal pulse by decreasing it as the value of the speed signal produced by said recording speed setting means increases and the interval between signal pulses correspondingly decreases.

5,513,168

OPTICAL INFORMATION READ/WRITE APPARATUS

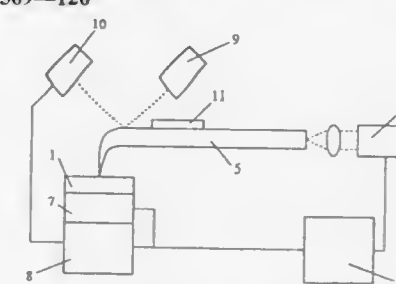
Masamichi Fujihira, 2000-1-3-404, Kosugaya-cho, Sakae-ku, Yokohama-shi, Kanagawa; Hiroshi Muramatsu, Chiba; Norio Chiba, Chiba, and Tatsuaki Ataka, Chiba, all of Japan, assignors to Seiko Instruments Inc., and Masamichi Fujihira, both of Japan

Filed Oct. 18, 1994, Ser. No. 324,741

Int. Cl.⁶ H01J 3/14; G11B 9/00

U.S. Cl. 369—126

31 Claims



1. An optical information read/write apparatus comprising: an optical memory medium comprising a substrate modified by an optically reactive functional group formed on a surface thereof for recording information; a light source for generating an information read/write light beam; an optical transmission probe having a microscopic aperture at a leading end thereof for focusing the light beam on the optical memory medium, the light beam being irradiated through the probe from a back end thereof which is opposite the leading end; and an X-Y-Z position control means for controlling a relative position between the leading end of the optical transmission probe and the surface of the optical memory medium.

5,513,169

CD-ROM WITH MACHINE-READABLE I.D. CODE

Barry A. Flte; Michael L. Mitchell; Russ A. Kunz, and Clifford R. Brannon, all of Terre Haute, Ind., assignors to Sony Corporation, Tokyn, Japan, and Digital Audio Disc Corporation, Terre Haute, Ind.

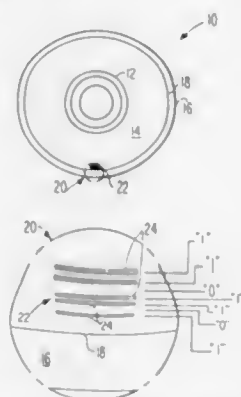
Division of Ser. No. 132,709, Oct. 6, 1993, Pat. No. 5,400,319.

This application Nov. 29, 1994, Ser. No. 346,423

Int. Cl.⁶ G11B 7/00

U.S. Cl. 369—272

14 Claims



1. A method of applying a human-readable serial number to an optical information storage disk having a machine-readable code formed thereon, comprising the steps of:

reading said machine-readable code formed on said disk;

performing an encryption algorithm with respect to said read machine-readable code to obtain an encrypted code; and applying said encrypted code to said disk in human-readable form.

5,513,170

MULTIPLE DATA SURFACE OPTICAL DATA STORAGE SYSTEM

Margaret E. Best, San Jose; Hal J. Rosen, Los Gatos; Kurt A. Rubin, Santa Clara, and Timothy C. Strand, San Jose, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 188,613, Jan. 26, 1994, Pat. No. 5,410,530, which is a division of Ser. No. 79,483, Jun. 18, 1993, Pat. No.

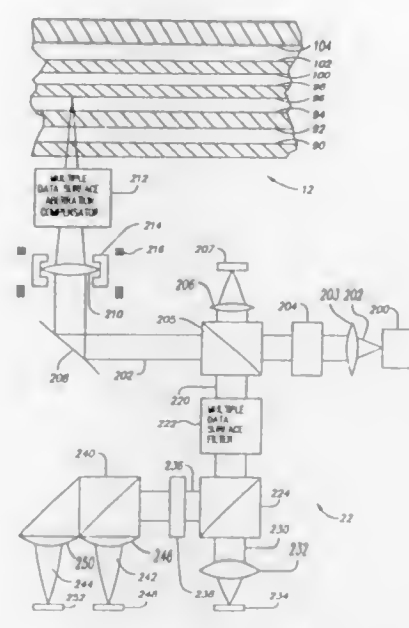
5,381,401, which is a division of Ser. No. 710,226, Jun. 4, 1991, Pat. No. 5,255,262. This application Jan. 26, 1995, Ser. No. 378,690

Int. Cl.⁶ G11B 7/24

U.S. Cl. 369—275.1

17 Claims

1. An optical data storage system comprising:
an electromagnetic radiation source for producing an electromagnetic radiation beam;
an optical medium having a plurality of data surfaces;
a focus device for focussing the electromagnetic radiation beam to a selected one of the data surfaces;
an optical detector for receiving a return electromagnetic radiation beam from the medium and generating a focus error signal responsive thereto; and
a focus control device connected to the focus device, the focus control device comprising a peak detector for detecting a peak in the focus error signal and a controller for counting the peaks detected by the peak detector and determining the data surface on which the electromagnetic radiation beam is focused.



5,513,171

ARRANGEMENT FOR DYNAMICALLY DERIVING A TELEPHONE NETWORK MANAGEMENT DATABASE FROM TELEPHONE NETWORK DATA

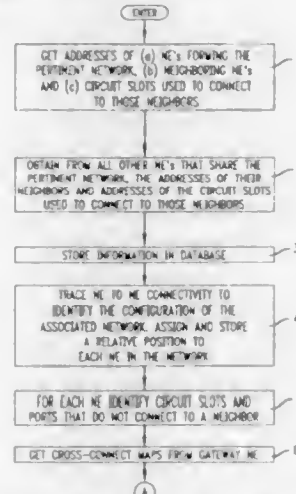
Karen M. Ludwiczak, Holmdel; Louis M. Martz, Rumson, and Patricia Hart Wilson, Red Bank, all of N.J., assignors to AT&T Corp., Murray Hill, N.J.

Filed Jul. 26, 1994, Ser. No. 280,421

Int. Cl.⁶ H04J 3/14

U.S. Cl. 370—13

3 Claims



1. A method of operating a network management system, said network management system supporting the operations of an associated network comprising a plurality of network elements interconnected via respective communications paths, said method comprising the steps of

responsive to a change in said network, identifying each of said network elements,
obtaining from each of the identified network elements information indicative of at least (a) identities of components forming the network element, (b) identities of neighbor network elements and (c) configuration of the network element, and
determining from the information obtained from each of the identified network elements the interconnections between network elements and the configuration of said network, in which said network may be one of a plurality of different network configurations, wherein said step of obtaining includes the step of communicating with a gateway network

element to obtain said information, and wherein said information includes a cross-connect map associated with a respective data rate.

5,513,172

FRAME RELAY APPARATUS AND A RELAY METHOD

Toshihiro Shikama, and Hiroyuki Sato, both of Kanagawa, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

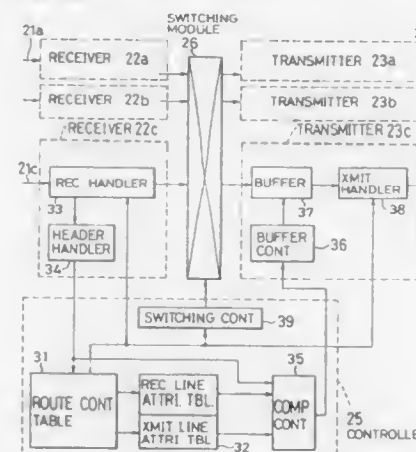
Filed Aug. 17, 1994, Ser. No. 291,761

Claims priority, application Japan, Aug. 24, 1993, 5-209638

Int. Cl.⁶ H04J 3/24

U.S. Cl. 370—13

21 Claims



1. A frame relay apparatus connected to input lines and output lines, comprising:

at least one receiver, receiving a frame on one of the input lines at a first transmission rate, the frame having a header, the receiver including means for providing header information indicative of the header;

a controller, receiving the header information, including:

means for selecting one of the output lines as a selected output line on which to transmit the frame;

means for determining a second transmission rate of the output line; and

means for determining a buffering amount based on the first and the second transmission rates and on the header information; and

at least one transmitter, including:

a buffer coupled to the at least one receiver to receive the frame;

means for storing a portion of the frame in the buffer according to the buffering amount; and
means for transmitting the contents of the buffer on the selected output line at the second transmission rate.

5,513,173

DATA LINK ACCESS UNIT FOR T1 SPANS SUPPORTING THE EXTENDED SUPERFRAME FORMAT (ESF)

Kevin S. Machemer, Littleton, and John A. Neely, Aurora, both of Colo., assignors to XEL Communications, Inc., Aurora, Colo.

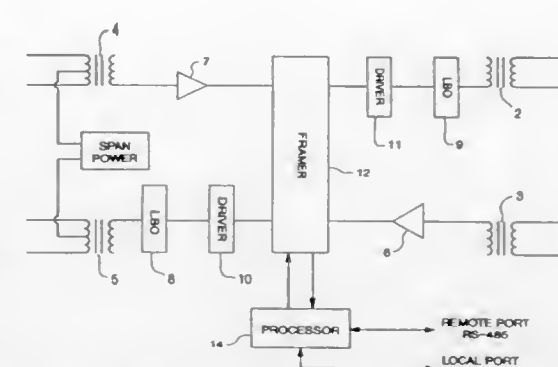
Filed Mar. 16, 1994, Ser. No. 213,567

Int. Cl.⁶ H04J 3/14; H04L 12/26

U.S. Cl. 370—17

13 Claims

1. A data link access unit for insertion into a T1 span providing communication of frames of digital data between two network elements with at least one of said network elements communicating using extended superframe format (ESF) that provides a data link channel using specified bits in said frames of digital data, said data link access unit comprising:



a framer in said T1 span between said network elements for accessing said frames and accumulating performance data for said T1 span; and a processor for accessing said performance data.

5,513,174

TELECOMMUNICATION SYSTEM WITH DETECTION AND CONTROL OF PACKET COLLISIONS

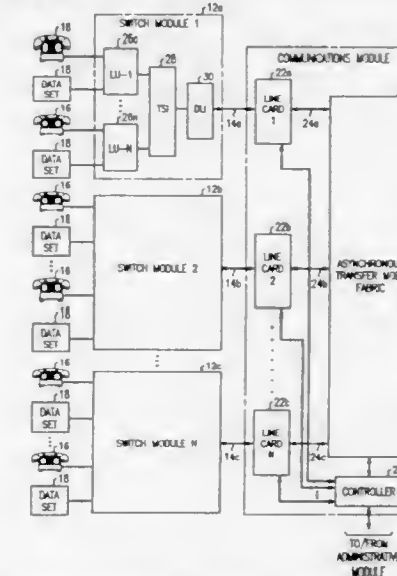
Vikram Punj, Naperville, Ill., assignor to AT&T Corp., Murray Hill, N.J.

Filed Dec. 7, 1994, Ser. No. 350,926

Int. Cl.⁶ H04L 12/56; H04Q 11/04

U.S. Cl. 370—17

16 Claims



1. In a telecommunication system in which input and output line cards provide an interface between synchronous communication channels that are interconnected by an asynchronous network, a method comprising the steps of:

generating and storing packets by each input line card during a predetermined time frame, each packet carrying information received from the synchronous communication channels and having an output line card destination;
selecting a sequence for the sequential transmission of the packets by each input line card to the asynchronous network;
determining, based on the sequence of packets selected by the selecting step, a cumulative number of packets that will be stored for delivery to each output line card due to collisions that would occur at each output line card during the predetermined time frame, a collision being the substantially concurrent arrival at an output line card of more than one packet;
comparing the cumulative number for each output line card with a predetermined delay threshold;
reducing the number of packets that will be transmitted to an output line card if the cumulative number exceeds the predetermined delay threshold in order to maintain time delay within a predetermined limit.

a plurality of multiplexing circuits, operatively connected to the outputs of said demultiplexing circuit respectively and connected to said video signal transmitting means, each for multiplexing each of the demultiplexed ATM data cells received from one corresponding output of said demultiplexing circuit and an ATM cell carrying a video signal of the one channel selected by a corresponding subscriber in accordance with a request from the corresponding subscriber; and designated channel selecting means, operatively connected to said plurality of multiplexing circuits, for providing a channel designating signal to each of said multiplexing circuits in accordance with a request from the corresponding subscriber, each of said plurality of multiplexing circuits selecting one of the video signals in accordance with said channel designating signal.

5,513,181

MULTI-SIGNAL MULTI-CODER TRANSCODER

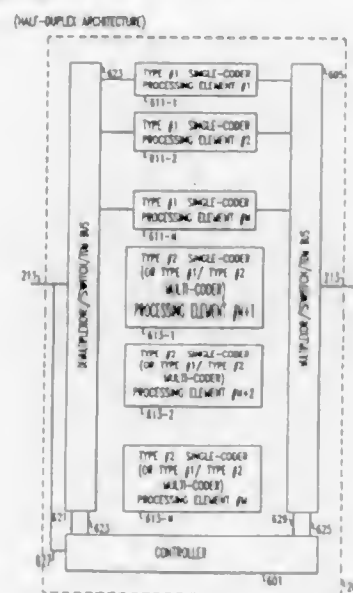
Robert D. Bresaller, Parsippany; Robert C. Fairfield, Randolph, and Kevin Loughran, Randolph Township, Morris County, all of N.J., assignors to AT&T Corp., Murray Hill, N.J.

Filed Feb. 17, 1995, Ser. No. 390,333

Int. Cl. 6 H04J 3/02

U.S. Cl. 370—79

12 Claims



1. An apparatus comprising:

an input lead capable of transporting a plurality of multiplexed communication signals;

an output lead capable of transporting a plurality of multiplexed transcoded communication signals;

a first processing element that is configured to perform a first coding technique on at least one communication signal to produce one transcoded communication signal for each communication signal;

a second processing element that is configured to perform said first coding technique on at least one communication signal to produce one transcoded communication signal for each communication signal;

a third processing element that is configured to perform a second coding technique on at least one communication signal to produce one transcoded communication signal for each communication signal;

a fourth processing element that is configured to perform said second coding technique on at least one communication signal to produce one transcoded communication signal for each communication signal;

a controller;

first switching means for receiving said plurality of multiplexed communications signals, for segregating said plurality of multiplexed communications signals and for routing, under the direction of said controller, one or more of said communications signals to any of said first processing element, said second processing element, said third processing element and said fourth processing element; and

second switching means for receiving each of said transcoded communications signals, for desegregating said transcoded communications signals to form said plurality of multiplexed transcoded communications signals, and for transmitting said plurality of multiplexed transcoded communications signals on said output lead.

5,513,182

STAR CONFIGURATION NETWORK SYSTEM

Harumi Kawamura, Tokyo, and Keiko Satoh, Kanagawa, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 183,396, Jan. 19, 1994, abandoned.

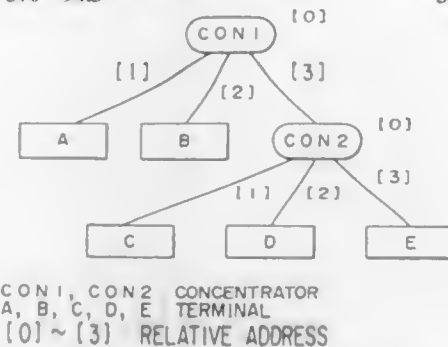
This application May 15, 1995, Ser. No. 441,679

Claims priority, application Japan, Feb. 1, 1993, 5-036100

Int. Cl. 6 H04L 12/44

U.S. Cl. 370—94.3

36 Claims



1. A star configuration data network system comprising:
 - a first node having a plurality of connected terminals for providing a signal switching function;
 - a second node for providing a signal transmitting function and a signal receiving function, said second node being connected to said first node;
 - a data processor for transmitting and receiving data in a form of packets between said first node and said second node; and
 - a controller for assigning addresses to said first node, said second node, and the plurality of connected terminals of said first node, wherein nodes of the network system are assigned a single predetermined common address as viewed from respective nodes or terminals connected both thereto and downstream in a signal flow direction, wherein the address of a more upstream one in the signal flow direction of said first node and said second node as viewed from the other of said first node and said second node is represented by the single predetermined common address, whereby the system transmits and receives the packets of the data between said first node and said second node or between said first node and said plurality of terminals connected to said first node.

5,513,183

METHOD FOR EXPLOITATION OF VOICE INACTIVITY TO INCREASE THE CAPACITY OF A TIME DIVISION MULTIPLE ACCESS RADIO COMMUNICATIONS SYSTEM

Stanley E. Kay, Rockville; John E. Corrigan III, Chevy Chase; Daniel R. Wendling, Darnestown; Ashok D. Mehta, North Potomac, all of Md., and Michael I. Parr, San Diego, Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Division of Ser. No. 118,553, Sep. 9, 1993, Pat. No. 5,357,513, which is a division of Ser. No. 622,232, Dec. 6, 1990, Pat. No. 5,299,198. This application Jul. 27, 1994, Ser. No. 281,389

The portion of the term of this patent subsequent to Mar. 29, 2011, has been disclaimed.

Int. Cl. 6 H04J 3/16

U.S. Cl. 370—95.3

32 Claims

1. In a radio telephony system having a controlling station and a plurality of controlled stations, the controlling station transmitting and receiving information bursts to and from the controlled stations, the bursts being transmitted on radio carrier frequencies divided into information channels for carrying the information bursts and control channels for carrying control messages controlling the transmission of the information bursts between stations, each channel having a predetermined sequence of carrier frequency time slots, a method for transmitting the information bursts from a selected one of the controlled stations to the controlling station comprising:

5,513,185

METHOD AND APPARATUS FOR TRANSMISSION LINK ERROR RATE MONITORING

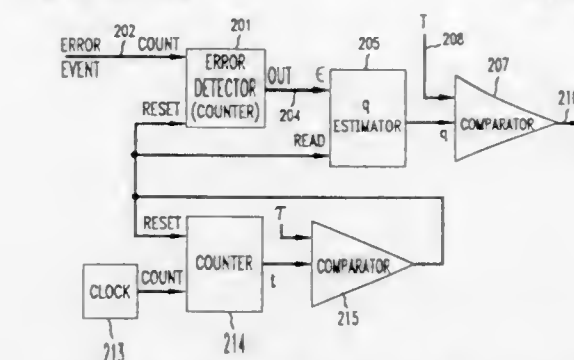
Douglas C. Schmidt, Holmdel, N.J., assignor to AT&T Corp., Murray Hill, N.J.

Filed Nov. 23, 1992, Ser. No. 979,958

Int. Cl. 6 G06F 11/00

U.S. Cl. 371—5.5

10 Claims



1. Apparatus for monitoring the error rate in messages transmitted over a transmission link so that the link can be taken out of service if excessive errors occur, said transmission link including a buffer for storing messages so that messages not successfully transmitted on said link are available for subsequent retransmission on said link, said apparatus comprising:
 - means for counting the number of errors occurring on the link during successive time intervals of τ seconds, where τ is the round trip time required to transmit a message on said transmission link and then notify said buffer to initiate a retransmission;
 - means responsive to said counting means for formulating an estimate of the amount of data requiring retransmission on said link due to errors, said estimate being a joint function of (a) said round trip time τ , (b) the maximum allowable error rate λ_0 on said link, and (c) the speed "c" of said link;
 - means for comparing said estimate to a threshold value determined as a joint function of (a) Ω , the maximum allowed amount of data requiring retransmission, (b) λ_0 , and (c) τ , and means for taking said transmission link out of service when said estimate exceeds said threshold.

5,513,184

WIRELESS COMMUNICATION SYSTEM

Giovanni Vannucci, Middletown, N.J., assignor to AT&T Corp., Murray Hill, N.J.

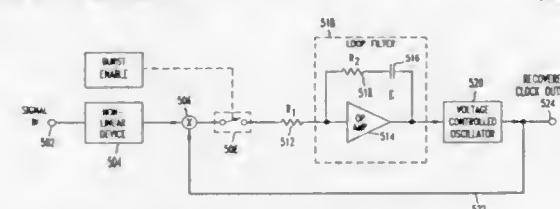
Continuation of Ser. No. 662,532, Feb. 28, 1991, abandoned.

This application Jul. 15, 1993, Ser. No. 92,379

Int. Cl. 6 H03L 7/08

U.S. Cl. 370—105.3

7 Claims



1. A communications system comprising:
 - a transmitter whose transmitting functions are controlled by a first clock signal;
 - a receiver whose receiving functions are controlled by a second clock signal;
 - clock recovery means connected to said receiver for generating said second clock signal in response to communications coupled from said transmitter, said clock recovery means including an oscillator whose operation is varied in response to said communications;
 - said clock recovery means further including means for substantially maintaining this operation at its last varied state in an absence of any communications from said transmitter; and
 - said communications between said transmitter and receiver occurring in bursts and said clock recovery means still further including a switching element connected to said oscillator, said switching element being selectively closed during the presence of a burst for coupling said burst to an input port of said oscillator and opened during the absence of said burst for isolating the input port of said oscillator.

5,513,186

METHOD AND APPARATUS FOR INTERCONNECT TESTING WITHOUT SPEED DEGRADATION

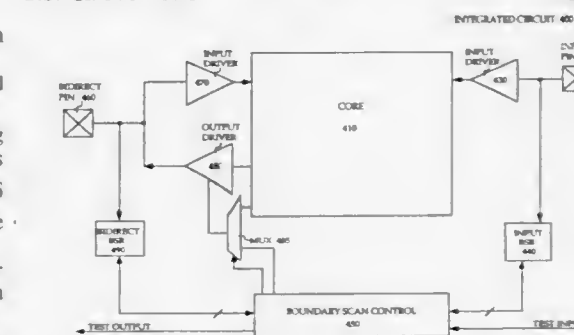
Marc E. Levitt, Sunnyvale, Calif., assignor to Sun Microsystems, Inc., Mountain View, Calif.

Filed Dec. 7, 1993, Ser. No. 163,989

Int. Cl. 6 H04B 17/00

U.S. Cl. 371—22.3

17 Claims



1. An electrical component coupled to a circuit board, the electrical component comprising:
 - a functional core;
 - at least one bi-directional pin to carry a first input signal from the circuit board to the functional core and to carry an output signal from the functional core to the circuit board;

at least one bi-directional boundary scan register coupled to the at least one bi-directional pin but not placed on a path between the functional core and the at least one bi-directional pin;

at least one tristatable output driver; and

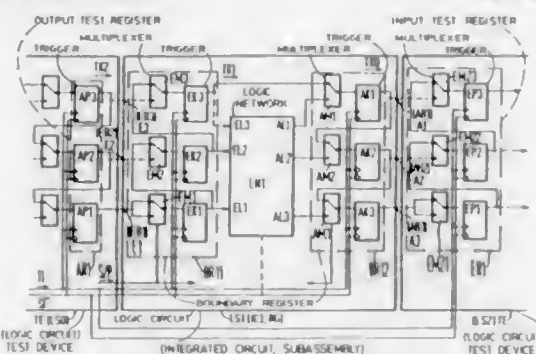
boundary scan control logic, such that when the electrical component is placed in a test mode, the boundary scan control logic causes the at least one tristatable output driver to tristate and block the output signal from the functional core to the circuit board, the boundary scan control logic then causes the at least one bi-directional boundary scan register to capture the first input signal and further causes the captured first input signal to be output from the electrical component.

5,513,187 PROCESS FOR TESTING INTEGRATED CIRCUITS WITH AT LEAST ONE LOGIC CIRCUIT AND TESTABLE INTEGRATED CIRCUIT

Claus-Peter Zepp, München, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany
PCT No. PCT/DE92/00638, § 371 Date May 26, 1994, § 102(e)
Date May 26, 1994, PCT Pub. No. WO93/03434, PCT Pub. Date Feb. 18, 1993

PCT Filed Aug. 3, 1992, Ser. No. 193,152
Claims priority, application Germany, Aug. 8, 1991, 41 26 333.2

Int. Cl. G01R 31/28
U.S. Cl. 371—22.3 10 Claims



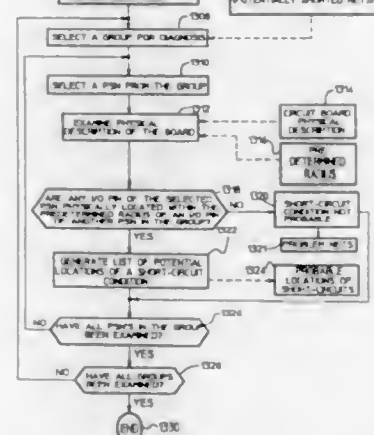
1. A process for testing integrated modules having at least one logic circuit, said at least one logic circuit having a logic network surrounded by boundary-scan cells, in which process, for static testing in a serial mode, input trigger circuits and output trigger circuits of the boundary-scan cells are connected in series as shift registers for serial writing and reading of test information, and at least one test combination being written to at least one of the input trigger circuits and the output trigger circuits, comprising the steps of: for dynamic testing, in an operating mode, connecting the input trigger circuits into signal lines between input terminal points of the logic circuit and inputs of the logic network, connecting the output trigger circuits into signal lines between the outputs of the logic network and output terminal points of the logic circuit; for dynamic testing, writing a first test combination to the at least one of the input trigger circuits and the output trigger circuits applying at least one second test combination from parallel outputs of a test device or of an upstream logic circuit to the input terminal points of the input trigger circuits; before the dynamic testing with at least two successive system test pulses, switching the input trigger circuits and the output trigger circuits from the serial mode into the operating mode; transferring with a first system test pulse the second test combination, and transferring with each further system test pulse a further test combination, in parallel into the input trigger circuits; storing with a second system test pulse, and storing with each further system test pulse, an output combination of the at least one logic circuit as a logical sequence of the second test combination, and of further test combinations, in the output trigger circuits; and checking the output combinations in the test device.

5,513,188 ENHANCED INTERCONNECT TESTING THROUGH UTILIZATION OF BOARD TOPOLOGY DATA

Kenneth P. Parker, and Kenneth E. Posse, both of Fort Collins, Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Continuation-in-part of Ser. No. 794,767, Nov. 19, 1991, and a continuation-in-part of Ser. No. 201,741, Mar. 1, 1994, which is a continuation of Ser. No. 757,162, Sep. 10, 1991, abandoned. This application Mar. 9, 1994, Ser. No. 208,245

Int. Cl. H04B 17/00
U.S. Cl. 371—22.3 20 Claims



1. An automated method for increasing the diagnostic resolution of a boundary-scan interconnect test performed on a circuit, wherein the circuit includes a plurality of integrated circuit chips, each integrated circuit chip having a plurality of I/O pins, the I/O pins making electrical interconnection through a plurality of independent conductive nets, said method comprising:

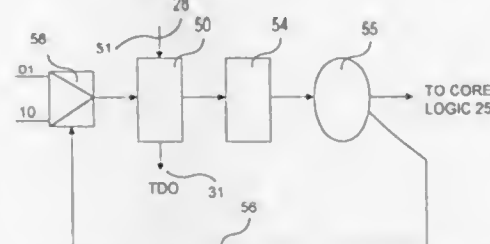
- (1) receiving a list of net signatures generated during execution of a boundary-scan interconnect test;
- (2) grouping together nets having identical net signatures into groups of potentially shorted nets;
- (3) examining x,y coordinate data contained in a board physical description of the circuit to identify radial adjacencies between I/O pins in the circuit; and
- (4) for each group of potentially shorted nets, determining which nets are likely short-circuited together based on said radial adjacencies between I/O pins of said nets in said group of potentially shorted nets.

5,513,189 BOUNDARY SCAN SYSTEM WITH IMPROVED ERROR REPORTING USING SENTINEL BIT PATTERNS

Thomas W. Savage, San Jose, Calif., assignor to Tandem Computers, Incorporated, Cupertino, Calif.

Filed May 25, 1994, Ser. No. 248,801
Int. Cl. G01R 31/3183

U.S. Cl. 371—22.3 10 Claims



10. An integrated circuit for use in a serial bus, comprising: at least one core logic element;

a boundary scan instruction register connected to the at least one core logic element;

a test data in terminal for inputting an instruction register;

a decoder for checking for an error in the boundary scan instruction register and for outputting a signal indicating whether the error was detected; and

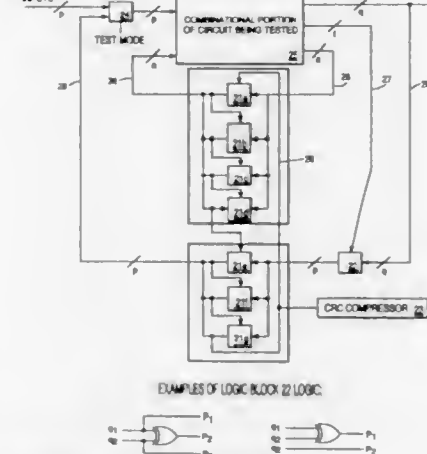
means, responsive to the signal output from the decoder, for altering the bit pattern of the boundary scan instruction register when at least one predetermined error condition occurs, wherein the predetermined error condition is one of a condition where an error is detected by the decoder and a condition where an error is not detected by the decoder.

5,513,190 BUILT-IN SELF-TEST TRI-STATE ARCHITECTURE

Peter A. Johnson, San Jose, and Guntram K. Wolski, Watsonville, both of Calif., assignors to Sequola Semiconductor, Inc., Scotts Valley, Calif.

Filed Oct. 28, 1991, Ser. No. 783,491
Int. Cl. G01R 1/02

U.S. Cl. 371—22.5 11 Claims



1. An integrated circuit comprising:

a logic circuit with a tri-state bus; and

a built-in self-test (BIST) mechanism coupled to the logic circuit to test said logic circuit during self-test and to allow said logic circuit to perform its designated logic function during user mode, said BIST mechanism generating mode signals for controlling the mode of operation for said logic circuit, wherein the logic circuit further comprises a circuit architecture comprising

a plurality of tri-state devices coupled serially, each of said plurality of tri-state devices driving data onto said tri-state bus when activated, each of said plurality of tri-state devices activated by an enable signal and an inhibit input signal, said inhibit input signal being the inhibit output signal from the previous device, wherein each of said plurality of tri-state devices includes a first logic means to avoid contention on said tri-state bus between other tri-state devices during self-test by preventing each tri-state device from driving the tri-state bus while another tri-state device drives the tri-state bus;

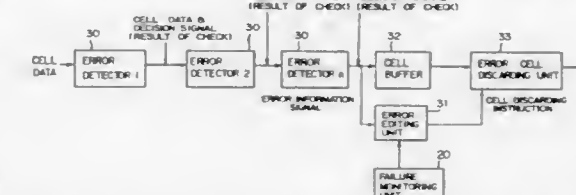
second logic means for setting said bus to a first predetermined state or retaining the state to which said tri-state bus was last driven when said logic circuit is performing its designated function when none of said plurality of tri-state devices are driving said tri-state bus, said second logic means also for setting said tri-state bus to a second predetermined state during self-test when none of said plurality of tri-state devices are driving said tri-state bus.

5,513,191 ASYNCHRONOUS TRANSFER MODE (ATM) CELL ERROR PROCESSING SYSTEM

Ryuichi Takechi, Takeshi Kawasaki, Jyoei Kamoi, Kazuo Hagi-kano, Satoshi Kuroyanagi, and Toshio Shimoe, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed May 27, 1992, Ser. No. 888,787
Claims priority, application Japan, May 27, 1991, 3-121070

Int. Cl. G06F 11/10 16 Claims



1. A fault tolerant disk drive system comprising:

a first plurality of disk drive devices for storing data;
means for performing a first plurality of parity checks including a plurality of vertical parity checks, and a plurality of diagonal parity checks on data coupled to said first plurality of disk drive devices;
a second plurality of disk drive devices for storing results of said first plurality of parity checks;
means for performing a second plurality of parity checks including a plurality of vertical parity checks and a plurality of diagonal parity checks on said data in the event said data is outputted from said first plurality of disk drive devices;
means for comparing results from said first plurality of parity checks and said second plurality of parity checks and generating comparison results;
means for utilizing the comparison results and unaffected data to detect and correct data errors.

5,513,193

NON-VOLATILE SEMICONDUCTOR MEMORY DEVICE CAPABLE OF CHECKING THE THRESHOLD VALUE OF MEMORY CELLS

Kiyokazu Hashimoto, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

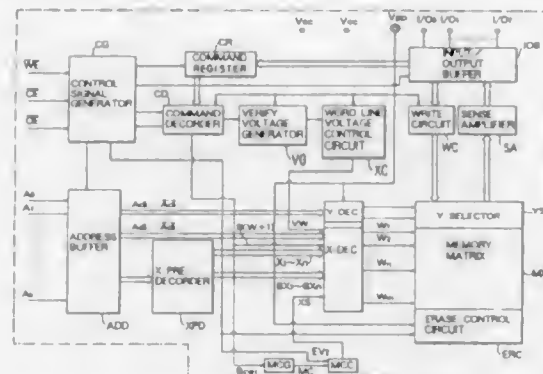
Continuation of Ser. No. 995,821, Dec. 23, 1992, abandoned.

This application Jun. 6, 1995, Ser. No. 467,349

Claims priority, application Japan, Dec. 27, 1991, 3-359813
Int. Cl.⁶ G11C 29/00

U.S. Cl. 371—67.1

18 Claims



1. A non-volatile semiconductor memory device comprising:

a plurality of row address lines;
a plurality of digit lines;
means for sensing and amplifying signals on said digit lines and outputting said amplified signals;
a plurality of memory cells each having a current path with a plurality of terminals, one end of said current path connected to an associated one of said digit lines and having a gate connected to an associated one of said row address lines; and
means for discriminating said memory device as a defect by detecting, as an electrically over-erased memory cell, any and all memory cells which will become improperly conductive by parasitic capacitance between a drain of said memory cell and said gate during normal read or write cycles, said discriminating means comprising:
read means for applying a same predetermined voltage, which is a positive voltage less than a power source voltage and substantially equal to a minimum normal operating threshold value of those of said memory cells which are electrically erased, to all of said row address lines to read out stored data from said memory cells.

5,513,194

STRETCHED-PULSE FIBER LASER

Kohichi Tamura, Mito, Japan; Erich P. Ipen, Belmont, Mass.; Hermann S. Haus, Lexington, Mass.; Lynn E. Nelson, Somerville, Mass., and Christopher R. Doerr, Atlantic Highlands, N.J., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

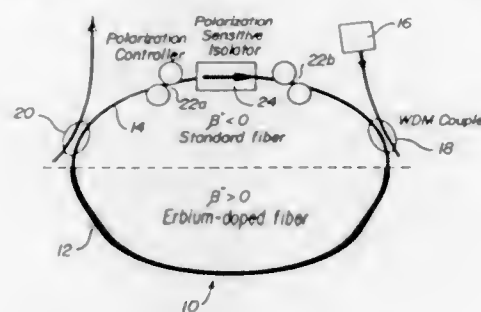
Continuation of Ser. No. 268,821, Jun. 30, 1994, abandoned.

This application Apr. 7, 1995, Ser. No. 418,812

Int. Cl.⁶ H01S 3/30

U.S. Cl. 372—6

44 Claims



1. A fiber laser comprising:

a positive-dispersion fiber segment,
a negative-dispersion fiber segment joined in series with the positive-dispersion fiber segment to form a laser cavity in which soliton effects of laser pulse circulation in the cavity are suppressed and widths of laser pulses circulating in the cavity undergo large variations between a maximum laser pulse width and a minimum laser pulse width during one round trip through the cavity.

means for modelocking laser radiation in the laser cavity,

means for providing laser radiation gain in the laser cavity, and
means for extracting laser pulses from the laser cavity.

5,513,195

PHASE-CONTROLLED, FRACTAL LASER SYSTEM

Hans OPOWER, Krailling; Helmut Huegel, Sindelfingen, and Adolf Giesen, Stuttgart, all of, Germany, assignors to Deutsche Forschungsanstalt fuer Luft- und Raumfahrt e.V., Bonn, and Universitaet Stuttgart Institut fuer Strahlwerkzeuge, Stuttgart, both of, Germany

PCT No. PCT/DE94/00036, § 371 Date Sep. 21, 1994, § 102(e)

Date Sep. 21, 1994, PCT Pub. No. WO94/17575, PCT Pub.

Date Aug. 4, 1994

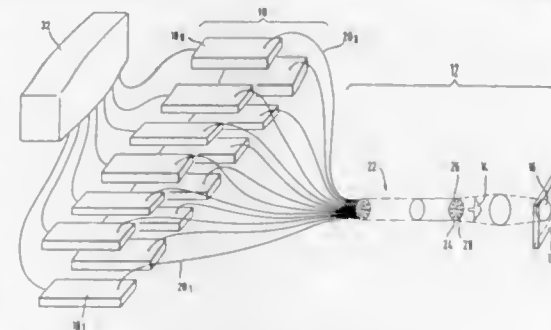
PCT Filed Jan. 14, 1994, Ser. No. 307,712

Claims priority, application Germany, Jan. 22, 1993, 43 01 687.1

Int. Cl.⁶ H01S 3/098

U.S. Cl. 372—18

59 Claims



1. A semiconductor laser system comprising:

a plurality of semiconductor laser units for outputting laser radiation, each of said laser units including a laser oscillator;
said laser radiation output from each laser unit being coupled with low loss to a first end of one single mode light conduction fiber associated with said respective laser unit for guiding the laser radiation output from the laser unit to a second end remote from said first end;

a fiber bundle formed from the light conducting fibers of said plurality of laser units, an end of said fiber bundle being formed by said second ends of said light conducting fibers, said end of said fiber bundle outputting a combined laser radiation that is substantially the sum of the laser radiation output from each of said second ends; and

means for independently controlling the phase of the laser radiation output from at least several of said laser units contributing to said combined laser radiation to establish desired phase relationships between different ones of said laser units;

wherein the combined laser radiation output from said end of said fiber bundle comprises a superposition of the radiation from said laser units that takes place at a predeterminable phase orientation established by said phase controlling means.

5,513,197

SEMICONDUCTOR LASER DRIVE CIRCUIT

INCLUDING SWITCHED CURRENT SOURCE

Kenji Koishi, Takarazuka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

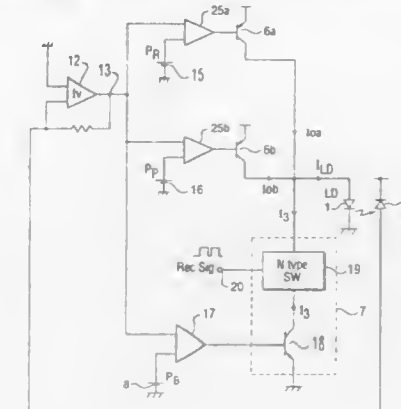
Filed Nov. 9, 1993, Ser. No. 149,568

Claims priority, application Japan, Nov. 12, 1992, 4-302025

Int. Cl.⁶ H01S 3/10; 3/00; G11B 7/00

U.S. Cl. 372—38

2 Claims



1. A semiconductor laser drive circuit comprising:

a semiconductor laser having a cathode that is grounded;
a photodiode for receiving an optical output of said semiconductor laser and outputting a corresponding optical current;
a converter for converting the optical current output by said photodiode into a voltage output;
a first voltage source for generating a first voltage having a first predetermined value indicative of a direct current flowing in said semiconductor laser during a reproducing operation;
a first operational amplifier for comparing the voltage output of said converter with the first voltage generated by said first voltage source and outputting a corresponding first control voltage;
a first current source for supplying a first current corresponding to the direct current to an anode of said semiconductor laser responsive to the first control voltage;
a second voltage source for generating a second voltage having a second predetermined value indicative of a peak value of an optical pulse current flow in said semiconductor laser during a recording operation;
a second operational amplifier for comparing the voltage output of said converter with the second voltage generated by said second voltage source and outputting a corresponding second control voltage;
a second current source for supplying a second current corresponding to the peak value of an optical pulse current flow during recording to the anode of said semiconductor laser responsive to the second control voltage;
a third voltage source for generating a third voltage having a third predetermined value indicative of a minimum value of the optical pulse current;
a third operational amplifier for comparing the voltage output of said converter with the third voltage generated by said third voltage source and outputting a corresponding third control voltage;
a third current source for drawing a third current having a value corresponding to a difference between the peak value and the minimum value of the optical pulse current from said anode of said semiconductor laser responsive to the third control voltage;
a switching circuit which enables said third current source to draw said third current from said anode of said semiconductor laser when switched in a first state and prevents said third

5,513,196

OPTICAL SOURCE WITH MODE RESHAPING

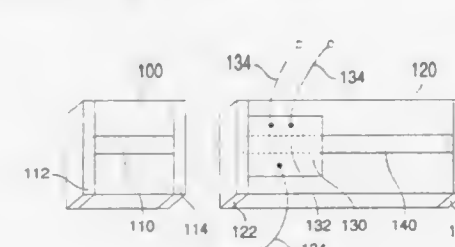
William K. Bischel, Menlo Park; David A. G. Deacon, Los Altos, and Michael J. Brinkman, Redwood City, all of Calif., assignors to Deacon Research, Palo Alto, Calif.

Filed Feb. 14, 1995, Ser. No. 389,796

Int. Cl.⁶ H01S 3/10

U.S. Cl. 372—22

56 Claims



1. An optical source comprising:

a first optical reflector;
at least a second optical reflector aligned with said first optical reflector to define a resonating structure;
an optically active medium means for supporting multiple transverse modes, said optically active medium means disposed in said resonating structure;
an integrated optical mode filter structure in an optical path within said resonating structure, the integrated optical mode filter structure comprising:

mode reshaping means for reshaping said transverse modes, said mode reshaping means having a first port and a second port, said first port coupled to a matching multimode port of said optically active medium means; and
a waveguide means, said waveguide means coupled to said second port, said waveguide means for supporting a different mode structure than mode structure of said multimode laser exciter; and
means for extracting coherent optical energy from the optical path passing through said mode reshaping means.

current source from drawing said third current from said anode of said semiconductor laser when switched in a second state.

5,513,198 PACKAGING OF HIGH POWER SEMICONDUCTOR LASERS

Paul A. Jakobson, Corning, N.Y., assignor to Corning Incorporated, Corning, N.Y.

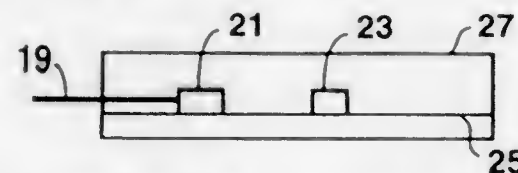
Continuation-in-part of Ser. No. 91,657, Jul. 14, 1993, Pat. No. 5,392,305. This application Dec. 17, 1993, Ser. No. 168,125

The portion of the term of this patent subsequent to Feb. 21, 2012, has been disclaimed.

Int. Cl.⁶ H01S 3/18; H01L 23/36

U.S. Cl. 372-43

2 Claims



1. A packaged high power semiconductor laser comprising: (A) a semiconductor laser which comprises a GaAs substrate, said laser having an operating optical power of at least 50 milliwatts; and (B) a hermetically sealed container surrounding the semiconductor laser and filled with a gaseous medium having an oxygen content of at least 100 parts per million.

5,513,199 BLUE-GREEN LASER DIODE

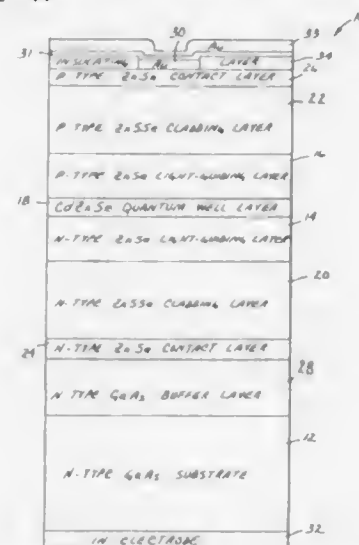
Michael A. Haase, Woodbury; James M. DePuydt, Stillwater; Hwa Cheng, and Jun Qiu, both of Woodbury, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 147,844, Nov. 5, 1993, abandoned, which is a division of Ser. No. 700,606, May 15, 1991, which is a continuation of Ser. No. 700,601, May 15, 1991, abandoned. This application Mar. 8, 1995, Ser. No. 400,665

Int. Cl.⁶ H01S 3/19

U.S. Cl. 372-44

51 Claims



1. A II-VI compound semiconductor laser diode, including: a plurality of layers of II-VI semiconductor forming a pn junction, including: a first cladding layer of a first conductivity type;

a second cladding layer of a second conductivity type; and at least a first guiding layer between the first and second cladding layers; an active layer of II-VI semiconductor within the pn junction; a semiconductor substrate for supporting the layers of II-VI semiconductor; and first and second electrodes for coupling electrical energy to the laser diode.

5,513,200 MONOLITHIC ARRAY OF INDEPENDENTLY ADDRESSABLE DIODE LASERS

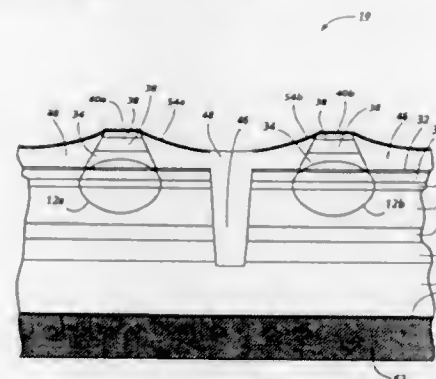
Thomas L. Paoli, Los Altos, Calif., assignor to Xerox Corporation, Stamford, Conn.

Continuation-in-part of Ser. No. 948,524, Sep. 22, 1992, Pat. No. 5,412,678. This application Apr. 20, 1993, Ser. No. 49,897

Int. Cl.⁶ H01S 3/18; 3/25

U.S. Cl. 372-50

11 Claims



1. A monolithic laser array, comprising: a semiconductor substrate having first and second surfaces; a multilayer structure having third and fourth surfaces, and wherein said third surface is disposed on said second surface of said substrate, said multilayer structure including a first semiconductor optical confinement layer having the same conductivity type as said substrate, and a second semiconductor optical confinement layer having the opposing conductivity type, said multilayer structure further including at least two active semiconductor regions for generating and propagating lasing light, each of said active regions being interposed to said first and second semiconductor confinement layers and having a smaller bandgap than said first and second confinement layers, and each of said active regions operating at substantially the same wavelength; a plurality of lateral optical waveguides in at least one layer of said multilayer structure; an optical resonator for at least two of said plurality of lateral optical waveguides; a plurality of addressing electrodes on said fourth surface, each addressing electrode being associated with one of said optical waveguides; an isolation groove between two of said optical waveguides and that extends from said fourth surface through said active layer, wherein said isolation groove includes a thermally and electrically insulating layer extending into said groove such that said optical waveguides are thermally and electrically isolated from each other; and a common electrode on said first surface of said substrate, said common electrode for cooperating with each of said addressing electrodes to enable current flow through the optical waveguide associated with each addressing electrode.

5,513,201 OPTICAL PATH ROTATING DEVICE USED WITH LINEAR ARRAY LASER DIODE AND LASER APPARATUS APPLIED THEREWITH

Satoshi Yamaguchi; Masahiro Daimon, both of Sagami-hara; Koichi Chiba, Tokyo; Tetsuro Kobayashi, Tokyo, and Yoshimasa Saito, Tokyo, all of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

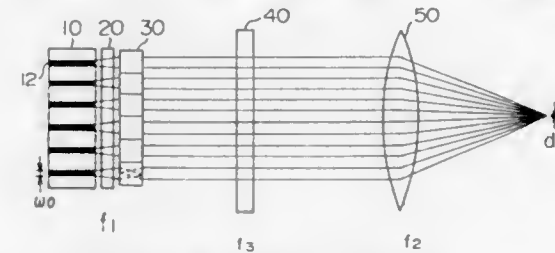
Filed Apr. 28, 1994, Ser. No. 235,455

Claims priority, application Japan, Apr. 30, 1993, 5-124647; Jun. 28, 1993, 5-182048; Jul. 2, 1993, 5-190775; Jul. 14, 1993, 5-197926; Jul. 20, 1993, 5-201116

Int. Cl.⁶ H01S 3/094

U.S. Cl. 372-75

54 Claims



1. A semiconductor laser apparatus comprising: a linear array laser diode, having a plurality of laser-beam-emitting emitters having emitter faces arranged to extend linearly in a first direction for emitting a group of laser beams in a form of a dotted line; a first condenser, disposed in front of said linear array laser diode, for collimating said group of laser beams by refracting them to a direction substantially perpendicular to said first direction; an optical path rotating device, disposed in front of said first condenser, having arranged in parallel a plurality of optical elements for bending substantially at a right angle an axis of a cross section of at least a laser beam, for receiving the group of laser beams collimated in said second direction, and emitting the group of laser beams substantially in the form of ladder rungs lined up in said first direction by rotating the axis of the cross section of the laser beams for each of said optical elements; a second condenser for collimating said group of laser beams substantially in the form of ladder rungs by refracting the beams to a direction substantially perpendicular to said first direction; and a third condenser for bringing the group of laser beams emitted from said second condenser into focus.

5,513,202 VERTICAL-CAVITY SURFACE-EMITTING SEMICONDUCTOR LASER

Yasuhiko Kobayashi, Osaka; Toyonji Chino, Toyonaka, and Kenichi Matsuda, Moriguchi, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Feb. 23, 1995, Ser. No. 393,209

Claims priority, application Japan, Feb. 25, 1994, 6-027939

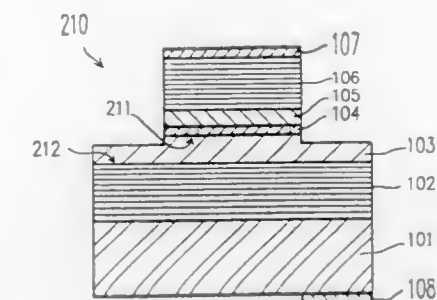
Int. Cl.⁶ H01S 3/19

U.S. Cl. 372-96

20 Claims

1. A vertical-cavity surface-emitting semiconductor laser comprising:

a p-type bottom mirror having an upper face; a p-type spacer layer covering over the entire upper face of the p-type bottom mirror; an active region including an active layer having a bottom face smaller than the upper face of the p-type bottom mirror, the active region being formed on the p-type spacer layer; an n-type spacer layer formed on the active region; and an n-type top mirror formed on the n-type spacer layer, wherein a sum of optical path lengths of the p-type spacer layer, the active region and the n-type spacer layer in a perpendicular direction, satisfies a relationship expressed by



$d=(1+n)\lambda/2$ (n : natural number) with respect to a wavelength λ of light oscillated from the active region.

5,513,203 SURFACE EMITTING LASER HAVING IMPROVED PUMPING EFFICIENCY

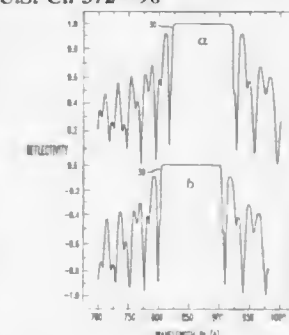
Theodor C. Damen, Colts Neck, N.J., assignor to AT&T Corp., Murray Hill, N.J.

Filed Apr. 5, 1995, Ser. No. 417,308

Int. Cl.⁶ H01S 3/085; 3/094; 3/18

U.S. Cl. 372-96

12 Claims



1. A surface emitting laser comprising: a substrate; a first distributed feedback mirror comprising a plurality of layers formed on the substrate; an active gain medium formed on the first mirror comprising at least one active, optically emitting layer and one barrier layer; a second distributed feedback mirror comprising a plurality of layers formed on the active gain medium, said first and second mirrors defining a resonant cavity for supporting a standing wave optical field at a designed wavelength of operation; said first and second mirrors having first and second reflective bandwidths that respectively include first and second transmissive bandwidths for receiving optical pumping energy, said first and second reflective bandwidths being shifted in wavelength relative to one another such that the first and second transmissive bandwidths are located at distinct wavelengths.

5,513,204 LONG WAVELENGTH, VERTICAL CAVITY SURFACE EMITTING LASER WITH VERTICALLY INTEGRATED OPTICAL PUMP

Vijaysekhar Jayaraman, Santa Barbara, Calif., assignor to Optical Concepts, Inc., Lompoc, Calif.

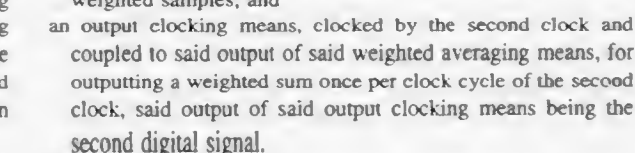
Filed Apr. 12, 1995, Ser. No. 422,486

Int. Cl.⁶ H01S 3/19; 3/094

U.S. Cl. 372-96

22 Claims

1. An optical device, comprising: a first vertical cavity surface emitting laser (VCSEL), said first VCSEL having a long wavelength active medium interspersed

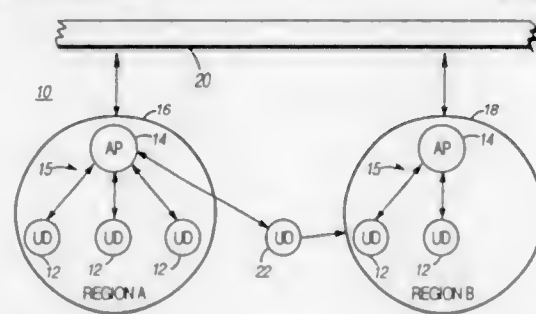


5,513,210
METHOD FOR CONTROLLING CHANNEL ACCESS
PRIORITIES IN A FREQUENCY HOPPING LOCAL AREA
NETWORK

Frederick W. Vook, Schaumburg; William K. Doss, Lake In The Hills, and Mark G. Demange, Schaumburg, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Dec. 5, 1994, Ser. No. 349,654
Int. Cl.⁶ H04B 1/713

U.S. Cl. 375—202

8 Claims



1. In a frequency hopping communication system having a plurality of communication devices in communication with each other where data is transmitted in a channel selected from a group of frequencies, the selected frequencies defining a hopping set, transmissions occurring within a predetermined period of time defining a dwell, where an attempted access of the channel occurs based on assigning one of at least a first and a second probability of transmission value to the communication device, a method for prioritizing the data transmissions, the steps comprising:

- defining a predetermined number of time slots at termination of a data transmission, each time slot having a predetermined duration during which time fragmented data may be transmitted, where each slot has an associated data type;
- the communication device accessing the channel and transmitting the fragmented data when the data type of the fragmented data corresponds to the data type of the slot;
- assigning the second probability of transmission value to the communication device when the step of accessing the channel succeeds;
- reassigning the first probability of transmission value to the communication device when the transmission of the fragmented data is complete; and
- iteratively repeating step (c) through step (d) where communication devices assigned the second probability of transmission value retain the second probability of transmission value between dwells until the transmission of the fragmented data is complete.

5,513,211
RADIO COMMUNICATION SYSTEM WITH
CONTROLLED VOICE CODE SWITCHING

Masami Yabusaki; Kouji Yamamoto, both of Saltama, and Shinji Uebayashi, Kanagawa, all of Japan, assignors to Nippon Telegraph and Telephone Corp. and NTT Mobile Communications Network Inc., both of Tokyo, Japan

Continuation of Ser. No. 849,197, Mar. 11, 1992, abandoned.

This application May 25, 1994, Ser. No. 249,077

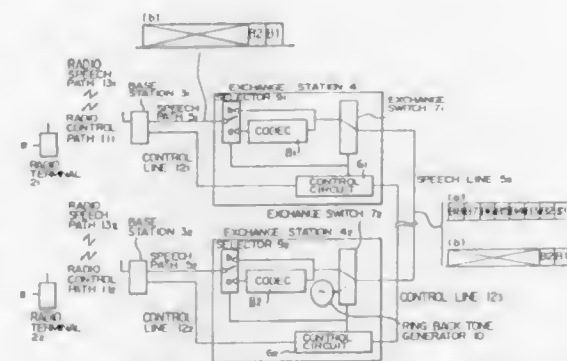
Claims priority, application Japan, Sep. 2, 1991, 3-246430

Int. Cl.⁶ H04B 1/38; H04L 5/16

U.S. Cl. 375—219

3 Claims

1. A radio communication system comprising:
- a plurality of radio terminals which operate with a first voice coding system,
 - a network coupled with said plurality of radio terminals through a plurality of radio links, said network having a plurality of base stations for coupling the network with said plurality of radio terminals through said plurality of radio links, a plurality of exchange stations, each having an exchange switch coupled with a corresponding base station of said plurality of



base stations and also with fixed terminals of a fixed network operating with a second voice coding system, for exchanging calls between terminals, and a plurality of codecs coupled between said plurality of base stations and said fixed network for converting voice coding systems between said first voice coding system and said second voice coding system, each of said voice coding systems having voice carrying lines that carry voice signals represented by a plurality of voice-representative digital bits.

said network including a plurality of selectors for switching respective codecs between a codec release mode and a codec mode, a plurality of control circuits for controlling the switching by said selectors, and a control line, separate from voice carrying lines of said voice coding systems, coupled between said control circuits in different exchange stations for control of said control circuits during operation on said voice carrying lines, such that said selectors are operative to select a codec release mode when a radio terminal communicates with another radio terminal through said network, and to select a codec mode for conversion between said first voice coding system and said second voice coding system when a radio terminal communicates with a fixed terminal/such that none of the digital bits on the voice carrying lines is used for switching between codec release mode and codec mode, and the digital bit resolution on said voice carrying lines is retained without deterioration by the switching.

5,513,212
CONVERSION OF A FAX MODULATION TO A DATA
MODULATION

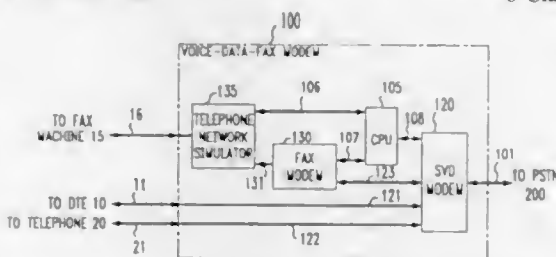
Gordon Bremer, Clearwater, Fla., assignor to AT&T Corp., Murray Hill, N.J.

Filed Nov. 15, 1993, Ser. No. 151,689

Int. Cl.⁶ H04L 25/00; 27/00; H04N 1/00; H04M 11/00

U.S. Cl. 375—222

8 Claims



1. A method for use in data communications equipment, the method comprising the steps of:
- answering a telephone call;
 - detecting a first identification signal that identifies a far-end modem as providing fax information within a simultaneous voice and data signal;
 - sending a second identification signal that identifies the data communications equipment as compatible with the far-end modem;
 - switching to a fax mode of operation;
 - receiving the simultaneous voice and data signal;

demodulating the data portion of the simultaneous voice and data signal to provide a data signal;

demodulating the voice portion of the simultaneous voice and data signal to provide a voice signal;

modulating the data signal to provide a fax modulation signal; and

transmitting the fax modulation signal.

5,513,213
DATA-DRIVEN AUTORATING FOR USE IN DATA
COMMUNICATIONS

Mahendra Patel, Brandon, and Robert E. Scott, Indian Rocks Beach, both of Fla., assignors to AT&T Corp., Murray Hill, N.J.

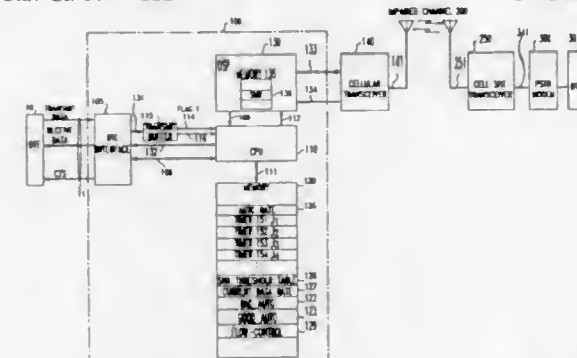
Continuation of Ser. No. 131,343, Oct. 4, 1993, abandoned.

This application Mar. 27, 1995, Ser. No. 410,597

Int. Cl.⁶ H04B 1/38; 7/00

U.S. Cl. 375—222

12 Claims



1. An autorating method for use in a modem, the method comprising the steps of:

receiving data from a data terminal equipment for transmission to a far-end modem over a first time interval;

communicating the data over a full-duplex cellular communications channel to the far-end modem at a transmission data rate selected from a range of data rates, where the range has a lowest data rate and a highest data rate;

switching the transmission data rate to a low-speed data rate as a function of the amount of received data over the first time interval; and

further adapting the transmission data rate to the quality of the full-duplex communications channel;

wherein the adapting step is prohibited from increasing the transmission data rate beyond a first value as a function of the amount of received data over the first time interval, and where the first value is less than the highest data rate and greater than or equal to the low-speed data rate.

5,513,214
SYSTEM AND METHOD OF ESTIMATING EQUALIZER
PERFORMANCE IN THE PRESENCE OF CHANNEL
MISMATCH

Francesco Gozzo, Endicott, N.Y., assignor to Loral Federal Systems Company, McLean, Va.

Continuation of Ser. No. 281,547, Jul. 27, 1994, abandoned,

which is a continuation of Ser. No. 846,651, Mar. 5, 1992,

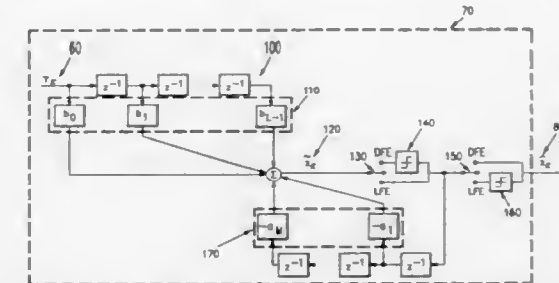
abandoned. This application Jul. 27, 1995, Ser. No. 514,356

Int. Cl.⁶ H03H 7/30; 7/40

U.S. Cl. 375—232

23 Claims

23. A receiving system for use with an adaptive receiver for providing a mean square error value of a performance of the receiver, the receiver for providing an output signal x_k , 80 which is an estimate of a transmitted information sequence x_k , 10, in response to an input signal r_k , 60 received from a discrete-time equivalent channel which has a linear channel filter 20 having channel filter coefficients being coupled to the transmitted informa-



tion sequence x_k and additive noise 40, the channel filter coefficients defined by $H(e^{j\omega})$ during training of the receiver and by $H(e^{j\omega})$ during receiver decoding, the additive noise defined by $N(e^{j\omega})$ during the training of the receiver and by $N(e^{j\omega})$ during the receiver decoding, the MSE defined by

$$\frac{1}{2\pi} \int_{-\pi}^{\pi} \frac{N(e^{j\omega})}{|H(e^{j\omega})|^2 + N(e^{j\omega})} + \frac{[|H(e^{j\omega})|^2 + N(e^{j\omega})] H(e^{j\omega}) - [|H(e^{j\omega})|^2 + N(e^{j\omega})] H(e^{j\omega})^2}{\{[H(e^{j\omega})|^2 + N(e^{j\omega})] [H(e^{j\omega})|^2 + N(e^{j\omega})]\}} d\omega.$$

5,513,215
HIGH SPEED SIMULCAST DATA SYSTEM USING
ADAPTIVE COMPENSATION

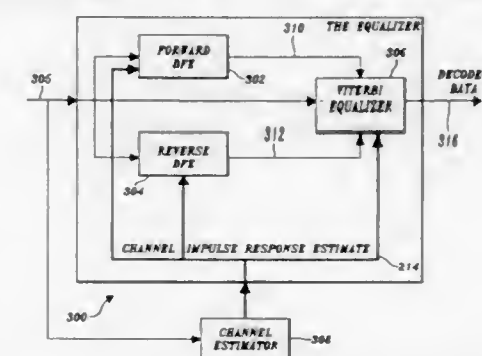
Robert F. Marchetto, Burnaby; Todd A. Stewart, West Vancouver, and Paul K. Ho, Surrey, all of Canada, assignors to Glenayre Electronics, Inc., Charlotte, N.C.

Filed Sep. 20, 1993, Ser. No. 124,155

Int. Cl.⁶ H03H 7/30; H04B 1/00

U.S. Cl. 375—233

15 Claims



1. Apparatus for use in a radio receiver to process a demodulated signal, to recover data that was transmitted, comprising:

(a) a first stage equalizer that has an input coupled to the demodulated signal and two outputs, said first stage equalizer including a first decision feedback equalizer for processing the demodulated signal to produce a first equalized output signal by sequentially processing said demodulated signal in a forward direction relative to the time of signal reception by said receiver, said first stage equalizer further including a second decision feedback equalizer for processing the demodulated signal to produce a second equalized output signal by sequentially processing said demodulated signal in a reverse direction relative to said time of signal reception by said receiver equalized output signals, with one of the two outputs of said first stage equalizer providing the forward equalized output signal and the other of said outputs providing the reverse equalized output signal;

(b) a channel estimator that has an input coupled to receive the demodulated signal and an output that provides a channel impulse response estimate determined as a function of symbols comprising the demodulated signal, said channel estima-

determining two main gains of two variable amplifiers on the basis of a ratio of two output levels of the two preliminary amplifiers; and
combining two output signals from the two variable amplifiers into the combined signal.

5,513,223

FIR DIGITAL FILTER AND METHOD FOR SIGNAL PROCESSING THEREOF

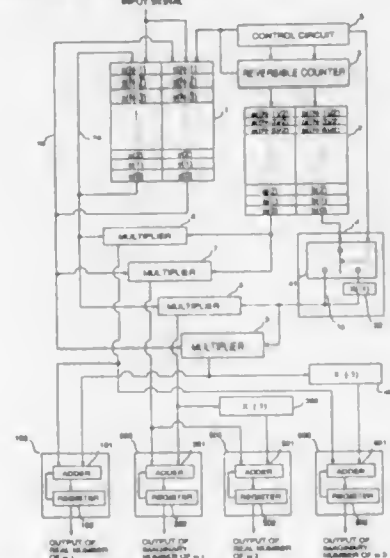
Takashi Shoji, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Nov. 10, 1994, Ser. No. 338,851

Claims priority, application Japan, Nov. 16, 1993, 5-286308
Int. Cl.⁶ H03H 17/02; 17/06

U.S. Cl. 375—350

12 Claims



1. A Finite Impulse Response (FIR) digital filter of which an impulse response $S(t)$ meets an equation, $S(t)=H(t)\exp(j\omega t)$, where $H(t)$ represents roll off characteristics and ω is an arbitrary frequency, said FIR digital filter comprising:

- a data storing means for delay-storing real number data and imaginary number data of a plurality of binary complex input data;
- a coefficient storing means for storing real number coefficients and imaginary number coefficients of said FIR digital filter corresponding to $s(0), s(1), \dots, s((N-1)/2)$ when N is an odd number, and storing real number coefficients and imaginary number coefficients of said FIR digital filter corresponding to $s(0), s(1), \dots, s(N/2-1)$ when N is an even number, where $s(0)$ to $s(N-1)$ represent an impulse response string;
- a reversible counting and reading out means for reading said real number coefficients and imaginary number coefficients stored in said coefficient storing means in order of $s(0), s(1), \dots, s((N-1)/2)$ at first order and $s((N-3)/2), \dots, s(1), s(0)$ next at second order when N is the odd number, or reading said real number coefficients and imaginary number coefficients stored in said coefficient storing means in order of $s(0), s(1), \dots, s(N/2-1)$ at first order and $s(N/2-1), \dots, s(1), s(0)$ next at second order when N is the even number;
- a sign control means for reversing a sign of the imaginary number coefficients which were read out at said second order from said coefficient storing means;
- calculating means for calculating sums of products of said real number data and said imaginary number data output from said data storing means and real number coefficients and imaginary number coefficients output from said coefficient storing means and said sign control means; and

control means for controlling said data storing means, said reversible counting and reading out means and said sign control means.

5,513,224

FILL LEVEL INDICATOR FOR SELF-TIMED FIFO

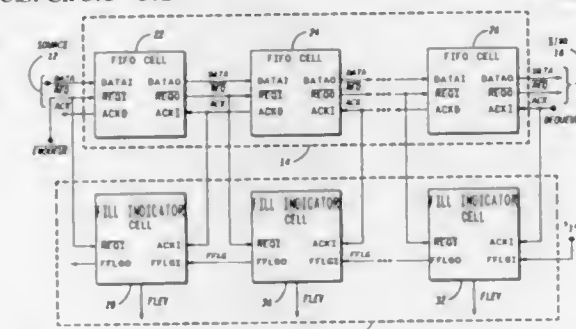
Craig S. Holt, Cohasset, Mass., assignor to Codex, Corp., Mansfield, Mass.

Filed Sep. 16, 1993, Ser. No. 122,740

Int. Cl.⁶ H04L 7/00; G11C 13/00

U.S. Cl. 375—372

9 Claims



1. A circuit, comprising:

first means for shifting data received at an input along a string of serially coupled data storage cells to an output where each of said data storage cells provides a request control signal indicating a request for data transfer to a first adjacent cell and an acknowledge control signal acknowledging data transfer from a second adjacent cell; and

second means coupled for receiving said request and acknowledge control signals and determining fill status of said data storage cells in a predetermined manner and providing a fill level signal accordingly, said second means includes a string of serially coupled fill indicator cells where a first fill indicator cell receives a full flag input signal from a second fill indicator cell adjacent to said first fill indicator cell, said first fill indicator cell including:

- (a) a first NAND gate having first, second and third inputs and an output, said first input receiving a first state signal of said first fill indicator cell, said second input receiving said full flag input signal, said third input receiving said request control signal,
- (b) a second NAND gate having first and second inputs and an output, said first input receiving a second state signal of said first fill indicator cell, said second input receiving an inverted request control signal,
- (c) a third NAND gate having first and second inputs and an output, said first input receiving said second state signal of said first fill indicator cell, said second input receiving said acknowledge control signal,
- (d) a fourth NAND gate having first and second inputs and an output, said first input receiving said first state signal of said first fill indicator cell, said second input receiving said second state signal of said first fill indicator cell, said output providing a second full flag output signal, and
- (e) a fifth NAND gate having first, second, third and fourth inputs and an output, said first input being coupled to said output of said first NAND gate, said second input being coupled to said output of said second NAND gate, said third input being coupled to said output of said third NAND gate, said fourth input being coupled to said output of said fourth NAND gate, said output providing said fill level signal and said second state signal of said first fill indicator cell.

5,513,225

RESISTORLESS PHASE LOCKED LOOP CIRCUIT EMPLOYING DIRECT CURRENT INJECTION

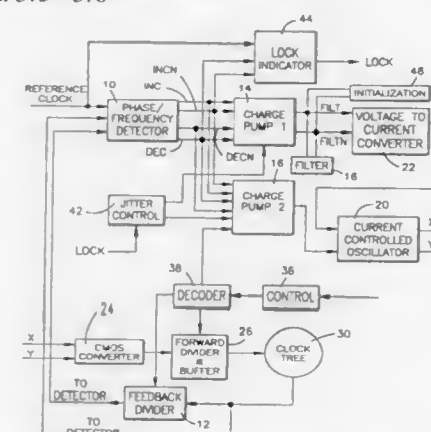
Ram Kelkar, South Burlington; Ilya I. Novof, Essex Junction, both of Vt.; Donald E. Strayer, Owego, N.Y., and Stephen D. Wyatt, Jericho, Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 31, 1994, Ser. No. 298,632

Int. Cl.⁶ H03D 3/24

U.S. Cl. 375—376

5 Claims



1. In a phase locked loop circuit including a phase/frequency detector which receives a reference clock signal and the phase locked loop circuit output signal as inputs thereto, and which phase/frequency detector outputs increment and decrement pulses having widths responsive to a phase difference between the reference clock signal and the phase locked loop circuit output signal, a voltage to current converter, a loop filter capacitor connected to the input of the voltage to current converter, a current controlled oscillator, the input of which is connected to the output of the voltage to current converter; a charge pump structure comprising:

- first and second charge pumps, the input of each being connected to the output of said phase/frequency detector to receive the increment and decrement pulses, each of the first and second charge pumps being configured to output a charging/discharging pulse which is proportional to the difference between the widths of said increment and decrement pulses;
- a) said first charge pump being connected to output said charging/discharging pulse to the loop filter capacitor;
- b) said second charge pump being connected to output said charging/discharging pulse to the input of the current controlled oscillator.

5,513,226

DESTRUCTION OF PLUTONIUM

Alan M. Baxter, San Diego, and Richard K. Lane, Encinitas, both of Calif., assignors to General Atomics, San Diego, Calif.

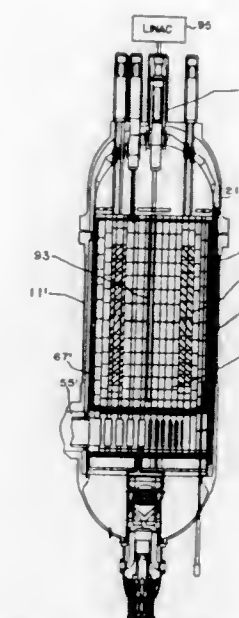
Filed May 23, 1994, Ser. No. 248,319

Int. Cl.⁶ G21C 1/30; 1/12; G21G 1/08

U.S. Cl. 376—170

19 Claims

1. A method for using plutonium in a manner so as to render it no longer suitable for employment in a device to create a nuclear detonation, which method comprises



forming spheroids of a size less than about 1 mm with plutonium in ceramic form,

coating said plutonium-containing spheroids with multiple-layer fission-product retentive coatings that will retain therewithin substantially all fission products created as a result of the fissioning of the fissile plutonium nuclides in said plutonium, disposing said coated spheroids in a sufficient number of graphite block fuel elements of similar shape and employing said fuel elements to provide a nuclear reactor core for a helium-cooled high temperature power-generation reactor,

operating said reactor to heat a circulating stream of helium by the fissioning of said fissile plutonium nuclides by neutrons primarily in the thermal range in said core and using said heated stream of helium to generate electric power until at least some of said graphite fuel elements are considered to be spent as a result of the decrease in the amount of fissile nuclides therein,

halting operation of said reactor to remove said spent graphite block fuel elements from said core and to refuel said core with fresh fuel elements,

locating said removed spent graphite block-fuel elements in an annular region to form a subcritical core region within a helium-cooled reactor vessel, which core is designed for operation with a supplementary neutron flux,

operating a linear proton accelerator to supply a stream of protons to a central location in said subcritical core region so as to create a fast neutron flux comprising at least about 6×10^{18} neutrons/sec having an energy level above about 1 Mev,

causing said fast neutrons to be moderated to have a typical reactor thermal neutron flux peak of about 0.1 ev to promote fissioning of fissile nuclides in said spent graphite block fuel elements,

withdrawing heat from the fissioning of nuclides in said subcritical core by circulating helium therethrough and using said heated helium to generate electrical power until at least about 80% of the original Pu-239 and Pu-240 nuclides have fissioned or been transmuted to higher isotopes,

withdrawing said graphite block fuel elements from said subcritical reactor core, and

storing said withdrawn graphite block fuel elements in long-term storage without the need for further processing because said plutonium nuclides are now of such an overall isotopic composition that said remaining plutonium is no longer suitable for employment in a device for creating a nuclear detonation.

5,513,227

READILY DISCONNECTABLE NOZZLE ARRANGEMENT FOR USE WITH A NUCLEAR REACTOR

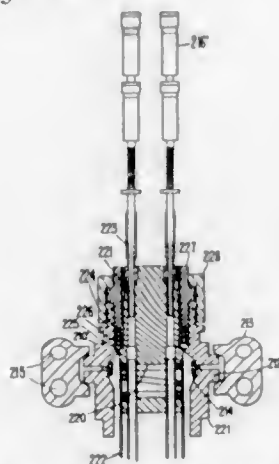
Kenneth V. Margotta, Ellington; Russell R. Radant, Central Village; Douglas S. Porter, Simsbury, all of Conn., and Mark W. Yorns, Chicopee, Mass., assignors to Combustion Engineering Inc., Windsor, Conn.

Continuation-in-part of Ser. No. 999,408, Dec. 31, 1992, Pat. No. 5,323,428. This application Jun. 21, 1994, Ser. No. 263,196

Int. Cl.⁶ G21C 13/00

U.S. Cl. 376—203

25 Claims



8. In a nuclear reactor including an in-core instrument, a head which is lifted when the reactor is refuelled, and a nozzle through which the in-core instrument is disposed, a nozzle arrangement comprising:

- a flange formed about an upper portion of said nozzle;
- a hub releasably connected to said flange;
- a plug member having a bore through which said in-core instrument is disposed;
- a stepped bore formed in said hub through which said plug member is disposed;
- seal means disposed in said stepped bore about said plug member for creating a seal between said plug member and said hub;
- a compression collar disposed about said plug member, said compression collar having a first end for engaging and pressing said seal means into sealing relationship with said hub and said plug member, a second end opposite said first end, and an abutment flange intermediate said first and second ends; and
- a retaining nut threadedly received on said hub and engaging said abutment flange on said compression collar to retain said collar in pressing engagement with said seal means.

5,513,228

CLAMP FOR TWO TUBULAR COMPONENTS, HAVING A SAFETY BLOCKING DEVICE, AND USE OF SUCH CLAMP

Jacques Malmasson, Evry, France, assignor to Framatome, Courbevoie, France

Filed Sep. 26, 1994, Ser. No. 311,868

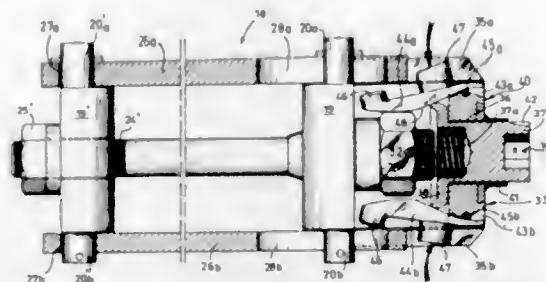
Claims priority, application France, Sep. 28, 1993, 93 11519

Int. Cl.⁶ G21C 13/00

U.S. Cl. 376—203

7 Claims

1. Clamp for leaktight connection of two tubular components, including at least two elements having a part in the form of a portion of a ring, which are articulated to each other around a pin parallel to the axis of the ring portions, and having an internal surface for bearing on two bearing surfaces of the tubular elements for clamping them in the axial direction with the interposition of a seal and a clamping and locking device including a screw arranged transversely to the articulated elements and engaged through two bearing blocks, each of said bearing blocks including a part for bearing on a recess of one of the articulated elements and a guide



journal on each side of the bearing part, which are engaged and held in a pair of openings arranged opposite each other and passing through two mutually parallel guide bars, arranged on either side of the junction parts of the articulated elements including the recesses and two nuts engaged on the screw each abutting on one bearing block, the openings of one pair of openings of the guide bars having a circular shape and the other openings having an oblong shape which is elongated along the direction of the screw, said clamp further comprising a blocking device consisting of:

- (a) a support traversed by an opening and including parts for engagement on the bars;
- (b) a lock nut rotationally mounted in the opening of the support, said lock nut having a tapped opening for screwing on one end of the screw which is situated on the oblong opening side, and a part for bearing on the nut engaged on said one end of the screw;
- (c) means for blocking the lock nut against rotation and axial translation with respect to the support; and
- (d) at least one blocking finger including a locking stud and a button mounted so as to pivot on the support about an axis perpendicular to the axis of the screw between a blocking position in which the locking stud is engaged in an end part of one oblong opening, and an open position, the lock nut including a bearing part for holding the blocking finger in the blocking position.

5,513,229

METHOD FOR REMOVING CONTROL ROD DRIVE USING TOOL TO VERIFY CONTROL ROD DRIVE UNCOUPLING

Daniel E. Willems, St. Marys, Ga., assignor to General Electric Company, San Jose, Calif.

Filed Nov. 12, 1993, Ser. No. 150,309

Int. Cl.⁶ G21C 19/00

U.S. Cl. 376—260

7 Claims

1. A method for removing a control rod drive from a control rod drive housing in a nuclear reactor from a position below a reactor pressure vessel, said control rod drive comprising a position indicator probe installable along a centerline axis of and removable from said control rod drive, comprising the steps of:

- uncoupling a control rod from said control rod drive while said position indicator probe is in place inside said control rod drive and electrically connected to a control room of the reactor;
- verifying in the control room that said control rod is uncoupled from said control rod drive from electrical signals received from said position indicator probe;
- electrically disconnecting said position indicator probe from said control room;
- electrically connecting an indicating tool to said position indicator probe;
- supporting said control rod drive from below using a mechanical support without removing said position indicator probe;
- removing a plurality of mounting bolts to mechanically disconnect said control rod drive from said control rod drive housing;
- lowering said mechanical support to slide said control rod drive out of said control rod drive housing; and
- verifying that said control rod is uncoupled from said control rod drive from electrical signals received by said indicating tool

5,513,231

SKID FOR TRANSPORTING A NUCLEAR FUEL TRANSPORTATION CASK

Kyle B. Jones, San Jose; Robert A. Lehnert, Milpitas; Ian D. McInnes, San Jose; Robert D. Quinn, Morgan Hill; Steven E. Sisley, Fremont, all of Calif., and Charles J. Temus, Puyallup, Wash., assignors to Pacific Nuclear Systems, Inc., Federal Way, Wash.

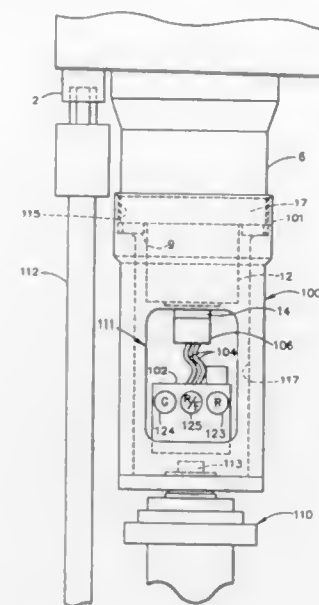
Division of Ser. No. 131,973, Oct. 8, 1993, Pat. No. 5,406,600.

This application Apr. 10, 1995, Ser. No. 419,722

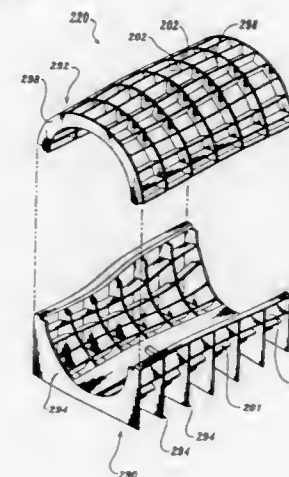
Int. Cl.⁶ G21C 19/06

U.S. Cl. 376—261

3 Claims



from said position indicator probe while said control rod drive is sliding out of said control rod drive housing.



1. A skid for transporting a nuclear fuel transportation cask that includes a neutron radiation shielding material reinforced with elongate members, the skid comprising:

- a supporting member that includes a plurality of parallel spaced-apart plates aligned perpendicular to a longitudinal axis of the cask, said parallel spaced-apart plates including a semi-circular trough for mating with the transportation cask, the parallel spaced-apart plates of the supporting member being connected by a plurality of longitudinal fins parallel to the longitudinal axis of the cask; and
- a retaining member that includes a plurality of spaced-apart plates aligned perpendicular to a longitudinal axis of the cask, the parallel spaced-apart plates including a trough for mating with the transportation cask, the parallel spaced-apart plates of the retaining member being connected by a plurality of longitudinal fins parallel to the longitudinal axis of the cask, the longitudinal fins of the supporting member being spaced apart a distance such that when the cask rests in the trough of the supporting member, the fins of the supporting member are aligned with the elongate members that reinforce the neutron radiation shielding material to transfer the load between the transportation cask and the skid.

5,513,230

FUEL ROD FOR A NUCLEAR REACTOR AND WELDING APPARATUS FOR PRODUCING THE FUEL ROD

Gerd-Dieter Crede, Kleinostheim, and Rainer Schleich, Hanau, both of, Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

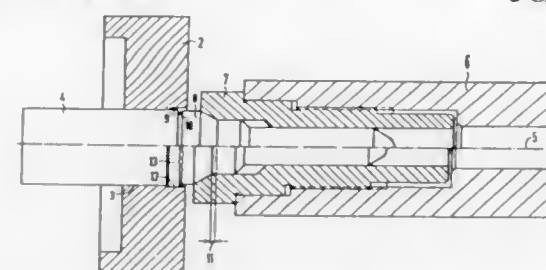
Division of Ser. No. 120,124, Sep. 10, 1993. This application Dec. 9, 1994, Ser. No. 353,659

Claims priority, application European Pat. Off., Sep. 14, 1992, 92115717

Int. Cl.⁶ G21C 19/00

U.S. Cl. 376—261

2 Claims



1. A welding apparatus for producing a fuel rod, comprising:

- an electrode having a through bore formed therein for receiving one end of a cladding tube; and
 - a counter electrode being displaceable relative to said electrode for holding a seal plug to be welded the one end of said cladding tube;
- said electrode having a cylindrical step formed therein at an end of said through bore facing toward said counter electrode, said cylindrical step having a diameter being greater than the diameter of said through bore.

5,513,232

TRANSPORTATION AND STORAGE CASK FOR SPENT NUCLEAR FUELS

Kyle B. Jones, San Jose; Robert A. Lehnert, Milpitas; Ian D. McInnes, San Jose; Robert D. Quinn, Morgan Hill; Steven E. Sisley, Fremont, all of Calif., and Charles J. Temus, Puyallup, Wash., assignors to Pacific Nuclear Systems, Inc., Federal Way, Wash.

Division of Ser. No. 131,973, Oct. 8, 1993, Pat. No. 5,406,600.

This application Apr. 10, 1995, Ser. No. 419,721

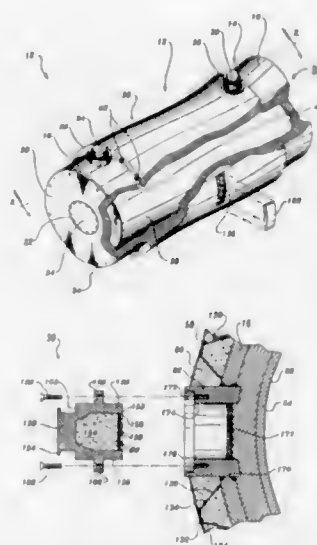
Int. Cl.⁶ G21F 5/008

U.S. Cl. 376—272

8 Claims

2. A container for containing and transporting spent nuclear fuel, comprising:

- a structural shell defining a cavity for receiving spent nuclear fuel and first and second end apertures;
- a first closure securable to the shell to seal the first end aperture;



a second closure securable to the shell to seal the second end aperture;

a radiation absorbing shield layer affixed to the shell; first and second trunnion mounting structures secured in opposing disposition to an exterior surface of the shell; and first and second trunnions, each defining a base and a bearing surface, the base of each trunnion being securable to a corresponding one of the trunnion mounting structures, whereby the bearing surfaces of the trunnions can be grasped to hoist the container, wherein the first and second trunnion mounting structures each comprise an annular sleeve welded to the shell, the base of each of the first and second trunnions having a cylindrical configuration and being receivable within the corresponding sleeve, and wherein each trunnion defines an annular flange formed between the base and the bearing surface, a plurality of apertures being formed through the flange, further comprising a plurality of bolts insertable through the apertures in the flange and engageable with corresponding threaded passages formed in the corresponding sleeve, whereby the engagement of the base of the trunnion in the sleeve serves to isolate the bolts from a portion of shear and tensile loads imposed during hoisting of the container.

5,513,233

NUCLEAR REACTOR

Masataka Hidaka; Shinichi Kashiwai; Yoshinori Salto, all of Hitachi, and Terufumi Kawasaki, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 7, 1994, Ser. No. 272,117

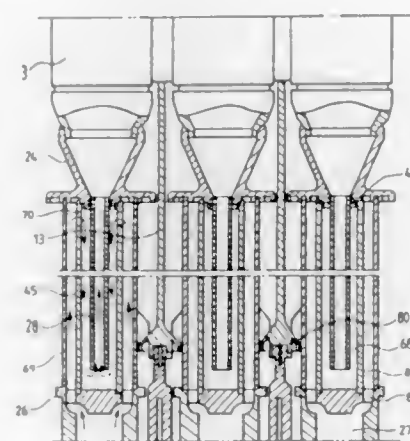
Claims priority, application Japan, Jul. 8, 1993, 5-168837
Int. Cl. G21C 15/00; 3/32

U.S. Cl. 376—352

14 Claims

7. A boiling water nuclear reactor in which coolant is supplied to fuel assemblies in a pressure vessel from a lower plenum below the fuel assembly comprising:

means for improving flow stability of a two-phase flow of said coolant in said fuel assemblies of said boiling water nuclear reactor by providing an increased path length of said coolant flow, said flow stability means including a first passage connected to a coolant entrance of said lower plenum for effecting upward flow of said coolant, a second passage connected to said first passage for effecting downward flow of said coolant from said first passage and a third passage for effecting upward flow of the coolant from said second passage, whereby the coolant is supplied to said fuel assemblies and enabling flow stability of the two-phase flow of said coolant in said fuel assemblies.



5,513,234

STRUCTURAL MEMBER FOR NUCLEAR REACTOR PRESSURE TUBES

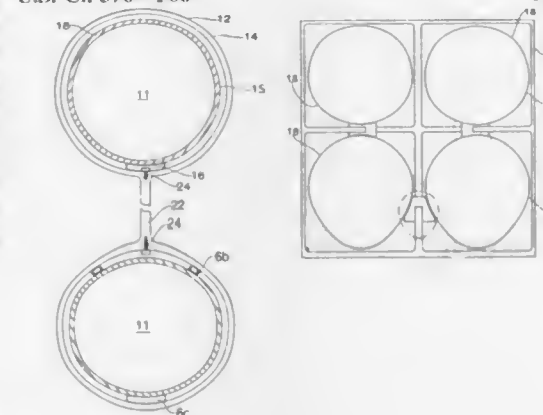
Sigmund Rottenberg, 11 Riverside Dr., Suite 6KW, New York, N.Y. 60046

Filed Jul. 18, 1994, Ser. No. 276,428

Int. Cl. G21C 15/00

U.S. Cl. 376—366

19 Claims



1. An apparatus for supporting multiple transversely disposed nuclear reactor fuel channel pressure tubes, comprising:

- a first tube shaped portion having a length;
- a second tube shaped portion having a length;
- a web connecting said first tube shaped portion to said second tube shaped portion; and
- a plurality of support pads disposed internally to said first tube shaped portion and said second tube shaped portion, said plurality of support pads extending said length of said first tube shaped portion and said length of said second tube shaped portion, said plurality of support pads forming an air space between each fuel channel pressure tube and said first tube shaped portion and said second tube shaped portion, said first tube shaped portion and said second tube shaped portion, said first tube shaped portion and said second tube shaped portion defining and functioning as an outer calandria tube for said each fuel pressure tube so that said each fuel channel pressure tube is protected against sags caused by gravity and ultimate cracks and said air space providing conduits for coolant.

5,513,235

INTEGRATED CIRCUIT THERMOMETER

James M. Douglass, Dallas County; Gary V. Zanders, Dallas, and Robert D. Lee, Denton, all of Tex., assignors to Dallas Semiconductor Corporation, Dallas, Tex.

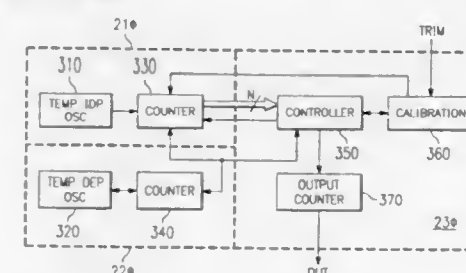
Division of Ser. No. 13,883, Feb. 5, 1993, Pat. No. 5,388,134.

This application Oct. 24, 1994, Ser. No. 327,736

Int. Cl. G01K 7/32

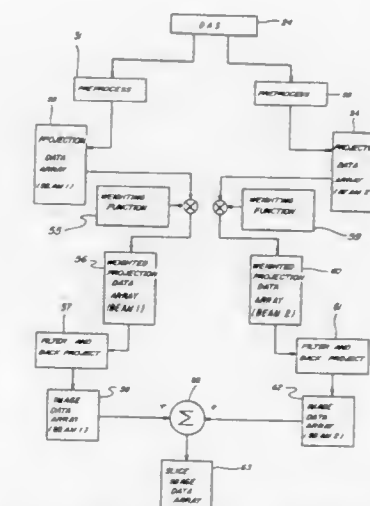
U.S. Cl. 377—25

13 Claims



1. A temperature detector, comprising:

- a temperature-to-time first converter, said temperature-to-time first converter outputting a time interval with length depending upon an input temperature;
- a time-to-number second converter, said time-to-number second converter with input coupled to receive said time interval outputted by said temperature-to-time first converter, said time-to-number second converter approximates a number version of said input temperature by fitting a linear model to said time interval and outputs said number version of said input temperature;
- said temperature-to-time first converter including a first oscillator with a temperature dependent period coupled to a first counter for providing a temperature dependent time interval, said time interval for said first counter determined by the number of oscillations counted for a predetermined count; and
- said time-to-number second converter including a second oscillator coupled to a time-to-number second counter, with said time-to-number second counter in response to said second oscillator input producing a digital number during said time interval of said first counter.



(a) create projection data arrays corresponding to the data obtained from each of the x-ray fan beams;

(b) apply a weighting function to each of the projection data arrays generated in step (a) to generate respective weighted projection data arrays, the weighting function applied being:

- if the table feeding speed s and detector z spacing, d , satisfy the relation $d < s < (2\pi/(\pi+2\gamma_m))d$, the helical weighting factors to be applied for each data set, denoted as $W1(\beta, \gamma)$ and $W2(\beta, \gamma)$, are:

$$W1(\beta, \gamma) = \begin{cases} 0 & \beta \leq \beta_{2-2x} \\ \frac{\beta - \beta_{2-2x}}{\beta_1 - \beta_{2-2x}} & \beta_{2-2x} < \beta \leq \beta_1 \\ \frac{\beta - \beta_1}{\beta_1 - \beta_2} & \beta_1 < \beta < \beta_2 \\ 0 & \beta \geq \beta_2 \end{cases}$$

$$W2(\beta, \gamma) = \begin{cases} 0 & \beta \leq \beta_1 \\ \frac{\beta - \beta_1}{\beta_2 - \beta_1} & \beta_1 < \beta < \beta_2 \\ \frac{\beta - \beta_1 + 2x}{\beta_2 - \beta_1 + 2x} & \beta_2 \leq \beta < \beta_1 + 2x \\ 0 & \beta \geq \beta_1 + 2x \end{cases}$$

- if the table feeding speed s and detector z spacing, d , satisfy the relation $s > (2\pi/(\pi-2\gamma_m))d$, the helical weighting factors to be applied for each data set, denoted as $W1(\beta, \gamma)$ and $W2(\beta, \gamma)$, are:

$$W1(\beta, \gamma) = \begin{cases} 0 & \beta \leq \beta_2 \\ \frac{\beta - \beta_2}{\beta_1 - \beta_2} & \beta_2 < \beta \leq \beta_1 \\ \frac{\beta - \beta_1}{\beta_1 - \beta_2} & \beta_1 < \beta < \beta_2 \\ 0 & \beta \geq \beta_2 \end{cases}$$

$$W2(\beta, \gamma) = \begin{cases} 0 & \beta \leq \beta_1 \\ \frac{\beta - \beta_1}{\beta_2 - \beta_1} & \beta_1 < \beta < \beta_2 \\ \frac{\beta - \beta_1}{\beta_2 - \beta_1} & \beta_2 \leq \beta < \beta_1 \\ 0 & \beta \geq \beta_1 \end{cases}$$

- from the projection data arrays generated in step (b), generate image data arrays to be used to construct a slice image.

5,513,236

IMAGE RECONSTRUCTION FOR A CT SYSTEM IMPLEMENTING A DUAL FAN BEAM HELICAL SCAN

Hu Hui, Waukesha, Wis., assignor to General Electric Company, Milwaukee, Wis.

Filed Jan. 23, 1995, Ser. No. 376,829

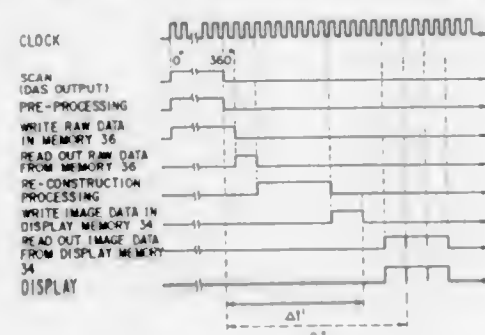
Int. Cl. A61B 6/03

U.S. Cl. 378—15

18 Claims

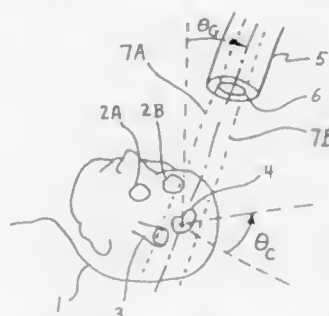
1. A system for producing a tomographic image of an object from projection data acquired in a helical scan, said system generating data from a pair of x-ray fan beams disposed along a z axis, said system comprising a data acquisition system configured to:

8 Claims



1. A computerized tomography apparatus comprising:
data acquisition means for acquiring multidirectional projection data on a subject under examination by means of a scan operation;
image reconstruction means for reconstruction tomography image data from said multi-directional projection data in a period of time less than a time required for said scan operation; and display means for displaying said tomography image data after a lapse of a given period of time from the termination of said scan operation.

I Claim

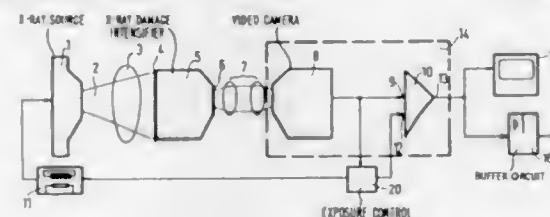


1. A method of automatic dose calculation of radiation dose on a target volume within the body of a patient, including a dose calculation of the radiation dose and an automatic search on said radiation dose, said dose calculation comprising the steps of:

(a) irradiating the patient with a radiation beam of radiation from a radiation delivery apparatus to represent said target volume and the position of other anatomical objects in said body in a computer data base in a computer means, and represent the beam characteristics of the radiation beam of radiation from the radiation delivery apparatus with respect to said target volume and said anatomical objects as a function of the beam phase space of possible approaches of said radiation beam onto said target volume and said anatomical objects;

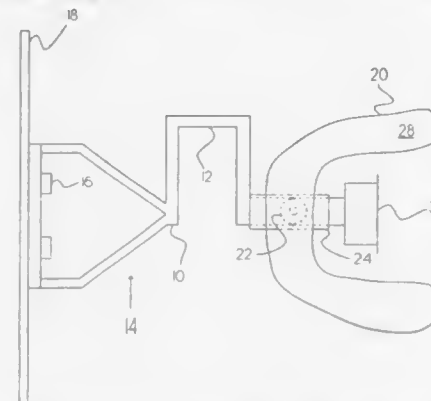
- (b) for each element of said beam phase space, calculating a target geometric involvement factor and an anatomical object geometric involvement factor related to the geometric interception of said radiation beam on said target volume and said anatomical object respectively;
- (c) determining a target acceptance criteria for said target geometric involvement factor and an anatomical object acceptance criteria for said anatomical object which relates to the acceptability of said radiation dose on said target volume and said anatomical objects;
- (d) computer searching by said computer means on said beam phase space so as to automatically determine an acceptable sub-portion of said beam phase space which satisfies said target acceptance criteria and said anatomical object acceptance criteria simultaneously so as to thereby enable automatic optimization of said radiation dose on said target volume within the constraint of said target acceptance criteria and said anatomical object acceptance criteria.

12 Claims



1. An X-ray examination apparatus, comprising an X-ray source for forming an X-ray image by irradiation of an object by means of X-rays, an X-ray image intensifier for converting the X-ray image into an optical image, and an image pick-up device for forming an electronic image signal from the optical image, which image pick-up device comprises an exposure control means for applying a control signal, derived from the electronic image signal, to a control input of an amplifier of the image pick-up device, which exposure control means comprises selection means for selecting at least one measuring field in the optical image, a maximum detector for detecting a maximum level derived from a maximum value of signal amplitudes of the image signal corresponding to at least one measuring field, a minimum detector for detecting a minimum level derived from a minimum value of signal amplitudes of the image signal corresponding to at least one measuring field, and a mean value detector for detecting a mean level derived from a mean value of signal amplitudes of the image signal corresponding to at least one measuring field, characterized in that the exposure control means is also operative to form the control signal with the maximum level when the mean level exceeds a first limit value, with the minimum level when the mean level drops below a second limit value, and with a signal level which varies smoothly between the two limit values as a function of the mean level.

13 Claims



1. An apparatus for providing a replicable projection geometry between an energy source, an intraoral target area, and an image receptor, comprising:

a rigid alignment arm, supporting at one end an alignment ring, and supporting at its opposite end an image receptor, the plane of said alignment ring being perpendicular to said alignment arm and said alignment ring having a planar face;

a biting surface, supported by said alignment arm in a fixed relationship to said image receptor and bearing impressions of a patient's tooth surfaces; and,

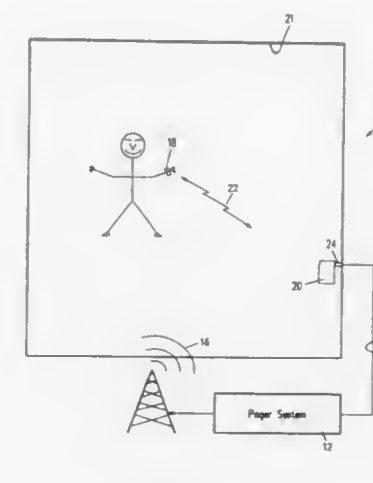
a sensor ring, mountable about an energy beam source and having a planar surface for engaging the planar face of said alignment ring,

whereby flat contact between the planar surfaces of said alignment ring and sensor ring produces a replicable projection geometry between said energy beam source, target area, and image receptor.

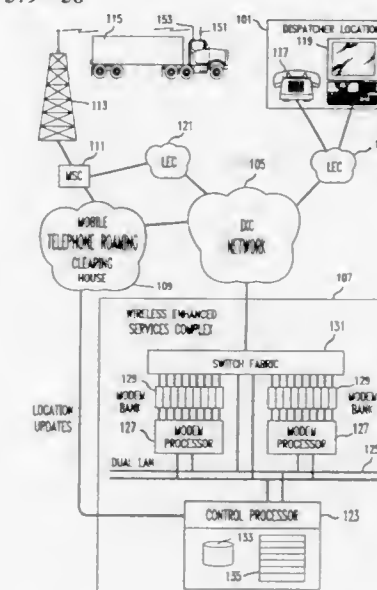
15 Claims

1. An acknowledge-back paging system comprising:

- a paging message broadcast facility providing paging messages by radio signal and coupled to a pre-existing telephone network;
- a remote paging device receiving said paging messages, said paging device further including a wireless transmission device whereby said paging device transmits an acknowledge signal in response to receiving a given paging message;
- a personal acknowledge module responsive to said acknowledge signal and coupled to a selected jack of said pre-existing telephone network whereby upon receiving from said paging device said acknowledge signal said module forwards said acknowledge signal to said broadcast facility by telephone signal.



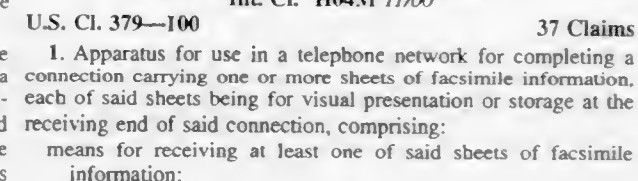
15 Claims

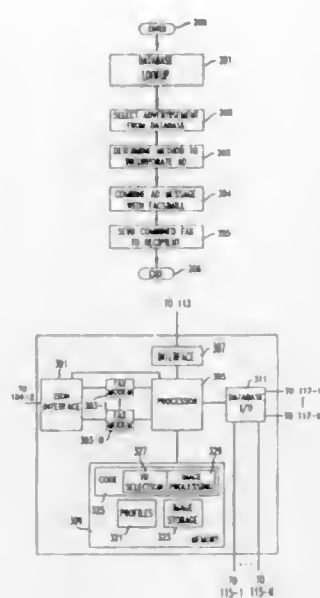


10. A method for use in providing wireless data transmission, comprising the steps of:

- transmitting data to be transmitted to a store and forward unit, attempting to transmit the data from said store and forward unit to a wireless data station;
- marking as unavailable the wireless data station when the store and forward unit can not successfully complete the data transmission;
- waiting for the wireless data station to signal its availability to receive data transmissions after it has been marked as unavailable; and
- transmitting the data from the store and forward unit to the marked data station only after a registration is received from the wireless data station;

control means for determining when said handset unit is within reception range of at least one of the base units, said control means being operable in conjunction with the base units for receiving information data for each handset unit from each of





means for incorporating an advertisement together with information derived from a portion of said at least one of said sheets of facsimile information to form a sheet of combined facsimile information and advertisement; and means for transmitting said combined sheet of facsimile information and advertisement to said receiving end of said connection in lieu of said received one or more sheets of facsimile information.

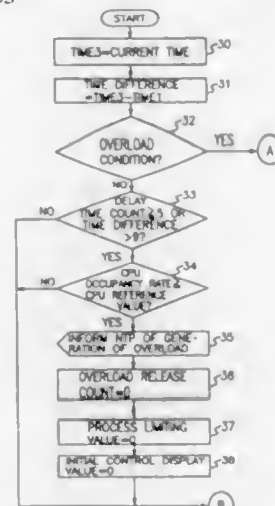
5,513,255
METHOD FOR CONTROLLING OVERLOAD OF DISTRIBUTED PROCESSORS OF FULL ELECTRONIC SWITCHING SYSTEM
 Chan H. Yoo; Byung S. Lee, and Young S. Kim, all of Daejeon, Rep. of Korea, assignors to Electronics and Telecommunications Research Institute, and Korea Telecommunications Authority, both of, Rep. of Korea

Filed Nov. 22, 1994, Ser. No. 343,638

Claims priority, application Rep. of Korea, Dec. 11, 1993, 1993-27368

Int. Cl.⁶ H04M 3/00

U.S. Cl. 379—133



1. A method for controlling an overload of distributed access switching processors in a full electronic switching system in which subscriber and trunk lines are arranged in a distributed manner so that an access of calls and a setting of calls are executed in a distributed manner, comprising the steps of:

- executing a call processing delay monitoring process loaded in an access switching processor in accordance with a priority not higher than a call processing process, but higher than an operation and maintenance process, thereby monitoring an execution condition of the call processing process;
- executing an overload control process in accordance with a priority higher than the call processing process, thereby determining and controlling an overload occurring in the access switching processor; and
- continuously repeating a process for changing a CPU reference value when a demand for a change of the CPU reference value is generated from an operator after the call processing delay monitoring process and the overload control process have started.

5,513,256

KEY TELEPHONE SYSTEM

Isaku Komuro, Kokubunji, Japan, assignor to Kabushiki Kaisha Toshiba, Kanagawa, Japan

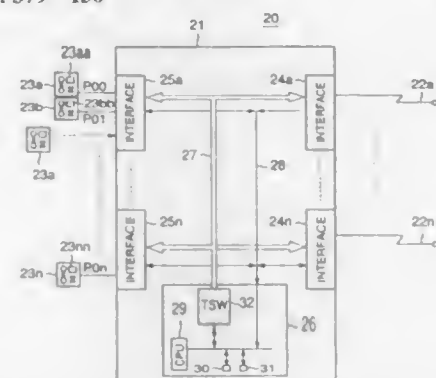
Filed Nov. 17, 1993, Ser. No. 153,465

Claims priority, application Japan, Nov. 18, 1992, 4-308822

Int. Cl.⁶ H04M 1/00

U.S. Cl. 379—156

10 Claims



- A telephone system including a key service unit having a plurality of ports coupled to a plurality of telephone sets, respectively, the key service unit, comprising:

first memory means having a plurality of memory areas, each memory area for storing data for a respective one of the plurality of ports, the data being for controlling the operation of a telephone set connected to the corresponding port;

second memory means for storing the data temporarily; means for recognizing a certain signal transmitted by one of the telephone sets; and

control means, responsive to the recognizing means, for transferring data to the memory area corresponding to the port connected to the one of the telephone sets, from the memory area corresponding to another port through said second memory means, the control means including means for transferring data from said first memory means to said second memory means, in response to a start-signal transmitted by a telephone set, subsequently transferring data stored in a transfer destination memory area of said first memory means to a transfer start memory area of said first memory means, in response to an end signal transmitted by the telephone set, and transferring the data already transferred to said second memory means to the transfer destination memory area of said first memory means.

5,513,257
METHOD FOR CONTROLLING OVERLOAD IN CENTRALIZED AND DISTRIBUTED OPERATING HYBRID SWITCHING SYSTEM

Chan H. Yoo; Byung S. Lee, and Young S. Kim, all of Daejeon, Rep. of Korea, assignors to Electronics and Telecommunications Research, and ABD Korea Telecommunications Authority, both of, Rep. of Korea

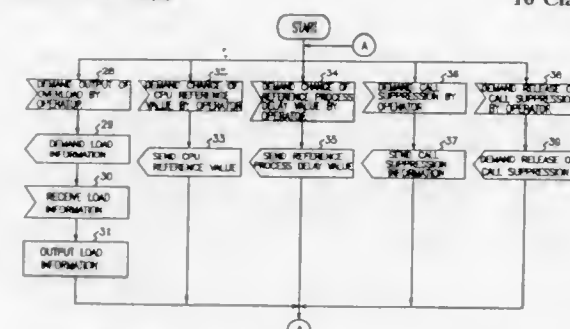
Filed Nov. 22, 1994, Ser. No. 343,649

Claims priority, application Rep. of Korea, Dec. 15, 1993, 1993-27892

Int. Cl.⁶ H04M 3/00

U.S. Cl. 379—220

10 Claims



- A method for controlling an overload in a full electronic switching system including an operation and maintenance processor adapted to record an accounting and to provide an interface with an operator, a number translating processor adapted to perform a number translation, an internal network processor adapted to connect space switches, and a plurality of access switching processors arranged in a distributed manner around the operation and maintenance processor, the number translating processor and the internal network processor, the method comprising the steps of:

(A) executing a control for an overload caused by an operator by use of an originating call approval value, an input trunk call approval value, and a terminating and output trunk call approval value for calls from the operator to be accepted for a first predetermined time period;

(B) detecting an execution delay condition of each of the processors in the order of priorities respectively assigned to the processors and determining a system overload of each processor on the basis of the result of the detection;

(C) detecting a CPU occupancy rate of each processor at intervals of a second predetermined time period, detecting an execution delay condition of a call processing process at intervals of the first predetermined time period, and determining a traffic overload of the processor on the basis of the detected CPU occupancy rate and the detected execution delay condition; and

(D) executing an overload control depending on a kind of overload generated, as one of an operator overload, a system overload and a traffic overload, in a selected one of the access switching processors associated with the generated overload at intervals of the first predetermined time period.

5,513,258
METHOD AND APPARATUS FOR PROCESSING CALL NUMBER INFORMATION FOR A SWITCHING SYSTEM
 Klaus Wille, Munich; Harold Linke, Olching, and Karl-Heinz Hass, Munich, all of, Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed May 18, 1994, Ser. No. 245,588

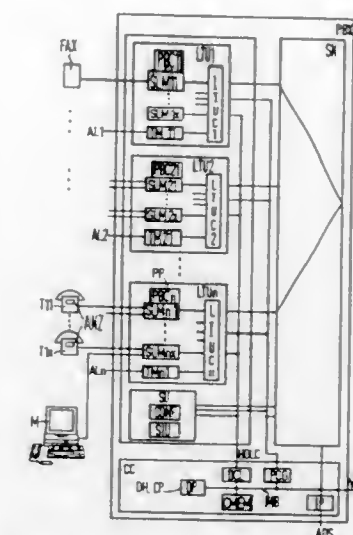
Claims priority, application Germany, May 28, 1993, 43 17 893.6

Int. Cl.⁶ H04M 3/00

U.S. Cl. 379—280

2 Claims

- An apparatus for processing call number information, comprising: a switching system having at least one controller having a control program for controlling switching-oriented procedures



therein, said control program comprising a first program part for processing call number information having a first plurality of call number digit information and a second program part for processing call number information having a second, greater plurality of call number digit information;

means for inputting said second plurality of call number digit information into said switching system, said second greater plurality of call number digit information comprising a first subset and a second subset thereof;

means for transforming said first subset into a transformed call number digit information set;

means for forming a combined set of call number digit information from said transformed call number digit information set and said second subset;

means for processing said combined set of call number digit information by using said first program part of said control program;

means for replacing said transformed call number digit information set with said first subset of said second plurality of call number digit information to produce said original second plurality of call number digit information; and

means for displaying said second plurality of call number information.

5,513,259
RESEALABLE MODULE FOR SUPPORTING ACOUSTIC TRANSDUCER AND PRINTED CIRCUIT COMPONENTS WITHIN RECEIVER END OF CRAFTSPERSON'S TEST SET

Greg J. Pettit, Camarillo, Calif., assignor to Harris Corporation, Melbourne, Fla.

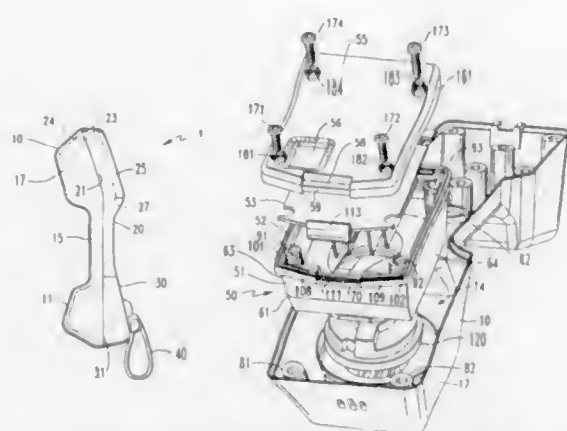
Filed Jul. 6, 1994, Ser. No. 271,295

Int. Cl.⁶ H04M 1/00

U.S. Cl. 379—429

26 Claims

- A test set assembly for housing an acoustic transducer and printed circuit components within a body of a craftsman's test set, said test set assembly comprising a resealable module that is configured to be inserted into an acoustic transducer-containing portion of said body, said resealable module having an acoustic opening adjacent to an acoustic energy coupling portion of said body, and an acoustic transducer-receiving portion adjacent to said acoustic opening, said acoustic transducer-receiving portion being sized to accommodate an acoustic transducer, and a first seal element which is configured and is made of a material which snugly engages said acoustic transducer-receiving portion and said acoustic transducer-containing portion of said test set body, and provides a first seal against the introduction of dust and moisture contaminants into said module when said module is inserted into said acoustic transducer-containing portion of said test set body, a printed circuit board having a printed circuit arranged thereon, and



being supported within said module relative to said acoustic transducer-receiving portion, so as to provide an acoustic chamber within said module adjacent to said acoustic opening thereof, said acoustic chamber providing for acoustic vibration adjacent to said acoustic transducer, a module enclosure top configured to be seated tightly against and close said module, and a second seal element, which is configured and is made of a material that is captured between said module enclosure top and said module and provides a second seal against the introduction of dust and moisture contaminants into said module.

5,513,260

METHOD AND APPARATUS FOR COPY PROTECTION FOR VARIOUS RECORDING MEDIA

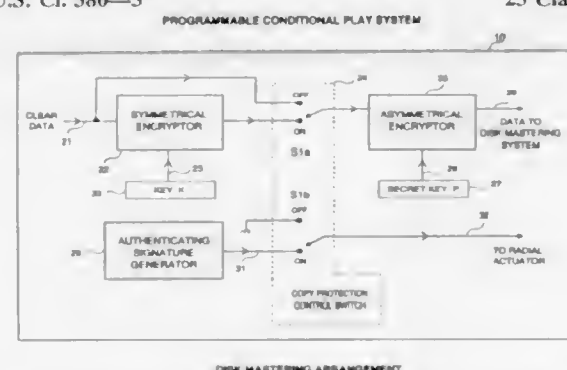
John O. Ryan, Cupertino, Calif., assignor to Macrovision Corporation, Sunnyvale, Calif.

Filed Jun. 29, 1994, Ser. No. 267,635

Int. Cl.⁶ G11B 23/28; H04L 9/30

U.S. Cl. 380—3

25 Claims



1. A method of providing copy-protection for a program distribution medium comprising the steps of:
adding an authenticating signature to media to be copy-protected;
passing program data through a first encryptor;
passing said first encrypted program data from said first encryptor through a second encryptor;
recording the data from the second encryptor on a media;
detecting the authenticating signature in a media player;
passing decoded data from said media through a first decryptor;
passing said first decrypted data from said first decryptor through a second decryptor;
selecting an output of said second decryptor when an authenticating signal is detected, and selecting an output of said first decryptor when an authenticating signature is not detected.

5,513,261
KEY MANAGEMENT SCHEME FOR USE WITH ELECTRONIC CARDS

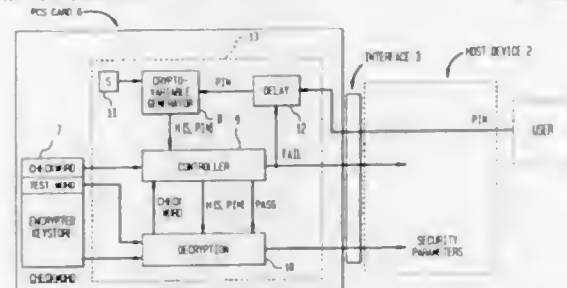
David P. Maher, Windham, N.H., assignor to AT&T Corp., Murray Hill, N.J.

Filed Dec. 29, 1993, Ser. No. 175,027

Int. Cl.⁶ H04L 9/32; G07F 7/10

U.S. Cl. 380—23

6 Claims



1. In an electronic device issued to a particular user for insertion into a host electronic device and for providing to said host electronic device, upon entry into the host electronic device of a predetermined personal identification number (PIN), parameters identifying or associated with the particular user, means for securing the parameters against use by other than said particular user, comprising:
means for storing the parameters in encrypted form according to a key;
means for receiving the PIN from the host device;
means for computing the key as a function of at least the PIN entered by the user; and
means for decrypting the parameters according to the key.

5,513,262

DEVICE FOR ENCRYPTING AND DECRYPTING, BY MEANS OF THE DES ALGORITHM, DATA TO BE WRITTEN TO BE READ FROM A HARD DISK

Harm W. van Rump, 's-Hertogenbosch; Jan van Maanen, Renkum; Nicolaas J. M. Opdam, Malden, and Willem J. Vervoorn, Hellou, all of, Netherlands, assignors to Tulip Computers International B.V., 's-Hertogenbosch, Netherlands

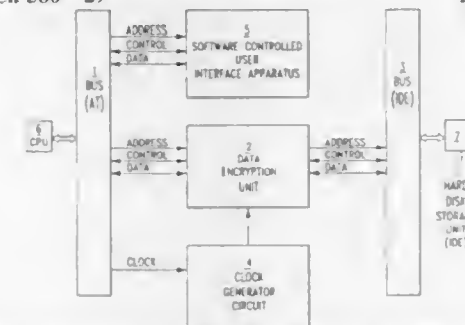
Filed Feb. 18, 1993, Ser. No. 19,068

Claims priority, application Netherlands, Feb. 18, 1992, 9200296

Int. Cl.⁶ H04L 9/00

U.S. Cl. 380—29

15 Claims



1. Apparatus for encrypting and decrypting data to be written to and read from a hard disk, the apparatus comprising:
a processor;
a hard disk storage unit; and
an encryption/decryption circuit connected between the processor and the hard disk storage unit for encrypting and decrypting data through a data encryption standard (DES) algorithm, the encryption/decryption circuit having:
a first converter circuit for converting n-bit wide words applied as an input thereto (wherein n is an integer less than or equal to 64) into 64-bit wide words, said n-bit words incoming, via

a first n-bit wide bus, from the processor and intended for storage in the hard disk storage unit or incoming, via a second n-bit wide bus, from the hard disk storage unit and intended for application to the processor;

a DES cipher circuit, connected to and responsive to the converter and through use of the DES algorithm, for enciphering each of the 64-bit words, formed of n-bit words incoming from the processor, into corresponding 64-bit DES encrypted words and for deciphering each of the 64-bit words, formed of n-bit words incoming from the hard disk storage unit, into corresponding 64-bit DES decrypted words; and
a second converter circuit, connected to the DES cipher circuit, for converting each of the 64-bit DES encrypted words into n-bit encrypted words and for applying, via the second n-bit bus, each of the n-bit encrypted words to said hard disk storage unit for storage thereon, and for converting each of the 64-bit DES decrypted words into n-bit decrypted words and for applying, via the first n-bit bus, each of the n-bit decrypted words to the processor.

5,513,263

METHOD FOR ESTABLISHING CLASSES WITHIN A COMMUNICATION NETWORK

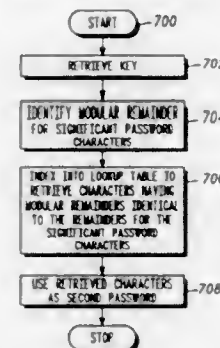
Richard E. White, Cary, and Mark G. Demange, Schaumburg, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 30, 1994, Ser. No. 347,022

Int. Cl.⁶ H04L 9/00

U.S. Cl. 380—44

9 Claims



1. In a communication network having a central controller, said controller having a key generator that utilizes a first password comprising characters to generate an encryption key, a method for establishing hierarchical user classes within said network, said method comprising the steps of:
generating a number of secondary passwords that when entered into the key generator, will generate the encryption key, said secondary passwords having different characters than the first password;
assigning to each secondary password a user class and associated information;
storing each secondary password and associated user class information in central controller memory; and
assigning at least one secondary password to at least one remote device seeking to communicate with said central controller.

5,513,264

VISUALLY INTERACTIVE ENCODING AND DECODING OF DATAFORMS

Ynjiun P. Wang, Fort Meyers, and Robert F. Meyerson, Captiva Island, both of Fla., assignors to Metanetics Corporation, Fort Myers, Fla.

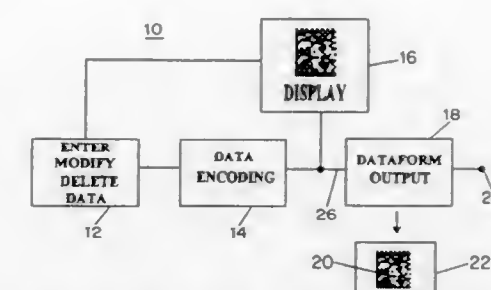
Filed Apr. 5, 1994, Ser. No. 222,855

Int. Cl.⁶ G09C 3/00

U.S. Cl. 380—51

24 Claims

1. A visually interactive method for encoding a machine readable dataform, comprising the steps of:
(a) entering entry data;



(b) encoding said entry data to provide code signals representative of a machine readable dataform;
(c) viewing a dynamic display providing a temporary visual image of said dataform, based upon said step (b) code signals;
(d) implementing changes in said entry data including at least one of add/modify/delete entry data;
(e) encoding modifications to said code signals responsive to said changes in said entry data to provide code signals representative of an altered machine readable dataform;
(f) viewing said dynamic display to interactively observe alterations to said temporary visual image of said dataform responsive to said changes in said entry data; and
(g) providing said code signals as code output signals.

5,513,265

MULTI-CHANNEL ECHO CANCELLING METHOD AND A DEVICE THEREOF

Akihiro Hirano, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

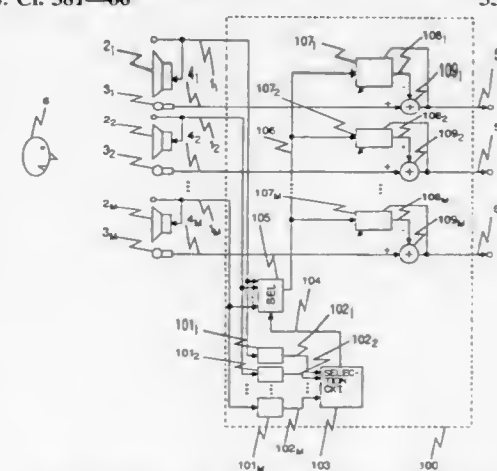
Filed May 31, 1994, Ser. No. 251,236

Claims priority, application Japan, May 31, 1993, 5-167261

Int. Cl.⁶ H04B 3/20

U.S. Cl. 381—66

33 Claims



1. A multi-channel echo cancelling method comprising:
a step of calculating a power of reception signal in each reception channel and selecting a reception channel of a reception signal having the biggest power;
a step of generating an echo replica corresponding to an echo in each mixed signal generated by propagation of reception signals of said reception channels based on said reception signal of the reception channel selected in the previous step for each reception channel; and
a step of cancelling said echo from said mixed signal by subtracting said echo replica from said mixed signal for each reception channel.

5,513,266

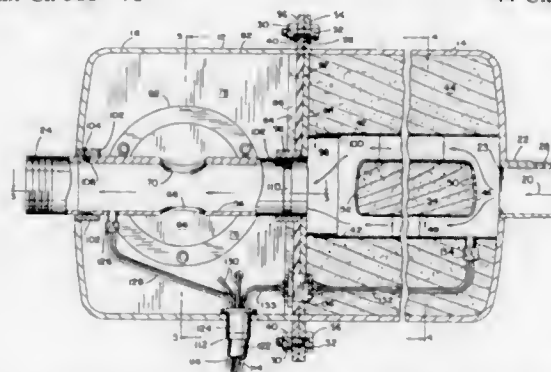
INTEGRAL ACTIVE AND PASSIVE SILENCER

Michael T. Zuroski, Sun Prairie, Wis., assignor to Digisonix, Inc., Middleton, Wis.

Filed Apr. 29, 1994, Ser. No. 236,565
Int. Cl.⁶ A61F 11/06; H03B 29/00

U.S. Cl. 381—71

44 Claims



1. An acoustic silencer for silencing an acoustic wave propagating through a pipe comprising:

- an outer housing with an inlet for receiving a gas flowing through a pipe and an outlet through which the gas exits the housing, the inlet being in a front portion of the housing and the outlet being in a rear portion of the housing;
- a passive silencer located in the front portion of the housing;
- an active silencer having a tube through which gas flows from the passive silencer to the outlet and an actuator for generating a canceling acoustic wave that is in acoustic communication with the gas in the tube through a port in the tube, the actuator and the tube being located in the rear portion of the housing.

5,513,267

SIGNAL STRENGTH ADAPTER CIRCUIT

Franciscus W. M. Lammers, Hasselt, Belgium, and Bart J. S. De Loore, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

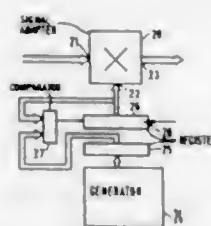
Filed Nov. 16, 1993, Ser. No. 153,388

Claims priority, application European Pat. Off., Nov. 17, 1992, 92203518

Int. Cl.⁶ H03G 3/00

U.S. Cl. 381—104

11 Claims



1. Signal strength adapter circuit for smoothly changing a signal strength of an input signal starting with an initial signal strength and ending with a final signal strength, the signal strength adapter circuit comprising:

- a signal adapter having a signal input for receiving the input signal, a digital set input for receiving a strength value, and a signal output for presenting an adapted signal that has a strength corresponding to the strength value on the digital set input; and

control means for generating, at successive discrete instants, a series of strength values which fix a function changing with time, said control means comprising means for applying the generated strength values to the digital set input, wherein the control means comprises:

- function generator means for periodically generating a next function value of a series of successive function values which determine, in coarse steps, a function which changes substantially exponentially with time; and
- adapter means for adapting the strength value in fine steps in accordance with a predetermined variation starting with a function value that has just been given and ending with a function value that is given next, characterized in that the input signal at the signal input of the signal adapter is presented as a series of successive signal values in synchronism with a specific clock signal, while the fine steps correspond to the least significant bit in the strength value, said signal strength adapter circuit further comprising means for terminating the adapting of the strength value by the adapter means once the strength value has reached the generated next function value.

5,513,268

VARIABLE DIGITAL CONTROL FOR ELECTRONIC DEVICE WITH ROTARY SWITCH CONTROL

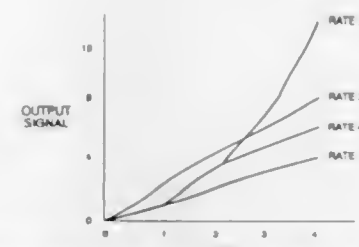
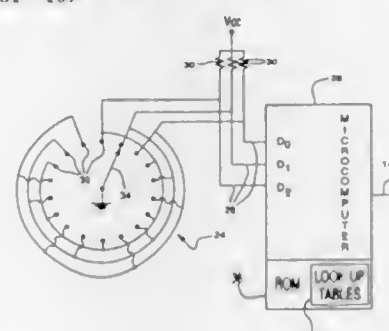
Dennis K. Bironas, Kokomo, James R. Bradley, Peru, and Wilbur A. Roharge, Greentown, all of Ind., assignors to Delco Electronics Corporation, Kokomo, Ind.

Filed Jan. 10, 1994, Ser. No. 179,300

Int. Cl.⁶ G06F 3/03

U.S. Cl. 381—109

9 Claims



1. A control apparatus for providing a variable control signal to an electronic device comprising:

- a digital switch movable to a plurality of positions and having a plurality of digital outputs to represent said positions;
- memory means for storing control increment values which correspond to an amount of change of position and rate of change of position of said switch;
- means for periodically sampling the switch output to determine switch movement;
- means for determining the direction of switch movement from a sequence of the digital outputs;
- means for counting an amount of change in position of the switch over a sampling time so as to determine a rate of change of position of the switch;
- means for looking up a control increment value from the memory means that corresponds to the change in position of the switch and rate of change of position of the switch,

5,513,270

SPEAKER BOX

Leopold A. Lewis, 50 Abingdon Drive, Nepean, Canada

PCT No. PCT/CA92/00340, § 371 Date Feb. 7, 1994, § 102(e)

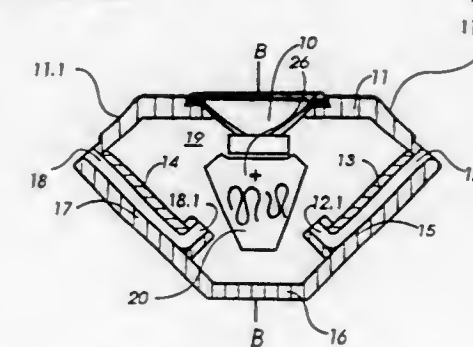
Date Feb. 7, 1994, PCT Pub. No. WO93/04564, PCT Pub. Date Mar. 4, 1993

PCT Filed Aug. 12, 1992, Ser. No. 193,015

Claims priority, application Canada, Aug. 12, 1991, 2048954
Int. Cl.⁶ H04R 25/00

U.S. Cl. 381—154

24 Claims



1. A loudspeaker system comprising:

- a loudspeaker driver;
- an enclosure having a hexagonal prism shape generally defined by a front baffle, a first baffle extension and a second baffle extension, a top and bottom panel, a pair of major panels and a rear panel,
- said baffle extension being substantially equal to each other and arranged at each side of said front baffle and forming a first angle with respect to said front baffle,
- said major panels being substantially equal to each other and each arranged at each side of said rear panel at a second angle with respect to said rear panel;
- vent means in said enclosure, comprising a first and a second vent, each vent having, respectively, an inlet within said enclosure, an outlet leading outside the boundaries of said enclosure, and a conduit connecting each said inlet to its associated said outlet,

wherein said outlet of said first vent is provided adjacent to said first baffle extension and said outlet of said second vent is provided adjacent to said second baffle extension, each of said conduits being arranged along the inner face of a respective one of said major panels and said inlets being directed toward the rear of said driver and generally toward a central region of said enclosure

such that high to mid frequency sound waves radiated within the boundaries of said enclosure and entering said inlets are substantially attenuated in said conduits and low frequency sound waves radiated within the boundaries of said enclosure are reinforced.

5,513,271

ANALYZING AN IMAGE SHOWING A PROPORTIONED PARTS GRAPH

Satyajit Rao, Bangalore, Ind., and James V. Mahoney, San Francisco, Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Nov. 24, 1993, Ser. No. 157,856

Int. Cl.⁶ G06K 9/00

U.S. Cl. 382—113

31 Claims

1. A method comprising:

- obtaining input image data defining an input image that shows a proportioned parts graph; the proportioned parts graph being a graphical representation with a feature that defines two or more segments, each segment representing a part that bears a proportion to a whole, each segment having a size that bears approximately the same proportion to the entirety of the feature as the part the segment represents bears to the whole; the feature

wherein control increment values increases with increasing rate of change of position of the switch so that an increased rate of change of position of the switch results in an increased control increment value corresponding to the change in position of the switch; and

means for changing the control signal by the control increment value.

5,513,269

CONSUMER APPLIANCE HAVING BOTH EXPLANATORY COMMENT AND EXTRA-LINGUISTIC SIGNALIZATION UPON ACTUATION THEREOF AND REVERSIBLE STEPPING BETWEEN THOSE TWO

Johannes H. M. DeVet, Johannes A. M. Kemp, and Cornelis J. Van Deemter, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

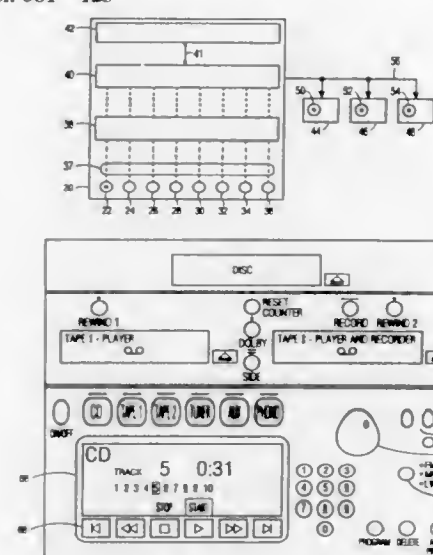
Filed Jan. 6, 1994, Ser. No. 178,147

Claims priority, application European Pat. Off., Jan. 7, 1993, 93200029

Int. Cl.⁶ B60R 25/00

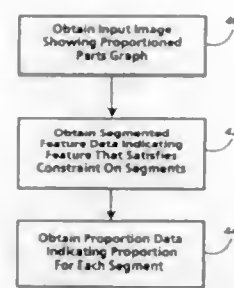
U.S. Cl. 381—123

8 Claims



1. A device having a finite set of states, comprising:

- an actuator element for changing a state of said device from a present state to a destination state upon actuation of said actuator element by a user;
- a memory including audio information corresponding to a plurality of combinations of states and actuator elements;
- a generator for generating a plurality of non-speech audio information corresponding to a plurality of combinations of states and actuator elements;
- a detection circuit for detecting said present state and said activated actuator element;
- a selection circuit, responsive to said present state and said activated actuator element, for selecting, in a first mode, audio information corresponding to at least one of said activated actuator element and said present state and, in a second mode, non-speech audio information corresponding to at least one of said activated actuator element and said present state; and
- an output circuit responsive to said selection circuit for outputting one of said audio information and said non-speech audio information to said user.



satisfying a constraint on segments; the constraint including a set of criteria, the set of criteria including one or more criteria; applying the set of criteria to the input image data to obtain segmented feature data; the segmented feature data indicating a feature that satisfies the constraint on segments; and using the segmented feature data to obtain proportion data indicating, for each segment of the feature that satisfies the constraint on segments, a proportion; each segment's proportion indicated by the proportion data being approximately equal to the proportion the segment's size bears to the entirety of the feature that satisfies the constraint on segments.

5,513,272

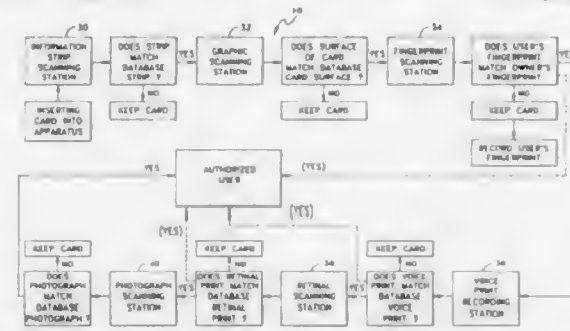
SYSTEM FOR VERIFYING USE OF A CREDIT/IDENTIFICATION CARD INCLUDING RECORDING OF PHYSICAL ATTRIBUTES OF UNAUTHORIZED USERS
Charles A. Bogosian, Jr., Warwick, R.I., assignor to Wizards, LLC, Wilmington, Del.

Filed Dec. 5, 1994, Ser. No. 349,688

Int. Cl. G06K 9/00

U.S. Cl. 382—116

46 Claims



1. A method for verifying an authorized user of a credit/identification card comprising the steps of:

inserting the card into an apparatus having a plurality of scanning stations, the card including a surface having a strip thereon which has information germane to the owner of the card, such as an identification number and other personal data, and at least one fingerprint thereon of the owner of the card; scanning the strip of the card at an information strip scanning station of said apparatus for verifying the information of the card including the identification number;

comparing the information stored on the strip of the card to information of the owner stored on at least one accessible database in communication with said apparatus, the apparatus withholding the card from the user if the information on the card does not match the information germane to the owner of the card which is stored in the database;

scanning the surface of the card at a graphic scanning station of said apparatus which digitizes the surface of the card by imaging every line thereof;

converting the image of the surface of the card to a digital numeric sequence;

comparing the surface of the card as scanned by said graphic scanning device and converted to a digital numeric sequence to a digital numeric sequence stored in said database for determining whether the card has been tampered with, the

apparatus withholding the card from the user if the surface of the card does not match the surface of the card stored by the database;

obtaining a fingerprint of the user;

scanning the fingerprint of the user at a fingerprint scanning station; and

comparing the fingerprint of the user to said fingerprint on the card and to a fingerprint of the owner of the card in the database to ensure authorized use of the card, the apparatus withholding the card from the user if the fingerprint scanned by the fingerprint scanning device does not match the fingerprints on the card and in the database; whereby, upon matching the user's fingerprint to the fingerprints on the card and in the database for ensuring the user of the card is the owner of the card, said apparatus allowing the user to use the card for a desired purpose.

said method further comprising the step of recording the fingerprint of the user of the card in the event the fingerprint of the user does not match the fingerprint on the card or the fingerprint of the owner of the card.

5,513,273

METHOD FOR OBTAINING INFORMATION ABOUT INTERSTITIAL PATTERNS OF THE LUNGS
Wataru Ito, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

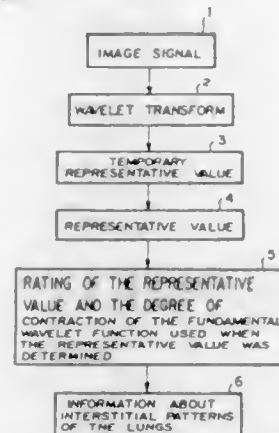
Filed Mar. 17, 1994, Ser. No. 219,431

Claims priority, application Japan, Mar. 18, 1993, 5-057592; Mar. 18, 1993, 5-057593

Int. Cl. G06T 7/00

U.S. Cl. 382—132

17 Claims



1. A method for obtaining information about interstitial patterns of lungs from an image signal comprising picture elements and representing a radiation image of the lungs, said method comprising the steps of:

i) rotating, by a predetermined degree interval, a predetermined basic Wavelet function corresponding to each of said picture elements, and changing a degree of contraction of said basic Wavelet function within a predetermined range to obtain a group of values of a Wavelet transformation factor for each of said picture elements,

ii) calculating a temporary representative value of said group of values of said Wavelet transformation factor obtained for each of said picture elements for a particular degree of contraction of said basic Wavelet function within said predetermined range, said temporary representative value being calculated for each degree of contraction within said predetermined range of said basic Wavelet function,

iii) selecting, for each of said picture elements, a representative value from a plurality of temporary representative values which have been respectively calculated for each degree of contraction of said basic Wavelet function in step ii),

iv) determining, for each of said picture elements, interstitial patterns of the lungs, as normal or abnormal, based upon said representative value and a value of said degree of contraction

5,513,275
AUTOMATED DIRECT PATTERNED WAFER INSPECTION

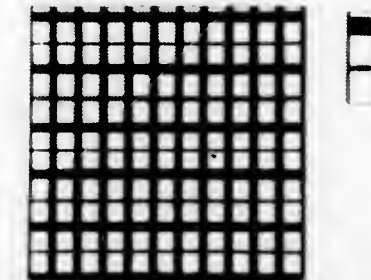
Babak H. Khalaj; Hamid K. Aghajan, and Thomas Kailath, all of Stanford, Calif., assignors to Board of Trustees of the Leland Stanford Junior University, Stanford, Calif.
Continuation of Ser. No. 2,864, Jan. 12, 1993, abandoned.

This application Jun. 9, 1994, Ser. No. 257,236

Int. Cl. G06K 9/00

U.S. Cl. 382—149

4 Claims



5,513,274
ADJUSTING ILLUMINATION FOR IMAGE LIFT TO MATCH CAMERA

David J. Concaannon, Farmington Hills; John D. Vala, Plymouth, and Gerald Banks, Ann Arbor, all of Mich., assignors to Unisys Corporation, Blue Bell, Pa.

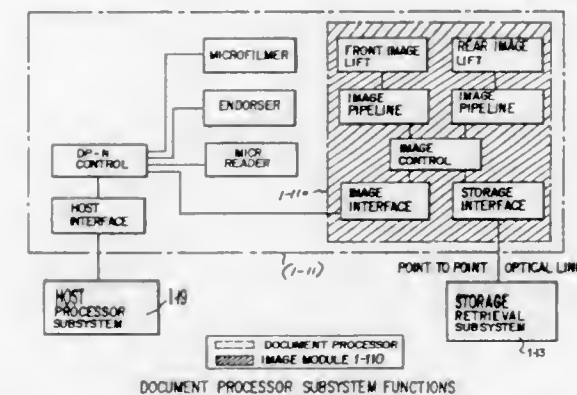
Division of Ser. No. 874,876, Apr. 28, 1992, Pat. No. 5,259,043, which is a division of Ser. No. 419,355, Oct. 10, 1989, Pat. No. 5,155,776. This application Jul. 12, 1993, Ser. No. 89,817

The portion of the term of this patent subsequent to Oct. 13, 2009, has been disclaimed.

Int. Cl. G06K 9/00

U.S. Cl. 382—138

6 Claims



1. A document-imaging arrangement including two document-imaging stations, one for the Front, one for the Rear of the documents; where a pair of like said illumination-path arrays are provided, one for Front illumination, one for Rear illumination; where each said illumination-path array conducts one of the beams so split to a respective Front or Rear side of the documents; and wherein each said path array further splits its illumination beam into two like sub-beams, these being directed to focus at a prescribed point, but being disposed at opposing, equal angles about this point; and where each said station comprises illumination-shaping slit means; the slit means being offset from one another sufficient to effectively avoid interference between Front and Rear illumination means including stable wavelength source means with an associated optical illumination-path array with the beam from said source means is split and sent to illuminate the Front and the Rear of each document advanced past said stations;

image-lift means including electronic human-response camera means with response essentially that of the human eye and comprising CCPD means and an associated optical image-path array; this image path array including filter means adapted to shift the received spectrum toward the wavelengths of optimal camera response.

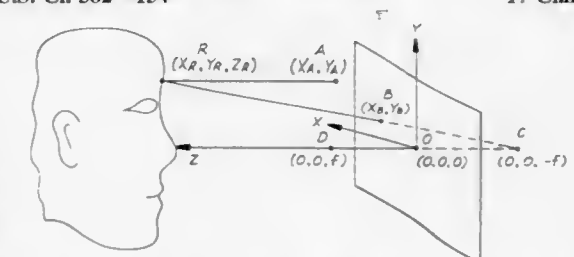
5,513,276
APPARATUS AND METHOD FOR THREE-DIMENSIONAL PERSPECTIVE IMAGING OF OBJECTS
Vassilios E. Theodoracatos, Norman, Okla., assignor to The Board of Regents of the University of Oklahoma, Norman, Okla.

Filed Jun. 2, 1994, Ser. No. 253,006

Int. Cl. G06K 9/00

U.S. Cl. 382—154

17 Claims



means for determining a sensed point lying in the sensor matrix plane and corresponding to the illuminated point on the object surface;

processing means for determining a normal line perpendicular to the sensor matrix plane and passing through the sensed point, and for computing three-dimensional image coordinates for the image point defined by the intersection of the normal line with the vanishing point line; and

transformation means for converting the three-dimensional image coordinates into three-dimensional object coordinates representing the object surface.

5,513,277 MEASURING CHARACTER AND STROKE SIZES AND SPACINGS FOR AN IMAGE

Daniel P. Huttenlocher, Ithaca, N.Y., assignor to Xerox Corporation, Stamford, Conn.

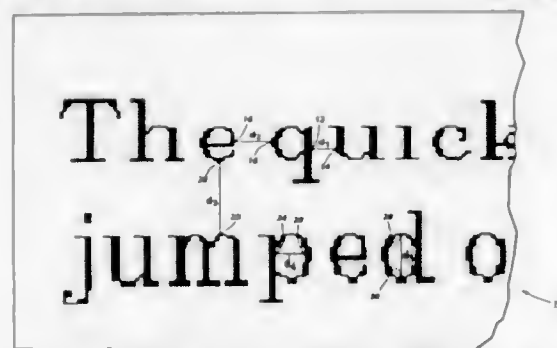
Continuation of Ser. No. 737,955, Jul. 30, 1991, abandoned.

This application Jun. 14, 1993, Ser. No. 77,702

Int. Cl.⁶ G06K 9/34

U.S. Cl. 382—171

22 Claims



1. A method of performing image processing on an N-dimensional image that includes text, where N is two or more; the image including two or more connected components that form the text; the connected components together having a prominent size or spacing in a measuring direction in the image; the image being accessible as an array of locations each with N coordinates, the array including a data item at each location; for each line that extends in the measuring direction, two of the N coordinates varying along the line so that the line is not parallel to either of the two coordinates axes; the method comprising steps of:

measuring two or more distances between edges of the connected components along lines extending in the measuring direction to obtain, for each of the distances, respective measurement data indicating the distance; each distance being measured by:

obtaining N starting coordinates of a starting location at an edge of a connected component;

obtaining N incremental values, with one of the N incremental values for each of the N coordinates; the N incremental values together defining an incremental line that extends in the measuring direction;

performing a series of iterations that includes a first iteration and a last iteration, each iteration having N initial coordinates of an initial location and N final coordinates of a final location; the N initial coordinates of the first iteration being the N starting coordinates; each iteration comprising:

using the iteration's N initial coordinates and the N incremental values to obtain the iteration's N final coordinates, the iteration's final location being displaced incrementally from the iteration's initial location along a line that extends in the measuring direction which is not parallel to either of the coordinate axes;

using the iteration's N final coordinates to access a data item at a location in the array;

determining whether the accessed data item is at a location at another edge of a connected component; and

if the accessed data item is at a location at another edge of a connected component, obtaining measurement data indicating a distance between the starting location and the iteration's final location, the iteration that obtains measurement data being the last iteration in the series; using the measurement data to obtain distribution data, the distribution data indicating a distribution of the distances between edges of the connected components in the measuring direction; the distances being measured between edges of a sufficient number of the connected components that the distribution data further indicate a measure of the prominent size or spacing of the connected components in the measuring direction for the image.

5,513,278 HANDWRITTEN CHARACTER SIZE DETERMINATION APPARATUS BASED ON CHARACTER ENTRY AREA

Tatsuo Hashizume, Moriguchi; Hiroyuki Sasaki, Ibaraki; Hideki Shitanda, Osaka, and Norio Nakamura, Neyagawa, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

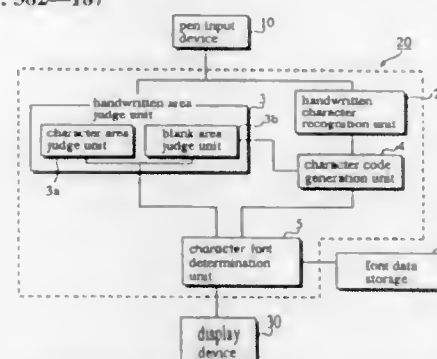
Filed May 26, 1994, Ser. No. 249,879

Claims priority, application Japan, May 27, 1993, 5-126211

Int. Cl.⁶ G06K 9/00

U.S. Cl. 382—187

10 Claims



1. A handwritten character input device comprising:

an input means for inputting coordinate data which represents an operator's handwriting to a preset character inputting coordinate system;

a character recognition means for recognizing a character from the handwriting according to the coordinate data, and generating a character code corresponding to the recognized character;

a character size determination means for determining a size of the character according to a range of the handwriting in the character inputting coordinate system by generating a plurality of predetermined divided areas in the character inputting coordinate system and determining the character size by detecting a range of divided areas which have been passed through by the handwritten character, the character size determination means generates the divided areas by dividing a character inputting area for a single character, and assigns a range of the divided areas to a standard character size; and

a character font generation means for generating a character font according to the character code generated by the character recognition means and the character size determined by the character size determination means, including a font data storage for storing character font data which corresponds to the character code and the character size, defined by a predetermined range of the divided areas.

5,513,279 IMAGE CODING AND DECODING APPARATUS WITH CODED DATA SIZE INFORMATION PROVIDED CODED DATA BLOCKS

Toshiaki Yoshinari; Kazuhiro Suzuki; Taro Yokose, and Ken Umezawa, all of Ebina, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

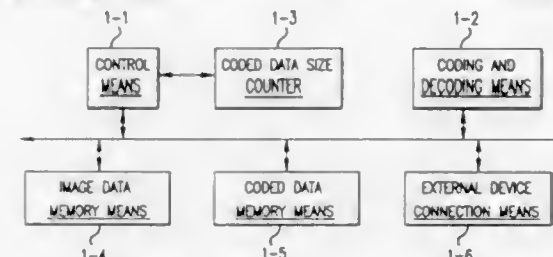
Filed Jun. 23, 1994, Ser. No. 264,372

Claims priority, application Japan, Sep. 8, 1993, 5-223607

Int. Cl.⁶ G06K 9/36

U.S. Cl. 382—232

4 Claims



1. An image coding and decoding apparatus comprising: image data memory means for storing image data temporarily; coding and decoding means for carrying out a coding process to obtain coded data by coding the image data and a decoding process to obtain image data by decoding the coded data; coded data memory means for storing the coded data and control information necessary for transferring and controlling the coded data when decoding temporarily; external device connection means for connecting said image coding and decoding apparatus with external devices which actually carry out transferring and storing of data; a coded data size counter for counting the size of the coded data produced by said coding and decoding means; and control means for transferring data among said coding and decoding means, said image data memory means, said coded data memory means and said external device connection means, producing and parsing said control information for the coded data, adding said control information to the coded data, extracting said control information from the coded data and sending parameters necessary for the behavior of said coding and decoding means, and wherein said control means comprises coded data dividing means for dividing the coded data produced by said coding and decoding means into a predetermined size to produce divided coded data blocks and coded data size information addition means for appending to each of the divided coded data blocks, when coding the image data, control information showing the data size of the divided coded data blocks as said control information.

5,513,280 DISCRIMINATION OF AN EDGE PORTION OF AN IMAGE FROM A SCREEN DOT PORTION IN AN IMAGE PROCESSING SYSTEM

Naoto Kawamura, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 103,209, Aug. 9, 1993, abandoned, which is a division of Ser. No. 6,123, Jan. 19, 1993, Pat. No. 5,251,267, which is a continuation of Ser. No. 642,434, Jan. 17, 1991, abandoned, which is a division of Ser. No. 378,488, Jul. 12, 1989, Pat. No. 5,029,227, which is a continuation of Ser. No. 188,712, Apr. 29, 1988, abandoned, which is a continuation of Ser. No. 901,825, Aug. 29, 1986, abandoned. This application May 22, 1995, Ser. No. 446,990

Claims priority, application Japan, Aug. 30, 1985, 60-189941; Aug. 30, 1985, 60-189942; Aug. 30, 1985, 60-189943

Int. Cl.⁶ G06K 9/36

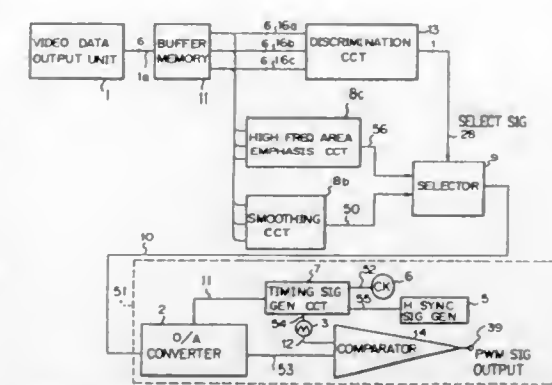
U.S. Cl. 382—266

12 Claims

1. An image processing apparatus, comprising:

a) image signal generating means for generating a digital image signal having multi-bits for each pixel;

b) discrimination means for discriminating an edge portion of the digital image signals using a plurality of pixels;



c) emphasizing means for emphasizing the digital image signal of the edge portion discriminated by said discriminating means to generate an output signal; and

d) pulse-width-modulated signal generating means for modulating the output signal.

5,513,281 INTERPOLATION METHOD AND APPARATUS BY CORRELATION DETECTION USING FUZZY INFERENCE

Haruo Yamashita, Osaka; Hideshi Ishihara, and Tsumoru Fukushima, both of Katano, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 985,122, Dec. 2, 1992, abandoned.

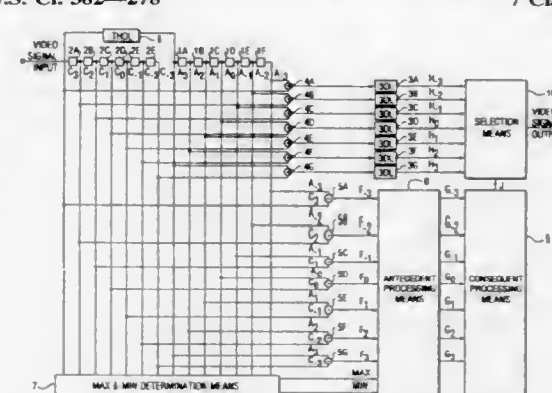
This application Apr. 13, 1995, Ser. No. 422,607

Claims priority, application Japan, Dec. 2, 1991, 3-317820

Int. Cl.⁶ G06F 17/15; 17/00; G06K 9/64; G06G 7/00

U.S. Cl. 382—278

7 Claims



1. An image processor for interpolating scan lines of an input image signal by determining an interpolation direction based on correlation between each pair of pixels located at intersections of one of plural interpolation lines passing a target pixel with scan lines located above and below said target pixel comprising:

a calculation means for calculating a level difference between each pair of pixels located on one of said plural interpolation lines for all said plural interpolation lines;

a fuzzy antecedent processing means comprising:

a first membership function means for calculating a likelihood of correlation between each pair of pixels located on one of said plural interpolation lines based on the level difference of each pair of pixels calculated by said calculation means;

a second membership function means for calculating an unlikelihood of correlation between a pair of pixels located on an interpolation line, having an opposite sign of slope of the interpolation line to which the likelihood of correlation is calculated, based on the level difference related to said interpolation line having an opposite sign of slope to the interpolation line to which the likelihood of correlation is calculated; and

a judging means for judging a correlation between each pair of pixels by integrating said likelihood of correlation calculated by said first membership function means and said unlikelihood of correlation calculated by said second membership function means;

a fuzzy consequent processing means for determining an interpolation direction based on results of judgement of said fuzzy antecedent processing means; and

an interpolation means for interpolating said target pixel based on levels of pixels located on the interpolation line determined by said fuzzy consequent processing means.

5,513,282

METHOD AND APPARATUS FOR CONTROLLING THE PROCESSING OF DIGITAL IMAGE SIGNALS

Leon C. Williams, Walworth, N.Y., assignor to Xerox Corporation, Stamford, Conn.

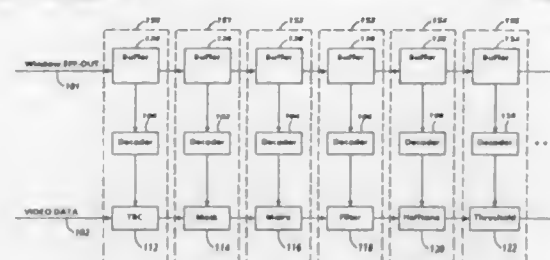
Continuation of Ser. No. 163,784, Dec. 9, 1993, abandoned.

This application Apr. 27, 1995, Ser. No. 430,116

Int. Cl.⁶ G06K 9/54; 9/34; H04N 1/40; 1/387

U.S. Cl. 382—303

15 Claims



1. An apparatus for processing a video representing an image to produce a modified video signal, comprising:

a video signal source for providing a video signal;

instruction means, operatively connected to said video source, for generating an effect dataword for the video signal, the effect dataword designating a set of image processing operations to be applied to the video signal, the effect dataword having at least two bits, representing the set of image processing operations;

first buffer means, operatively connected to said instruction means, for buffering the effect dataword;

first decoding means, operatively connected to said first buffer means, for decoding the entire effect dataword buffered in said first buffer means to determine if a first specific image process operation is to be executed upon the video signal and for generating a first control signal enabling execution of said first specific image process operation upon the video signal;

first image processing means, responsive to said first control signal, for processing the video signal, when said first specific image processing operation is enabled by said first control signal, to produce a modified video signal;

second buffer means, operatively connected to said first buffer means, for receiving an effect dataword from said first buffer means and for buffering the received effect dataword;

second decoding means, operatively connected to said second buffer means, for decoding the entire effect dataword buffered in said second buffer means to determine if a second specific image process operation is to be executed upon the video signal received from said first image processing means and for generating a second control signal enabling execution of said second specific image process operation upon the video signal; and

second image processing means, operatively connected to said first image processing means and responsive to said second control signal, for processing the video signal received from said first image processing means, when said second specific image processing operation is enabled by said second control signal, to produce a modified video signal.

5,513,283 TE-ME MODE CONVERTER ON POLYMER WAVEGUIDE

Wol-Yon Whang; Jang-Joo Kim; Tae-Hyoung Zyung, and Min-Chul Oh, all of Daejeon, Rep. of Korea, assignors to Electronics & Telecommunications Research Institute, Daejeon, Rep. of Korea

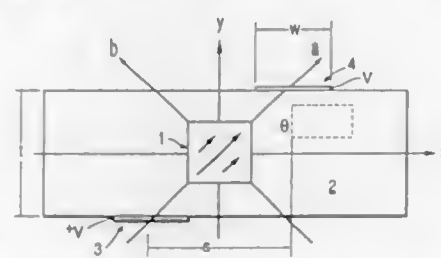
Filed Dec. 8, 1994, Ser. No. 354,167

Claims priority, application Rep. of Korea, Oct. 14, 1994, 94-26394

Int. Cl.⁶ G02F 1/295

U.S. Cl. 385—8

4 Claims



1. A TE-ME mode converter on a polymer waveguide comprising:

a core layer formed as a medium of non-linear polymer materials, to which an electrical dipole of a linear polymer which is freely arranged is fixed toward a direction of an electrical field artificially inclined to a pair of poling electrodes;

a cladding layer formed around the periphery of the core layer and made of materials having a refraction factor lower than the core layer;

a pair of bias electrodes, respectively mounted on the upper and lower portions of the cladding layer, for controlling the first polarization state of a core layer outputting light; and

a pair of modulation electrodes mounted on the upper and lower portions of the cladding layer which are electrically insulated from the pair of bias electrodes, for switching into the TM mode or the TE mode a first outputting state set at the TE mode or the TM mode by a bias voltage applied to the bias electrodes.

5,513,284

METHOD AND A DEVICE FOR CORRELATING TWO OR MORE OPTICAL PULSE SIGNALS

Jan Thøgersen, Aarhus, and Jannik Mark, Rungsted Kyst, both of, Denmark, assignors to Lycom A/S, Brøndby, Denmark

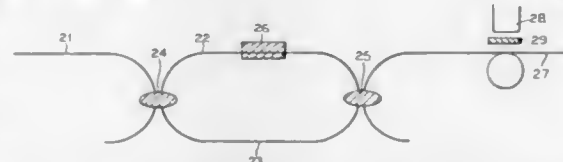
Filed Feb. 1, 1995, Ser. No. 347,356

Claims priority, application Denmark, Jun. 16, 1992, 0797/92

Int. Cl.⁶ G01J 11/00

U.S. Cl. 385—12

10 Claims



2. A device for correlating two or more optical pulse signals, comprising respective optical paths for the pulse signals, at least one of said paths having a variable delay element so that the pulse signals can be delayed temporally with respect to each other, as well as a photoreactive element which, by interaction with the signals, emits a signal by means of which the correlation of the pulse signals can be determined, characterized in that the device comprises an active, optical wave guide as the photoreactive element to which the pulse signals are applied, said wave guide being doped with optical, active ions, a detector arranged in connection with the wave guide to detect fluorescence originating from the wave guide as a consequence of the combination of the optical

signals with the active ions, and a unit for computing the correlation between the pulse signals in response to the detected fluorescence.

5,513,285

COMPACT OPTICAL SWITCHING MODULE INCLUDING THIN-FILM HEATERS AND TRIMMED THICK-FILM FIXED RESISTORS

Toshiyuki Kawashima; Jiro Utsunomiya; Kiyoshi Kurosawa; Iida Saburo, all of Tokyo; Ryo Nagase; Akira Himeno, both of Mito; Ken-ichi Yukimatsu, Sayama; Masayuki Okyno, Mito; Kuniharu Kato, Naka, and Masao Kawachi, Mito, all of, Japan, assignors to Oki Electric Industry Co., Ltd., and Nippon Telegraph and Telephone Corporation, both of Tokyo, Japan

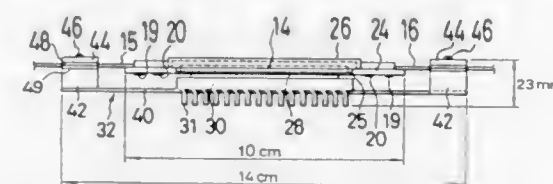
Filed Jun. 14, 1994, Ser. No. 216,040

Claims priority, application Japan, Jun. 17, 1993, 5-145855; Jun. 17, 1993, 5-146490; Jun. 17, 1993, 5-146492

Int. Cl.⁶ G02B 6/26

U.S. Cl. 385—16

7 Claims



1. An optical switching module, comprising:

an optical waveguide substrate having a plurality of waveguides configured to form switches for switching lightwave signals;

a plurality of thin-film heaters formed on said optical waveguide substrate, for controlling said switches by selectively heating the waveguides therein;

an electronic circuit substrate for supporting said optical waveguide substrate and having circuits for feeding current to said thin-film heaters;

a plurality of thick-film fixed resistors disposed on said electronic circuit substrate through which the current fed to said thin-film heaters is selectively made to flow by said circuits, said thick-film fixed resistors being previously trimmed to set an amount of the current fed to said thin-film heaters;

a spacer attached to one surface of said electronic circuit substrate; and

a heat sink attached of said spacer.

5,513,286

WHITE LIGHT DIMMER FOR FIBER OPTIC ILLUMINATION SOURCES

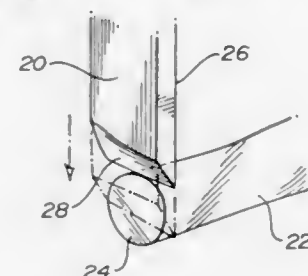
James C. Easley, St. Charles, Mo., assignor to Syntec, Inc., Winfield, Mo.

Filed Jun. 8, 1994, Ser. No. 255,660

Int. Cl.⁶ G02B 6/26

U.S. Cl. 385—19

10 Claims



1. A white light dimmer for an illuminated optical fiber wherein an aperture of a source of converging white light for the illumina-

tion of the fiber remains the same while the intensity of the light produced by the optical fiber is dimmed comprising:

a cover having a first flat surface terminating in at least one thin edge, a second non-flat surface terminating in the at least one thin edge, and a varying thickness of material between the first and second surfaces;

wherein the first flat surface of the cover touches and gradually partially covers a receiving end of the illuminated optical fiber, and wherein the angle formed by the intersection of the first surface and the second surface at the thin edge is less than the critical entrance angle of the source light to illuminate the optical fiber; and

said at least one thin edge having a thickness less than about 0.01" and having a length greater than the diameter of the optical fiber.

5,513,287

PRISM COUPLING MOUNT

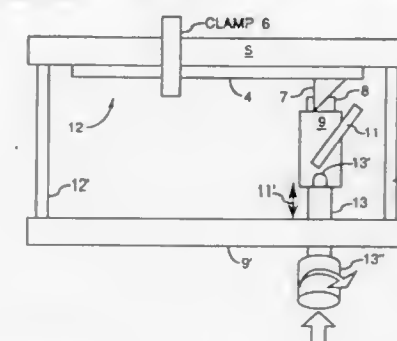
Pierre J. Talbot, Remsen, and David R. Jennings, Lycoming, both of N.Y., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Aug. 26, 1994, Ser. No. 296,780

Int. Cl.⁶ G02B 6/34

U.S. Cl. 385—25

23 Claims



1. In combination:

(a) a prism coupling mount for maintaining a coupling prism closely adjacent a waveguide for inducing a propagating light wave therein;

(b) spacing adjustment means for changing the spacing between said waveguide and said coupling prism;

(c) rotation means for rotating said coupling prism in a first direction for altering the mode selection angle between a light beam input surface of the coupling prism and an input light beam directed at the light beam input surface of said coupling prism; and

(d) means for rotating said coupling prism in a second direction for changing the tilt angle between said input light beam and the light beam input surface of said coupling prism.

5,513,288

OPTICAL POLYMER ELEMENT FOR COUPLING PHOTOELEMENTS ONTO INTEGRATED-OPTICAL CIRCUITS

Klaus-Michael Mayer, Gerlingen, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

PCT No. PCT/DE93/00475, § 371 Date Dec. 6, 1994, § 102(e)

Date Dec. 6, 1994, PCT Pub. No. WO93/25924, PCT Pub. Date Dec. 23, 1993

PCT Filed Jun. 3, 1993, Ser. No. 347,488

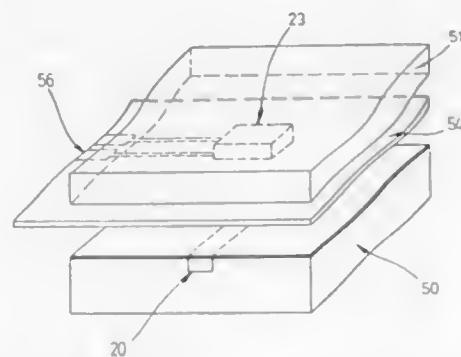
Claims priority, application Germany, Jun. 15, 1992, 42 20 135.7

Int. Cl.⁶ G02B 6/26

U.S. Cl. 385—30

29 Claims

1. An Integrated-optical device in polymer technology, having a photoelement coupled onto an optical waveguide, with only the



evanescent field components of the optical waveguide being coupled by an optical intermediate element into the photoelement, and wherein: the photoelement is incorporated into a polymeric upwardly closed cover plate; the cover plate is fitted exactly onto a base plate comprising a polymer layer having a light guiding optical waveguide; the intermediate element is an optical buffer layer disposed between the cover plate and the base plate; and the entire buffer layer has a lower refractive index than the lightguiding polymer layer.

5,513,289

OPTICAL INTEGRATED LENS/GRATING COUPLING DEVICE

Hayami Hosokawa, Yawata, and Tsukasa Yamashita, Nara, both of Japan, assignors to Omron Tateisi Electronics, Kyoto, Japan

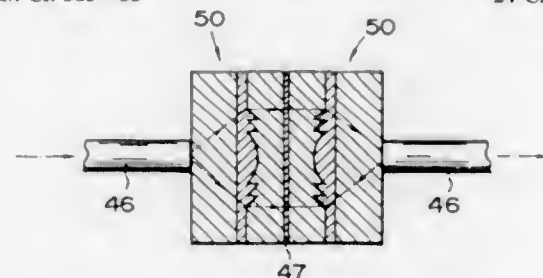
Continuation of Ser. No. 855,890, Mar. 23, 1992, Pat. No. 5,359,684, which is a division of Ser. No. 426,274, Oct. 25, 1989, Pat. No. 5,114,513. This application Aug. 22, 1994, Ser. No. 293,658

Claims priority, application Japan, Oct. 27, 1988, 63-269549; Mar. 13, 1989, 1-60278; Mar. 16, 1989, 1-65276

Int. Cl.⁶ G02B 6/32;6/00

U.S. Cl. 385—33

24 Claims



1. An optical device comprising:

an optical device element having an optically functional pattern defined by a depression and a projection on a surface thereof; a layer having a flat outer surface and formed on said surface of said optical device element with a material having a refractive index different from a refractive index of a material of said optical device element; and wherein said layer is formed with photosetting resin.

5,513,290
COUPLING STRUCTURE OF OPTICAL FIBERS AND OPTICAL WAVEGUIDES

Shinji Ishikawa; Hiroshi Suganuma; Dai Yui; Shigeru Semura; Masahide Saito, and Shigeru Hirai, all of Yokohama, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

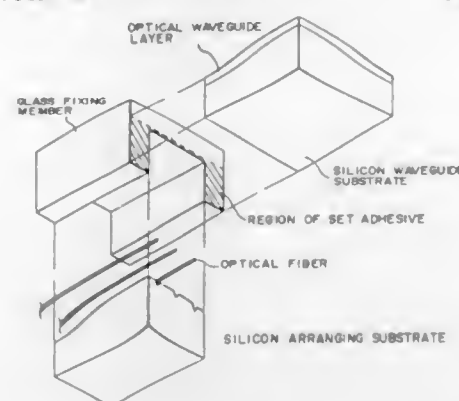
Continuation of Ser. No. 274,441, Jul. 13, 1994, abandoned. This application Feb. 6, 1995, Ser. No. 383,930

Claims priority, application Japan, Jul. 14, 1993, 5-174393; Feb. 2, 1994, 6-11015

Int. Cl.⁶ G02B 6/255;6/30

U.S. Cl. 385—49

30 Claims



1. A coupling structure for optical fibers and optical waveguides, comprising:

- optical fibers;
- an optical fiber arranging connector having a first and second member, said optical fibers being sandwiched by said first and second members to be fixed in said optical fiber arranging connector;
- a waveguide device having a waveguide substrate, optical waveguides being formed on a surface portion of said waveguide device;
- a photo-curable adhesive interposed and cured between an end face of said optical fiber arranging connector and an end face of said waveguide device which abut each other;
- said first member being made of a material preventing light having a wavelength capable of curing said adhesive from passing therethrough; and
- a part of at least one of said second member and said waveguide device being made of a light-transmitting material through which light having a wavelength capable of curing said adhesive can pass, whereby external light reaches to at least one part of said interposed adhesive to cure said interposed adhesive.

5,513,291

LIGHT SOURCE MODIFICATIONS FOR PLASTIC LIGHT FIBRE COMPATIBILITY

Michael P. Buchin, Palo Alto, and Charles Gresi, Jr., San Francisco, both of Calif., assignors to Origin Medsystems, Inc., Menlo Park, Calif.

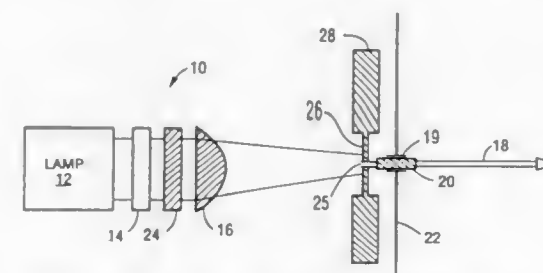
Filed Oct. 8, 1993, Ser. No. 134,527

Int. Cl.⁶ G02B 6/36

U.S. Cl. 385—93

36 Claims

- 1. Apparatus for coupling a light beam from a light source to a light fibre with reduced heating of the light fibre, the light source comprising a lamp, a condenser lens, and a dichroic infra-red filter disposed along an optical axis between the lamp and the light fibre, the light fibre having an extent, the apparatus being adapted for operation with a plastic light fibre having a softening temperature of less than 100 degrees Celsius, the apparatus comprising: light fibre connector means for securing the light fibre on the optical axis;
- non-visible radiation filter means for reducing non-visible radiation energy remaining in the light beam, the non-visible



radiation filter means being disposed on the optical axis in a broad part of the light beam between the dichroic filter and the light fibre;

restricting means for restricting the light beam to an extent approximately equal to the extent of the light fibre and for minimizing an amount of the light beam falling on the light fibre connector means, the restricting means being disposed on the optical axis adjacent to, and thermally isolated from, the light fibre connector means; and

means for transferring heat from the restricting means for dissipation at a location thermally isolated from the light fibre connector means.

5,513,292

OVERHEAD OPTICAL TRANSMISSION SYSTEM

Simon M. Rowland, Tarporley, and Ian G. Knight, Westminster Park, both of, England, assignors to BICC Public Ltd. Co., London, England

PCT No. PCT/GB93/00947, § 371 Date Oct. 25, 1994, § 102(e) Date Oct. 25, 1994, PCT Pub. No. WO93/23779, PCT Pub. Date Nov. 25, 1993

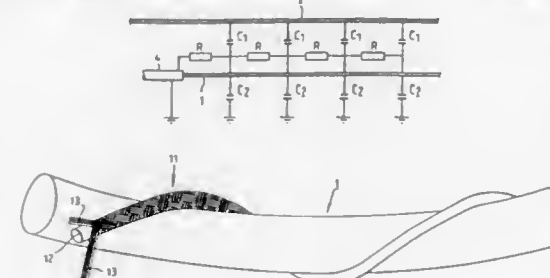
PCT Filed May 7, 1993, Ser. No. 318,844

Claims priority, application United Kingdom, May 9, 1992, 9210063

U.S. Cl. 385—100

Int. Cl.⁶ G02B 6/48

26 Claims



- 1. A method of installing an optical cable in an overhead power transmission line which comprises supporting an optical cable, which has an overall protective sheath of electrically insulating material, in long lengths between towers employed to support at least one electric power transmission line which is on load and, after the optical cable has been so installed and while the overhead electric power transmission line is on load, providing said optical cable with at least one longitudinally continuous path which extends throughout substantially the whole length of the supported optical cable and which is sufficiently electrically conductive to carry along the cable any currents that may be capacitively induced.

5,513,293
OPTICAL BACKPLANE FOR A TELECOMMUNICATION DISTRIBUTION FRAME

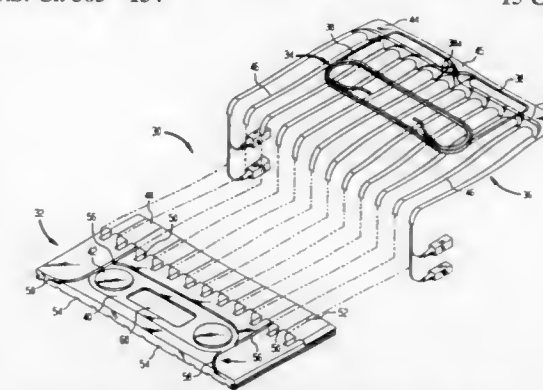
William R. Holland, Ambler, Pa.; Richard J. Pimpinella, Hampton, and Charles M. Schroeder, Wrightstown, both of N.J., assignors to AT&T Corp., Murray Hill, N.J.

Filed Nov. 29, 1994, Ser. No. 346,439

Int. Cl.⁶ G02B 6/36

U.S. Cl. 385—134

15 Claims



1. An optical fiber distribution frame, which comprises:

- a plurality of shelf units;
- a modular array disposed within each said shelf unit and having a plurality of modules for optically connecting to optical fiber jumper cables; and
- an optical backplane mounted within each said shelf unit, said optical backplane including a flexible fiber circuit having a plurality of individual optical fibers at least partially mounted to a substrate and being routed to corresponding optical modules of said modular array, said optical fibers connectable at first ends thereof to optical fibers of an incoming cable and at second ends thereof to corresponding modules of said modular array.

5,513,294

METHOD OF FORMING OPTICAL FIBER CONNECTORS

Richard A. Roll, West Trenton, and Muhammed A. Shahid, Ewing Township, Mercer County, both of N.J., assignors to AT&T Corp., Murray Hill, N.J.

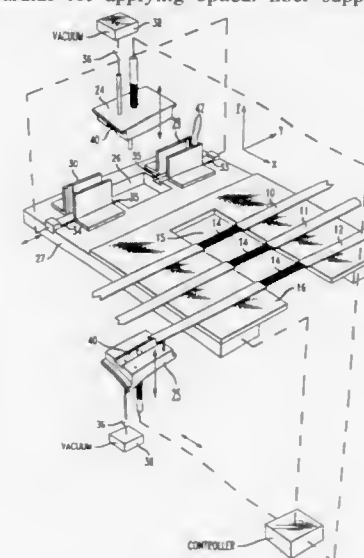
Filed Dec. 8, 1994, Ser. No. 352,011

Int. Cl.⁶ G02B 6/36

U.S. Cl. 385—137

19 Claims

11. Apparatus for applying optical fiber support members to



arrays of optical fibers comprising: first and second fixtures each adapted to hold therein an optical fiber support member having an array of grooves; means for forcing together the fixtures on opposite sides of an array of optical fibers such that each optical fiber is supported within matching grooves of two support members; wherein the improvement comprises:

- means comprising a magazine for holding a plurality of optical fiber support members in proximity to said first and second fixtures;
- means for urging optical fiber support members from the magazine onto the fixtures;
- and means for causing the support members to adhere to the fixtures.

5,513,295

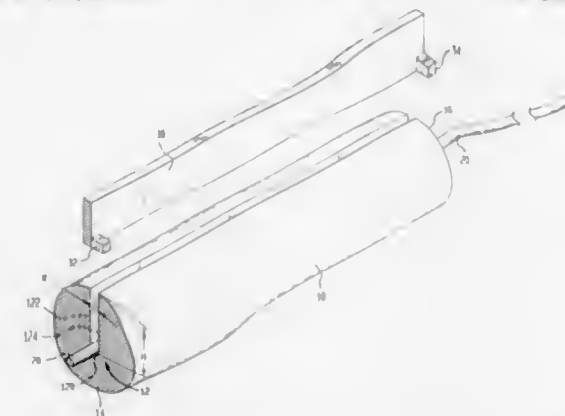
FIBER OPTIC HOLDER

Vinson L. Go, Uncasville, Conn., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 11, 1995, Ser. No. 511,494
Int. Cl.⁶ G02B 6/00

U.S. Cl. 385—137

18 Claims



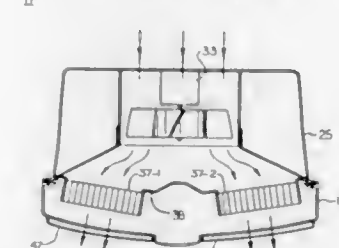
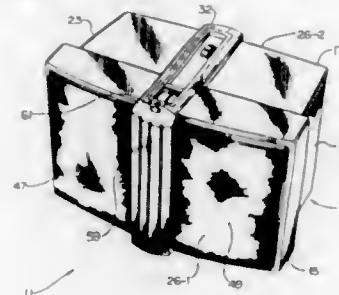
1. An apparatus for non-destructively supporting an optical fiber, comprising:

- a rod having a slot formed along the length of said rod for receiving at least partially therein one optical fiber so that said one optical fiber extends from a first end of said rod and a second end of said rod;
- a retainer mated with said rod and contacting said one optical fiber for restraining axial movement of said one optical fiber between said rod and said retainer by means of friction between said one optical fiber and said retainer; and
- a block having a borehole passing therethrough, said borehole having a first portion extending from a first side of said block to an annular shoulder within said block, said first portion sized to receive said rod mated with said retainer, said borehole further having a second portion extending from said annular shoulder through to a second side of said block opposite said first side, said second portion having a cross-section large enough to allow said one optical fiber extending from one of said first end and said second end of said rod to pass through said second side of said block, said cross-section of said second portion further being smaller than a cross-section of said first portion.

5,513,296
AIR HEATER WITH ANGLED PTC HEATERS
PRODUCING DIVERGING HEATED AIRFLOW
Andrew M. Goldstein, Newton, Mass., assignor to Holmes Products Corp., Milford, Mass.
Filed Jun. 8, 1994, Ser. No. 255,357
Int. Cl.⁶ H05B 3/00; F24H 3/02

U.S. Cl. 392—367

2 Claims



1. A positive temperature coefficient (PTC) heater comprising:
 - a) a housing having a front and a rear, said rear having an opening and said front having a pair of openings;
 - b) a fan mounted within said housing for producing a flow of air into the housing from the opening in the rear and then out of the housing through the pair of openings in the front;
 - c) a pair of positive temperature coefficient (PTC) heater assemblies disposed inside said housing in front of said fan in side by side, end to end relationship, said pair of PTC heater assemblies being angled relative to each other that air drawn in to the housing by the front passes through said PTC heater assemblies and emerges as a diverging column of heated air, each PTC heater assembly comprising a plurality of ceramic PTC pellets situated in a grid of conductive material;
 - d) heater assembly support means inside said housing for holding said PTC heater assemblies in place in said housing;
 - e) a grille in each opening in the front of said housing, each grille being aligned parallel with one of said PTC heater assemblies; and
 - f) a plenum mounted inside said housing behind said PTC heater assemblies;
 - g) said plenum together with said heater assembly support means directing all of the air drawn into said housing from the opening in the rear by said fan into said PTC heater assemblies.

5,513,297

SELECTIVE APPLICATION OF SPEECH CODING TECHNIQUES TO INPUT SIGNAL SEGMENTS

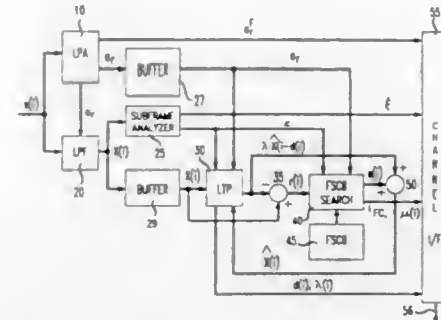
Willem B. Kleijn, Basking Ridge, and Peter Kroon, Green Brook, both of N.J., assignors to AT&T Corp., Murray Hill, N.J.

Filed Jul. 10, 1992, Ser. No. 911,850
Int. Cl.⁶ G10L 9/00

U.S. Cl. 395—2.32

22 Claims

1. A method of coding a first signal at a predetermined bit rate, the first signal reflecting speech information and comprising sets of signal segments, each set comprising a plurality of N signal segments, the method comprising the steps of:



- a. coding the N signal segments of a set with a first speech coder to provide a first coded representation for each of the N signal segments;
 - b. for each of one or more of the N signal segments, forming a second signal reflecting speech information not coded by the first speech coder; and
 - c. responsive to a coding criterion, coding a number, M, of second signals with a second speech coder to provide a second coded representation for each of said M second signals, where $1 < M < N-1$ and where the number of second signals coded, M, is determined based on the predetermined bit rate;
- such that, of said N signal segments, a number, P, of said signal segments are coded with use of the first speech coder, said M signal segments are coded with use of both the first and second speech coders, and wherein $N=P+M$.

5,513,298

INSTANTANEOUS CONTEXT SWITCHING FOR SPEECH RECOGNITION SYSTEMS

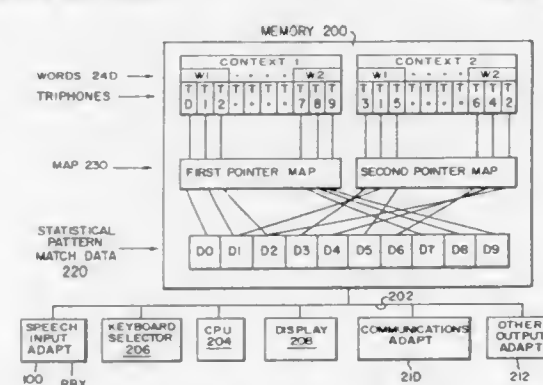
Vince M. Stanford, Gaithersburg; Alice G. Klein, and Norman F. Brickman, both of Potomac, all of Md., assignors to International Business Machines Corporation, Armonk, N.Y.
Continuation of Ser. No. 947,634, Sep. 21, 1992, abandoned.

This application May 18, 1995, Ser. No. 443,685

Int. Cl.⁶ G10L 9/00

U.S. Cl. 395—2.52

19 Claims



1. In a speech recognizer for multiple contexts and a plurality of users, an instantaneous context switching system, comprising:

- a memory coupled to a data processing means, a speech input means coupled to the plurality of users for speech recognition purposes and an output character string utilization device;
- a first context partition in said memory including a first plurality of words, each said first plurality of words including a second plurality of phonemes;
- a second context partition in said memory including a third plurality of words, each said third plurality of words including a fourth plurality of phonemes;
- a pattern matching partition in said memory including a fifth plurality of phoneme pattern matching data units for sharing by both contexts;

a first pointer map including a second plurality of pointers, each respective one of said second plurality of pointers related to a respective one of said fifth pattern matching data units;

a second pointer map including a fourth plurality of pointers, each respective one of said fourth plurality of pointers related to a respective one of said fifth plurality of pattern matching data units; and

selection means coupled to said memory either for selecting said first context partition and said first pointer map or alternately for selecting said second context partition and said second pointer map, for converting speech input information received from said speech input means into character string information output to said character string utilization device using the shared phoneme pattern matching data units for both contexts; whereby, a context of a speech recognition application can be instantaneously changed without loading new pattern matching data units in said memory.

5,513,299

OPERATION PLANNING SYSTEM FOR ROBOT

Hajime Terasaki, and Hironobu Takahashi, both of Tsukuba, Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan
Division of Ser. No. 784,153, Oct. 28, 1991, Pat. No. 5,325,468.

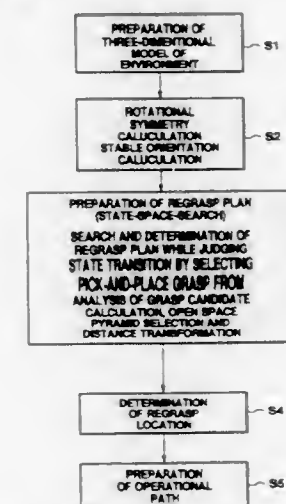
This application Jan. 13, 1994, Ser. No. 181,097

Claims priority, application Japan, Oct. 31, 1990, 2-295028; Oct. 31, 1990, 2-295029; Oct. 9, 1991, 3-261981

Int. Cl.⁶ G05B 19/04; 15/00; 19/18

U.S. Cl. 395—90

8 Claims



1. A robot operation planning system for planning the grasp and movement of an object by a hand of a robot, said system comprising:

means providing data representing a three-dimensional model of the environment in which the object is disposed, including any obstacles surrounding the object in the environment, geometric data representing the shape of the object, and data representing an initial state and a goal state of the object on a table;

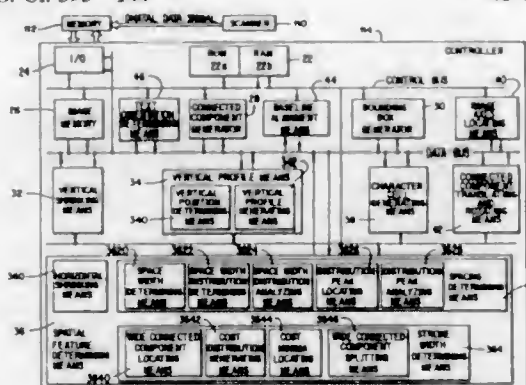
stable position calculating means connected to receive the geometric data for determining, from the data, all possible stable orientations in which the object can be stably placed on the table, and calculating intermediate locations of the object in the stable orientation during movement from the initial state to the goal state such that the robot hand can operate at the intermediate states without being affected by obstacles on the table, said stable position calculating means providing data representing the calculated intermediate states;

20 Claims

radius 1

The radius of a circle is the distance from the center of the circle to a point on the circle's perimeter.

40 Claims

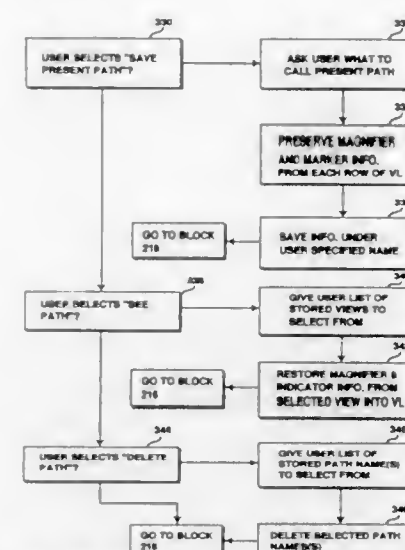


bounding box generating means for generating a plurality of bounding boxes, each bounding box surrounding a corresponding one of the plurality of connected components; and line spatial feature determining means for determining spatial features of each line of text of the unplayed text portion, each line of text comprising at least one of the plurality of connected components.

91 Claims

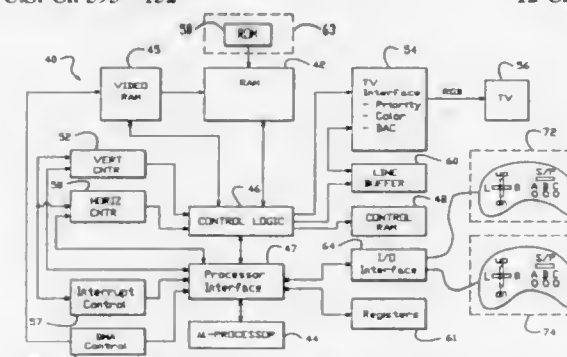
a computer coupled to said display, said computer defining a first area on said display and causing the display to display a first sample of said information within said first area, said first sample representing a first segment said first segment including a plurality of frames of said display data of said information, said computer further causing the display to display a second sample of said information within said first area of said display, said second sample representing a second segment said second segment including a plurality of frames of said display data of said information, said computer further causing the display to display a third sample of said information within said first area of said display, said third sample representing a third segment of said information, and said first segment being a superset of said second segment and said third segment, said second segment being a superset of said third segment, said first sample being a first key frame, and

3777



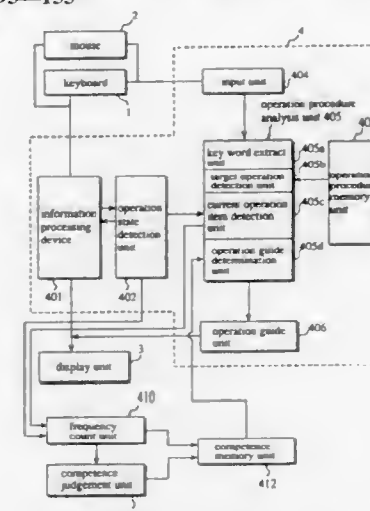
said second sample being a second key frame, said computer further causing the display to display a plurality of samples of said information, said plurality of samples including said first sample, said second sample, and said third sample of said information, said computer causing the display to display said first sample in a first subarea with some Of said plurality of displayed samples and causing the display to display said second sample and said third sample in a second subarea with some of said plurality of displayed samples, said first area including said first subarea and said second subarea, wherein said first subarea does not overlap said second subarea.

12 Claims



- storing in the digital memory multiple collision blocks that define respective path segments;
- dividing the playfield path into multiple graphics path blocks that comprise the playfield path;
- storing in the digital memory character collision type information which corresponds to a character and which indicates for

8 Claims



operation determination means for determining operations required in accordance with the current operation state and current target operation comprising a key word extract unit for extracting a key word from the message inputted by the second input means, target operation detection means for detecting a target operation corresponding to the key word extracted at the key word extract unit in accordance with a correspondence table showing correspondence between each target operation and each key word, an operation state transi-

tion memory unit for holding each change in the operation state of the information processing device, and an operation determination unit for referring to the operation state transition memory unit to determine the operations embodying the required operation based on the current operation state detected at the operation state detection means and the target operation detected at the target operation detection unit;

operation guide display storage means for holding help documentation for each operation to be executed at the information processing device;

display means; and

control means for reading from the operation guide display storage means the help documentation corresponding to each of the operations determined at the operation determination means, and displaying the help documentation at the display means.

5,513,309

GRAPHIC EDITOR USER INTERFACE FOR A POINTER-BASED COMPUTER SYSTEM

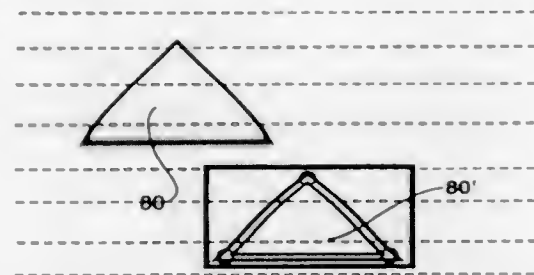
John R. Meier, Cupertino, and Stephen P. Capps, San Carlos, both of Calif., assignors to Apple Computer, Inc., Cupertino, Calif.

Continuation of Ser. No. 1,120, Jan. 5, 1993, abandoned. This application May 8, 1995, Ser. No. 436,082

Int. Cl.⁶ G06F 3/00; 3/033; G06T 3/00

U.S. Cl. 395—155

6 Claims



1. A method of editing objects displayed on a screen of a display assembly of a pen based computer system, the method comprising the steps of:

selecting a portion of an object to be edited, the selected portion of the object being displayed at an original location on the screen;

highlighting the selected portion of the object;

drawing a bounding box about the highlighted portion of the object; and

editing the object wherein during the editing step a user is permitted to duplicate the selected portion of the object by tapping a stylus on the screen at a location that is within the bounding box, wherein no other actions by the user are required to facilitate the duplication;

wherein when a duplication of the selection portion of the object is made, a duplicate of the selected portion of the object is displayed at a position that is offset from the position of the original selected portion of the object in a display updating step.

5,513,310 METHOD FOR SELECTING A CONSTRUCTED ELEMENT OF A DRAWING TO GENERATE SIMILAR ELEMENTS

Patrick Megard, 9, rue Jean-Jaquet, 1201 Geneve, and Serge Favre, 175, Rte de St-Julien, 1228 Plan-les-Ouates, both of, Switzerland

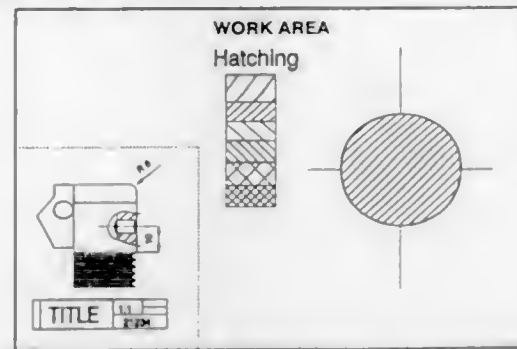
Filed Jan. 18, 1994, Ser. No. 182,333

Claims priority, application Switzerland, Feb. 8, 1993, 378/93

Int. Cl.⁶ G06F 15/00

U.S. Cl. 395—161

7 Claims



1. A computer-implemented CAD/CAM method of creating and processing representations of objects in two or three dimensions and of reproducing said representations using at least one of a display means and a manufacturing means, comprising the steps of:

constructing a representation of at least one element, said at least one element possessing a plurality of attributes, each of said plurality of attributes being dependent on at least one parameter set by at least one computer command that generated said at least one element;

saving, in a memory of a computer, data corresponding to said at least one constructed element, said data comprising a type of said at least one constructed element, said plurality of attributes of said at least one constructed element, and data corresponding to a manner in which said at least one constructed element is linked to additional elements saved in said memory of said computer;

saving, in said memory, information corresponding to said at least one computer command that generated said at least one constructed element, and information corresponding to said at least one parameter set by said at least one computer command, said saved information thereby defining at least one reference element;

selecting, by means of a pointer device, one of said at least one constructed element and said at least one reference element; automatically retrieving, from said memory, at least one of said at least one computer command and said at least one parameter, based on said selected one of said at least one constructed element and said at least one reference element;

automatically reproducing at least one other independent element sharing similar attributes as at least one of said constructed element and said at least one reference element using said at least one of said at least one computer command and said at least one parameter retrieved from said memory.

5,513,311 METHOD AND SYSTEM FOR CREATING LOGICAL CONNECTIONS IN A DATA PROCESSING SYSTEM

Frank A. McKiel, Jr., Trophy Club, Tex., assignor to International Business Machines Corporation, Armonk, N.Y.

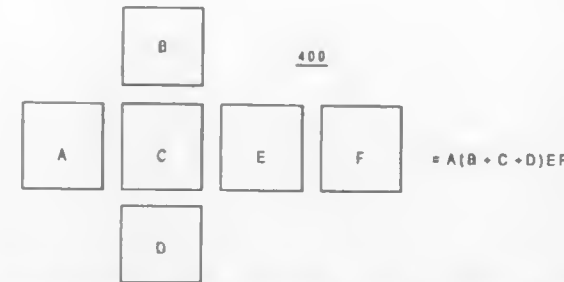
Filed May 31, 1994, Ser. No. 251,533

Int. Cl.⁶ G06F 15/21

U.S. Cl. 395—161

15 Claims

1. A method in a data processing system for efficiently creating a logical connection between a new graphic object and at least one of a plurality of existing graphic objects, wherein a number of



diverse types of logical connections may be created between graphic objects, said method comprising:

in response to a placement of a new graphic object in a location, identifying each existing graphic object within said plurality of existing graphic objects located within a predetermined distance from said new graphic object; and

automatically creating a particular logical connection between said new graphic object and each identified existing graphic object based upon a position of each identified existing graphic object with respect to said new graphic object, wherein logical connections between graphic objects are efficiently created.

5,513,312

METHOD FOR SYSTEM-PROMPTED FAULT CLEARANCE OF EQUIPMENT IN COMMUNICATION SYSTEMS

Norbert Loebig, Darmstadt, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

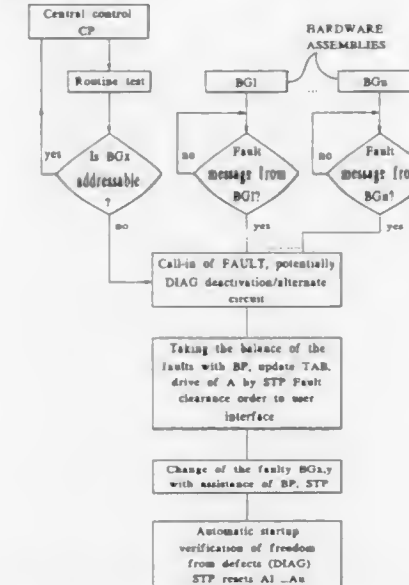
Filed Dec. 15, 1993, Ser. No. 166,691

Claims priority, application Germany, Dec. 15, 1992, 42 42 323.6

Int. Cl.⁶ H04B 17/00

U.S. Cl. 395—182.01

18 Claims



1. A method for system-prompted fault clearance of equipment in a communication system having a central control means in which sequence at least one fault treatment procedure and at least one diagnostic procedure, and having hardware equipment including assemblies each having a respective control means, a respective timer controlled by said respective control means and a plurality of sub-modules located in a respective hardware equipment, the hardware equipment being interrogated by the fault treatment procedure or the diagnostic procedure sequencing in the central control means for verification of operating condition thereof, comprising the steps of:

given an occurrence of a malfunction on at least one of the hardware equipment, transmitting via the respective control means a fault message to the central control means, whereupon the central control means, without substantial interruption of operation of the communication system, executes a fault verification/fault location procedure in which the central control means, first, updates a current fault picture of all hardware equipment present in the communication system that is stored in a fault table, the current fault picture being updated with information obtained from the fault verification/fault location procedure, and, second, sends an alarm message to an operator location;

identifying, via the central control means, without substantial interruption of operation of the communication system, that utilizes the information obtained, maintenance parameters, stored in the central control means via an evaluation procedure sequencing in the central control means, that indicate a current degree of redundancy of hardware equipment associated with said malfunction, and comparing the identified maintenance parameters with parameters representative of the current fault picture;

in response to the comparison of the identified parameters indicating availability of redundant hardware equipment, initiating a control procedure in the central control means, without substantial interruption of operation of the communication system, with which an optical display means is driven on the hardware equipment associated with said malfunction, to thereby indicate that replacement of the hardware equipment associated with said malfunction is both permitted and required; and

after replacement by an operator of the hardware equipment, associated with said malfunction, with a redundant hardware equipment and after automatically placing the redundant hardware equipment in service by the central control means, implementing, via the central control means, without substantial interruption of operation of the communication system, an automatic verification of freedom from malfunction and updating, via the central control means, without substantial interruption of operation of the communication system, the optical display means associated with the hardware equipment that had said malfunction.

5,513,313

METHOD FOR GENERATING HIERARCHICAL FAULT-TOLERANT MESH ARCHITECTURES

Jehoshua Bruck, Palo Alto; Robert E. Cypher, Los Gatos, and Ching-Tien Ho, San Jose, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

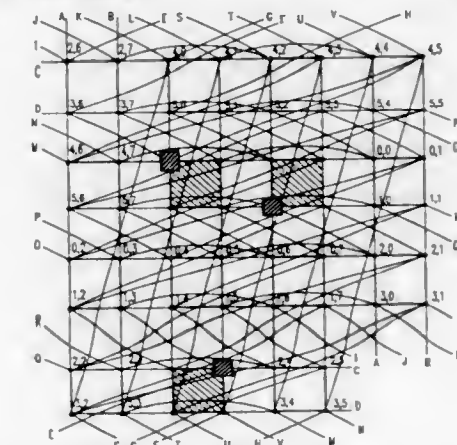
Continuation of Ser. No. 4,874, Jan. 19, 1993, abandoned.

This application Aug. 31, 1995, Ser. No. 521,645

Int. Cl.⁶ G06F 11/00

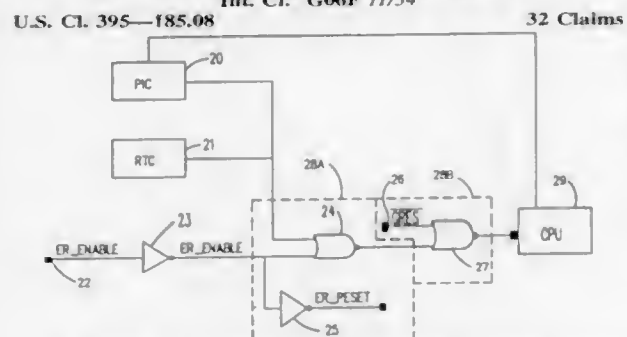
U.S. Cl. 395—182.02

11 Claims



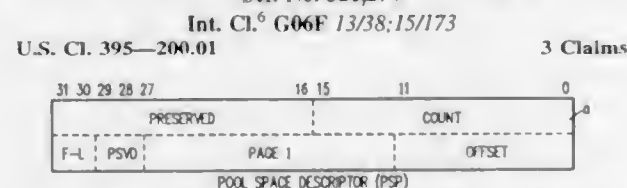
6. A multiprocessor network comprising: a plurality of processor nodes;

5,513,319
WATCHDOG TIMER FOR COMPUTER SYSTEM RESET
 Richard Finch, and Eric Schieve, both of Austin, Tex., assignors to Dell USA, L.P., Austin, Tex.
 Continuation of Ser. No. 86,962, Jul. 2, 1993, abandoned. This application Jun. 8, 1995, Ser. No. 488,708
 Int. Cl.⁶ G06F 11/34



1. A circuit for resetting a nonfunctioning computer system, comprising:
 - a watchdog timer coupled to a central processing unit (CPU) within said computer system to enable said watchdog timer to receive a start signal from said CPU indicating that said CPU is beginning execution of a particular task, said watchdog timer beginning to measure a preselected period of time upon receipt of said start signal and generating a timeout signal upon expiration of said preselected period of time;
 - a reset signal generating circuit for receiving said timeout signal from said watchdog timer and providing, in response thereto, a nonmaskable interrupt signal to said CPU and a reset signal; and
 - a reset circuit coupled to said CPU for receiving the reset signal from the reset signal generating circuit and for transmitting a hardware reset signal to said CPU after a delay period, the delay period allowing said CPU to reset only when said CPU has not responded to the nonmaskable interrupt signal indicating that said CPU is nonfunctioning.

5,513,320
TRANSMIT DATA DESCRIPTOR STRUCTURE IN A MEDIA ACCESS CONTROL/HOST SYSTEM INTERFACE THAT IMPLEMENTS FLEXIBLE TRANSMIT DATA DESCRIPTOR STRUCTURE UNIT
 Desmond W. Young, Campbell, Calif., and James R. Hamstra, Shorewood, Minn., assignors to National Semiconductor Corporation, Santa Clara, Calif.
 Continuation of Ser. No. 321,458, Oct. 11, 1994, abandoned, which is a continuation of Ser. No. 144,391, Oct. 27, 1993, abandoned, which is a division of Ser. No. 989,942, Dec. 10, 1992, abandoned, which is a continuation of Ser. No. 516,245, Apr. 27, 1990, abandoned. This application Aug. 30, 1995, Ser. No. 521,274
 Int. Cl.⁶ G06F 13/38; 15/173



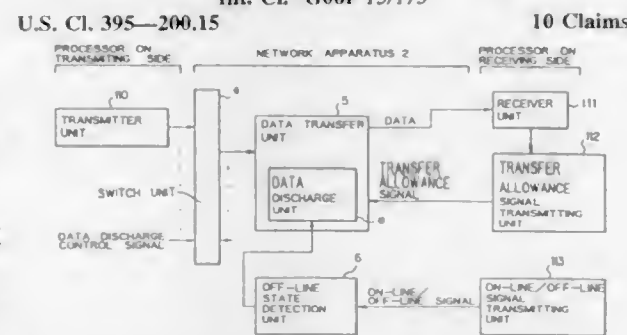
1. A method of processing information descriptors in an interface system connected between a local area network communications medium and a network station, wherein the interface system transfers information objects between the communications medium and a memory system associated with the network station, each information including one or more parts described by an information descriptor associated with said part, and wherein the interface system includes a bus interface unit that connects to the network station for transferring information objects between the interface system and the memory system, indicate circuitry connected to the

bus interface unit for transferring data information objects and control information objects received by the interface system from the communications medium to the memory system via the bus interface unit, request circuitry connected to the bus interface unit for transferring data information objects and control information objects received by the interface system from the memory system to the communications medium via the bus interface unit, and a status management unit that interprets control information objects received from the memory system or the communications medium, each information descriptor including one or more fields having zero value or greater than zero value, information descriptors associated with data information objects including a byte count field, the method comprising:

- scanning the byte count field of a received data information object information descriptor;
- in the event that the byte count field of the received data information object information descriptor has greater than zero value,
 - (i) validating said information descriptor;
 - (ii) requesting a data fetch associated with said received data information object; and
 - (iii) processing said information descriptor; and
- in the event that the byte count field of the received data information object information descriptor has zero value,
 - (i) processing said information descriptor without validating said information descriptor and without requesting an associated data field.

5,513,321
MULTIPROCESSOR SYSTEM DISCHARGING DATA IN NETWORKING APPARATUS IN RESPONSE TO OFF-LINE INFORMATION FROM RECEIVER-SIDE PROCESSOR

Masayuki Katori, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan
 Filed Aug. 24, 1993, Ser. No. 110,936
 Claims priority, application Japan, Dec. 22, 1992, 4-342357
 Int. Cl.⁶ G06F 15/173



1. A multi-processor system comprising:
 - a networking apparatus; and
 - a plurality of processors for transferring data through the networking apparatus from one of the plurality of processors to another of the plurality of processors, wherein at least one first processor among the plurality of processors comprises transmitting means, connected to the networking apparatus, for transmitting data to the networking apparatus, at least one second processor among the plurality of processors comprises:
 - receiving means, connected to the networking apparatus, for receiving data transferred from the networking apparatus;
 - transfer allowance signal transmitting means for transmitting a transfer allowance signal to the networking apparatus when the receiving means is ready to receive data and the at least one second processor is in an on-line state, and
 - on-line/off-line signal transmitting means for transmitting an on-line/off-line signal to the networking apparatus, the

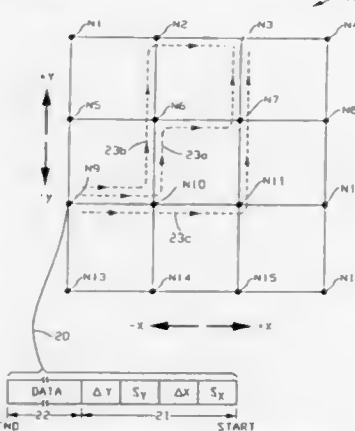
on-line/off-line signal indicating by a voltage level thereof whether the at least one second processor is in one of the on-line state and an off-line state;

- said networking apparatus comprising:
 - switch means for providing a route for transferring data between each of the at least one first processor and a respective one of the at least one second processor corresponding to each first processor,
 - data transfer control means, provided corresponding to each of said at least one second processor, on an output side of said switch means and, on each route for transferring data, for receiving from said switch means the data transferred between one of the at least one first processor connected to the route and one of the at least one second processor corresponding to said one of the at least one first processor, temporarily storing the data, and transferring the data to said one of the at least one second processor connected to the route, when the data transfer control means receives the transfer allowance signal from the second processor, and
 - off-line state detecting means, provided corresponding to each of said data transfer control means, for receiving the on-line/off-line signal, directly from said one of the at least one second processor connected to the route, detecting said voltage level of the on-line/off-line signal, and generating and outputting a data discharge control signal to the data transfer control means, when the on-line/off-line signal indicates that the at least one second processor is in the off-line state; and

the data transfer control means further comprises data discharge means for receiving the data discharge control signal, and for discharging the data temporarily stored in the data transfer control means in response to the data discharge control signal, regardless of the transfer allowance signal.

5,513,322
MULTI-PATH MESSAGE ROUTING WITHOUT DEADLOCKS
 Chi-Yeh Hou, Salt Lake City, Utah, assignor to Unisys Corporation, Blue Bell, Pa.
 Filed May 2, 1994, Ser. No. 236,439
 Int. Cl.⁶ G06F 15/80; 13/14; H04B 3/02

U.S. Cl. 395-200.15



1. A method of routing a message through an array of data processing nodes which are intercoupled with channels in rows and columns; said message including a header with a S_x field which selects a +X or -X direction for said message to travel on said rows of channels, a ΔX field which specifies the number of nodes through which said message must pass in the direction selected by said S_x field, a S_y field which selects a +Y or -Y direction for said message to travel on said columns of channels, and a ΔY field which specifies the number of nodes through which said message

must pass in the direction selected by said S_y field; said method being performed by a node which receives said header and including the steps of:

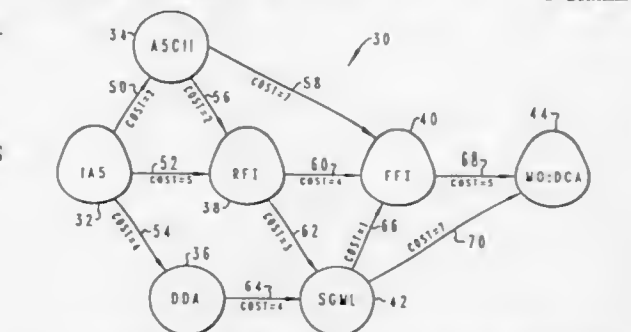
- examining said header for a first state wherein $\Delta X \neq 0$ and $\Delta Y \neq 0$ and S_x, S_y select a first predetermined pair of directions;
- sending said message through said node, if said first state exists, on just a single channel in the one direction of said first pair such that it followed by the other direction of said first pair form a clockwise turn;
- examining said header for a second state wherein $\Delta X \neq 0$ and $\Delta Y \neq 0$ and S_x, S_y select a second predetermined pair of directions;
- sending said message through said node, if said second state exists, on just a single channel in the one direction of said second pair such that it followed by the other direction of said second pair form a counterclockwise turn;
- examining said header for a third state wherein $\Delta X \neq 0$ and $\Delta Y \neq 0$ and S_x, S_y select neither said first or second predetermined pairs of directions; and,
- sending said message through said node, if said third state exists, on just a single channel in either one of the directions selected by S_x, S_y based on channel availability and without regard to whether said message will make a clockwise turn or counterclockwise turn.

5,513,323
METHOD AND APPARATUS FOR MULTISTAGE DOCUMENT FORMAT TRANSFORMATION IN A DATA PROCESSING SYSTEM

Marvin L. Williams, Lewisville, Tex., and Roselyn H. Yun, Honolulu, Hi., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 14, 1991, Ser. No. 715,179
 Int. Cl.⁶ G06F 5/00; 3/00; H01J 13/00

U.S. Cl. 395-200.18



1. A method in a data processing system having multiple object types therein and including multiple object type transformation applications for determining an optimal multistage transformation from a first selected object type to a second selected object type, said method comprising the steps of:
 - identifying each object type within said data processing system;
 - assigning each identified object type to an associated node within an object type network;
 - determining an expenditure cost associated with each of said multiple object type transformation applications;
 - associating each determined expenditure cost with a link between two selected nodes within said object type network; and
 - determining an optimal path through said object type network from a node associated with said first selected object type to a node associated with said second selected object type by means of links having minimal expenditure cost associated therewith.

5,513,324

METHOD AND APPARATUS USING NETWORK VARIABLES IN A MULTI-NODE NETWORK

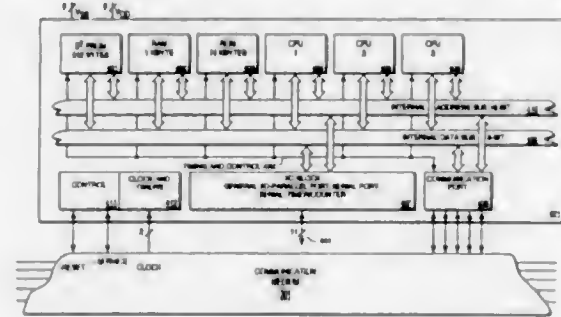
Robert A. Dolin, Jr., Menlo Park; Robert L. Elnkauf, Fremont, both of Calif.; Richard S. Kagan, London, England; Glen M. Riley, Los Gatos, and James M. Von De Bur, San Jose, both of Calif., assignors to Echelon Systems Corporation, Palo Alto, Calif.

Continuation of Ser. No. 671,036, Mar. 18, 1991, abandoned. This application Mar. 7, 1994, Ser. No. 207,229

Int. Cl. G06F 13/00

U.S. Cl. 395—200.18

36 Claims



1. A network for communicating a network variable V, said variable V having a value, said network comprising:

- a first node addressable by a first network address;
- a second node addressable by a second network address;
- a communications medium;

said first node being coupled to said communications medium, said first node having

- a first memory having a first storage location for storing a value of a variable V, said first memory further having an address table for storing said second network address, said first memory further having a network variable table for storing variable identification information for identifying said variable V and for storing address table index information corresponding to said variable identification information;

a first processor being coupled to said memory, said processor for writing to said first storage location with a first value of said variable V, said processor further for generating a communications packet responsive to said first value being written to said first memory, said communications packet including said first value and identification information identifying said first value as being a value of variable V, and

- a first network communications circuit being coupled to said processor and to said communications medium, said network communications circuit for communicating said communications packet onto said communications medium responsive to receiving said communications packet from said first processor, and

said second node being coupled to said communications medium, said second node having

- a second network communications circuit being coupled to said communications medium for receiving said communications packet,
- a second memory having a second storage location for storing a value of said variable V, and

a processor being coupled to said second network communications circuit and said second memory, said processor for extracting said first value from said received communications packet, said processor further for writing said first value to said second storage location responsive to extracting said first value from said received communications packet.

5,513,325

TECHNIQUE FOR COUPLING CTOS UNITS TO NON-CTOS HOST

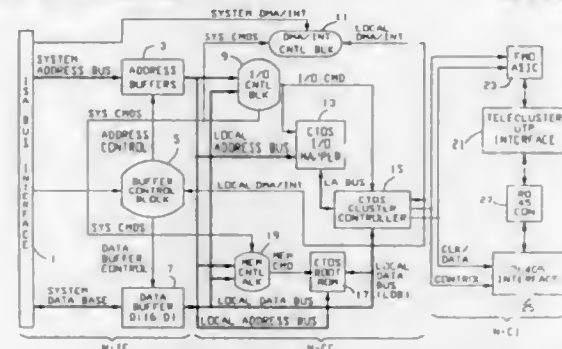
George W. Harris, Jr., Mountain View, and Shari J. Nolan, San Jose, both of Calif., assignors to Unisys Corporation, Blue Bell, Pa.

Filed Dec. 23, 1992, Ser. No. 996,986

Int. Cl. G06F 13/00

U.S. Cl. 395—200.20

26 Claims



1. A method for internetworking non-CTOS computer means with a network of CTOS terminals, this method including:

- providing said computer means with system-bus means, with CTOS-net bus means coupled and arranged to transfer signals to/from said system-bus with communication control means and net-interface means coupled and adapted to transfer signals between said CTOS-net bus means and said communication controller means and also providing associated network connections via a cluster-interface stage which is adapted to handle signals to/from said network connections;

said CTOS-net bus means being made to comprise ISA-bus means adapted to deliver address, data and control signals,

- plus associated interface logic means; wherein said communication controller means is coupled and adapted to transfer clock and data signals; and include a CTOS cluster controller chip intercoupling said cluster-interface stage and said CTOS-net bus means;

wherein said interface means comprises address buffer means, data buffer means and intermediating buffer control means for controlling signal flow to/from both buffer means; and wherein said data buffer means is coupled to said CTOS cluster controller chip via CTOS Boot ROM means which is made to include memory-control input means thereto; and

- wherein said interface means comprises address buffer means, data buffer means and intermediating buffer control means for controlling signal flow to and from both said address-buffer means and said data buffer means; and wherein said memory-control input means is inputted from both said Buffer means and said Buffer Control means; and wherein said Boot ROM is also coupled directly with both said Buffer means.

5,513,326

SYSTEM FOR OPTIMIZING DATA TRANSFER

Robert A. Nute, Westboro, Mass., assignor to Quantum Corporation, Milpitas, Calif.

Continuation of Ser. No. 365,244, Jun. 12, 1989, abandoned.

This application May 4, 1995, Ser. No. 434,797

Int. Cl. G06F 5/06

U.S. Cl. 395—250

31 Claims

1. An apparatus for optimizing data transfer between a central processing unit and a serial storage device, said data being buffered in a data buffer between said central processing unit and said serial storage device, such that data is transferred between said data buffer and said serial storage device, said apparatus comprising:

- monitoring circuitry for detecting utilization of said buffer, wherein utilization is based at least in part on the quantity of data in said buffer, and for providing a utilization signal based on said utilization to a processor, said utilization signal pro-

5,513,328

APPARATUS FOR INTER-PROCESS/DEVICE COMMUNICATION FOR MULTIPLE SYSTEMS OF ASYNCHRONOUS DEVICES

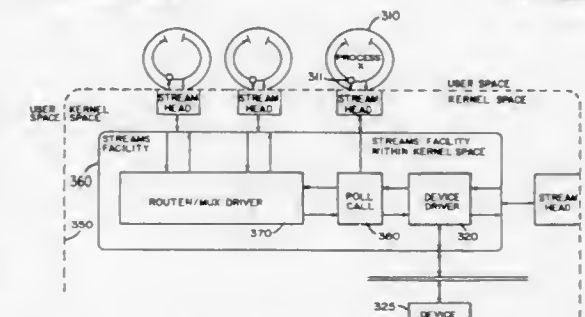
James F. Christofferson, 544 Belleforte, Oak Park, Ill. 60302

Filed Oct. 5, 1992, Ser. No. 956,511

Int. Cl. G06F 9/00

U.S. Cl. 395—280

20 Claims



viding an indication which indicates whether said quantity of data in said buffer is within a desired range; said processor for receiving said utilization signal and for providing a speed control signal to a speed control circuit, wherein said speed control signal causes said speed control circuit to adjust the transfer rate of said serial data storage device in a continuously varying manner in response to a signal received from said processor indicating that said utilization is not within said desired range.

5,513,327

INTEGRATED CIRCUIT I/O USING A HIGH PERFORMANCE BUS INTERFACE

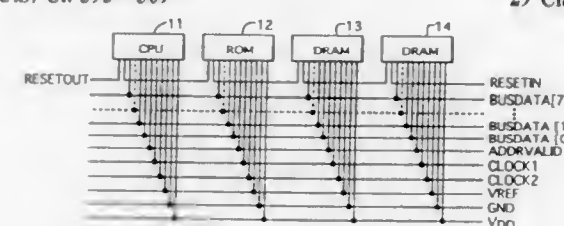
Michael Farmwald, Berkeley, and Mark Horowitz, Palo Alto, both of Calif., assignors to Rambus, Inc., Mountain View, Calif.

Continuation of Ser. No. 954,945, Sep. 30, 1992, Pat. No. 5,319,755, which is a continuation of Ser. No. 510,898, Apr. 18, 1990, abandoned. This application Mar. 31, 1994, Ser. No. 222,646

Int. Cl. G06F 13/00

U.S. Cl. 395—309

29 Claims



1. A dynamic random access memory (DRAM), comprising:

- a first circuit for providing a clock signal;
- a conductor for coupling the DRAM to a bus; and
- a receiver circuit coupled to the conductor and the first circuit, the receiver circuit for latching information received from the conductor in response to a rising edge of the clock signal and a falling edge of the clock signal, wherein the receiver circuit comprises:

- a first input receiver coupled to the conductor and the first circuit, the first input receiver for latching information provided by the bus via the conductor in response to the rising edge of the clock signal; and

a second input receiver coupled to the conductor and the first circuit, the second input receiver for latching information from the bus in response to the falling edge of the clock signal.

5,513,329

MODULAR HOST LOCAL EXPANSION UPGRADE

Victor Pecore, Austin, Tex., assignor to Dell USA, L.P., Austin, Tex.

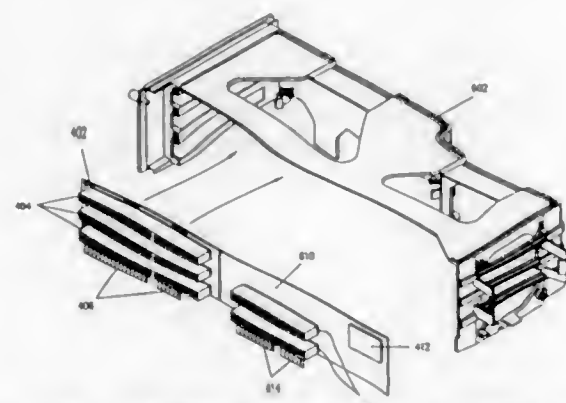
Filed Jul. 15, 1993, Ser. No. 92,179

Int. Cl. G06F 13/00

U.S. Cl. 395—281

1 Claim

1. An apparatus, in a computer system, for expanding the functionality of the computer system, comprising:



- a plurality of motherboard connectors on a computer system motherboard, said plurality of motherboard connectors connected to address, data, control, power and ground buses of the motherboard;
- a riser card having a side edge portion removably insertable into said motherboard connectors so as to connect to the address, data, control, power and ground buses of the motherboard; and
- said riser card having a plurality of riser card connectors adapted for connection to a plurality of peripheral device interface cards and having application specific integrated circuits for translation of bus signals between the motherboard and interface cards.

5,513,330

APPARATUS FOR SUPERSALAR INSTRUCTION PREDECODING USING CACHED INSTRUCTION LENGTHS

David R. Stiles, Sunnyvale, Calif., assignor to NexGen, Inc., Milpitas, Calif.

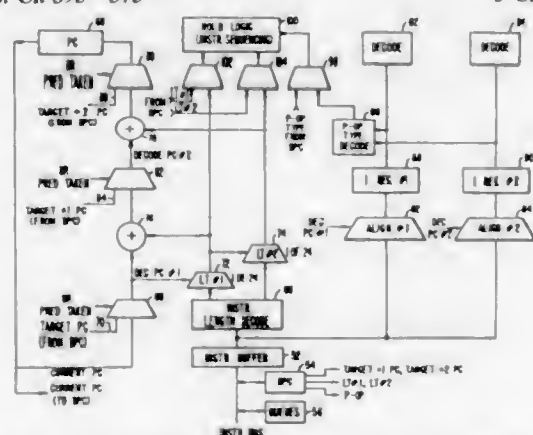
Continuation of Ser. No. 594,878, Oct. 9, 1990, abandoned.

This application Oct. 27, 1993, Ser. No. 143,549

Int. Cl. G06F 9/38

U.S. Cl. 395—375

3 Claims



3. An instruction pre-decoding apparatus for a processor executing variable-length instructions fetched from a memory, each of said instructions executing in an integral multiple of a time unit referred to as an instruction cycle said processor executing for a plurality of said instruction cycles, said apparatus pre-decoding at least two of said instructions during one of said instruction cycles, said instructions having respectively associated lengths, addresses, and locations in said memory, said addresses respectively representing said locations in said memory,

said instructions including branch instructions and target instructions, said target instructions being respectively associated with said branch instructions,

said apparatus comprising:

a branch prediction cache having at least one entry said at least one entry having fields for one of said target instructions, the length of said one of said target instructions, the length of a first sequential instruction following said one of said target instructions, the address of said one of said target instructions, the address of said first sequential instruction following said one of said target instructions, and the address of a second sequential instruction following said one of said target instructions;

means for determining the address of a first one of said instructions;

means for fetching from said memory during one of said instruction cycles at least said first one of said instructions and a second one of said instructions, said second one of said instructions sequentially following said first one of said instructions;

means for determining the respective lengths of said first and second ones of said instructions;

means for determining the address of said second one of said instructions;

means for determining whether either of said first and second ones of said instructions is one of said branch instructions and is thus a detected branch;

means for checking whether said at least one entry of said branch prediction cache is associated with said detected branch and is thus an associated entry;

means for substituting, said means for substituting receiving a first group of said fields from said associated entry, said first group of said fields including said one of said target instructions, said length of said one of said target instructions, and said address of said one of said target instructions, said means for substituting providing said first group of said fields as replacements respectively for said detected branch, said detected branch's determined length, and said detected branch's determined address;

a program counter register;

a first multiplexer having a first input coupled to an output of said program counter register and a second input for receiving said address of said one of said target instructions from said associated entry of said branch prediction cache;

first means for adding an output of said first multiplexer and said length of said first one of said instructions from said means for determining the respective lengths;

a second multiplexer having a first input coupled to an output of said first means for adding and a second input for receiving said address of said first sequential instruction following said one of said target instructions from said associated entry of said branch prediction cache;

second means for adding an output of said second multiplexer and said length of said second one of said instructions from said means for determining the respective lengths;

a third multiplexer having a first input coupled to an output of said second means for adding and a second input for receiving said address of said second sequential instruction following said one of said target instructions from said associated entry of said branch prediction cache, an output of said third multiplexer being coupled to an input of said program counter register;

first alignment circuit for aligning said first one of said instructions in response to an input of a first program count information from said output of said first multiplexer; and

a second alignment circuit for aligning said second one of said instructions in response to an input of a second program count information from said output of said second multiplexer.

5,513,331

METHOD AND APPARATUS FOR AUTOMATICALLY CONFIGURING SYSTEM MEMORY ADDRESS SPACE OF A COMPUTER SYSTEM HAVING A MEMORY SUBSYSTEM WITH INDETERMINISTIC NUMBER OF MEMORY UNITS OF INDETERMINISTIC SIZES DURING SYSTEM RESET

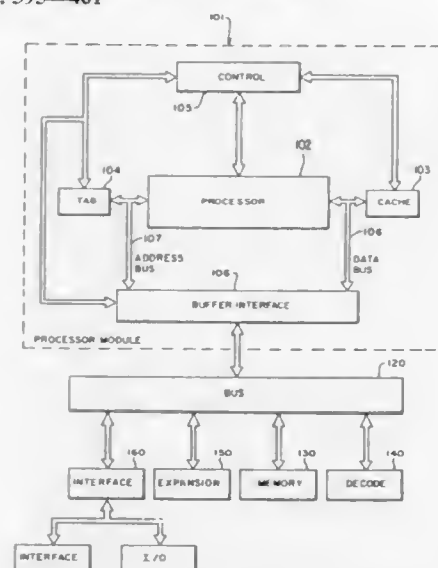
Stephen Pawlowski, Beaverton, and Peter D. MacWilliams, Aloha, Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Continuation of Ser. No. 331,160, Oct. 28, 1994, abandoned, which is a continuation of Ser. No. 164,626, Dec. 7, 1993, abandoned, which is a continuation of Ser. No. 82,153, Jun. 24, 1993, abandoned, which is a continuation of Ser. No. 649,243, Jan. 29, 1991, abandoned, which is a continuation of Ser. No. 292,566, Dec. 30, 1988, abandoned. This application Mar. 29, 1995, Ser. No. 412,607

Int. Cl. G06F 12/02

U.S. Cl. 395—401

4 Claims



1. In a computer system comprising a processor, an address decoder, and a system bus having a plurality of connector slots, wherein the processor and the address decoder are both coupled to the bus; and one or more memory units are correspondingly connected to one or more of the connector slots, a method for automatically configuring system memory address space of the computer system during system reset, the method comprising the steps of:

- concurrently outputting and maintaining one or more memory sizes of the one or more memory units on one or more groups of private bus signal lines of the system bus, through the connector slot(s), by the one or more memory units, while system reset is in progress, responsive to a system reset bus signal so denoting;
- concurrently coupling the memory size(s) maintained by the memory unit(s) on the private bus signal lines to the address decoder by the bus while the memory size(s) are being output and maintained; and
- systematically reading the private bus signal lines, one group of private bus signal line(s) at a time, incrementally configuring the system address space in accordance to the memory size(s) systematically read, and retaining the system address space configuration information by the address decoder, while system reset is in progress, responsive to the same system reset bus signals, the retained system address configuration information being used by the address decoder subsequently during operation to select the appropriate ones of the one or more memory units when the one or more memory units are address by the processor.

5,513,332

DATABASE MANAGEMENT COPROCESSOR FOR ON-THE-FLY PROVIDING DATA FROM DISK MEDIA TO ALL WITHOUT FIRST STORING DATA IN MEMORY THEREBETWEEN

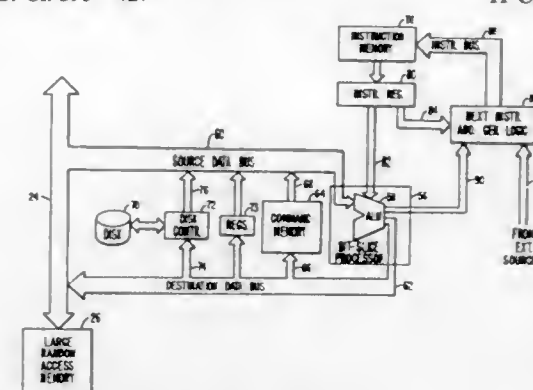
Ted L. Wimer, Kuna, and Charles Jopson, Boise, both of Id., assignors to Extended Systems, Inc., Boise, Id.

Filed May 31, 1988, Ser. No. 178,110

Int. Cl. G06F 13/00

U.S. Cl. 395—427

11 Claims



- A data retrieval processor comprising: a disk interface coupled to a disk memory; an arithmetic logic unit (ALU); source data bus means, coupling said disk interface to an input of said arithmetic logic unit, for providing data from said disk memory directly to said input of said ALU without storing said data in a memory first; command memory means for storing criteria downloaded from an external host computers; means, having an input for receiving said criteria from said host computer, and having an output coupled to said ALU, for selecting data with said ALU which meet said criteria, wherein only said selected data is provided to said output of said means for selecting; and a destination data bus coupling said output of said means for selecting to said random access memory.

5,513,333

CIRCUITRY AND METHOD FOR PROGRAMMING AND ERASING A NON-VOLATILE SEMICONDUCTOR MEMORY

Virgil N. Kynett, El Dorado Hills, and Mickey L. Fandrich, Placerville, both of Calif., assignors to Intel Corporation, Santa Clara, Calif.

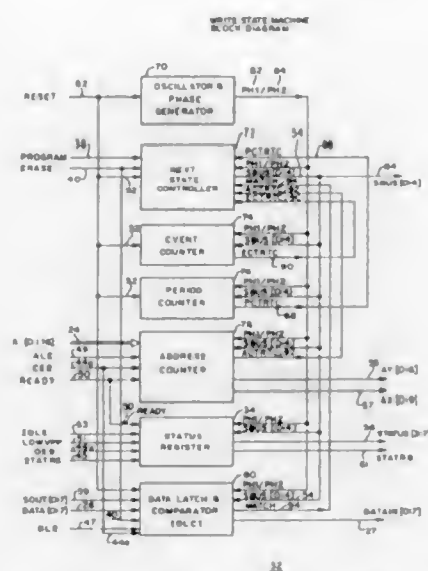
Division of Ser. No. 654,375, Feb. 11, 1991, abandoned. This application Sep. 15, 1993, Ser. No. 100,508

Int. Cl. G11C 16/06

U.S. Cl. 395—430

10 Claims

- A control circuit for controlling a programming of a nonvolatile memory array, comprising:
 - a period counter that times a duration of a programming pulse applied to a memory cell of the nonvolatile memory array and asserts a first terminal count signal when the duration of the programming pulse is equal to a predetermined duration;
 - a comparator that compares a logic level of the memory cell with a predetermined reference value and asserts a match signal when the logic level is equal to the predetermined reference value;
 - an event counter that counts a number of times the programming pulse is applied to the memory cell and asserts a second terminal count signal when the number is equal to a predetermined number;
 - a state controller coupled to the period counter, the comparator, and the event counter to receive the first and second terminal count signals and the match signal, wherein the state



controller generates control signals to automatically cause the programming pulse to be applied to the memory cell upon receipt of an initiation signal, wherein the state controller causes the programming pulse to be reapplied to the memory cell when the first terminal count signal is asserted and the match signal and second terminal count signal are not asserted until the match signal or the second terminal count signal is asserted.

5,513,334

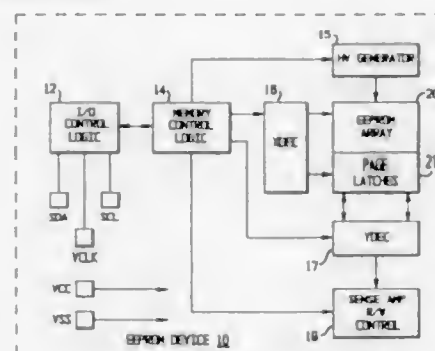
MEMORY DEVICE WITH SWITCHING OF DATA STREAM MODES

Samuel E. Alexander, Phoenix, Ariz., assignor to Microchip Technologies, Inc., Chandler, Ariz.

Filed Jun. 27, 1994, Ser. No. 266,948
Int. Cl. G06F 12/00; 1/10

U.S. Cl. 395—430

16 Claims



1. An I²C bus-compatible, serial, electrically erasable programmable read-only memory (EEPROM) device for storage and serial transmission of configuration information for an intelligent peripheral device with which the EEPROM device is to be associated, for communication of the information on a bus to a host device, comprising:

an EEPROM array for storing data representing the configuration and control information, and

means for selectively establishing any of a plurality of modes supported by said EEPROM device for transmitting data stored in the EEPROM array sequentially onto the bus in the established mode to the exclusion of all other modes for allowing interaction between said host device and said peripheral device, including separate clock input lines to said EEPROM device each associated with a respective distinct and different one of said modes and a data line for outputting data from the EEPROM array onto the bus as clocked by the respective clock input line for the established mode, said means for selectively establishing including means for selectively multiplexing said separate clock input lines to the EEPROM device as a single clock source according to the mode to be established.

5,513,335

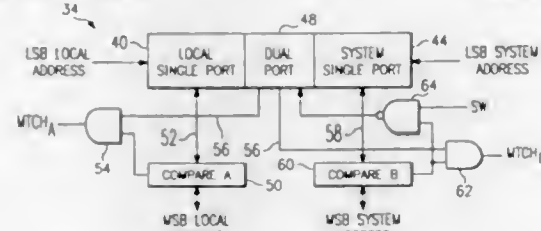
CACHE TAG MEMORY HAVING FIRST AND SECOND SINGLE-PORT ARRAYS AND A DUAL-PORT ARRAY

David C. McClure, Carrollton, Tex., assignor to SGS-THOMSON Microelectronics, Inc., Carrollton, Tex.

Filed Nov. 2, 1992, Ser. No. 970,188
Int. Cl. G06F 12/00; 15/00; G11C 13/00

U.S. Cl. 395—457

14 Claims



1. A cache tag memory, comprising:

a first single-port memory array having a plurality of entries;
a dual-port memory array having a plurality of entries corresponding to the plurality of entries in the first single-port memory array;

a second single-port memory array having a plurality of entries corresponding to the plurality of entries in the dual-port memory array and the first single-port memory array;
a first memory port capable of writing entries to said first single-port memory array said second single-port memory array, and said dual-port memory array, and capable of reading entries from said first single-port memory array and said dual-port memory array;

means for, when data is written to said dual-port array and said first and second single-port arrays through said first memory port, writing identical data into corresponding entries of said first and second single-port arrays;

a second memory port capable of reading entries from said second single-port memory array and said dual-port memory array, and capable of writing entries to said dual-port memory array;

a first comparator connected to said first memory port for comparing an array entry selected by a first portion of a local address with a second portion of the local address, and for generating a signal indicative of a match; and

a second comparator connected to said second memory port for comparing an array entry selected by a first portion of a global address with a second portion of the global address, and for generating a signal indicative of a match.

5,513,336

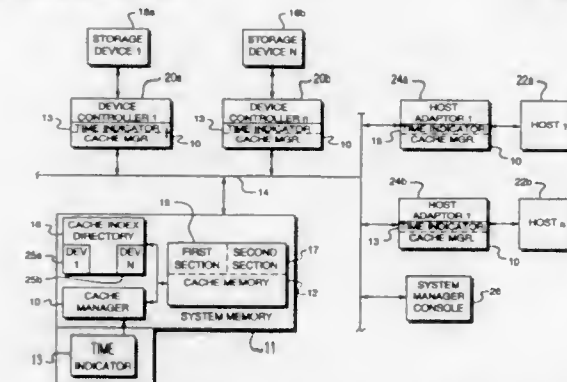
SYSTEM AND METHOD FOR DETERMINING WHEN AND WHAT POSITION IN CACHE MEMORY TO STORE DATA ELEMENTS UTILIZING LEAST AND LAST ACCESSED DATA REPLACEMENT METHOD

Natan Vishitzky, and Haim Kopylovitz, both of Brookline, Mass., assignors to EMC Corporation, Hopkinton, Mass.
Continuation-in-part of Ser. No. 893,509, Jun. 4, 1992, Pat. No. 5,381,539. This application Dec. 12, 1994, Ser. No. 354,479

Int. Cl. G06F 12/12

U.S. Cl. 395—463

33 Claims



1. A cache management system including a cache manager, for monitoring and controlling contents of a cache memory coupled to at least one longer term data storage device, said cache management system comprising:

said cache memory including a first cache memory section, for storing data elements awaiting writing to said at least one longer term data storage device, and a second cache memory section for storing data elements which have been written to said at least one longer term data storage device, said data elements stored in said second cache memory section including a last recently used data element and a least recently used data element, said last recently used data element moveable, over time, in said second cache memory section to become said least recently used data element;

a time indicator, for providing a time indication signal;

a cache indexer, responsive to said time indication signal, for maintaining a cache index of data elements which are stored in at least said first and second cache memory sections, said cache index of data elements including a time indication associated with each data element indexed in said cache index by said cache indexer; and

a cache manager for placing data elements into and removing data elements from said first and second cache memory sections, said cache manager responsive to at least one data element stored in said first cache memory section and written to said at least one longer term data storage device, and responsive to said time indication associated with each data element stored in said cache and indexed in said cache index by said cache indexer, for determining an average period of time that elapses between at least one data element being inserted into said second cache memory section as a last recently used data element, and said at least one data element inserted into said second cache memory section as a last recently used data element being removed from said second cache memory section as said least recently used data element, and for determining a period of time that said at least one data element was stored in said first cache memory section, for comparing said average period of time that elapses with said period of time said at least one data element was stored in said second cache memory section, for placing said at least one data element into said second cache memory section as a last recently used data element if said period of time is less than said average period of time that elapses, and for placing said at least one data element into said second

cache memory section as a least recently used data element if said period of time is greater than said average period of time that elapses.

5,513,337

SYSTEM FOR PROTECTING UNAUTHORIZED MEMORY ACCESSES BY COMPARING BASE MEMORY ADDRESS WITH MASK BITS AND HAVING ATTRIBUTE BITS FOR IDENTIFYING ACCESS OPERATIONAL MODE AND TYPE

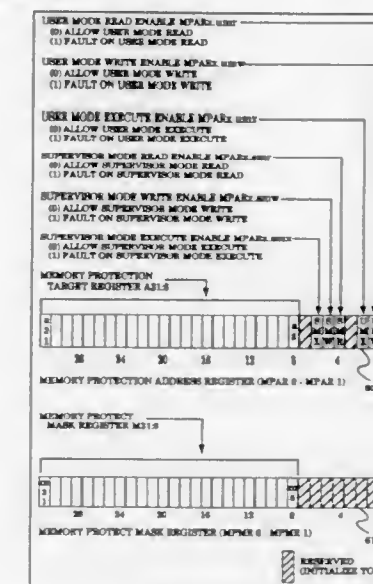
Byron R. Gillespie, Phoenix; Elliot D. Garbus, Scottsdale, both of Ariz.; Mitchell A. Kahn, San Jose, Calif.; Thomas M. Johnson, Tempe, Ariz.; Dennis M. O'Connor, Chandler, Ariz., and Jay S. Heeb, Gilbert, Ariz., assignors to Intel Corporation, Santa Clara, Calif.

Filed May 25, 1994, Ser. No. 249,011

Int. Cl. G06F 12/14

U.S. Cl. 395—479

2 Claims



1. A non-intrusive apparatus for providing protection from memory access violations comprising:

a plurality of memory protect address registers, each for storing a base memory address and attribute bits identifying unauthorized memory access operations;
a monitor for reading any memory access request communicated on a memory bus coupled to a processor, the memory access request having an associated operational mode and access type, the monitor determining a memory address for each memory access request;

a plurality of mask registers each associated with one of the memory protect address registers for storing mask bits, the mask bits for selectively determining a portion of the base memory addresses to be compared to a portion of the memory address to determine a match;

a mode input for receiving signals indicative of an operational mode and access type for the memory access request; and

a fault mode generation block providing a fault signal to the processor, the fault signal indicative of whether the memory access request is one of the unauthorized memory access operations to the protected range of memory as determined by the mask bits according to the operational mode and access type as determined by the attribute bits, the fault mode generation block further providing a cancel signal to a bus control unit coupled to the memory bus if the memory access request is one of the unauthorized memory access operations.

tation system that automatically adjusts window presentation in accordance with window environment changes, including changes in the user-perceivable data, said method implemented by a computer and comprising the steps of:

- operating said presentation system to create a display that includes child windows with user-perceivable data, said child windows positioned within a parent window which comprises a data structure including a child window layout routine;
- detecting an indicated change in child window environment;
- causing each child window to respond automatically to said change in child window environment to operate a child window procedure, associated with each child window, which calculates a minimum size of at least each child window which requires adjustment to accommodate said change in environment and reporting each said minimum size to said child window layout routine; and
- operating said child window layout routine to reposition said child windows on said display, including adjusted size child windows, in accordance with child window spacing parameters associated with said child window layout routine.

5,513,343

NETWORK MANAGEMENT SYSTEM

Hiroshi Sakano; Hiroshi Naruse; Akihiko Masubuchi, all of Tokyo, and Ikuko Tachibana, Ehime, all of Japan, assignors to NEC Corporation, Tokyo, Japan

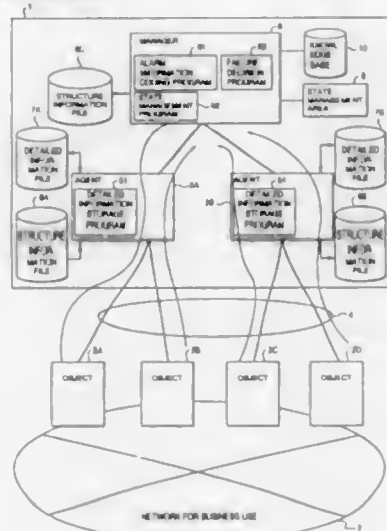
Filed Mar. 25, 1994, Ser. No. 217,703

Claims priority, application Japan, Mar. 25, 1993, 5-090767

Int. Cl.⁶ G06F 11/00

U.S. Cl. 395—183.02

8 Claims



1. A network management system for managing plural objects connected to a network, comprising:

- detailed information storage means for storing into detailed information files detailed information contained in alarm information transmitted from the objects and hash keys prepared from said alarm information;
- alarm information code means for converting said alarm information into alarm codes according to a fixed rule;
- state management means for storing into a state management area said alarm codes together with file types indicating a main cause alarm or an effect alarm and said hash keys;
- a knowledge base for entering therein combinations of alarm codes and effects of alarm information as decision patterns; and

failure decision means for deriving a decision result, by matching, at the time of receiving alarm information, said knowledge base and said state management area with each other.

5,513,344

METHOD OF TESTING CACHE MEMORIES USED FOR AN INFORMATION PROCESSING APPARATUS

Northisa Nakamura, Tokyo, Japan, assignor to NEC Corporation, Japan

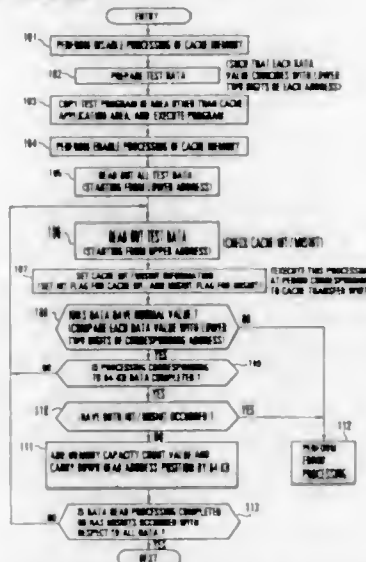
Filed Nov. 1, 1994, Ser. No. 332,082

Claims priority, application Japan, Nov. 10, 1993, 5-280791

Int. Cl.⁶ G06F 11/00

U.S. Cl. 395—185.18

4 Claims



1. A cache memory test method for an information processing apparatus including a main memory, a plurality of cache memories which have different memory capacities and are accessed at the same time when said main memory is accessed, and a determining circuit for, when data is read out from said main memory, determining a cache hit indicating that the data is read out from one of said cache memories, or a cache mishit indicating that the data is not read out from any one of said cache memories, comprising:

- a first step of setting data for testing said cache memories in said main memory such that data values of the data have regularity;
- a second step of loading the data from said main memory into each of said cache memories, the data being not less in amount than the capacity of each of said cache memories;
- a third step of recording information indicating a cache hit indicating that the data is read out from one of said cache memories when said main memory is accessed to read out the data therefrom, or information indicating a cache mishit indicating that the data is not read out from any one of said cache memories, thereby forming a cache hit/mishit information table;
- a fourth step of determining a normal/abnormal condition of each of said cache memories from a state of occurrence of cache hits and cache mishits indicated by the cache hit/mishit information table;
- a fifth step of determining a normal/abnormal condition of each of said cache memories by checking, on the basis of the regularity, correctness of a data value with respect to data for which a cache hit is determined in the third step; and
- a sixth step of determining the capacity of each of said cache memories on the basis of an amount of data for which cache hits are determined in the third step.

5,513,345

SEARCHING SYSTEM FOR DETERMINING ALTERNATIVE ROUTES DURING FAILURE IN A NETWORK OF LINKS AND NODES

Yasuyuki Sato, Iwate; Keiji Miyazaki, Kawasaki; Kohel Iseda, Kawasaki, and Takafumi Chujo, Kawasaki, all of Japan, assignors to Fujitsu Limited, Kanagawa, Japan

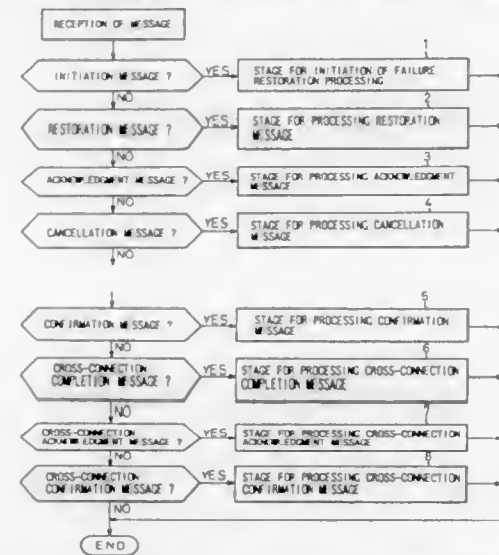
Filed Mar. 17, 1995, Ser. No. 405,606

Claims priority, application Japan, Mar. 18, 1994, 6-049554

Int. Cl.⁶ G06F 13/00; H04L 12/00; H04Q 11/04

U.S. Cl. 395—182.02

14 Claims



1. A system for searching for alternative routes in a network constituted by a plurality of nodes which searches for alternative routes by distributed control in the case of a failure at a link or node, wherein

- a node detecting a failure in a link or in a node executes a stage for initiation of failure restoration processing in accordance with an initiation message to determine and bundle the failed paths and create and send a restoration message for searching for alternative routes,
- a node receiving the restoration message executes a stage for processing the restoration message to send back an acknowledgment message for reserving an alternative route when that node is a candidate as a chooser node stated in the restoration message and relays the restoration message on when the node is not a candidate as a chooser node,
- a node receiving the acknowledgment message executes a stage for processing the acknowledgment message to send a confirmation message for confirming a reserved alternative route and start switching at cross-connect equipment when that node is the sender node in the restoration message and to relay the acknowledgment message and send back a cancellation message for cancelling reservation of the alternative route to the nodes for which reservation of alternative routes could not be continued when that node is not the sender node,
- a node receiving the cancellation message executes a stage for processing the cancellation message to release reserved spare channels and, then, tries to transmit an acknowledgment message once again to another route in the same way as the above stage for processing an acknowledgment message and suspends processing for chooser nodes for which reservation of the alternative route could not be continued,
- a node receiving the confirmation message executes a stage for processing the confirmation message to finally confirm the spare channels, starts the cross-connect equipment switching if the node is a chooser node, and relays the confirmation message if the node is not a chooser node,
- a node for which cross-connect equipment switching has been completed executes a stage for processing a cross-connection completion message in accordance with the cross-connection completion message, issues a cross-connection acknowledgment message when that node is the sender node, further

issues a cross-connection confirmation message, when that node is not a sender node, if it has already received a cross-connection acknowledgment message and is a chooser node, and relays the cross-connection acknowledgment message if that node is not a chooser node, immediately accomplishes the processing if not yet receiving the cross-connection acknowledgment message when the cross-connect equipment switching has been started and, conversely, orders cross-connect equipment switching when switching has not yet been started, a node receiving a cross-connection acknowledgment message executes a stage for processing the cross-connection acknowledgment message to send the cross-connection confirmation message if that node is a chooser node at the completion of the cross-connect equipment switching and relay the cross-connection acknowledgment message if that node is not a chooser node, and

a node receiving the cross-connection confirmation message executes a stage for processing the cross-connection confirmation message to relay the cross-connection confirmation message if that node is not the sender node, and completion the relaying of the message if that node is the sender node, by which an alternative route is formed autonomously in a distributed manner.

5,513,346

ERROR CONDITION DETECTOR FOR HANDLING INTERRUPT IN INTEGRATED CIRCUITS HAVING MULTIPLE PROCESSORS

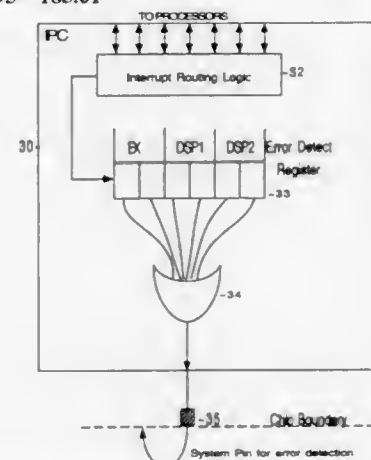
Ramprasad Satagopan, Chandler, and David R. Regenold, Mesa, both of Ariz., assignors to Intel Corporation, Santa Clara, Calif.

Filed Oct. 21, 1993, Ser. No. 139,987

Int. Cl.⁶ G06F 11/34

U.S. Cl. 395—185.01

18 Claims



5. An interrupt error condition detector incorporated on a single integrated circuit on a chip, said integrated circuit having a plurality of processors incorporated thereon wherein said plurality of processors signal interrupts to others of said plurality of processors on said integrated circuit, said interrupt error condition detector comprising:

- an interrupt processor incorporated on said single integrated circuit, said interrupt processor being coupled to communicate with each of said plurality of processors, wherein interprocessor interrupts are routed through said interrupt processor, said interrupt processor detecting any interrupt error conditions between any of said plurality of processors incorporated on said integrated circuit; and

an output signal path coupled to said interrupt processor for said interrupt processor to signal outside of said chip an interrupt error condition when one is detected by said interrupt processor, said output signal path comprising a pin for conveying an interrupt error condition detect signal out of said integrated circuit.

5,513,347

DATA TRANSFER SYSTEM

Yoshio Wakatsuki; Toshiharu Okuyama; Hajime Takeuchi; Misao Shimizu, and Glichiro Shimizu, all of Tokyo, Japan, assignors to Man Design Co., Ltd., Tokyo, Japan
PCT No. PCT/JP88/00378, § 371 Date Nov. 1, 1994, § 102(e)
Date Nov. 1, 1994, PCT Pub. No. WO88/08233, PCT Pub. Date Oct. 20, 1988

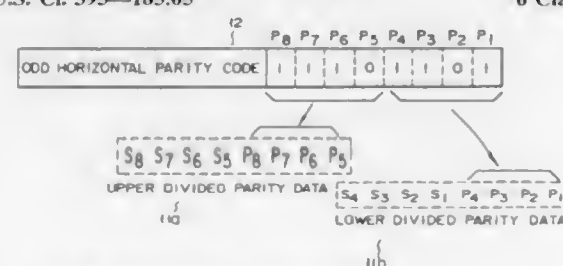
PCT Filed Apr. 15, 1988, Ser. No. 432,731

Claims priority, application Japan, Apr. 16, 1987, 62-92014

Int. Cl.⁶ G06F 7/00

U.S. Cl. 395—185.05

6 Claims



1. A data transfer system comprising:

a sender including sender side control means for formatting a transfer frame including a plurality of character codes representing a numeral of numerical data to be transferred, error detection data including a parity code for said character codes and a predetermined transfer control code, said sender side control means also for dividing a plurality of parity bits constituting said parity code into a plurality of parity bit groups and for adding a predetermined code to each of said parity bit groups to form a plurality of modified parity bit groups each different from said predetermined transfer control code, and means for sending out the modified transfer frame; and

a receiver including means for receiving the transfer frame transferred from said sender, and receiver side control means for reproducing the transfer frame, for removing the predetermined code from the modified parity bit groups to reproduce the parity code, and for performing a parity-check in accordance with the reproduced parity code.

5,513,348

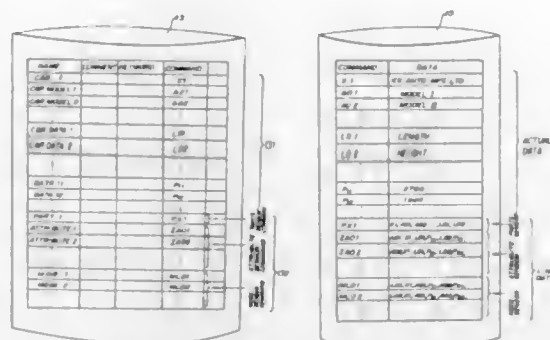
SYSTEM FOR RELATIONAL DATABASE RETRIEVAL THROUGH A LINK FILE BUILT TO ACCESS COMPONENTS OF RELATIONAL TABLES

Tadamitsu Ryu; Toshio Takahara, both of Kanagawa; Shingo Hirano, Tokyo, and Tohru Matsumoto, Yokohama, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan
Continuation of Ser. No. 281,540, Jul. 28, 1994, abandoned, which is a continuation of Ser. No. 598,960, Oct. 17, 1990, abandoned. This application Jun. 9, 1995, Ser. No. 488,859
Claims priority, application Japan, Oct. 17, 1989, 1-270047
Int. Cl.⁶ G06F 17/30

U.S. Cl. 395—600

14 Claims

1. A data retrieval system for a relational database, for retrieving a relational table in the relational database of parts which form data, said data retrieval system comprising:
a link data file managing link data including parts sensors which describe command names assigned to parts located at table item positions of the relational table, attribute sensors which describe command names of parts arranged in a row direction



of the relational table corresponding to the command names described by said parts sensors, and mode sensors which describe command names of parts arranged in a column direction of the relational table corresponding to the command names described by said parts sensors;

an actual data file for managing actual data, of the parts corresponding to the command names, which form the relational table; and

link processing means for linking said link data file and said actual data file, responsive to a retrieval request which requests retrieval of the relational table, for reading a command name description corresponding to a retrieval condition of the retrieval request by referring to said link data file, and for obtaining the actual data described by said command name description from said actual data file.

5,513,349

SYSTEM AND METHOD FOR SAFING OF ASYNCHRONOUS INTERRUPTS

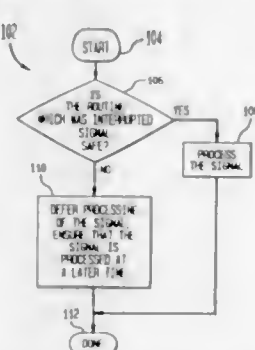
Tsunao Horiguchi, San Jose; Eric L. Porter, Fremont, both of Calif., and Richard Tallman, Saugerties, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 24, 1994, Ser. No. 216,932

Int. Cl.⁶ G06F 13/14; 12/06

U.S. Cl. 395—650

14 Claims



1. A method of processing an asynchronous signal directed to a thread comprising a software routine executing in a computer system such that data consistency is maintained, comprising the steps of:

- (1) determining one or more characteristics of the routine;
- (2) determining from said one or more characteristics of the routine whether the routine is signal safe such that processing of the routine may be interrupted in order to process the signal without possibly causing inconsistency of data without requiring the use of a locking mechanism;
- (3) asynchronously interrupting the routine and processing the signal immediately if the routine is signal safe; and

(4) deferring processing of the signal if the routine is not signal safe to a time when the signal may be processed without possibly causing inconsistency of data.

5,513,350

UPDATE CONSTRAINTS IN TRANSACTIONS WHICH MAY ABORT

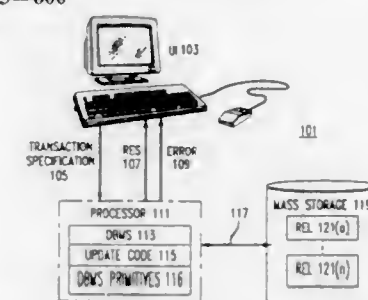
Timothy G. Griffin, New Providence, and Howard W. Trickey, Westfield, both of N.J., assignors to AT&T Corp., Murray Hill, N.J.

Filed May 27, 1994, Ser. No. 250,205

Int. Cl.⁶ G06F 15/40; 7/00

U.S. Cl. 395—600

10 Claims



1. Apparatus for generating code for a transaction on a set of data, the transaction being subject to constraints and the apparatus comprising:

- a transaction description which describes operations performed in the transaction, the operations including at least one operation which may abort without affecting the set of data;
- a constraint specification which specifies the constraints to which the transaction is subject; and

code generating means responsive to the transaction description and the constraint specification for generating the code, the code generating means including

means for generating code for an update constraint which indicates whether the constraints would be satisfied if the transaction could not abort and which is executed prior to any operation which may abort.

5,513,351

PROTECTING A SYSTEM DURING SYSTEM MAINTENANCE BY USAGE OF TEMPORARY FILENAMES IN AN ALIAS TABLE

Jeffrey A. Grantz, Boca Raton, Fla., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 28, 1994, Ser. No. 281,721

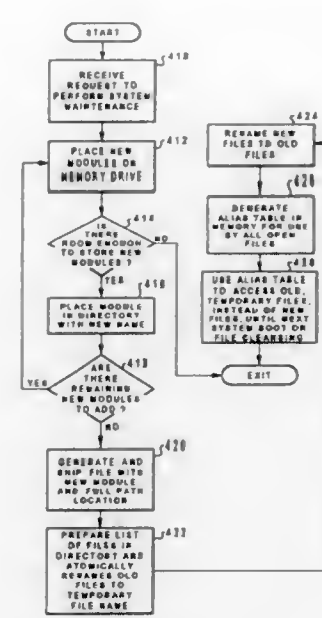
Int. Cl.⁶ G06F 17/30

U.S. Cl. 395—600

12 Claims

1. A method of maintaining functional integrity during and after performing system maintenance on an existing set of originally named files during system operation on a data processing system, the steps comprising:

- (a) responsive to a request to perform system maintenance placing any new file on a memory drive in said data processing system said new file intending to replace one of said set of existing files;
- (b) giving said new file a new name;
- (c) renaming said existing file to be maintained with a temporary name;
- (d) placing new name of said new file in an alias table;
- (f) responsive to a file request of one of said new files with a new name in said alias table, accessing one of said existing files with a temporary name instead of said one of said new files with a new name.



5,513,352

ELECTRONIC MUSICAL INSTRUMENT HAVING SECONDARY STORAGE OF FILES WITH COMMON CONSTITUENT PORTIONS IDENTIFIED BY ENTRY NAME

Akira Tozuka, Hamamatsu, Japan, assignor to Yamaha Corporation, Shizuoka, Japan

Continuation of Ser. No. 821,363, Jan. 16, 1992, abandoned.

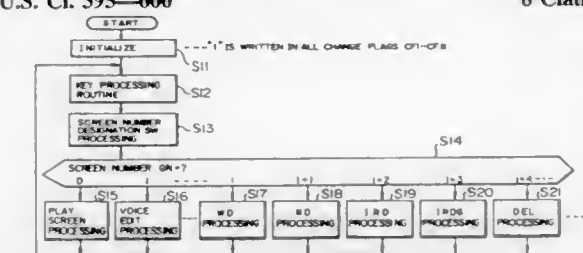
This application Oct. 14, 1994, Ser. No. 324,154

Claims priority, application Japan, Jan. 17, 1991, 3-017009

Int. Cl.⁶ G06F 12/00; 13/00

U.S. Cl. 395—600

8 Claims



the secondary storage device to thereby minimize the amount of storage space used in the secondary storage device; and

a write control means for making a determination, upon storage of the group of data forming the data file in the secondary storage device, whether any of the constituent data portions are the same as any of the already stored constituent data portions in the secondary storage device, so that when a particular constituent data portion of the constituent data portions is the same as another already stored constituent data portion in the secondary storage device, the write control means uses the same entry name as that of the another already stored constituent data portion for the particular constituent data portion of the data file without causing the secondary storage device to store the particular constituent data portion of the data file, while when the particular constituent data portion of the data file is different from any of the already stored constituent data portions in the secondary storage device, the write control means causes the secondary storage device to store the particular constituent data portion of the data file, and at the same time the write control means uses a new entry name that is different from any of the other entry names of the already stored constituent data portions for the particular constituent data portion of the data file and causes the entry storage section to store an entry name structure with respect to each new entry name.

5,513,353

CACHE CONTROL SYSTEM WHICH PERMANENTLY INHIBITS LOCAL BUT NOT GLOBAL PARAMETER DATA WRITES TO MAIN MEMORY

Akihisa Fujimoto, Akishima, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

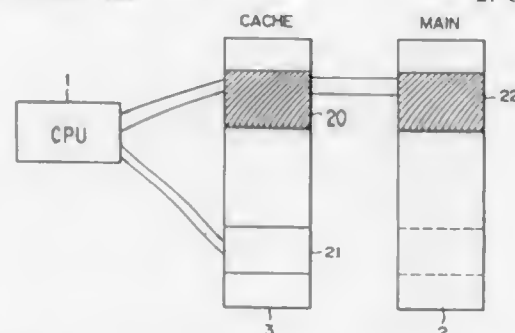
Continuation of Ser. No. 765,007, Sep. 24, 1991, abandoned, which is a continuation-in-part of Ser. No. 249,789, Sep. 27, 1988, abandoned. This application Mar. 9, 1995, Ser. No. 401,292

Claims priority, application Japan, Sep. 30, 1987, 62-246130

Int. Cl.⁶ G06F 17/30

U.S. Cl. 395—600

27 Claims



1. A data cache memory control system having a main memory, a data cache memory in which part of said main memory is copied, and a central processing unit (CPU) for accessing said main memory and said data cache memory, comprising:

data cache memory allocating means for allocating at least a global area for storing global parameters and a local area for storing local parameters in said data cache memory, the global area being accessed in any one of a plurality of modules constituting a program, and the local area being accessed in a specific module, said CPU writing global parameters in the global area and said main memory, and reading the global parameters from said main memory when the global parameters are not found in the global area; local area access detecting means for detecting whether an access to the local area is performed; and memory access means for permanently inhibiting contents of the local area from being written into said main memory when the

access to the local area is performed, and means for writing the local parameters only in the local area.

5,513,354

FAULT TOLERANT LOAD MANAGEMENT SYSTEM AND METHOD

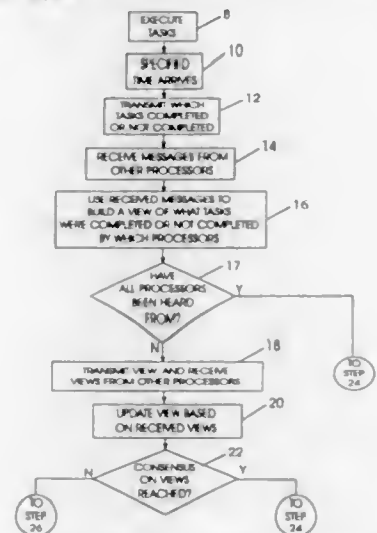
Cynthia Dwork, Palo Alto; Joseph Y. Halpern, Cupertino, and Hovey R. Strong, Jr., San Jose, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 18, 1992, Ser. No. 993,183

Int. Cl.⁶ G06F 15/16

U.S. Cl. 395—650

44 Claims



1. A crash fault tolerant load management method for allocating tasks among a plurality of processors, the method comprising the steps of:

determining, among operational ones of the processors, which tasks, previously allocated to various ones of the processors, have not been executed, the step of determining including exchanging views between the operational processors to reach consensus among the operational processors as to the status of the previously allocated tasks, each view including at least one of:

- information on what work has been done by the processor sending the view, and
- information on what work, done by other processors, has been reported to the processor sending the view; and allocating pending tasks among the operational processors.

5,513,355

CONTROL SYSTEM OF A SWITCHING SYSTEM

Carl-Heinz Doellinger, Germering, and Martin Wollensak, Muenchen, both of, Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Feb. 5, 1993, Ser. No. 16,149

Claims priority, application Germany, Aug. 27, 1992, 9211546 U

Int. Cl.⁶ G06F 15/76

U.S. Cl. 395—650

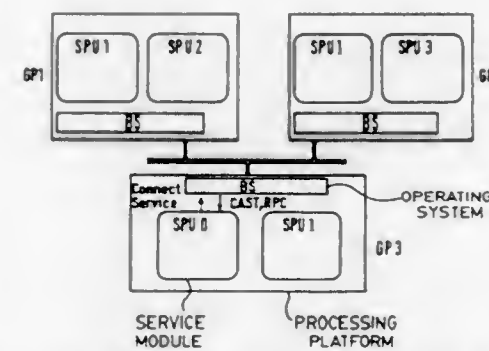
19 Claims

1. A control system for enabling communication between service module means, comprising: at least one control processor;

a plurality of service module means for effecting services, said service module means executing services for other service module means and requesting service from said other service module means;

means for interfacing said service module means;

the at least one control processor having an operating system;



the at least one control processor having at least one service module means that respectively contains at least one service and that contains means for requesting a service of a different service module means for implementation of one of its services; and

a communication path linking said at least one service module means to said different service module means;

the operating system having a services management system having means for informing the at least one service module means that requests a specific service about said communication path over which communication can be undertaken to the different service module means that contains the requested specific service.

5,513,356

INFORMATION PROCESSING SYSTEM FOR OBTAINING DESIRED PROCESSING BASED UPON OUTPUT SPECIFICATIONS INPUT BY USER

Tsutomu Takahashi; Kazuhiro Sugino; Wakako Oguruma, and Hisashi Onari, all of Yokohama, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

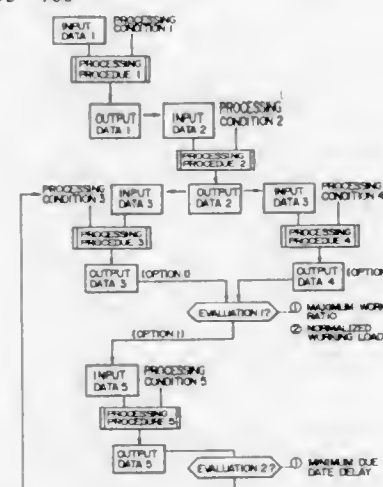
Filed Apr. 22, 1991, Ser. No. 688,279

Claims priority, application Japan, Apr. 20, 1990, 2-102933

Int. Cl.⁶ G06F 15/16; 19/00

U.S. Cl. 395—700

22 Claims



1. A computer-implemented information processing method for an information processing system including a capability for storage of data, said method comprising the steps of:

- dividing a processing procedure to be carried out by an information processing system into a plurality of basic processing blocks and storing said basic processing blocks in said information processing system;
- creating processing block information elements including a name for a respective processing executed within each of said processing blocks, an input table required by said processing block, and an output table outputted by said processing block

for each of said processing blocks and storing said processing block information in corresponding information processing system;

- inputting data which identifies a user-specified desired output table format in said information processing system;
- selecting processing block information elements most compatible to said desired output table format in said information processing system;
- selecting other processing block information elements relevant to the input tables of said selected processing block information elements;
- repeating said step (E) to search for other processing block information elements for the desired output table format by tracing the flow of the processing from the output table back to the other processing block information elements; and
- connecting the processing blocks from said searched for other processing block information elements in the sequence of the processing flow to build a procedure of said desired processing.

5,513,357

USE OF BUILD STATUS INDICATORS IN CONNECTION WITH BUILDING OF COMPLEX COMPUTER PROGRAMS FROM SOURCE CODE PARTS

Douglas J. Morton, Bradford, Canada, assignor to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 16,622, Feb. 12, 1993. This application

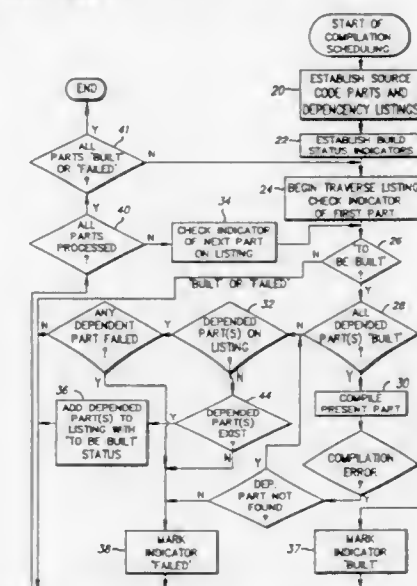
Jun. 8, 1994, Ser. No. 257,621

Claims priority, application Canada, Feb. 17, 1992, 2061298

Int. Cl.⁶ G06F 9/44

U.S. Cl. 395—700

11 Claims



1. In a computer, a method for building complex computer programs from source code parts, said source code parts comprising objects obtained from a program library, said method comprising the steps of:

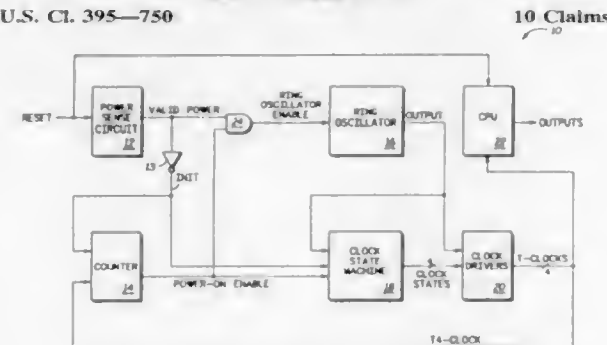
- listing in a first listing source code parts required for building a complex computer program;
- marking each source code part in said first listing with a build status indicator indicative of a status of compilation;
- repeatedly traversing said first listing,
- attempting to compile each said source code part according to said build status indicator as said first listing is traversed, and if said attempted compilation of said source code part is successful, replacing said build status indicator for said source code part with a successful compilation indicator; and
- stopping said traversing of said first listing when a traverse of said first listing creates a specific state of the build status indicators.

5,513,358
METHOD AND APPARATUS FOR POWER-UP STATE
INITIALIZATION IN A DATA PROCESSING SYSTEM
James R. Lundberg, and Charles E. Nuckolls, both of Austin,
Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Feb. 4, 1994, Ser. No. 191,898

Int. Cl. G06F 13/00

U.S. Cl. 395—750



1. In a data processing system having a central processing unit (CPU), a power-up state initialization system comprising:
a power sense circuit for detecting a voltage level at a power supply terminal in said CPU, and for providing a first control signal indicating whether said voltage level is greater than a minimum voltage suitable for CMOS logic resolution;
a counter circuit, coupled to said power sense circuit for receiving said first control signal and a plurality of internal clock pulses, and for counting a number of said internal clock pulses, said counter circuit enabling a second control signal, in response to receiving said first control signal indicating that said voltage level is greater than said minimum voltage suitable for CMOS logic resolution, and disabling said second control signal when said number of internal clock pulses exceeds a predetermined count value; and
an initialization logic portion coupled to said power sense circuit and said counter circuit for receiving said first control signal and said second control signal, and for providing said plurality of internal clock pulses in response thereto, said plurality of internal clock pulses being used by said system to propagate a reset condition in said CPU, said initialization logic portion stopping said internal clock pulses in response to receiving said disabled second control signal to reduce power consumption by said system associated with state conflict in said CPU without using externally generated clock signals or a global asynchronous reset signal.

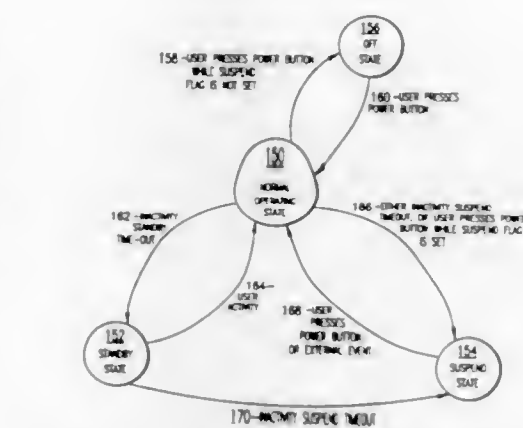
5,513,359
DESKTOP COMPUTER HAVING A SINGLE-SWITCH
SUSPEND/RESUME FUNCTION
Michael W. Clark; James L. Combs; Dwayne T. Crump; Jerry T. Kozel, and Steven T. Pancoast, all of Lexington, Ky., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 23, 1993, Ser. No. 97,334

Int. Cl. G06F 15/00; 13/10

U.S. Cl. 395—750

1. A computer system capable of operating in any selected one of at least three states of power management, namely a normal operating state in which code is executed normally by said computer system, an off state and a suspend state, the system comprising:
a CPU capable of executing code;
a control unit in circuit communication with said CPU;
a switch in circuit communication with said control unit, said switch having closure events;



a flag in circuit communication with said CPU and said control unit and having associated therewith at least a first flag state and a second flag state;
a power supply in circuit communication with said CPU and said control unit and having system regulation circuitry for selectively providing system power from an external source to at least said CPU;
a failsafe timer in circuit communication with said CPU and said control unit, said failsafe timer being set to expire after the expiration of a preselected time interval, the preselected time interval being restartable responsive to said CPU, said failsafe timer causing said computer system to transition to said off state responsive to the expiration of the preselected time interval;
a video control unit in circuit communication with said switch; and
a video controller in circuit communication with said CPU and said video control unit, said video controller having video generation circuitry for generating a video signal corresponding to a visual image to be displayed on a video display terminal;
said power supply operating in a selected one of a first power supply state and a second power supply state, said power supply changing between said first and second power supply states in response to said control unit;
said control unit causing said computer system to transition from said normal operating state to said off state responsive to a closure event of said switch while said flag is in said first flag state;
said control unit causing said computer system to transition from said normal operating state to said suspend state responsive to a closure event of said switch while said flag is in said second flag state;
said normal operating state being characterized in that said power supply is in said first power supply state and code is executing normally on said CPU;
said suspend state being characterized in that said power supply is in said second power supply state and the code executing on said CPU has been reversibly interrupted such that the execution of the code on said CPU may be resumed after said power supply changes to said first power supply state;
said off state being characterized in that said power supply is in said second power supply state and the code executing on said CPU has been irreversibly interrupted; and
wherein said video control unit and said video controller operate such that said video signal has a first video signal state and said second video signal state, said video signal changing from the first video signal state to the second video signal state in response to a closure event of said switch, the second video signal state providing user feedback regarding a transition between two of the at least three states of power management.

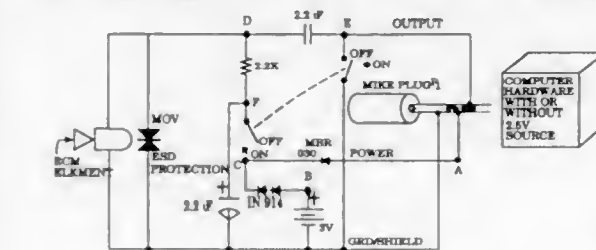
5,513,360
COMPUTER MICROPHONE POWERED BY INTERNAL
BATTERY OR COMPUTER HARDWARE
Robert Bauer, Shirley, Mass., assignor to Sun Microsystems, Inc., Mountain View, Calif.

Continuation of Ser. No. 842,219, Feb. 26, 1992, abandoned.

This application Jun. 20, 1994, Ser. No. 262,354

Int. Cl. G06F 1/00; H04M 11/00

U.S. Cl. 395—750



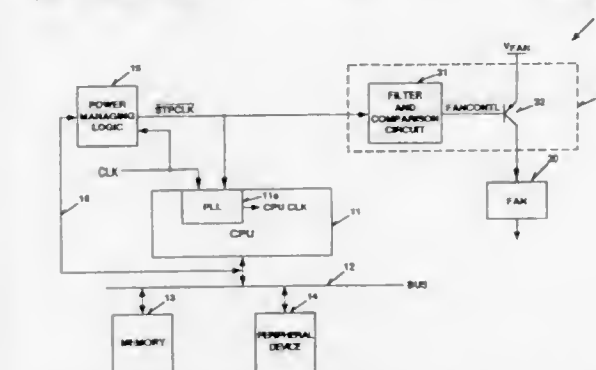
1. A computer microphone circuit for coupling to a computer comprising:
means for generating an electrical signal, wherein said means for generating an electrical signal accepts a sound wave as an input and generates an electrical signal as an output;
first means for supplying a first voltage to said means for generating an electrical signal, said first voltage being at the output of a first diode in series with an internal power source; and
second means for supplying a second voltage to said means for generating an electrical signal, said second voltage being at the output of a second diode in series with an external power source, said second voltage being greater than said first voltage, wherein when the application of power from said external power source is supplied to the computer microphone circuit, the application of power from said internal power source is terminated and, wherein when the application of power from said external power source is terminated, the application of power from said internal power source is re-initiated.

5,513,361
METHOD AND APPARATUS FOR REDUCING POWER
CONSUMPTION OF A FAN IN A COMPUTER SYSTEM
Bruce A. Young, Beaverton, Oreg., assignor to Intel Corporation, Santa Clara, Calif.

Filed Jul. 25, 1994, Ser. No. 279,544

Int. Cl. G06F 1/32

U.S. Cl. 395—750



1. A circuit for controlling power consumption of a fan within a computer system having a central processing unit (CPU), comprising:
(A) a filter circuit coupled to receive a periodical pulse signal for detecting duty cycle of the periodical pulse signal by converting the periodical pulse signal into an analog signal, wherein the analog signal has a voltage level proportional to the duty cycle of the periodical pulse signal;

(B) a comparator circuit coupled to the filter circuit for comparing the voltage level of the analog signal with a predetermined voltage level to generate a switching signal when the voltage level of the analog signal is below the predetermined voltage level; and
(C) a switching circuit coupled to (1) a power supply, (2) the fan, and (3) the comparator circuit for disconnecting the power supply from the fan when the switching signal is generated by the comparator circuit so as to substantially reduce the power consumption of the fan in the computer system.

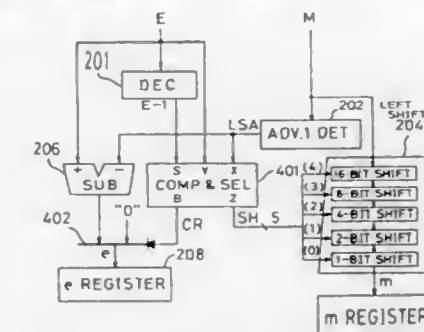
5,513,362
METHOD OF AND APPARATUS FOR NORMALIZATION
OF A FLOATING POINT BINARY NUMBER
Miki Urao, and Takashi Taniguchi, both of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Apr. 20, 1993, Ser. No. 49,433

Claims priority, application Japan, Apr. 22, 1992, 4-104487
Int. Cl. G06F 7/38

U.S. Cl. 395—800

3 Claims



1. An operational processing apparatus for executing a shift processing on a mantissa, having a plurality of bit positions and radix point, of a floating point binary number and for adjusting an exponent of said floating point binary number, said apparatus comprising:
advancing 1 detecting means for detecting the bit position of an advancing 1 in said mantissa and for supplying, as an amount of cancelling of said mantissa, a difference between said bit position and the bit position of a bit one bit position more significant than the radix point;
decrementing means for supplying a value obtained by subtracting 1 from said exponent;
comparing means for comparing in magnitude, with each other, two input data, i.e., an output of said decrementing means and an amount of cancelling supplied from said advancing 1 detecting means, thereby to supply, as a result of magnitude-relation judgment, the input data whichever is the smaller, and also to supply a magnitude-relation judging signal representing which input data is smaller out of said two input data;
subtracting means for supplying a value obtained by subtracting, from said exponent, an amount of cancelling supplied from said advancing 1 detecting means;
selecting means for supplying, as an exponent of a result of an operational processing, 0 when a magnitude-relation judging signal from said comparing means represents that, out of said two input data, said output of said decrementing means is smaller, and an output of said subtracting means when said magnitude-relation judging signal represents otherwise; and
shifting means for supplying, as a mantissa of said result of said operational processing, a value obtained by executing on said mantissa of said floating point binary number, a left shift processing in which shift amount is equal to a result of magnitude-relation judgment, having a plurality of bits, supplied from said comparing means, wherein the comparing means has a minimum value selecting circuit to propagate the magnitude relation of the two input

data for each digit thereof from a most significant digit to a least significant digit, thereby to supply the result of magnitude-relation judgment, starting with the most significant digit, and the shifting means comprises left 2^k ($k=0, 1, 2, \dots, n-1$) bit shifters which respectively correspond to lower n -bits of a result of magnitude-relation judgment supplied from said minimum value selecting circuit and which are connected in cascade to one another.

5,513,363

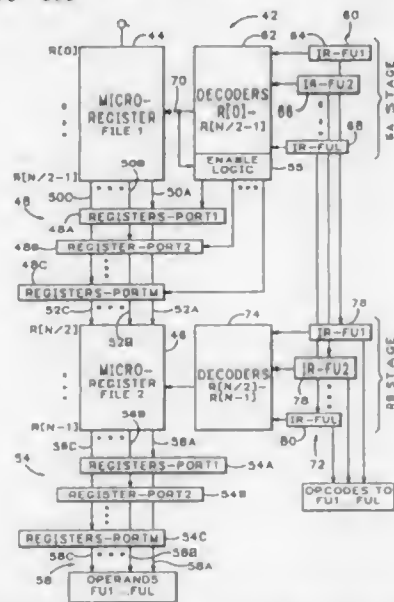
SCALABLE REGISTER FILE ORGANIZATION FOR A COMPUTER ARCHITECTURE HAVING MULTIPLE FUNCTIONAL UNITS OR A LARGE REGISTER FILE

Rajendra Kumar, Sunnyvale, and Paul G. Emerson, San Jose, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Aug. 22, 1994, Ser. No. 293,862
Int. Cl.⁶ G06F 9/00

U.S. Cl. 395—800

22 Claims



1. A scalable register file for a computer architecture having multiple functional units, the register file comprising:

- a first instruction register for holding an instruction;
- a first micro-register file including a first plurality of registers and an output port;
- a first instruction decoder coupled between the first micro-register file and the first instruction register for selecting one or more of the first plurality of registers during a first pipeline cycle;
- a first pipeline register coupled to the output port of the first micro-register file for temporarily holding the contents of the first selected registers;
- a second instruction register coupled to the first instruction register for receiving the instruction held in the first instruction register;
- a second micro-register file including a second plurality of registers and an output port;
- a second instruction decoder coupled between the second micro-register file and the second instruction register for selecting one or more of the second plurality of registers during a second pipeline cycle;
- a second pipeline register coupled to the output port of the second micro-register file for temporarily holding the contents of the second selected registers, the second pipeline register being coupled to the first pipeline register to receive the first selected register contents during the second pipeline cycle; and

enable logic to present the contents of the first pipeline register to the second pipeline register, during the second pipeline cycle, if there were contents stored in the first pipeline register during the first pipeline cycle.

5,513,364 DATA TRANSFER DEVICE AND MULTIPROCESSOR SYSTEM

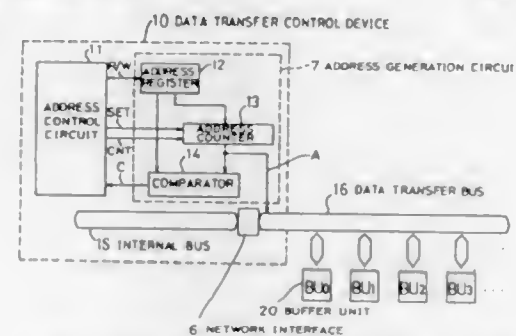
Junji Nishikawa, Osaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Mar. 3, 1994, Ser. No. 205,417

Claims priority, application Japan, Mar. 9, 1993, 5-047606
Int. Cl.⁶ G06F 13/00

U.S. Cl. 395—287

29 Claims



1. A data transfer device having a plurality of buffer units connected to a common data transfer bus and a data transfer control device for outputting continually onto the data transfer bus a buffer unit address for sequentially selecting buffer units in an arbitrary number out of the plural buffer units and for governing control of data transfer, via the data transfer bus, between buffer units selected by the buffer unit address, said data transfer control device comprising:

- a memory means for storing a first address and a second address, said first address indicative of either an upper limit address or a lower limit address of the buffer unit address, and said second address indicative of either of the upper limit address or the lower limit address of the buffer unit address not indicated by said first address;
- an update means for holding the first address provided from said memory means and for outputting the thus held first address as the buffer unit address, while sequentially updating the thus held first address;
- a comparison means for outputting a conformity signal upon conformity of the buffer unit address outputted from said update means with the second address provided from said memory means; and
- a control means for sequentially providing an address update requirement signal to said update means so that said update means executes address update and for providing an address setting signal to said update means, upon receipt of an output of the conformity signal from said comparison means, so as to set the first address held by said memory means to said update means.

5,513,365

DISPLAY ADAPTER INTERFACE LAYER

John A. Cook, Stephanie L. Jensen, both of Austin; James A. Miller, Cedar Park, and Gary L. Wiseman, Austin, all of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

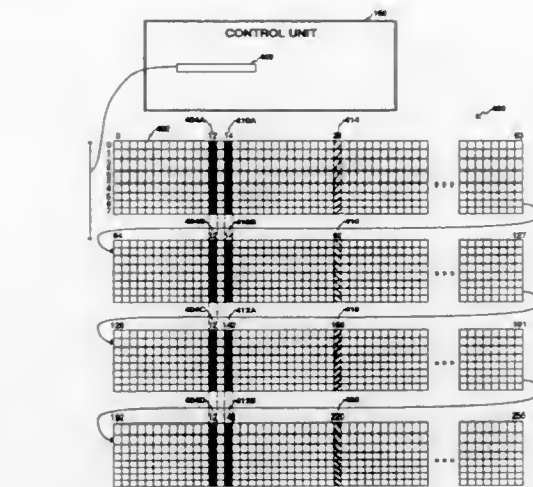
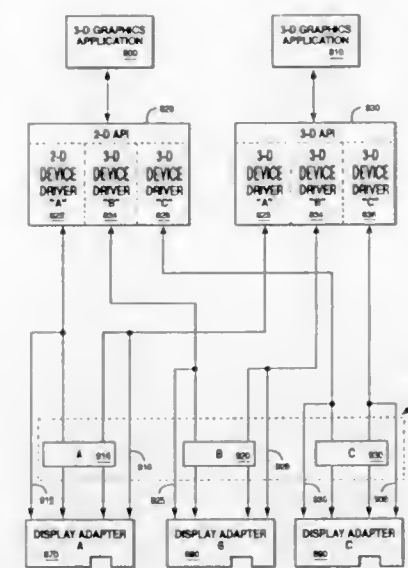
Continuation of Ser. No. 734,427, Jul. 23, 1991, abandoned.

This application Sep. 6, 1994, Ser. No. 301,832
Int. Cl.⁶ G06F 15/00

U.S. Cl. 395—800

15 Claims

1. An apparatus for interfacing between a plurality of application programs and a plurality of display adapters, each of said display



means for performing a vector operation utilizing data stored in said vector register.

5,513,367

MULTIPROCESSOR SYSTEM HAVING RESPECTIVE BUS INTERFACES THAT TRANSFER DATA AT THE SAME TIME

Yukio Kumazawa, Kanagawa, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

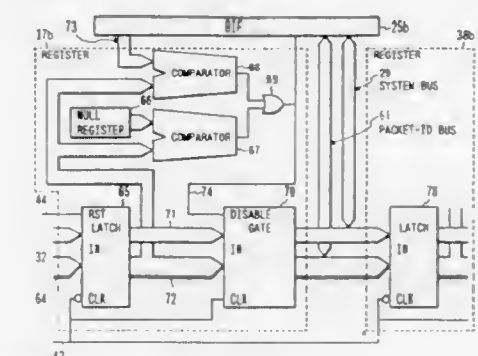
Continuation of Ser. No. 914,353, Jul. 17, 1992, abandoned.

This application Jan. 13, 1995, Ser. No. 372,826

Claims priority, application Japan, Jul. 20, 1991, 3-180006
Int. Cl.⁶ G06F 13/00

U.S. Cl. 395—800

3 Claims



3. A multiprocessor system, comprising:

- a plurality of processors;
- a plurality of bus interfaces, each bus interface being individually coupled to a processor of the plurality of processors for transferring packets of data during a single clock cycle;
- a plurality of system buses for sending a data packet transferred by the corresponding bus interface from a preceding system bus to a following system bus during a single clock cycle, each system bus being individually coupled to a respective bus interface of the plurality of bus interfaces;
- a plurality of changeover registers, each changeover register being coupled to and between adjacent pairs of the system buses to connect the plurality of system buses in a loop, for changing over during the same single clock cycle from a first operation in which the preceding system bus and the following system bus of an adjacent pair of system buses are electrically separated by placing the changeover register in a high impedance state to enable transfer of a packet signal from the bus interface coupled to the following system bus onto the following system bus and a second operation in which a packet signal on the preceding system bus is sent to the following system bus, wherein each of the plurality of changeover registers includes:

5,513,366 METHOD AND SYSTEM FOR DYNAMICALLY RECONFIGURING A REGISTER FILE IN A VECTOR PROCESSOR

Ramesh C. Agarwal, Yorktown Heights, N.Y.; Randall D. Groves, Austin, Tex.; Fred G. Gustavson, Briarcliff Manor, N.Y.; Mark A. Johnson, Austin, Tex., and Brett Olsson, Round Rock, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 28, 1994, Ser. No. 313,971

Int. Cl.⁶ G06F 17/16

U.S. Cl. 395—800

7 Claims

1. A single-instruction, multiple-data processor having a register file that may be dynamically reconfigured, said single-instruction, multiple-data processor comprising:

- a controller;
- a plurality of registers coupled to said controller and arranged in an array having a configuration of N rows of M columns of said registers, where N and M are integers;
- means for storing a vector size, VS , within said controller, wherein said vector size specifies a number of said plurality of registers comprising a vector register, where VS is an integer less than M multiplied by N ;
- means, responsive to said vector size, for selecting selected ones of said M columns to form said vector register having at least VS registers; and

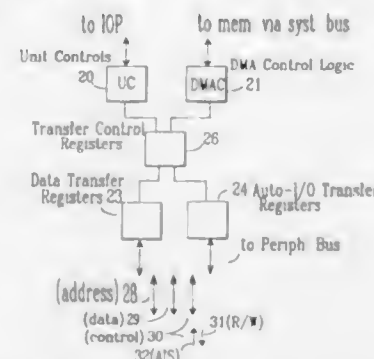
a latch for latching the packet signal on the preceding system bus and the ID value from the preceding ID bus;
 a register for storing a predetermined value;
 a first comparator for comparing the latched ID value with the stored predetermined value;
 a second comparator for comparing the latched ID value with an ID value specific to the changeover register;
 an OR gate for producing an ID match signal for enabling the bus interface coupled to the following system bus to output the packet signal in response to the detection of a coincidence by either one of the first or second comparator means; and
 a gate for receiving the latched packet signal and ID value from the latch, the gate being rendered in a floating state to enable the transfer of the packet signal from a bus interface coupled to the following system bus onto the following system bus in response to the ID match signal, and for sending the latched packet signal to the following system bus and the latched ID value to the following ID bus in response to the absence of the ID match signal.

5,513,368
COMPUTER I/O ADAPTERS FOR PROGRAMMABLY VARYING STATES OF PERIPHERAL DEVICES WITHOUT INTERFERING WITH CENTRAL PROCESSOR OPERATIONS

Seratin J. E. Garcia, Jr., Lake Worth; Gary B. Hoch, Coral Springs; Eric H. Stelzer, Boca Raton, and Donald G. Williams, Delray Beach, all of Fla., assignors to International Business Machines Corporation, Armonk, N.Y.
 Filed Jul. 16, 1993, Ser. No. 93,541
 Int. Cl.⁶ G06F 9/30; 15/16

U.S. Cl. 395—842

13 Claims



1. An adapter for interfacing between a memory subsystem of a computer system having a central processor and I/O devices served by said system, said adapter comprising:

first means responsive to first programmed information contained in descriptors prepared by said central processor for directing data transfers between said memory subsystem and said I/O devices, while said adapter and devices are operating in offline relationship to operations of said central processor of said computer system;

second means responsive to second programmed information contained in at least one of said descriptors, while said adapter and devices are still operating in offline relationship to said central processor, for conducting auto-I/O signalling operations between said adapter and any of said I/O devices; said auto-I/O signalling operations being used to transfer device controlling signals between registers in said adapter and specific internal components of said I/O devices; said specific internal components being designated by I/O address information contained in said second programmed information; said auto-I/O operations being characterized in that they can be used to alter operational states of said I/O devices in predetermined time coordination with data transfers con-

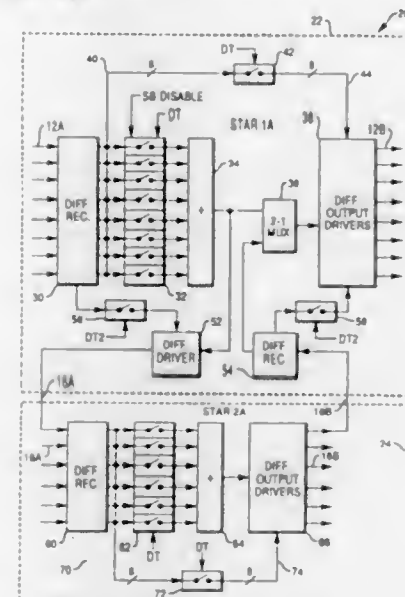
ducted by said first means, and without interruption of or interference with ongoing operations of said central processor; and
 means enabling said adapter alternatively to reprocess a descriptor that is currently being processed and initiate chained processing of a next descriptor in a linked list queue; said reprocessing of said descriptor currently being processed being undertaken when processing of said descriptor currently being processed fails to reach successful completion; said chained processing of said next descriptor being undertaken when processing of said descriptor currently being processed is completed successfully;
 means for detecting an asynchronous signal from a said I/O device involved in a data transfer that is being directed by said first means; said asynchronous signal indicating completion of data transfer handling by the device sending said signal; and
 means responsive to said detected asynchronous signal for initiating said chained processing of a said next descriptor in said linked list queue.

5,513,369
STAR COUPLER DEVICE INCLUDING MEANS FOR CONNECTING MULTIPLE STAR COUPLERS TOGETHER IN A CASCADED RELATIONSHIP

Chiman R. Patel, Poway, and Henry Y. Hsu, San Diego, both of Calif., assignors to NCR Corporation, Dayton, Ohio
 Filed Aug. 5, 1991, Ser. No. 740,542
 Int. Cl.⁶ G06F 13/00

U.S. Cl. 395—800

6 Claims



6. A data processing system, comprising:

a plurality of first level star couplers, each of said first level star couplers having a plurality of input and output ports, each one of said first level star couplers including:

a first OR gate connected to receive a first plurality of input signals from its associated processors for combining said received input signals to generate a first output signal;
 a multiplexer having first and second inputs, said first input being connected to receive said first output signal, said second input being connected to receive a second output signal, said multiplexer providing an output signal which can be selected to be either said first output signal or said second output signal; and
 a first output driver circuit having an input port connected to receive the output of said multiplexer and a plurality of output ports forming the output ports of said first level star coupler, each of said first star coupler's output ports pro-

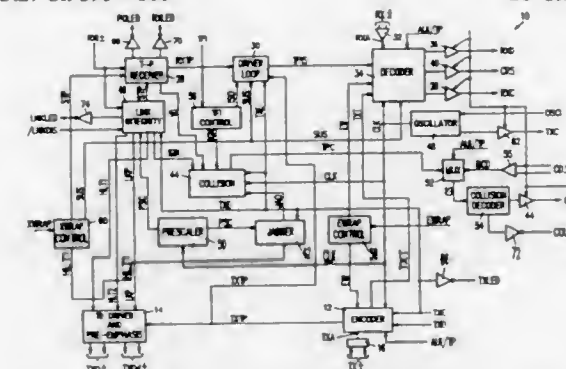
viding an output signal equivalent to the output signal received from said multiplexer;
 a plurality of processors associated with each one of said first level star couplers, each one of said processors being connected to a corresponding input port and a corresponding output port of its associated first level star coupler; and
 a second level star coupler having a plurality of input and output ports, wherein an output port of each one of said first level star couplers is connected to a corresponding input port of a said second level star coupler, and wherein an input port of each one of said first level star couplers is connected to a corresponding output port of said second level star coupler, said second level star coupler including:
 a second OR gate connected to receive the first output signals from said each of said first level star couplers for combining said received first output signals to generate said second output signal; and
 a second output driver circuit having an input port connected to receive said second output signal and a plurality of output ports forming the output ports of said second level star coupler, one of the output ports of said second output driver being connected to provide said second output signal to the second input of said multiplexer.

5,513,370
TWISTED PAIR AND ATTACHMENT UNIT INTERFACE (AUI) CODING AND TRANSCIVING CIRCUIT WITH FULL DUPLEX, TESTING, ISOLATION, AND AUTOMATIC OUTPUT SELECTION

Prasun K. Paul, Santa Clara, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.
 Continuation-in-part of Ser. No. 995,598, Dec. 22, 1992, Pat. No. 5,446,914. This application Aug. 27, 1993, Ser. No. 113,382

Int. Cl.⁶ G06F 11/14; 13/40; 13/376; 15/20
 U.S. Cl. 395—800

28 Claims



1. A twisted pair and attachment unit interface (AUI) coding and transceiving circuit for connecting an external controller to either a twisted pair network or a coaxial network, the circuit comprising:
 an encoder that encodes data received from the external controller to form outgoing encoded data when valid data is present, outputs the outgoing encoded data to a first node when a twisted pair data pathway is selected, and outputs the outgoing encoded data to a second node when an AUI data pathway is selected;

a twisted pair driver connected to the first node that receives the outgoing encoded data when the twisted pair data pathway is selected, and transmits the outgoing encoded data as a pair of output complementary twisted pair signals and a pair of output delayed complementary twisted pair signals;
 an AUI driver connected to the second node that receives the outgoing encoded data when the AUI data pathway is selected, and transmits the outgoing encoded data as a pair of output complementary AUI signals;
 a twisted pair receiver that receives data signals from the twisted pair network, and outputs incoming twisting pair data in response thereto;

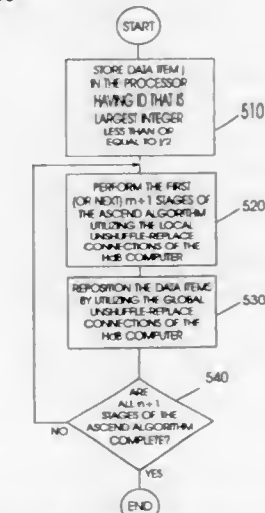
a link integrity circuit connected to the twisted pair network that detects link pulse signals and data signals on the twisted pair network, and indicates when both the link pulse signals and the data signals have been continuously undetected for a predetermined period of time;
 an AUI receiver that receives data signals from the coaxial network, and outputs incoming AUI data in response thereto;
 a decoder that decodes the incoming twisted pair data to form a received data signal, a recovered clock signal, and a carrier sense signal when the twisted pair data pathway is selected, and decodes the incoming AUI data to form the received data signal, the recovered clock signal, and the carrier sense signal when the AUI data pathway is selected, the carrier sense signal indicating when data is being received;
 a jabber circuit that indicates when the twisted pair driver or the AUI driver has been transmitting for more than a predefined period of time;
 a collision circuit that identifies a simultaneous transmission by the twisted pair driver and reception by the twisted pair receiver, and generates a collision signal in response thereto;
 a traffic ignore circuit that disables the collision circuit in response a first external command; and
 an autoswitch circuit that normally selects the twisted pair data pathway, and changes from the twisted pair data pathway to the AUI data pathway when the link integrity circuit indicates that both the link pulse signals and the data signals have been undetected for the predetermined period of time, wherein the coding and transceiving circuit provides full duplex operation by disabling the collision circuit.

5,513,371
HIERARCHICAL INTERCONNECTION NETWORK ARCHITECTURE FOR PARALLEL PROCESSING, HAVING INTERCONNECTIONS BETWEEN BIT-ADDRESSABLE NODES BASED ON ADDRESS BIT PERMUTATIONS

Robert E. Cypher, and Jorge L. C. Sanz, both of Los Gatos, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.
 Continuation of Ser. No. 818,028, Jan. 7, 1992, abandoned.
 This application Jan. 24, 1995, Ser. No. 378,981
 Int. Cl.⁶ G06F 15/00

U.S. Cl. 395—800

10 Claims



1. For implementing an Ascend algorithm having 2^n data items, each of which has a unique integer ID having a value between 0 and 2^n-1 inclusive, where n is an integer, wherein said Ascend algorithm has n stages, 0 through $n-1$, and further wherein at each state i , $0 \leq i \leq n-1$, processing is performed on each pair of data items with IDs whose binary representation differ only in bit position i , on an Hierarchical Shuffle-Exchange (HSE) computer having 2^n processors, each of which has a unique ID having a value between 0 and 2^n-1 , inclusive wherein said HSE computer

includes 2^{n-m} packaging modules, where m is an integer and $n > m$, said method comprising the steps of:

- storing each data item j , where j is an integer having a value between 0 and $2^n - 1$ inclusive, in processor j ;
- performing the first m stages of said Ascend algorithm by utilizing exchange connections and local unshuffle connections of said HSE computer, the exchange connections being connections between each given one of the processors and a respective other one of the processors having an ID identical to that of the given one of the processors, except for a least significant bit opposite to that of the given one of the processors, the local unshuffle connections being connections between each given one of the processors and a respective other one of the processors having an ID identical to that of the given one of the processors, except that the m lowest significance bits of the ID of the other one of the processors, are those of the given one of the processors, subjected to a right rotate;
- repositioning the data items by utilizing global unshuffle connections of said HSE computer, the global unshuffle connections being connections between each given one of the processors and a respective other one of the processors having an ID identical to that of the given one of the processors, except that the bits of the ID of the other one of the processors are those of the given one of the processors, wherein the $n-m$ most significant bits are in the $n-m$ least significant bit positions, and the m least significant bits are in the m most significant bit positions; and
- repeating steps (b) and (c) until all the n stages of the Ascend algorithm have been completed.

5,513,372

PERIPHERAL INTERFACE HAVING HOLD CONTROL LOGIC FOR GENERATING STALL SIGNALS TO ARBITRATE TWO READ AND ONE WRITE OPERATIONS BETWEEN PROCESSOR AND PERIPHERAL

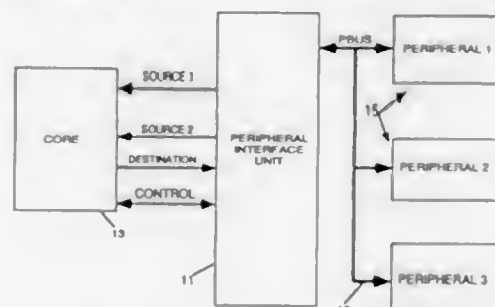
Nicholas Ong, Tempe, and Jamshid Moaddah, Phoenix, both of Ariz., assignors to Intel Corporation, Santa Clara, Calif.

Filed Aug. 23, 1993, Ser. No. 110,427

Int. Cl. G06F 15/02

U.S. Cl. 395—821

4 Claims



1. A peripheral interface unit for interfacing a core processor having register space to at least one peripheral unit wherein the core processor utilizes a bus architecture having first and second source buses for writing data generated by the least one peripheral unit to the core and one destination bus for reading data from the core to be transferred to the at least one peripheral unit, said first and second source buses having corresponding first and second source address buses and said destination bus having a corresponding destination address bus, and the at least one peripheral unit utilizes a bus architecture having a single peripheral bus for reading data from and writing data to the peripheral unit and a corresponding peripheral address bus, said peripheral interface unit comprising:

sequencing control logic means coupled between the core processor and the peripheral bus for arbitrating accesses to and from the two source buses and the destination bus;

said sequencing control logic means comprising:

- destination logic means coupled to said destination bus for determining the presence of a valid address into the core register space existing on the destination address bus and generating a signal DIVAL indicating that the destination logic means is being accessed;
 - first source logic means coupled to said first source bus for determining the presence of a valid address into the core register space existing on the first source address bus and the absence of a pending core write by the destination logic means and generating a signal SIVAL indicating that the first source logic means is being accessed;
 - second source logic means coupled to said second source bus for determining the presence of a valid address into the core register space existing on the second source address bus, and the absence of a pending core read by the first source logic means and generating a signal S2VAL indicating that the second source logic means is being accessed;
 - prioritization and control signal logic means for determining the availability of the peripheral bus by checking a PRDY signal generated by said at least one peripheral unit and generating a set of signals indicating the presence and absence of a read operation on said first source bus, a read operation on said second source bus, and a write operation on said destination bus;
 - pipe hold control logic means for generating a core stall signal during each of:
 - a read operation on said first source bus;
 - a read operation on said second source bus;
 - a read operation on one of said first source bus and said second source bus when the peripheral bus is not ready;
 - a write operation followed by a read operation on one of said first source bus and said second source bus during the same bus cycle; and
 - a write operation when the peripheral bus is not ready;
- said peripheral interface unit further comprising:
- data path logic means coupled to the sequencing control logic means for coupling the first and second source buses and the destination bus to the peripheral bus.

5,513,373

APPARATUS USING THREE LIGHT EMITTING DIODES (LEDs) AND A TRANSISTOR FOR INDICATING WHETHER THERE IS AN OVERTERMINATION UNDERTERMINATION, OR POWER TERMINATION OF PERIPHERAL DEVICES

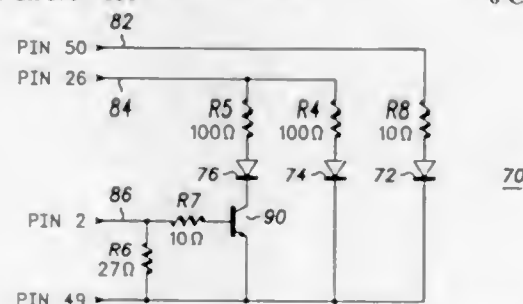
John L. Damkler, Tempe, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 21, 1994, Ser. No. 210,854

Int. Cl. G06F 11/32

U.S. Cl. 395—836

6 Claims



1. An apparatus for indicating a termination status of a computer system having peripheral devices coupled to a computer, at least one of the peripheral devices having a small computer systems interface port, the apparatus comprising:

a small computer systems interface connector connected to the small computer systems interface port and having a first pin, a second pin and a third pin;

- a first light emitting diode connected to the first pin via a first data line and emitting light when the first data line supplies current to the first light emitting diode;
- a second light emitting diode connected to the second pin via a power line and emitting light when the power line supplies current to the second light emitting diode;
- a transistor connected to the third pin via a second data line and enabling current to flow when the second data line supplies a current exceeding a threshold amount;
- a third light emitting diode connected to the power line and connected to the transistor and emitting light when the power line supplies current to the third light emitting diode and the transistor enables current to flow to the light emitting diode.

5,513,374

ON-CHIP INTERFACE AND DMA CONTROLLER WITH INTERRUPT FUNCTIONS FOR DIGITAL SIGNAL PROCESSOR

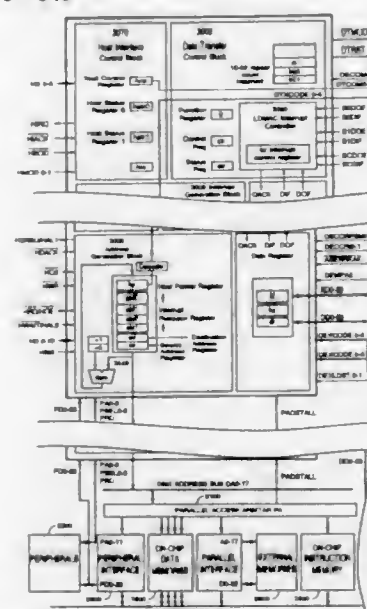
Toru Baji, San Jose, Calif., assignor to Hitachi America, Inc., Tarrytown, N.Y.

Filed Sep. 27, 1993, Ser. No. 127,685

Int. Cl. G06F 13/28

U.S. Cl. 395—846

11 Claims



- A single chip digital signal processor (DSP), comprising:
 - a multiplicity of memory mapped resources, said memory mapped resources including:
 - memory locations in a data memory for storing DSP data,
 - memory locations in a program memory for storing DSP instructions, and
 - a plurality of on-chip peripheral interfaces for interfacing the DSP with peripheral devices external to said DSP;
- said plurality of on-chip peripheral interfaces generating data read and data write interrupt signals when said peripheral devices are ready to transfer data to and from said memory mapped resources;
- a DSP core coupled to said data memory and program memory for executing said stored DSP instructions;
- a direct memory access (DMA) controller coupled to said data memory, program memory, and on-chip peripheral interfaces for performing local data transfers between specified ones of said memory mapped resources;
- a plurality of data and address bus pairs, each data and address bus pair coupled to a predefined subset of said data memory, program memory, on-chip peripheral interfaces, DSP core and DMA controller; wherein a first of said data and address bus pairs is dedicated to data transfers performed by said DMA controller, and a second of said data and address bus pairs is

dedicated to data transfers controlled by said DSP core for transferring data to and from said DSP core;

said DMA controller including a data transfer register, a first set of transfer control registers for local data transfers that are initiated by said DSP core and performed by said DMA controller, and a second set of transfer control registers for data transfers that are initiated by interrupts from said on-chip peripheral interfaces and performed by said DMA controller; said first set of registers including a first address source register, a first address destination register and a first repeat counter register to specify source and destination addresses for said local data transfer and to specify a quantity of data to be transferred by said local data transfer; said second set of registers including a second address source register, a second address destination register and a second repeat counter register; and

said DMA controller including an DMA interrupt controller for interrupting a local data transfer being performed using said first set of registers when any of said data read and data write interrupt signals is received from any of said on-chip peripheral interfaces, for performing a distinct data transfer corresponding to said received interrupt signal using said second set of registers to specify source and destination addresses for said distinct data transfer and to specify a quantity of data to be transferred by said distinct data transfer, and for resuming said local data transfer when said distinct data transfer is completed.

5,513,375

SYSTEM FOR COMPENSATING DATA RATE BETWEEN A STORAGE DEVICE AND A DATA COMPRESSION PROCESSOR USING A BUFFER MEMORY MAPPED TWICE INTO CONTIGUOUS ADDRESS SPACE OF A HOST PROCESSING UNIT

Eric C. Peters, Carlisle, Mass., assignor to Avid Technology, Inc., Tewksbury, Mass.

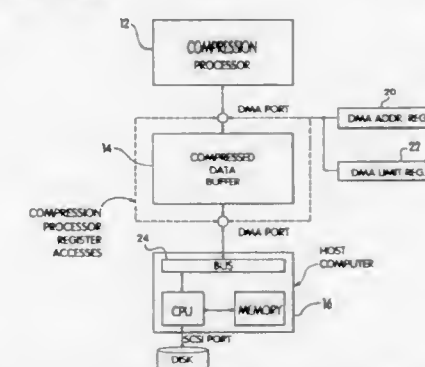
Continuation of Ser. No. 807,269, Dec. 31, 1991, abandoned.

This application Apr. 28, 1994, Ser. No. 234,713

Int. Cl. G06F 15/167; 13/38

U.S. Cl. 395—846

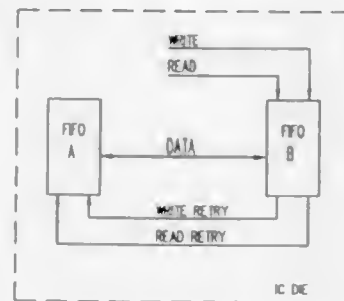
18 Claims



1. A method for compensating for data rate differences between a storage device and a data compression processor and for transferring data between the storage device and the data compression processor, comprising the steps of:

- providing a data interface linking an addressable data buffer, a host processing unit, and the storage device, the host processing unit including an address space; and
- mapping the data buffer twice into the address space of the host processing unit, to provide a contiguous buffer memory; and
- transferring data between the data buffer and the storage device by passing the data through the host processing unit only once.

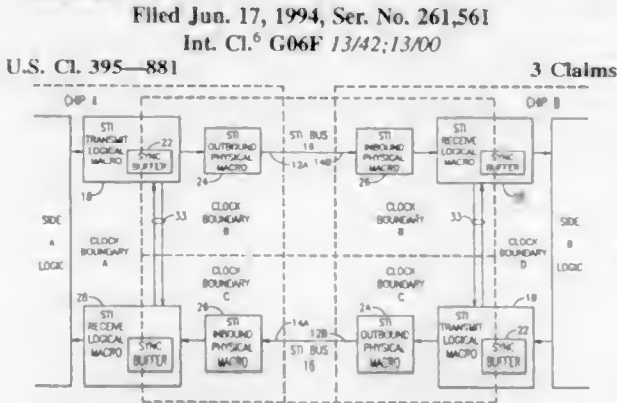
5,513,376
METHOD OF OPERATING AN EXTENSION FIFO IN ANOTHER DEVICE WHEN IT IS FULL BY PERIODICALLY RE-INITIATING A WRITE OPERATION UNTIL DATA CAN BE TRANSFERRED
 Michael G. Lohmeyer, San Jose, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.
 Division of Ser. No. 147,348, Nov. 2, 1993, abandoned. This application May 4, 1994, Ser. No. 238,260
 Int. Cl. G06F 13/14
 U.S. Cl. 395—873 3 Claims



1. A method of operating first and second physically separated first-in, first-out (FIFO) memory devices as a single FIFO, the method comprising:

- connecting the first and second FIFO memory devices for transfer of data characters therebetween;
- initiating write operation for transfer of data characters from the first FIFO memory device to the second FIFO memory device; and
- in the event that the second FIFO memory device is full, providing a write retry signal from the second FIFO memory device to the first FIFO memory device that causes the write operation to be aborted, the first FIFO memory device responding to the write retry signal by periodically re-initiating the write operation until transfer of the data characters from the first FIFO memory device to the second FIFO memory device is accomplished.

5,513,377
INPUT-OUTPUT ELEMENT HAS SELF-TIMED INTERFACE USING A RECEIVED CLOCK SIGNAL TO INDIVIDUALLY PHASE ALIGN BITS RECEIVED FROM A PARALLEL BUS
 Robert S. Capowski, Verbank; Daniel F. Casper, Poughkeepsie; Frederick J. Cox, Wappingers Falls; Frank D. Ferraiolo, New Windsor, and Marten J. Halma, Poughquag, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
 Filed Jun. 17, 1994, Ser. No. 261,561
 Int. Cl. G06F 13/42; 13/00
 U.S. Cl. 395—881 3 Claims

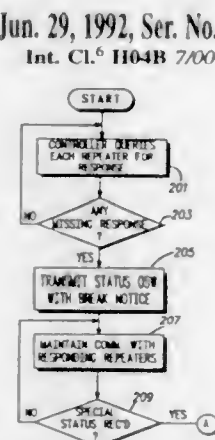


1. An input-output element for coupling digital data at high data rates between a host processor and a plurality of input-output controllers, comprising in combination:

- a host processor;

a high-speed, self-timed interface;
 an input-output channel sub-element;
 a plurality of input-output channels connecting said input-output sub-element respectively to a plurality of input-output controllers;
 said high-speed, self-timed interface connecting said host processor to said input-output channel sub-element;
 said high speed, self-timed interface including a transmitting node for transmitting a digital data and a clock signal and a receiving node for receiving said digital data and said clock signal, said transmitting node connected to said receiving node by a parallel data bus to individual lines to which a digital data stream is coupled by said clock signal at said transmitting node;
 said bus including a separate line for transmitting said clock signal, and said receiving node including means to phase align each bit of said digital data stream on each of said lines separately with respect to said clock signal.

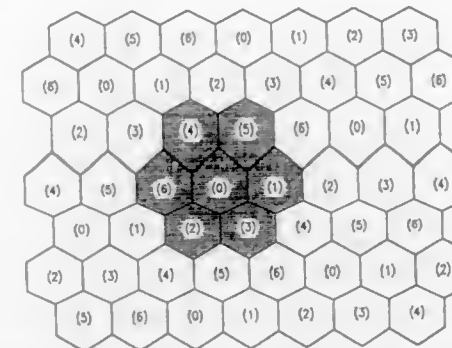
5,513,378
MAINTAINING COMMUNICATIONS AFTER CONTROL BREAKS IN A TRUNKED COMMUNICATION SYSTEM
 Stephen J. Ranz, 496 Arlington, Elmhurst, Ill. 60126, and William A. Felderman, 1310 Springbeach Rd., Cary, Ill. 60013
 Filed Jun. 29, 1992, Ser. No. 905,958
 Int. Cl. H04B 7/00
 U.S. Cl. 455—8 8 Claims



1. A method of distributing control in a trunked communication system with distributed control of allocation of communication resources amongst a plurality of repeaters in a coverage area via a data network between at least two of the plurality of repeaters, comprising the steps of:
 detecting a break in the data network;
 sending by a radio a notice of the break to the plurality of repeaters located on each side of the break;
 determining which side of the break provides desired usage of the communication resources;
 maintaining the side of the break with said desired usage.

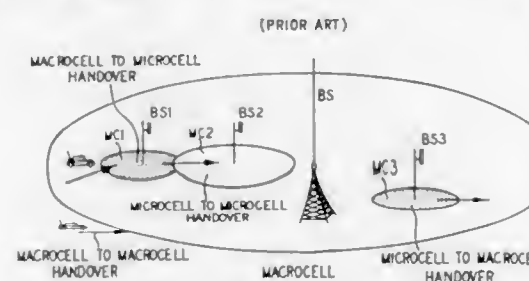
5,513,379
APPARATUS AND METHOD FOR DYNAMIC RESOURCE ALLOCATION IN WIRELESS COMMUNICATION NETWORKS UTILIZING ORDERED BORROWING
 Mathilde Benveniste, South Orange; Albert G. Greenberg, Millburn; Frank K. Hwang, Warren; Boris D. Lubachevsky, Bridgewater, and Paul E. Wright, Basking Ridge, all of N.J., assignors to AT&T Corp., Murray Hill, N.J.
 Filed May 4, 1994, Ser. No. 238,138
 Int. Cl. H04Q 7/00
 U.S. Cl. 455—33.1 19 Claims

1. A method for dynamically allocating channels between the cells in a communications network partitioned into a plurality of substantially contiguous cells, each cell having a base station, comprising:



assigning channels to each base station for use by callers within a corresponding cell in accordance with an initial channel assignment scheme satisfying anticipated channel availability, blocking, and interference constraints;
 establishing for each base station an initial channel access order establishing an order in which channels allocated during said assigning step are accessed; and
 reassigning calls to channels not in actual use or held in a reserved state by a given base station, said channels in actual use and said reserved channels being the first channels listed in said initial channel access order established for the given base station.

5,513,380
MOBILE SPEED DEPENDENT HANDOVER TECHNIQUES IN HIERARCHICAL MOBILE RADIO NETWORKS
 Kollo Ivanov, and Egon Schulz, both of Munich, Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany
 Filed Feb. 14, 1994, Ser. No. 195,390
 Int. Cl. H04Q 7/22
 U.S. Cl. 455—33.2 23 Claims

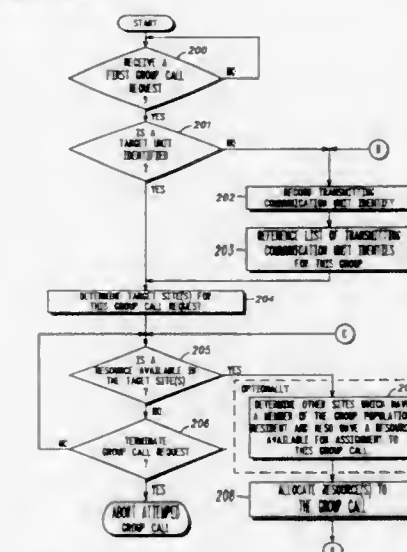


1. A mobile speed dependent handover decision method for use in a mobile radio network having a plurality of base stations arranged in a hierarchical cell structure, which is composed of macro cells in an upper layer of the hierarchical cell structure and micro cells in a lower layer of the hierarchical cell structure, a mobile station allocated to a base station of a serving macro cell and moving through a coverage area of micro cells, said handover decision method controlled by the speed of said mobile station, comprising the steps of:

- performing uplink measurements of a signal level of said mobile station by the base station of said serving macro cell, and performing downlink measurements of signal levels of said serving macro cell and said micro cells by said mobile station; calculating relative signal levels based on said uplink and downlink measurements for each of said micro cells;
- starting a separate timer for each micro cell when it has been determined that the mobile station has entered the radio coverage domain of a respective micro cell;
- comparing said measured signal levels and said calculated relative signal levels to predetermined thresholds for each micro cell while a respective timer thereof is running;

based on above said measurements, continuously calculating and comparing radio coverage improvement in each micro cell with a predetermined threshold associated with each micro cell;
 requesting and performing a handover for said mobile station from said serving macro cell into a micro cell when an associated timer thereof exceeds a predetermined time interval threshold for that micro cell before the radio coverage improvement reached said associated predetermined threshold as an indicator of slow movement of said mobile station; and preventing a handover for said mobile station from said serving macro cell into a micro cell when its associated timer has not yet reached said associated predetermined time interval threshold but its radio coverage improvement thereof has already exceeded said associated prescribed threshold as an indicator of fast movement of said mobile station.

5,513,381
METHOD FOR PLACING A COMMUNICATION GROUP CALL IN A MULTIPLE SITE TRUNKED SYSTEM
 Michael D. Sasuta, 1661 Blackburn Dr., Mundelein, Ill. 60060
 Filed Mar. 24, 1993, Ser. No. 36,620
 Int. Cl. H04B 7/26
 U.S. Cl. 455—34.1 3 Claims



1. In a multi-site trunked communication system that includes a plurality of communication units arranged into communication groups, a plurality of sites, a limited number of communication resources for use in each site of the plurality of sites, and a communication resource allocator, wherein members of a particular communication group are located throughout the multi-site trunked communication system, a method for placing a communication group call, the method comprises the steps of:

- a) initiating, by a requesting communication unit of the particular communication group, a group call by transmitting to the communication resource allocator a group call request that includes identification information of the particular communication group and identification information of at least one target communication unit, wherein at least two communication units receiving the group call are located in different sites;
- b) identifying, by the communication resource allocator upon reception of the group call request, a target site, wherein the at least one target communication unit is located at the target site;
- c) determining, by the communication resource allocator, whether a communication resource is available in the target site;

- d) when the communication resource is available in the target site, allocating the communication resource to the particular communication group; and
- e) transmitting, by the requesting communication unit, a communication to the at least one target communication unit and any other communication units affiliated with the particular communication group that are located in the target site via the allocated communication resource.

5,513,382

MULTI-CERAMIC LAYER SWITCH CIRCUIT

Darioush Agahi-Kesheh, Mundelein, Ill.; Kong-Fong Huang, and Richard S. Komrmusch, both of Albuquerque, N.M., assignors to Motorola, Inc., Schaumburg, Ill.

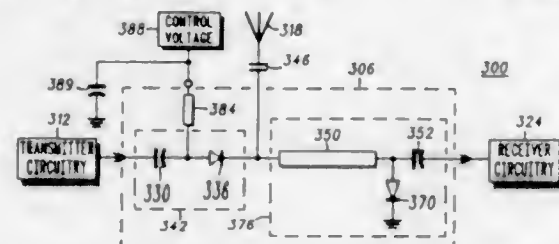
Continuation of Ser. No. 40,780, Mar. 31, 1993, abandoned.

This application Mar. 20, 1995, Ser. No. 407,787

Int. Cl.⁶ H04B 1/44

U.S. Cl. 455—83

11 Claims



1. A switch circuit for a transceiver having a transmitter circuitry and a receiver circuitry, said switch circuit positionable responsive to levels of a control signal applied thereto for connecting alternately the transmitter circuitry to a transceiver antenna or the receiver circuitry to the transceiver antenna, said switch circuit comprising:

- a DC blocking capacitor formed on the first and second ceramic substrates, a first side portion of said DC blocking capacitor for interconnection with a first side portion of the transceiver antenna;
- a receiver circuit path interconnecting the receiver circuitry and a second side portion of the DC blocking capacitor wherein, depending upon the levels of the control signal, said receiver circuit path includes a shunt path as a portion thereof and wherein said receiver circuit path includes a receiver-side stripline transmission line formed upon a third ceramic substrate, a first ground plane adjacent to one side of the third ceramic substrate, and a second ground plane adjacent to an opposing side of the third ceramic substrate, wherein one of said first and second ground planes is formed on an adjacent ceramic substrate, wherein said receiver-side stripline transmission line is of a length substantially corresponding to one-quarter a wavelength of signals to be received at the transceiver antenna;
- a transmitter circuit path interconnecting the transmitter circuitry and the second side portion of the DC blocking capacitor wherein said transmitter circuit path is of electrical characteristics dependent upon the levels of the control signal; and
- a control-signal stripline transmission line formed upon the same third ceramic substrate and coupled to said transmitter circuit path to apply the control signal to the transmitter circuit path to cause the transmitter circuit path to form a low impedance path to connect electrically the transmitter circuitry and the transceiver antenna and also to cause the shunt path to form a portion of said receiver circuit path, thereby to disconnect electrically the receiver circuitry from the transceiver antenna only during times when the control signal is above a first signal level and, otherwise to cause the transmitter circuit path to form a high impedance path to disconnect electrically the transmitter circuitry from the transceiver antenna and also to disconnect the shunt path from the receiver circuit path, thereby to connect electrically the receiver circuitry and the transceiver antenna, wherein said control-signal stripline

transmission line is of a length substantially corresponding to one-quarter a wavelength of signals to be transceived at the transceiver antenna.

5,513,383

MOBILE COMMUNICATION TERMINAL HAVING EXTENDABLE ANTENNA

Chieh-Hsing A. Tsao, Saratoga, Calif., assignor to Space Systems/Loral, Inc., Palo Alto, Calif.

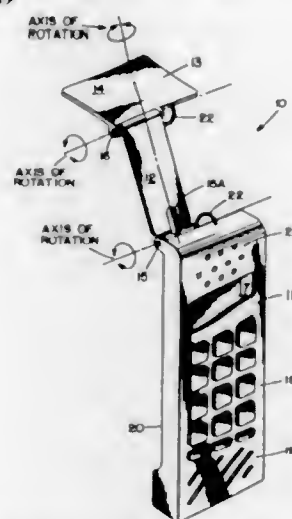
Continuation of Ser. No. 121,075, Sep. 14, 1993, abandoned.

This application Mar. 29, 1995, Ser. No. 412,741

Int. Cl.⁶ H04B 1/38; H01Q 1/24

U.S. Cl. 455—89

3 Claims



1. A compact terminal or telephone for mobile communications comprising an RF transmission circuitry including a microphone, an RF signal amplifier and an antenna electrically-connected to each other for the transmission of messages, and an RF reception circuitry including an antenna, an RF signal demodulator and a speaker electrically connected to each other for the reception of messages, said terminal or telephone comprising an elongate main housing having a microphone adjacent the bottom portion thereof, and a speaker, an elongate extender element having a face surface, an upper end and a lower end, the lower end of which comprises a ball joint connection to hinge means, said hinge means attaching said extender element to said housing at an upper portion thereof for rotation into storage position parallel to said housing, said ball joint connection pivotally-attaching the extender element to the hinge means for axial rotation of said extender element to direct the face surface thereof in any desired direction relative to said housing, and a planar radiator transmission/reception antenna element hingedly-attached to the upper end of said extender element, remote from said lower end, and a flexible RF cable signal coupler means between said main housing, through said extender element to said radiator antenna element to couple the RF transmission circuitry including the microphone of the main housing and the transmission antenna of the antenna element, and to couple the RF reception circuitry including the speaker of the main housing and the reception antenna of the antenna element, whereby for use of the terminal or telephone, the hinge means and the extender element are rotated from storage position to extend above the upper portion of the main housing, the extender element is rotated axially on said ball joint connection to direct the face surface thereof in any desired direction relative to the housing and the planar radiator antenna element is rotated and/or pivoted to face upwardly and away from the user in the direction of optimum transmission and reception, whereby the exposure of the user to intense RF power transmitted by the antenna element is substantially reduced or eliminated.

5,513,384
SYSTEM AND METHOD FOR PROVIDING MULTIPLE BROADCASTS OF AUDIO INFORMATION TO SPECTATORS

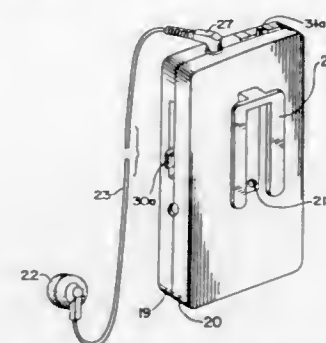
Christopher J. Brennan, Winnetka; Terence P. Brennan, Wilmette; Robert C. Phillips, Glenview; Philip B. Kenny, Glenview, and Vladimir Dvorkin, Arlington Heights, all of Ill., assignors to Inner Ear Communications, Inc., Winnetka, Ill.

Filed Nov. 9, 1993, Ser. No. 149,454

Int. Cl.⁶ H04B 7/00

U.S. Cl. 455—180.1

20 Claims



1. A system for providing individual spectators at a local event with multiple broadcasts of audio information, said system comprising:

- receiving means for receiving multiple broadcasts of audio information;
- transmission and antenna means for simultaneously transmitting said multiple broadcasts on audio frequency signals within a predetermined frequency range which occupies a bandwidth of approximately 3 to 6 megahertz to a limited area surrounding a local event; and
- radio means provided to spectators at said local event for providing said spectators with access to a selected one of said multiple broadcasts, said radio means including a narrow-band receiving means for receiving signals within said predetermined frequency range, tuning means for selecting one of said multiple broadcasts, and speaker means for providing said selected one of said multiple broadcasts as sound to said spectator.

5,513,385

RECEPTION APPARATUS, SIGNAL REPRODUCING APPARATUS USING RECEPTION APPARATUS AND CONTROL METHOD THEREOF

Yozo Tanaka, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Sep. 28, 1994, Ser. No. 314,081

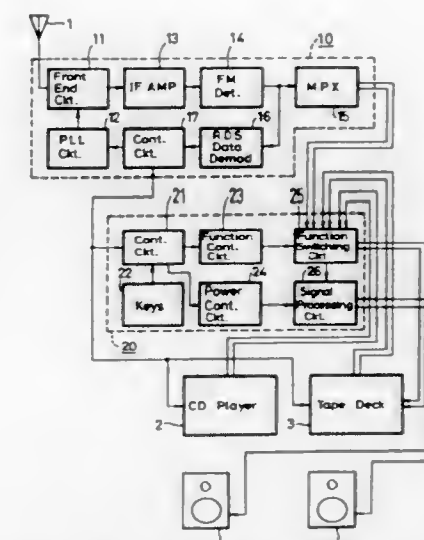
Claims priority, application Japan, Sep. 30, 1993, 5-245453

Int. Cl.⁶ H04B 1/16

U.S. Cl. 455—228

10 Claims

1. A signal reproducing apparatus comprising:
- demodulating means for demodulating a received broadcasting signal that was modulated with a baseband signal and a data signal to obtain the baseband signal and the data signal, the baseband signal having a program content, the data signal identifying the program content of the baseband signal;
- amplifying means for amplifying the baseband signal to form an amplified baseband signal, the amplified baseband signal being capable of driving an external speaker;
- identifying means for identifying the program content in the data signal; and
- control means for energizing the demodulating means, and the identifying means, and for deenergizing the amplifying means when a power switch of said signal reproducing apparatus is turned off and a predetermined receiving mode is set, and for



reenergizing the amplifying means when the program content in the data signal indicates that a preselected program is present.

5,513,386

RECEIVER FOR A CELLULAR MOBILE RADIO COMMUNICATION SYSTEM

Tooru Ogino, and Kazuya Hashimoto, both of Tokyo, Japan, assignors to NEC Corporation, Japan

Continuation of Ser. No. 716,811, Jun. 17, 1991, abandoned.

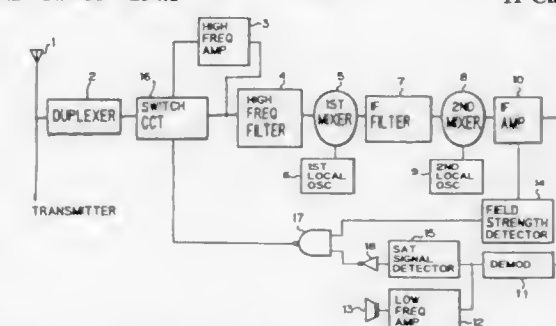
This application Nov. 17, 1994, Ser. No. 340,814

Claims priority, application Japan, Jun. 16, 1990, 2-158257; May 24, 1991, 3-149491

Int. Cl.⁶ H04B 1/06

U.S. Cl. 455—234.1

11 Claims



1. A receiver for being mounted on a mobile station which is included in a cellular mobile radio communication system for communicating with a base station, comprising:
- high frequency amplifying means for amplifying a received input signal and an interference signal received along with the input signal;
- mixer means for converting said received input signal to a desired intermediate frequency (IF) signal and for converting said interference signal to an intermodulation product;
- field strength detecting means for detecting a field strength based on a signal derived from said received input signal;
- SAT (Supervisory Audible Tone) signal detecting means for detecting a SAT signal being fed from said base station and thereby determining whether or not said mobile station is in communication with said base station; and

control means for selectively enabling or disabling said high frequency amplifying means on the basis of a level of the field strength detected by said field strength detecting means and on the basis of a decision signal produced by said SAT signal detecting means in response to the SAT signal;

wherein said control means enables said high frequency amplifying means when the field strength is lower than a predetermined level regardless of said decision signal, for amplifying both said received input signal and said interference signal, thereby relatively enhancing said intermodulation product in relation to said desired intermediate frequency signal; and wherein said control means disables said high frequency amplifying means when the field strength is higher than said predetermined level and the SAT signal is not detected, thereby relatively reducing said intermodulation product in relation to said desired intermediate frequency signal.

5,513,387

AUTOMATIC GAIN CONTROL CIRCUIT

Yutaka Saito, Ishikawa, and Yasumi Imagawa, Kanazawa, both of, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

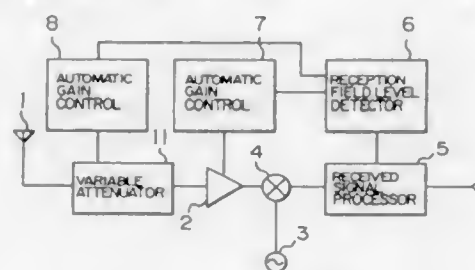
Filed Jun. 15, 1993, Ser. No. 76,847

Claims priority, application Japan, Jun. 16, 1992, 4-156359

Int. Cl.⁶ H04B 1/16

U.S. Cl. 455—243.1

18 Claims



1. An automatic gain control circuit comprising: reception means for adjusting a level of an intermittently received signal having an information portion, the reception means including multiple gain stages comprising first and second gain stages each having a controllable gain; received signal processing means, coupled to receive the intermittently received signal from the reception means, for processing the information portion of the intermittently received signal after a predetermined period of time from when said intermittently received signal is received from said reception means;

reception field level detection means for detecting a level of an electric field of said intermittently received signal and producing, during successive gain control operations of the first and second gain stages, respectively, a first gain control quantity based on a first reception field level detection point and a second gain control quantity based on a second reception field level detection point that is determined by the first gain control quantity for executing a multi-stage gain control; and a plurality of automatic gain control means for controlling the gain of the first and second gain stages of said reception means in accordance with the first and second gain control quantities, respectively, for adjusting the level of the intermittently received signal within said predetermined period of time and holding said controlled gain after said predetermined period of time elapses, wherein there is a predetermined time

delay after the gain control operation of the first gain stage until start of the gain control operation of the second gain stage and the second reception field level detection point is determined after the gain control operation of the first stage is completed.

5,513,388

AUTOMATIC FREQUENCY CONTROL CIRCUIT

Gen Suganuma, Mitaka, Japan, assignor to Japan Radio Co., Ltd., Tokyo, Japan

Filed Jun. 18, 1993, Ser. No. 80,407

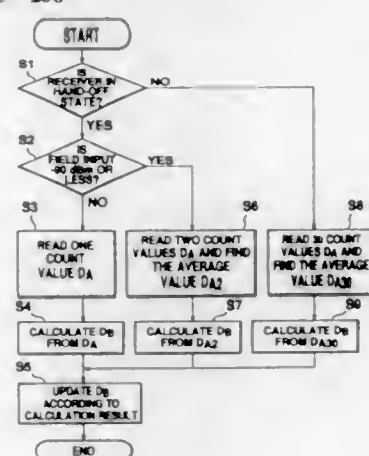
Claims priority, application Japan, Jun. 23, 1992, 4-187408;

Jun. 23, 1992, 4-187409; Jun. 23, 1992, 4-187410

Int. Cl.⁶ H04B 1/26

U.S. Cl. 455—258

12 Claims



1. For use with a receiver which mixes a reception signal with a local oscillation signal to generate an intermediate frequency signal, an automatic frequency control circuit comprising: means for counting a frequency of the intermediate frequency signal for a predetermined time; means being responsive to a count value by the counting means for controlling a frequency of the local oscillation signal; determination means for determining whether or not an error is prone to occur in the count value; means being responsive to a determination result by the determining means for executing an error suppression process for suppressing the error of the count value, wherein said determination means has means for detecting the receiver being in a hand-off state; said error suppression process execution means has means for setting said count time comparatively long if the receiver is not in the hand-off state; said determination means further includes means for detecting an electric field input level to the receiver if the receiver is in the hand-off state; and

said error suppression process execution means further includes means for setting said count time in response to a specification of time required to stabilize the frequency of the local oscillation signal at hand off within a control object range and in response to the detected electric field input level.

5,513,389

PUSH PULL BUFFER WITH NOISE CANCELLING SYMMETRY

Glen O. Reeser, Palatine, and Lawrence E. Connell, Naperville, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

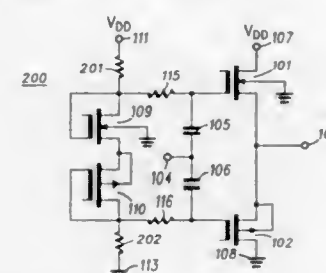
Continuation of Ser. No. 215,883, Mar. 22, 1994, abandoned, which is a continuation of Ser. No. 936,805, Aug. 27, 1992,

abandoned. This application Jul. 28, 1995, Ser. No. 508,552

Int. Cl.⁶ H04B 1/10

U.S. Cl. 455—311

6 Claims



1. An apparatus comprising:

a class AB amplifier circuit;

a bias circuit operably coupled to the class AB amplifier circuit, wherein the bias circuit contains exactly two substantially equal resistors arranged and configured to substantially reduce noise attributable to the bias circuit,

wherein the bias circuit includes two active elements coupled between a voltage source and ground, with the substantially equal resistors configured in series with the two active elements,

and wherein a first one of the two substantially equal resistors couples the two active elements to the voltage source, and a second one of the two substantially equal resistors couples the two active elements to ground,

wherein the bias circuit does not include any other circuit elements in parallel with the two substantially equal resistors that would preclude noise attributable to the bias circuit from being substantially reduced,

and wherein the noise is due in part to thermal noise and in part to flicker noise.

5,513,390

BIASED FET MIXER

Michael W. Vice, San Mateo County, Calif., assignor to Watkins Johnson Company, Palo Alto, Calif.

Continuation-in-part of Ser. No. 4,234, Jan. 14, 1993, Pat. No. 5,361,409, which is a continuation of Ser. No. 668,248, Mar.

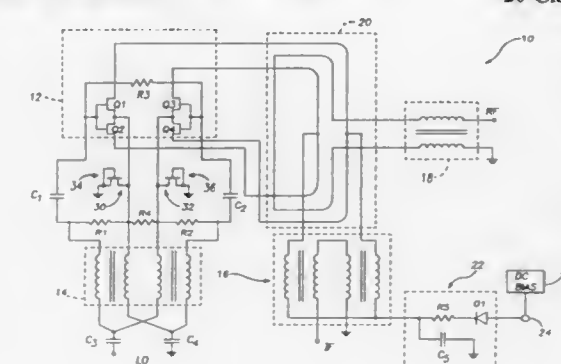
12, 1991, abandoned. This application Nov. 9, 1993, Ser. No.

149,671

Int. Cl.⁶ H04B 1/26

U.S. Cl. 455—323

20 Claims



1. A DC-biased reflection transformer, comprising:

a transmission line transformer having at least two ports, said ports connected such that nearly complete coupling of energy between said ports relies on substantially complete reflection of said energy at a reference plane of the transformer, said DC-biased reflection transformer further including phase selector switch means for inducing said substantially complete reflection of energy at said reference plane by switchably creating an impedance mismatch at a first end of a transmission line connected to at least one of said two ports, said reflection transformer being disposed to receive a DC bias signal through one of said ports from a DC bias network coupled thereto.

VOL
185

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DESIGN PATENTS

GRANTED APR. 30, 1996

ERRATA

For CLASS	See PATENT NO.
D21-226	D 369,396

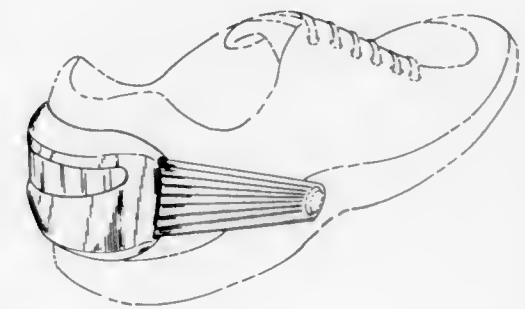
DESIGNS

APRIL 30, 1996

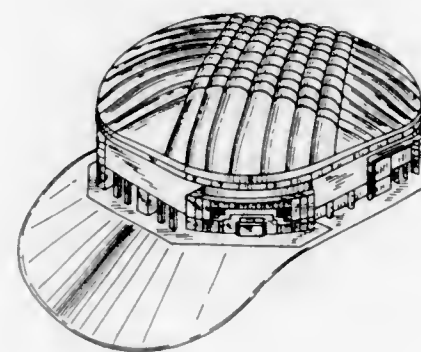
369,231
SOCK ACCESSORY
 Cindy Wasserman, Tamarac, Fla., assignor to J. J. Apparel,
 Inc., Tamarac, Fla.
 Filed Jun. 30, 1994, Ser. No. 25,380
 Term of patent 14 years
 U.S. Cl. D2—625



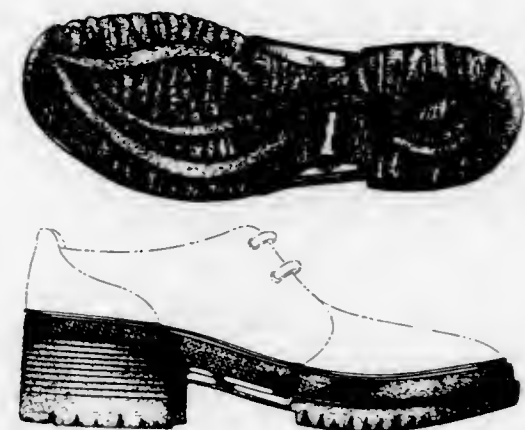
369,233
ELECTRIC LIGHT HOUSING FOR AN ATHLETIC SHOE
 Terry M. Haber, 25011 Castlewood, El Toro, Calif. 92630;
 William H. Smedley, 33285 Blanche Dr., Lake Elsinore,
 Calif. 92530, and Clark B. Foster, 23631 Wakefield Ct.,
 Laguna Niguel, Calif. 92677
 Filed Mar. 11, 1994, Ser. No. 19,880
 Term of patent 14 years
 U.S. Cl. D2—946



369,232
BASEBALL CAP
 Max Ma, 38 Lawrence Avenue West, Toronto, Ontario, Canada
 Filed Jun. 7, 1994, Ser. No. 24,074
 Term of patent 14 years
 U.S. Cl. D2—869



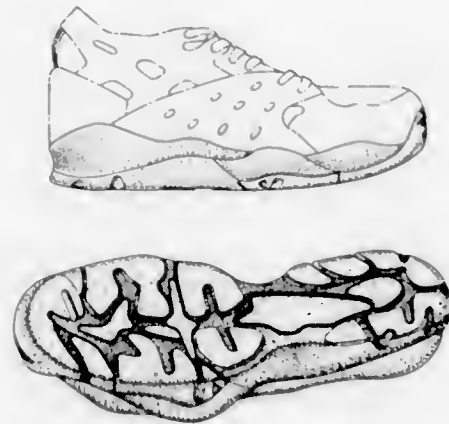
369,234
SHOE SOLE
 Kimberly Fabio, Cambridge, Mass., assignor to The Keds Cor-
 poration, Cambridge, Mass.
 Filed Mar. 7, 1995, Ser. No. 35,823
 Term of patent 14 years
 U.S. Cl. D2—952



369,235
SHOE SOLE

Shinji Senda, and Wataru Ueda, both of Kobe, Japan, assignors to Asics Corporation, Iiyogo, Japan
Filed Sep. 6, 1994, Ser. No. 28,040
Claims priority, application Japan, Mar. 9, 1994, 6-6199
Term of patent 14 years

U.S. Cl. D2—953



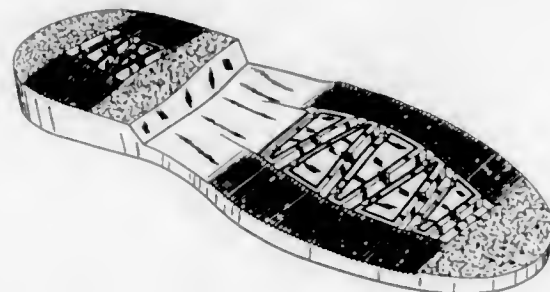
369,237
SHOELACE COVER

Robert J. Gamm, 13587 Kings Glen Dr., St. Louis, Mo. 63131
Division of Ser. No. 6,831, Apr. 8, 1993, Pat. No. Des. 356,675.
This application Nov. 21, 1994, Ser. No. 31,168
Term of patent 14 years
U.S. Cl. D2—975



369,236
SHOE SOLE

Richard V. Maltby, Monson, Mass., assignor to Vibram S.P.A., Albizzate, Italy
Filed Jul. 11, 1994, Ser. No. 25,733
Term of patent 14 years
U.S. Cl. D2—959



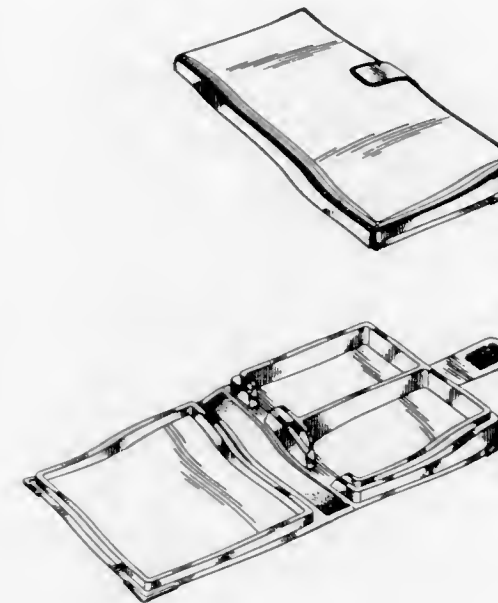
369,238
UMBRELLA CASE

Ann S. Cain, Cincinnati, Ohio, assignor to 'totes', Incorporated, Loveland, Ohio
Filed Jun. 12, 1995, Ser. No. 40,304
Term of patent 14 years
U.S. Cl. D3—11



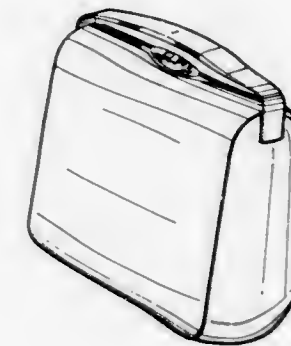
369,239
CARD HOLDER

Sidney Seymour, Woodbridge, Canada, assignor to Data Accessories Corporation, Woodbridge, Canada
Filed Jun. 18, 1993, Ser. No. 9,598
Claims priority, application Canada, Jun. 9, 1993, 09-06-93-2
Term of patent 14 years
U.S. Cl. D3—247



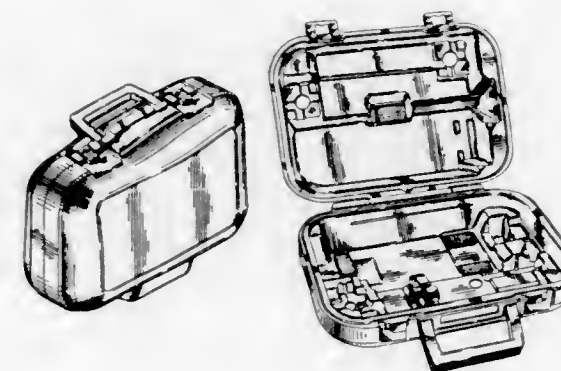
369,241
BEAUTY CASE

Adrian D. Stokes, Kingston Upon Thames; David Banham, Haslemere, and Wendy Flicker, London, all of, United Kingdom, assignors to Carlton International PLC, Enfield, United Kingdom
Filed Dec. 9, 1994, Ser. No. 31,953
Claims priority, application United Kingdom, Jun. 10, 1994, 2039628
Term of patent 14 years
U.S. Cl. D3—276

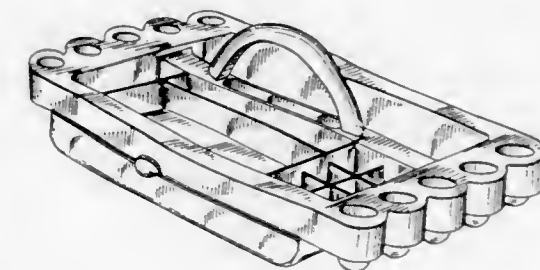


369,240
CASE FOR A VIDEO RECORDER

John P. Newby, Sr., Raleigh, N.C., assignor to Southern Case, Inc., Raleigh, N.C.
Division of Ser. No. 6,494, Mar. 31, 1993, Pat. No. 8,353,265.
This application Dec. 12, 1994, Ser. No. 32,022
Term of patent 14 years
U.S. Cl. D3—268

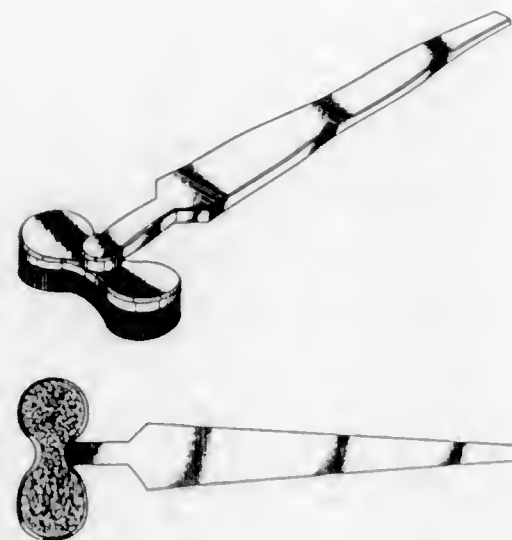


369,242
TRAY ORGANIZER WITH DRAWER
Paolo Tiramani, Greenwich, Conn., assignor to 500 Group Incorporated, Greenwich, Conn.
Filed Mar. 7, 1994, Ser. No. 19,607
Term of patent 14 years
U.S. Cl. D3—308



369,243
PIVOT TOOTHBRUSH

William J. Hunt, 1506 Stech Dr., Bridgewater, N.J. 08807
Filed May 24, 1995, Ser. No. 39,323
Term of patent 14 years
U.S. Cl. D4—104



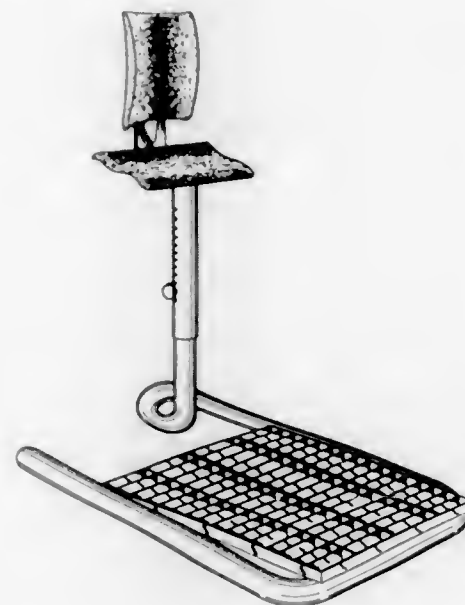
369,245
ACTION CHAISE LOUNGE

Rory Rehmer, Birmingham, Ala., assignor to Meadowcraft, Inc., Birmingham, Ala.
Filed Sep. 19, 1994, Ser. No. 28,639
Term of patent 14 years
U.S. Cl. D6—361



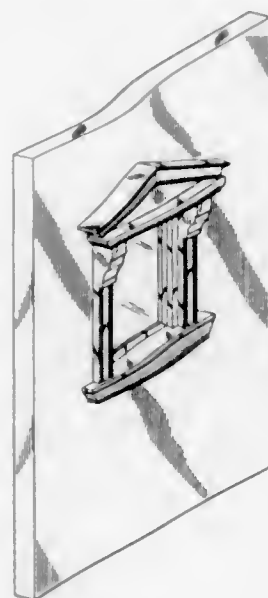
369,246
SIT STAND

Lester P. Schaevitz, 431 Latch's Ln., Merion Station, Pa. 19066
Filed Jan. 26, 1994, Ser. No. 17,977
Term of patent 14 years
U.S. Cl. D6—364

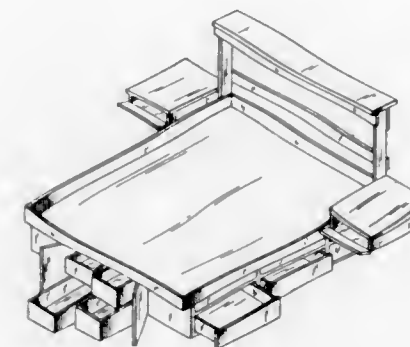


369,244
PICTURE FRAME

Elaine W. Baker, 3300 Coffey Ln., Santa Rosa, Calif. 95403
Filed Mar. 14, 1995, Ser. No. 36,160
Term of patent 14 years
U.S. Cl. D6—303



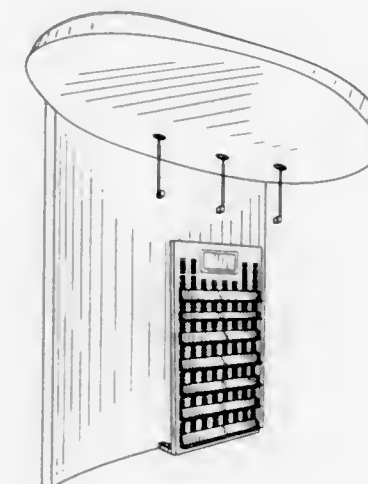
369,247
COMBINATION BED AND BEDROOM ORGANIZER
Robert F. Anderson, 5300 13th St., Menominee, Mich. 49858
Filed Jul. 8, 1994, Ser. No. 25,708
Term of patent 14 years
U.S. Cl. D6—384



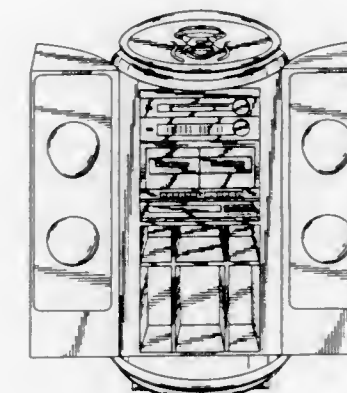
369,249
DISPENSER
Jonathon Loew, East Meadow, N.Y., assignor to Design Display Group, Inc., Carlstadt, N.J.
Filed Sep. 29, 1994, Ser. No. 29,159
Term of patent 14 years
U.S. Cl. D6—408



369,248
DISPLAY AREA
Paul R. Lechleiter, Powell, and Mark B. Artus, Beechwood, both of Ohio, assignors to Blockbuster Entertainment Corporation, Ft. Lauderdale, Fla.
Filed Dec. 6, 1994, Ser. No. 31,781
Term of patent 14 years
U.S. Cl. D6—396



369,250
MUSIC CENTER
Brian J. Palmer, Auchterarder, and Alexander Craddock, Hillington, both of Scotland, assignors to Akura Electronics Limited, Happy Valley, Hong Kong
Filed Feb. 7, 1994, Ser. No. 18,461
Claims priority, application United Kingdom, Aug. 5, 1993, 2032928; Aug. 5, 1993, 2032929
Term of patent 14 years
U.S. Cl. D6—434



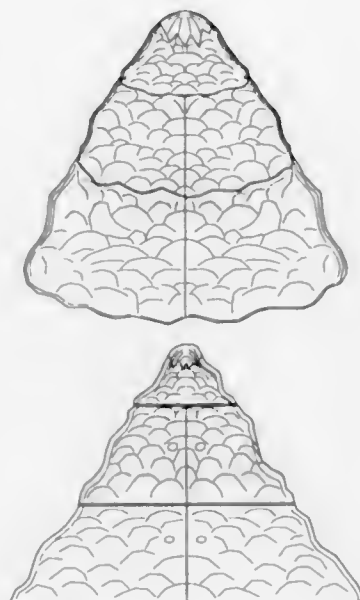
369,251
STORAGE UNIT

Judith A. Williamson-Markman, 5167 Jarom, Las Vegas, Nev. 89120

Filed Feb. 7, 1995, Ser. No. 34,528

Term of patent 14 years

U.S. Cl. D6—434



369,252
ACCESSORY STAND

Rosalind R. Solomon-Wise, 587 Fairmont, Pocatello, Id. 83201

Filed Jan. 27, 1995, Ser. No. 34,121

Term of patent 14 years

U.S. Cl. D6—457



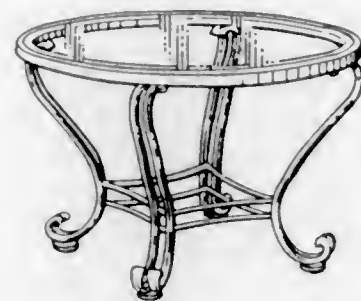
369,253
TABLE

Leo Martin, Coconut Grove, Fla., assignor to Miami Metal Products, Inc., Miami, Fla.

Filed Apr. 11, 1994, Ser. No. 37,361

Term of patent 14 years

U.S. Cl. D6—484



369,254

COMBINED HYGIENE SHIELD AND LIGHT FIXTURE

Peter C. Martin, Denver, Colo., assignor to Lew's Inc., Denver, Colo.

Filed Jun. 30, 1994, Ser. No. 25,337

Term of patent 14 years

U.S. Cl. D6—491



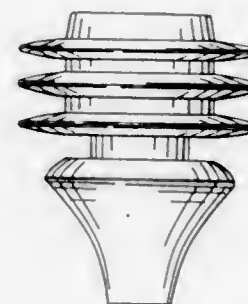
369,255
SEAT LEG

Larry Laslo, New York, N.Y., assignor to Directional Buying Group, Inc., High Point, N.C.

Filed Mar. 9, 1995, Ser. No. 35,905

Term of patent 14 years

U.S. Cl. D6—495



369,257
TABLE LEG

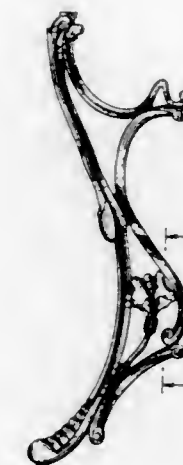
Manuel A. Escalona, Barcelona, Spain, assignor to Comercial Kettal, S.A., Barcelona, Spain

Filed Dec. 29, 1994, Ser. No. 32,941

Claims priority, application Spain, Jul. 21, 1994, 133.128B

Term of patent 14 years

U.S. Cl. D6—497



369,258

TABLE LEG

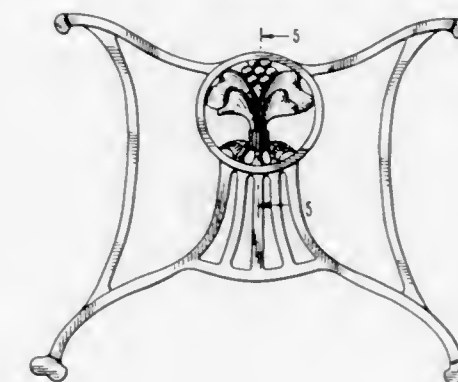
Manuel A. Escalona, Barcelona, Spain, assignor to Comercial Kettal, S.A., Barcelona, Spain

Filed Dec. 29, 1994, Ser. No. 32,942

Claims priority, application Spain, Jul. 21, 1994, 133.129

Term of patent 14 years

U.S. Cl. D6—497



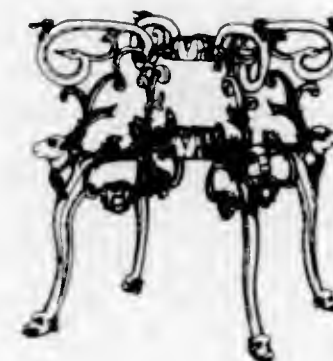
369,256
TABLE BASE

Olivier H. Rinaldi, Calle Cuello No. 9, La Campina, 1050 Caracas, Venezuela

Division of Ser. No. 662,893, Mar. 1, 1991, abandoned. This application Nov. 3, 1993, Ser. No. 14,918

Term of patent 14 years

U.S. Cl. D6—497



369,259

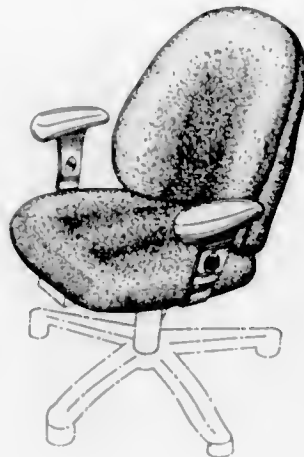
BACK SUPPORT CHAIR

William R. Breen, 111 Lakeshore Dr., Etobicoke, Ontario, Canada

Filed Jan. 19, 1995, Ser. No. 33,723

Claims priority, application Canada, Oct. 12, 1994, 19942026
Term of patent 14 years

U.S. Cl. D6—500



369,261

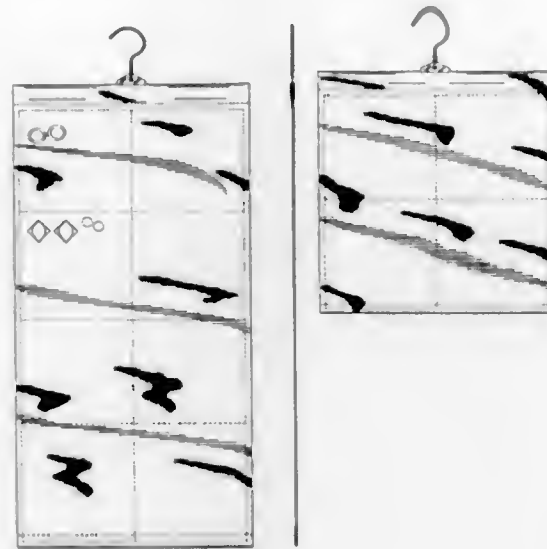
JEWELRY ORGANIZER

Nancy L. Brink, 816 Pine St., Saltsburg, Pa. 15681

Filed Oct. 19, 1994, Ser. No. 29,909

Term of patent 14 years

U.S. Cl. D6—514



369,262

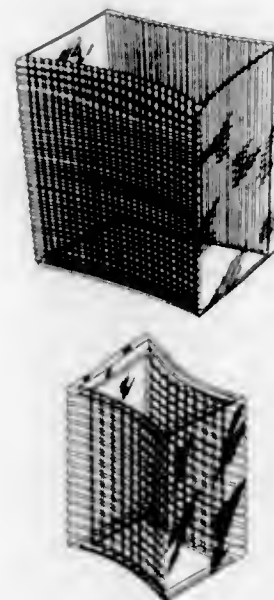
BATH ACCESSORY

Willard Aaron, Niles, Ill., assignor to Sally Designs, Ltd., Niles, Ill.

Filed Jun. 28, 1994, Ser. No. 25,293

Term of patent 14 years

U.S. Cl. D6—524



369,260

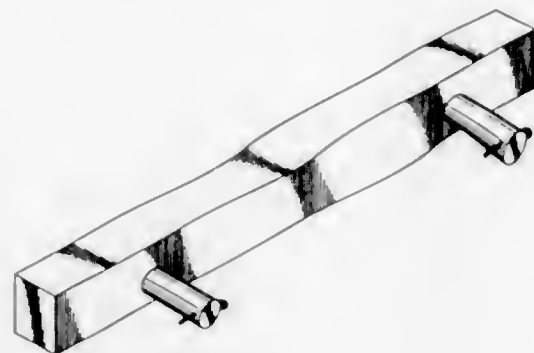
WORKBENCH EXTENDER

Fred Cochrane, and Coleen Hoekstra, both of P.O. Box 85, 35 W. Main St., Hillsborough, N.H. 03244

Filed Jul. 7, 1994, Ser. No. 25,665

Term of patent 14 years

U.S. Cl. D6—509



369,263

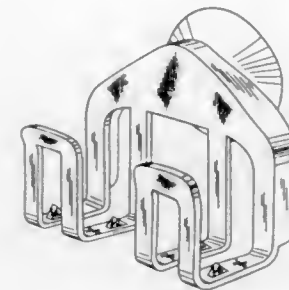
SOAP HOLDER

William L. Gregg, Portland, Oreg., assignor to GBS Products, Inc., Portland, Oreg.

Filed Feb. 24, 1995, Ser. No. 35,350

Term of patent 14 years

U.S. Cl. D6—540



369,265

LOUVRE FOR VERTICAL BLIND

Kenneth J. Potts, Cleveland, England, assignor to Kenneth John Potts, and Josephine Anne Potts, both of Cleveland, England

Filed Mar. 11, 1994, Ser. No. 19,787

Claims priority, application United Kingdom, Sep. 13, 1993, 2033779

The portion of the term of this patent subsequent to Oct. 24, 2009, has been disclaimed.

Term of patent 14 years

U.S. Cl. D6—580



369,266

STORAGE ASSEMBLY

Shahriar Dardashti, c/o Atlantic Representations, Inc., P.O. Box 2339, Santa Fe Springs, Calif. 90670

Filed Apr. 30, 1995, Ser. No. 40,706

Term of patent 14 years

U.S. Cl. D6—629



369,264

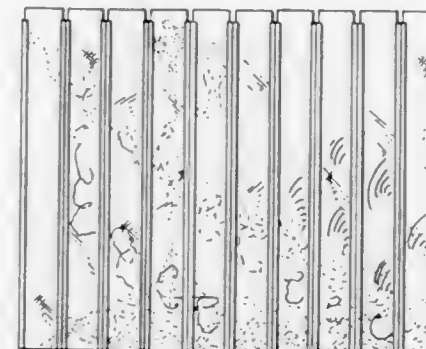
MURAL VERTICAL BLIND INSERT

Young Suh, 3 Kenneth Dr., Putnam Valley, N.Y. 10579

Filed Apr. 11, 1994, Ser. No. 21,218

Term of patent 14 years

U.S. Cl. D6—577



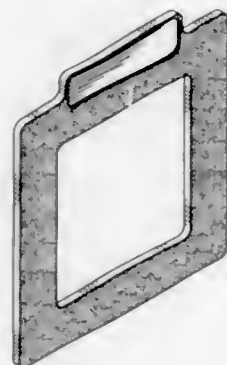
369,267

COMPUTER DISK SEPARATING TAB

Michael L. Harrington, 1918 W. Clarke, Spokane, Wash. 99201
 Filed Oct. 20, 1994, Ser. No. 30,085

Term of patent 14 years

U.S. Cl. D6—630



369,269

MINI COOKING CENTER

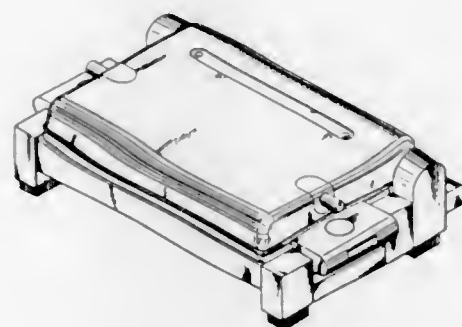
Miguel Labadla Del Fresno, Vitoria, Spain, assignor to Electro-domesticos Sotac, S.A., Vitoria, Spain

Filed Feb. 22, 1995, Ser. No. 35,282

Claims priority, application Spain, Aug. 22, 1994, 133303

Term of patent 14 years

U.S. Cl. D7—352



369,268

COFFEE MAKER

Jürgen Assmann, Essen; Dietmar Walta, and Andre Kunzen-dorf, both of Velbert, all of, Germany, assignors to WIK Elektro-Hausgeräte Vertriebs GmbH & Co. Produktions KG, Essen, Germany

Filed Aug. 2, 1994, Ser. No. 26,658

Claims priority, application Hague Agreement, Feb. 2, 1994, DM/028 586

Term of patent 14 years

U.S. Cl. D7—309



369,270

ELECTRIC FRYER

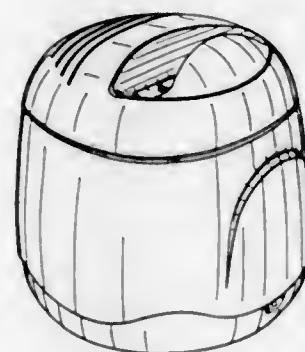
Jean-Mac Payen, Quétigny, France, assignor to SEB, Selongey, France

Filed Apr. 7, 1995, Ser. No. 37,237

Claims priority, application France, Oct. 13, 1994, 94 56 55

Term of patent 14 years

U.S. Cl. D7—354



369,271

COOKING APPARATUS

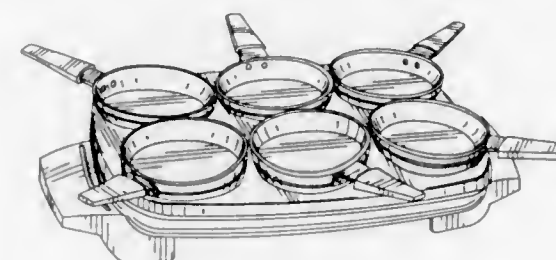
Lionel Doumeng, Marcellaz-Albanais, France, assignor to Tefal SA, Ruimsilly, France

Filed Aug. 12, 1993, Ser. No. 11,688

Claims priority, application France, Feb. 19, 1993, 93 0790

Term of patent 14 years

U.S. Cl. D7—357



369,273

PAN HANDLE

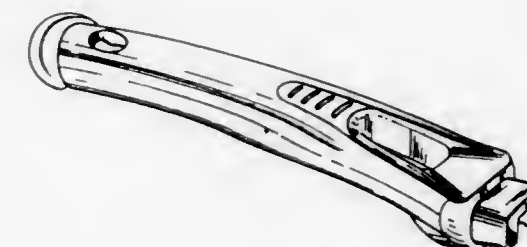
Francesco Munari, Cardano Al Campo, Italy, assignor to La Termoplastica F.B.M. S.r.l., Gallarate, Italy

Filed May 23, 1995, Ser. No. 39,203

Claims priority, application Italy, Dec. 9, 1994, MI94 0 000614

Term of patent 14 years

U.S. Cl. D7—395



369,274

EXTENSION RING FOR A CONVECTION OVEN

David A. Dornbush, Prior Lake; Chad S. Erickson, Plymouth; Jeffrey E. Sandahl, Burnsville; Neal P. Barnes, Maple Grove; James B. Easley; Richard C. Jackson, both of Minneapolis; Andrew L. Von Duyke, Greenwood, and Kevin B. Moore, Chaska, all of Minn., assignors to American Harvest, Inc., Chaska, Minn.

Continuation-in-part of Ser. No. 6,661, Apr. 13, 1993, Pat. No.

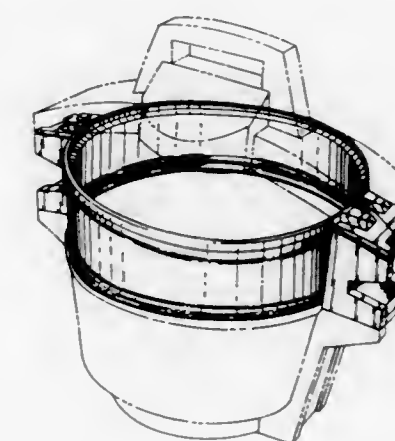
Des. 357,383, which is a continuation-in-part of Ser. No.

6,031, Mar. 31, 1993, Pat. No. Des. 355,564. This application

Apr. 27, 1993, Ser. No. 7,682

Term of patent 14 years

U.S. Cl. D7—402



369,272

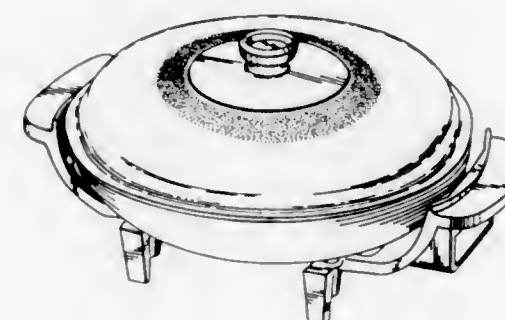
SKILLET

Lewis A. Mendelson, Overland Park, Kans., and Donald L. Avise, Lake Lotawana, Mo., assignors to Dazey Corporation, New Century, Kans.

Filed Jan. 6, 1995, Ser. No. 33,184

Term of patent 14 years

U.S. Cl. D7—360

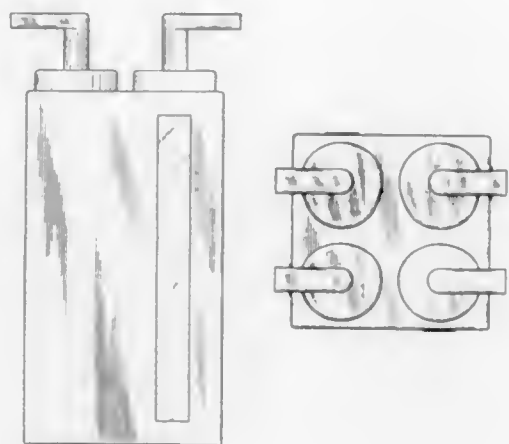


369,275

MULTI-FLUID TRAVEL BOTTLE

Michael L. Anton, 8906 Apache La., Overland, Mo. 63114
 Filed Mar. 13, 1995, Ser. No. 36,112
 Term of patent 14 years

U.S. Cl. D7—513

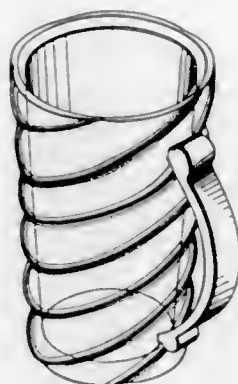


369,277

MUG

Rick Lin, Tainan, Taiwan, assignor to Juei Chyuan Enterprise Co., Ltd., Tainan, Taiwan
 Filed Jun. 12, 1995, Ser. No. 40,165
 Term of patent 14 years

U.S. Cl. D7—529

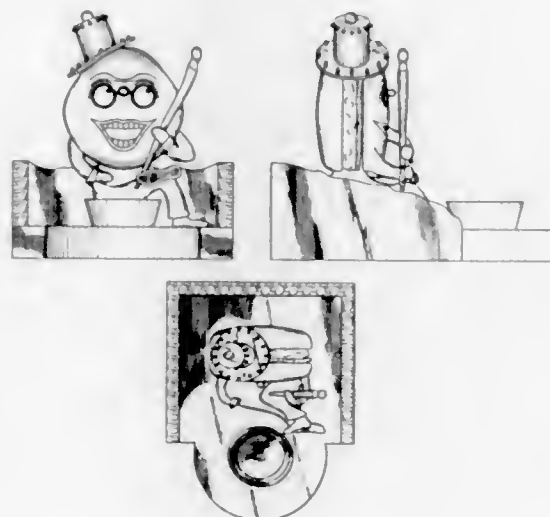


369,278

BOWL

Daniel A. Scialpi, 1209 E. 98th St., Brooklyn, N.Y. 11236, and
 Tony J. Caggiano, 51 Laurel Ave., East Islip, N.Y. 11730
 Filed Jul. 18, 1994, Ser. No. 26,037
 Term of patent 14 years

U.S. Cl. D7—579

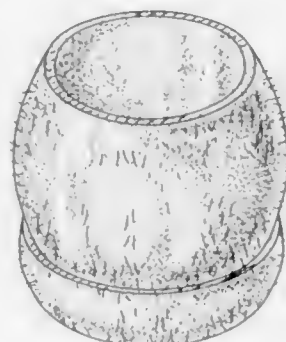


369,276

COCONUT SHELL DRINKING VESSEL

Blake Jessen, 323 Hillview La., Winters, Calif. 95694-2315
 Filed Feb. 23, 1995, Ser. No. 35,268
 Term of patent 14 years

U.S. Cl. D7—523

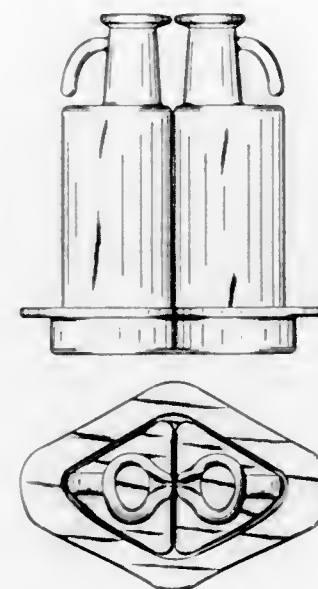


369,279

CRUET SET

Robert B. Rothschild, III, 3143 E. Rte. 36, Urbana, Ohio 43078
 Filed Nov. 4, 1994, Ser. No. 30,636
 Term of patent 14 years

U.S. Cl. D7—598



369,281

DRINK COASTER

Peter J. Cowell, St. Peters, Australia, assignor to Ink-A (SA) Pty Ltd, Stepney, Australia
 Filed Apr. 25, 1994, Ser. No. 21,826
 Claims priority, application Australia, Oct. 28, 1993, 3437/93
 Term of patent 14 years

U.S. Cl. D7—624



369,280

FOOD CONTAINER

David L. Feer, Andover, Mass., and William A. Pesa, Wooster, Ohio, assignors to Rubbermaid Incorporated, Wooster, Ohio
 Filed Dec. 16, 1994, Ser. No. 32,395
 Term of patent 14 years

U.S. Cl. D7—602



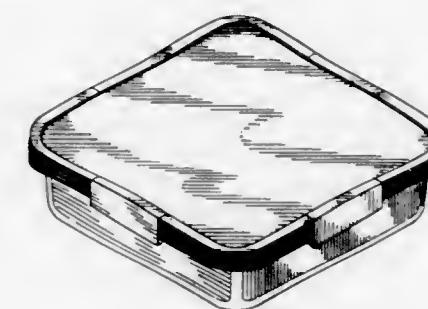
369,282

COMBINED LID AND CONTAINER

Gianni Arduini, Melegnano, Italy, assignor to Click Clack International Ltd., New Zealand
 Filed Nov. 28, 1994, Ser. No. 31,427
 Claims priority, application New Zealand, May 27, 1994, 25925

Term of patent 14 years

U.S. Cl. D7—629



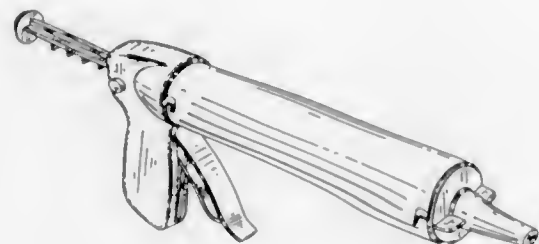
369,283
FOOD EXTRUDING GUN

Robert L. Finlay, Emporia, Kans., assignor to BPE, Inc., Emporia, Kans.

Filed Feb. 8, 1995, Ser. No. 34,572

Term of patent 14 years

U.S. Cl. D7—672



369,285
MASTIC GUN

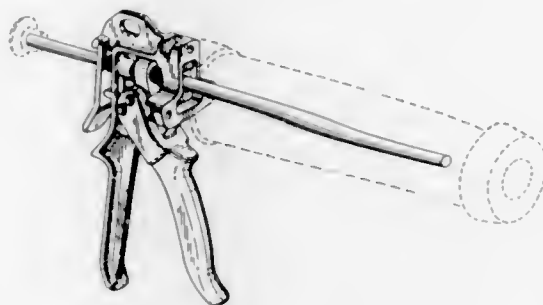
Andrew C. Leech, Newbury, England, assignor to B.B.A. Group plc, West Yorkshire, United Kingdom

Filed Apr. 21, 1995, Ser. No. 37,828

Claims priority, application United Kingdom, Oct. 21, 1994, 2042736

Term of patent 14 years

U.S. Cl. D8—14.1



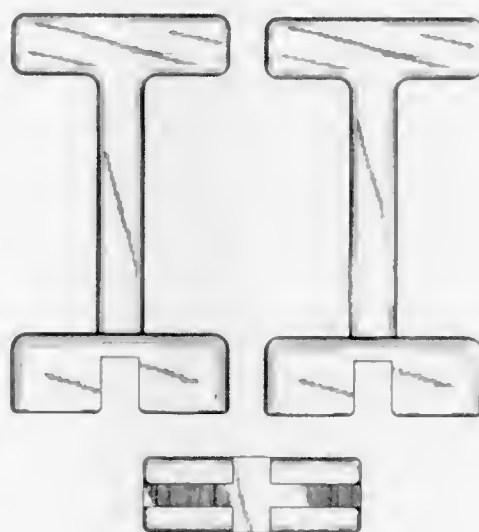
369,286
WRENCH FOR GAS CAP REMOVAL

Wilbur W. Tackman, 403 Nuemann Dr., East Peoria, Ill. 61611

Filed Jan. 5, 1995, Ser. No. 33,144

Term of patent 14 years

U.S. Cl. D8—21



369,284
BARBECUE GRILL ASH SWEEP

Richard Bird, Louisville, Ky., and Calvin Sprinkle, Borden, Ind., assignors to Porcelain Metals Corporation, Louisville, Ky.

Filed Aug. 12, 1994, Ser. No. 27,089

Term of patent 14 years

U.S. Cl. D7—690



369,287
FOLDING KNIFE

Brett P. Seber, Escondido, and Roy L. Helton, Jr., San Diego, both of Calif., assignors to Buck Knives, Inc., El Cajon, Calif.

Continuation-in-part of Ser. No. 138,703, Oct. 18, 1993, abandoned, and a continuation-in-part of Ser. No. 138,670, Oct. 18, 1993. This application Jul. 18, 1994, Ser. No. 26,042

Term of patent 14 years

U.S. Cl. D8—98



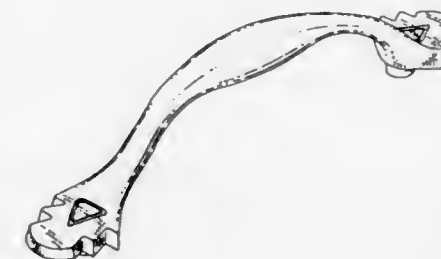
369,289
PULL

Gerald Caugh, Rockford; Kevin DeWald, Spring Lake, and Deborah Mattson, Plainwell, all of Mich., assignors to Belwith International, Grandville, Mich.

Filed Nov. 5, 1993, Ser. No. 15,019

Term of patent 14 years

U.S. Cl. D8—317



369,288
DRAW-OPERATED LOCK HANDLE

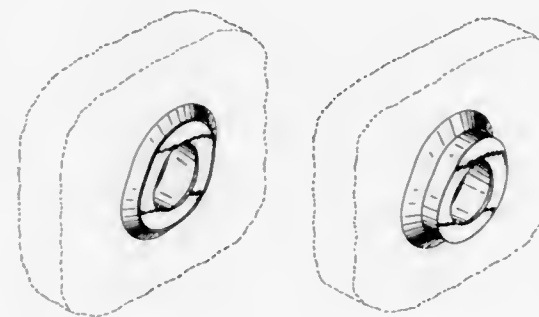
Ulla L. F. Jensen, Storeholm 17, DK-2670 Greve, Denmark

Filed Mar. 23, 1994, Ser. No. 20,304

Claims priority, application Denmark, Sep. 23, 1993, 93/0871

Term of patent 14 years

U.S. Cl. D8—313



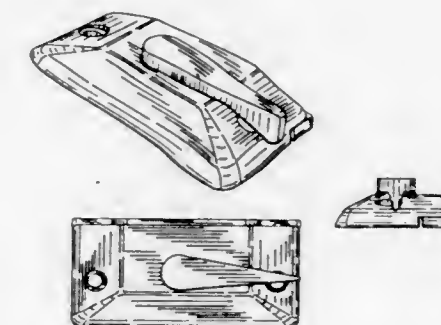
369,290
SASH LOCK AND KEEPER ASSEMBLY

Edward J. Subliskey, Mountaintop, Pa., assignor to Allen-Stevens Corporation, West Hazleton, Pa.

Filed Jun. 23, 1995, Ser. No. 40,687

Term of patent 14 years

U.S. Cl. D8—337



369,291

CIRCUIT BOARD SUPPORT

Toshinobu Nakamura, Tokyo, Japan, assignor to Shinagawa Shoko Co., Ltd., Tokyo, Japan

Filed Oct. 11, 1994, Ser. No. 30,044

Term of patent 14 years

U.S. Cl. D8—354

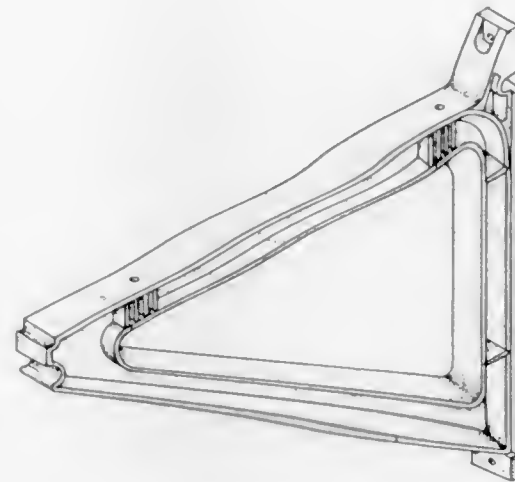
369,293
BRACKET

John Gusdorf, and Fred D. Oberhaus, both of St. Louis County, Mo., assignors to Industrial Wire Products, Inc., Sullivan, Mo.

Filed Mar. 23, 1995, Ser. No. 36,596

Term of patent 14 years

U.S. Cl. D8—381



369,294

COMBINED COSMETIC PUMP SPRAY BOTTLE AND CAP

Eriko Hirato, Abiko, Japan, assignor to Shiseido Company, Ltd., Tokyo, Japan

Filed May 19, 1995, Ser. No. 39,395

Claims priority, application Japan, Nov. 21, 1994, 6-35110

Term of patent 14 years

U.S. Cl. D9—300

369,292

ORNAMENT HANGER

Lonnie Gary, and Peter A. Brown, both of Lubbock, Tex., assignors to Gary Products Group, Inc., Lubbock, Tex.

Filed Mar. 7, 1995, Ser. No. 35,793

Term of patent 14 years

U.S. Cl. D8—367



369,295

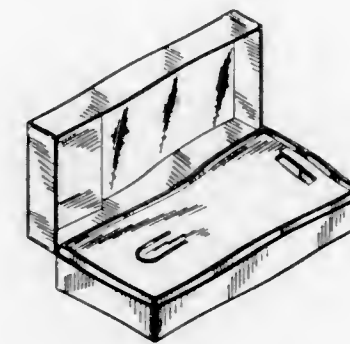
WATCH BOX

Hiroaki Kobari, Tokyo, Japan; Toyohiko Shigeta, Hackensack, N.J., and Takashi Wakuyama, Tokyo, Japan, assignors to Kabushiki Kaisha Hattori Seiko, Tokyo, Japan

Filed Apr. 25, 1994, Ser. No. 22,802

Term of patent 14 years

U.S. Cl. D9—423



369,297

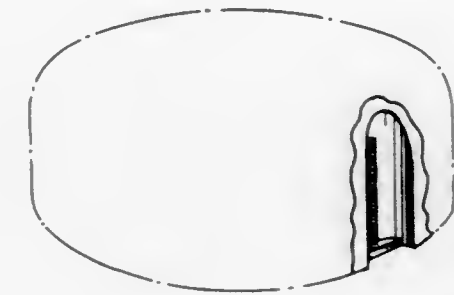
TAMPER EVIDENCING STRUCTURE FOR A CLOSURE

Thomas H. Hayes, Loveland, Ohio, assignor to Anchor Hocking Packaging Company, Lancaster, Ohio

Filed Sep. 30, 1994, Ser. No. 29,214

Term of patent 14 years

U.S. Cl. D9—435



369,296

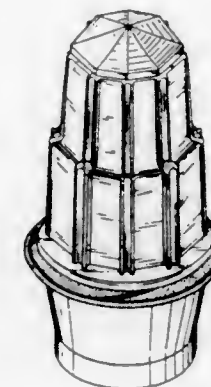
ICE CREAM CONTAINER

Hyun S. Park, Kyungki-do, Rep. of Korea, assignor to Lotte Confectionery Co., Ltd., Seoul, Rep. of Korea

Filed Aug. 30, 1994, Ser. No. 27,827

Term of patent 14 years

U.S. Cl. D9—429



369,298

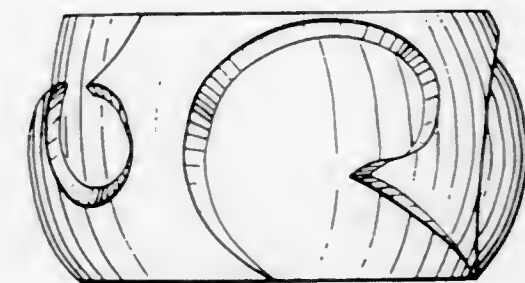
EXTERIOR SURFACE OF A BODY FOR A JAR

Stephan Weiss, 211 E. 70th St., New York, N.Y. 10021

Division of Ser. No. 13,654, Sep. 29, 1993, Pat. No. Des. 358,099. This application Dec. 16, 1994, Ser. No. 32,359

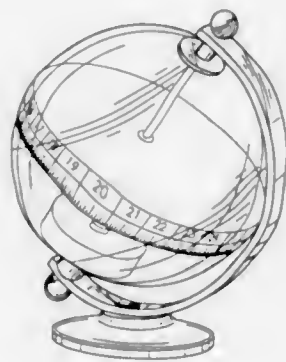
Term of patent 14 years

U.S. Cl. D9—549



369,299
CLOCK

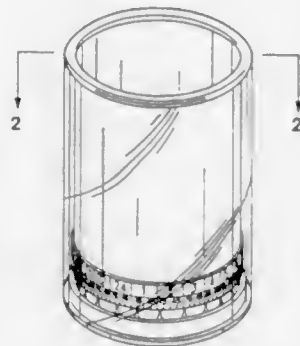
Kam M. Ling, Kowloon, Hong Kong, assignor to Merry Global Technology Limited, Kowloon, Hong Kong
 Filed Sep. 13, 1993, Ser. No. 12,854
 Term of patent 14 years
 U.S. Cl. D10—15

369,301
CLOCK

Anthony Sell, Crystal Lake, Ill., assignor to Spartus Corporation, Arlington Heights, Ill.
 Filed Apr. 21, 1994, Ser. No. 21,648
 Term of patent 14 years
 U.S. Cl. D10—18

369,300
CLOCK

Yu K. S. Ip, Tin Shui Wai, Hong Kong, assignor to Merry Global Technology Limited, Kowloon, Hong Kong
 Filed Sep. 13, 1993, Ser. No. 12,961
 Claims priority, application United Kingdom, Mar. 12, 1993, 2029754
 Term of patent 14 years
 U.S. Cl. D10—15

369,302
WRISTWATCH

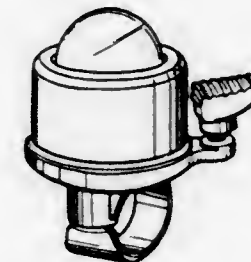
Craig S. Wood, 5711 Preston Oaks #644, Dallas, Tex. 75240
 Filed Sep. 7, 1994, Ser. No. 28,095
 Term of patent 14 years
 U.S. Cl. D10—32

369,303
WRISTWATCH

Barbara Giardiello, Naples, Italy, assignor to Artime SA, Neuchatel, Switzerland
 Filed Mar. 9, 1995, Ser. No. 35,935
 Claims priority, application Hague Agreement, Sep. 9, 1994, DMA/002626
 Term of patent 14 years
 U.S. Cl. D10—39

369,305
BELL HAVING GYRO

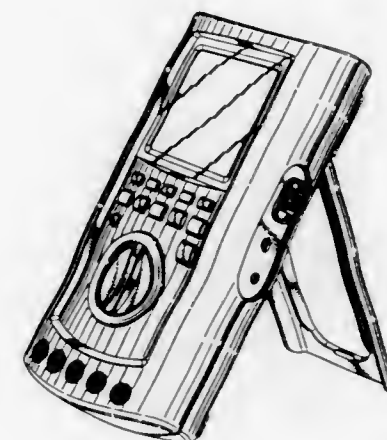
Michael Shih, No. 3, Hsing Yeh Road, Fu Hsing Industrial Zone, Fu Hsing Hsiang, Chang Hua, Taiwan
 Filed Mar. 13, 1995, Ser. No. 36,098
 Term of patent 14 years
 U.S. Cl. D10—68



369,306

GRAPHIC MULTIMETER INSTRUMENT

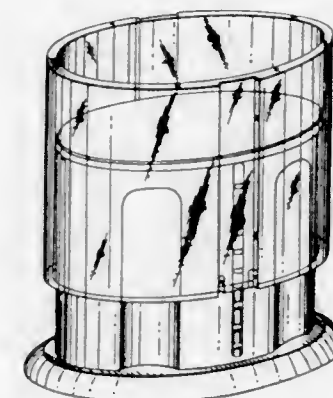
Steven W. Fisher, Edmonds, Wash., assignor to Fluke Corporation, Everett, Wash.
 Continuation of Ser. No. 20,736, Mar. 31, 1994, abandoned.
 This application Jan. 12, 1995, Ser. No. 33,397
 Term of patent 14 years
 U.S. Cl. D10—78



369,304

ADJUSTABLE MEASURING CONTAINER

Frans M. Wetters, Tuscumbia, Ala., assignor to Robbins Industries, Inc., Florence, Ala.
 Filed Mar. 24, 1995, Ser. No. 36,674
 Term of patent 14 years
 U.S. Cl. D10—46.3



369,307

INTRAOPERATIVE ULTRASOUND PROBE

Deborah K. Imling, Bellevue, and Perry W. Kaminski, Seattle, both of Wash., assignors to Advanced Technology Laboratories, Inc., Bothell, Wash.

Filed Jan. 17, 1985, Ser. No. 33,651

Term of patent 14 years

U.S. Cl. D10—78



369,309

TRAFFIC SIGNAL GLOVE

Mark W. Marbach, 4545 Klingwood Dr. #1707, Klingwood, Tex. 77345

Filed Aug. 25, 1993, Ser. No. 12,241

Term of patent 14 years

U.S. Cl. D10—109



369,308

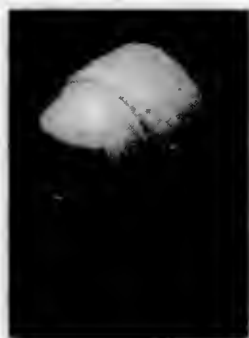
COMBINED MOTION DETECTOR AND AUDIBLE ALARM

Kam-Wah Pun, Kowloon Bay, Hong Kong, assignor to Styling City, Ltd., Kowloon Bay, Hong Kong

Filed Feb. 27, 1995, Ser. No. 35,387

Term of patent 14 years

U.S. Cl. D10—106



369,310

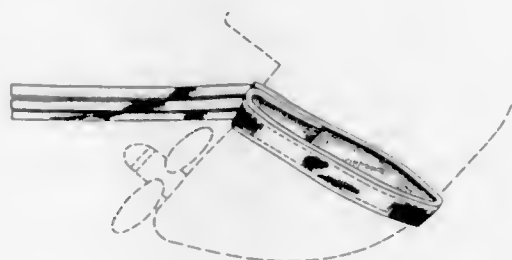
BOAT MOTOR MARKER

Bradford L. Hanson, 1144 S. Monroe St., Denver, Colo. 80210

Filed Jul. 5, 1994, Ser. No. 25,508

Term of patent 14 years

U.S. Cl. D10—109



369,311

SPIRAL ROPE JEWELRY CHAIN

Spiros Andrews, St. Petersburg, and Akira Tashiro, Largo, Fla., assignors to Ravel, Inc., Clearwater, Fla.

Filed Jan. 25, 1994, Ser. No. 17,916

Term of patent 14 years

U.S. Cl. D11—13



369,314

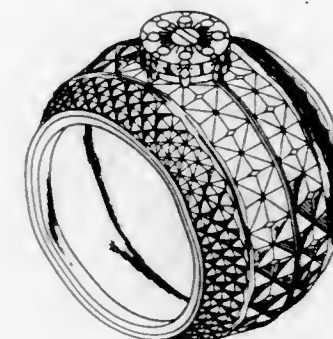
ORNAMENT

Chin-Sheng Yang, 4 Fr. No. 26 Lane 358 Yung An Street, Tainan, Taiwan

Filed Aug. 9, 1994, Ser. No. 26,930

Term of patent 14 years

U.S. Cl. D11—121



369,312

JEWELRY PIN

Paul D. Saladino, P.O. Box 1576, Rochester, N.H. 03867-1576

Filed Aug. 11, 1994, Ser. No. 27,039

Term of patent 14 years

U.S. Cl. D11—47



369,315

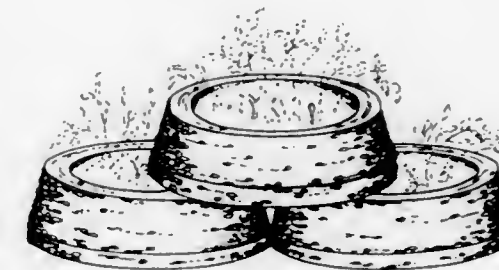
PLANTER

Daryl L. Peterson, M.P. 36,38L S.R. 14, Stevenson, Wash. 98648

Filed Feb. 12, 1993, Ser. No. 4,741

Term of patent 14 years

U.S. Cl. D11—152



369,313

Patent Not Issued For This Number

369,316 PLANTER

Daryl L. Peterson, M.P. 36.38L S.R. 14, Stevenson, Wash. 98648

Filed Feb. 12, 1993, Ser. No. 4,758

Term of patent 14 years

U.S. Cl. D11-152



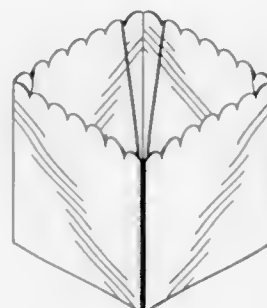
369,317

FLOWER POT COVER

Donald E. Weder, and Joseph G. Straeter, both of Highland, Ill., assignors to Highland Supply Corporation, Highland, Ill. Continuation-in-part of Ser. No. 710,272, Jun. 4, 1991, which is a continuation-in-part of Ser. No. 617,454, Nov. 21, 1990, abandoned, Ser. No. 411,249, Sep. 22, 1989, Ser. No. 411,247, Sep. 22, 1989, Pat. No. Des. 358,113, and Ser. No. 411,245, Sep. 22, 1989. This application Dec. 16, 1991, Ser. No. 808,559 The portion of the term of this patent subsequent to Jul. 18, 2009, has been disclaimed.

Term of patent 14 years

U.S. Cl. D11-164



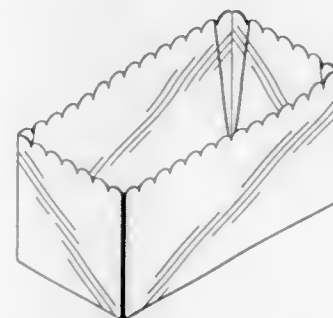
369,318

FLOWER POT COVER

Donald E. Weder, and Joseph G. Straeter, both of Highland, Ill., assignors to Highland Supply Corporation, Highland, Ill. Continuation-in-part of Ser. No. 710,272, Jun. 4, 1991, which is a continuation-in-part of Ser. No. 617,454, Nov. 21, 1990, abandoned, Ser. No. 411,249, Sep. 22, 1989, Pat. No. Des. 358,113, Ser. No. 411,247, Sep. 22, 1989, and Ser. No. 411,245, Sep. 22, 1989. This application Dec. 16, 1991, Ser. No. 809,635 The portion of the term of this patent subsequent to Jul. 18, 2009, has been disclaimed.

Term of patent 14 years

U.S. Cl. D11-164



369,319

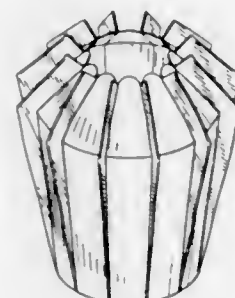
FLOWER POT COVER WITH FINS

Donald E. Weder, and Joseph G. Straeter, both of Highland, Ill., assignors to Highland Supply Corporation, Highland, Ill. Continuation-in-part of Ser. No. 781,453, Oct. 21, 1991, Pat. No. Des. 348,634, which is a continuation-in-part of Ser. No. 617,454, Nov. 21, 1990, abandoned, which is a continuation-in-part of Ser. No. 411,249, Sep. 22, 1989, Pat. No. Des. 358,113, and Ser. No. 411,247, Sep. 22, 1989, and Ser. No. 411,245, Sep. 22, 1989. This application Sep. 29, 1992, Ser. No. 954,060

The portion of the term of this patent subsequent to Sep. 19, 2009, has been disclaimed.

Term of patent 14 years

U.S. Cl. D11-164



369,320

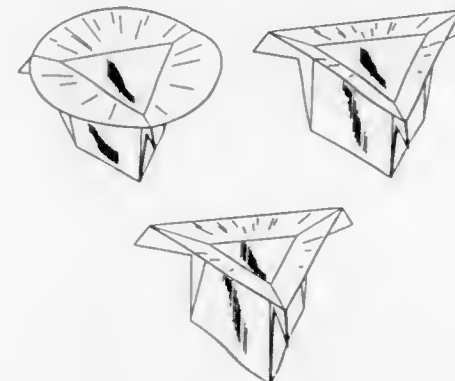
FLOWER POT COVER

Donald E. Weder, and Joseph G. Straeter, both of Highland, Ill., assignors to Highland Supply Corporation, Highland, Ill. Continuation-in-part of Ser. No. 781,453, Oct. 21, 1991, Pat. No. Des. 348,634, which is a continuation-in-part of Ser. No. 617,454, Nov. 21, 1990, abandoned, Ser. No. 411,249, Sep. 22, 1989, Pat. No. Des. 358,113, Ser. No. 411,247, Sep. 22, 1989, and Ser. No. 411,245, Sep. 22, 1989. This application Oct. 20, 1992, Ser. No. 672

The portion of the term of this patent subsequent to Nov. 21, 2009, has been disclaimed.

Term of patent 14 years

U.S. Cl. D11-164



369,322

FLOWER POT COVER

Donald E. Weder, and Joseph G. Straeter, both of Highland, Ill., assignors to Highland Supply Corporation, Highland, Ill. Continuation-in-part of Ser. No. 781,453, Oct. 21, 1991, Pat. No. Des. 348,634, which is a continuation-in-part of Ser. No. 617,454, Nov. 21, 1990, abandoned, Ser. No. 411,249, Sep. 22, 1989, Pat. No. Des. 358,113, Ser. No. 411,247, Sep. 22, 1989, and Ser. No. 411,245, Sep. 22, 1989. This application Nov. 30, 1992, Ser. No. 2,131

The portion of the term of this patent subsequent to Nov. 21, 2009, has been disclaimed.

Term of patent 14 years

U.S. Cl. D11-164



369,323

FLOWER POT COVER

Donald E. Weder, and Joseph G. Straeter, both of Highland, Ill., assignors to Highland Supply Corporation, Highland, Ill. Continuation-in-part of Ser. No. 807,904, Dec. 16, 1991, which is a continuation-in-part of Ser. No. 710,272, Jun. 4, 1991, which is a continuation-in-part of Ser. No. 617,454, Nov. 21, 1990, abandoned, Ser. No. 411,249, Sep. 22, 1989, Pat. No. Des. 358,113, Ser. No. 411,247, Sep. 22, 1989, and Ser. No. 411,245, Sep. 22, 1989. This application Jan. 5, 1993, Ser. No. 3,285

The portion of the term of this patent subsequent to Jan. 16, 2010, has been disclaimed.

Term of patent 14 years

U.S. Cl. D11-164

369,321

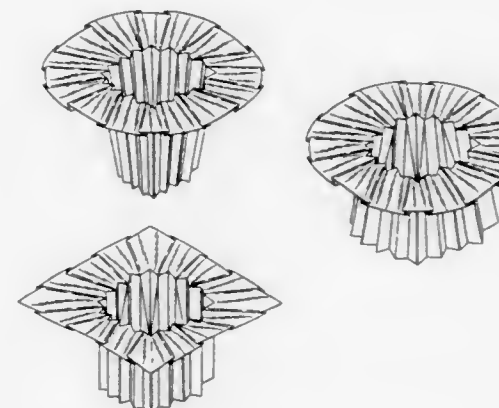
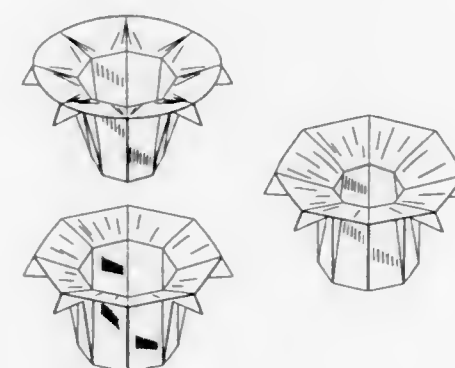
FLOWER POT COVER

Donald E. Weder, and Joseph G. Straeter, both of Highland, Ill., assignors to Highland Supply Corporation, Highland, Ill. Continuation-in-part of Ser. No. 781,453, Oct. 21, 1991, Pat. No. Des. 348,634, which is a continuation-in-part of Ser. No. 617,454, Nov. 21, 1990, abandoned, and Ser. No. 411,249, Sep. 22, 1989, Pat. No. Des. 358,113, and Ser. No. 411,247, Sep. 22, 1989, and Ser. No. 411,245, Sep. 22, 1989. This application Oct. 20, 1992, Ser. No. 695

The portion of the term of this patent subsequent to Nov. 21, 2009, has been disclaimed.

Term of patent 14 years

U.S. Cl. D11-164



369,324

FLOWER POT COVER

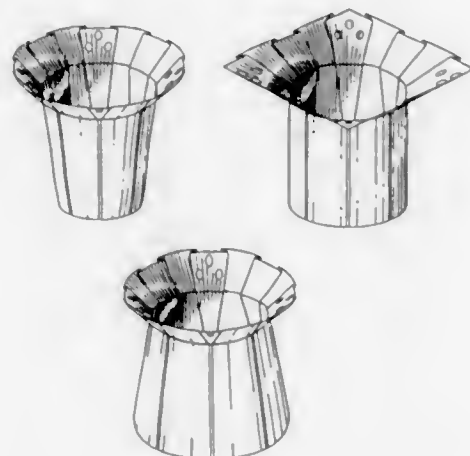
Donald E. Weder, and Joseph G. Straeter, both of Highland, Ill., assignors to Highland Supply Corporation, Highland, Ill.

Continuation-in-part of Ser. No. 808,561, Dec. 16, 1991, which is a continuation-in-part of Ser. No. 710,272, Jun. 4, 1991, which is a continuation-in-part of Ser. No. 617,454, Nov. 21, 1990, abandoned, said Ser. No. 710,272 is a continuation-in-part of Ser. No. 411,249, Sep. 22, 1989, Pat. No. Des. 358,113, said Ser. No. 710,272 is a continuation-in-part of Ser. No. 411,247, Sep. 22, 1989, said Ser. No. 710,272 is a continuation-in-part of Ser. No. 411,245, Sep. 22, 1989. This application Jan. 5, 1993, Ser. No. 3,286

The portion of the term of this patent subsequent to Oct. 3, 2009, has been disclaimed.

Term of patent 14 years

U.S. Cl. D11—164



369,325

FLOWER POT COVER

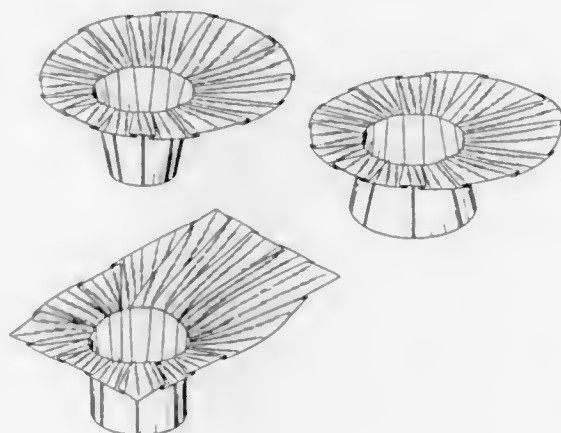
Donald E. Weder, and Joseph G. Straeter, both of Highland, Ill., assignors to Highland Supply Corporation, Highland, Ill.

Continuation-in-part of Ser. No. 808,360, Dec. 16, 1991, which is a continuation-in-part of Ser. No. 710,272, Jun. 4, 1991, which is a continuation-in-part of Ser. No. 617,454, Nov. 21, 1990, abandoned, and Ser. No. 411,249, Sep. 22, 1989, Pat. No. Des. 358,113. This application Jan. 5, 1993, Ser. No. 3,339

The portion of the term of this patent subsequent to Oct. 3, 2009, has been disclaimed.

Term of patent 14 years

U.S. Cl. D11—164



369,326

FLOWER POT COVER

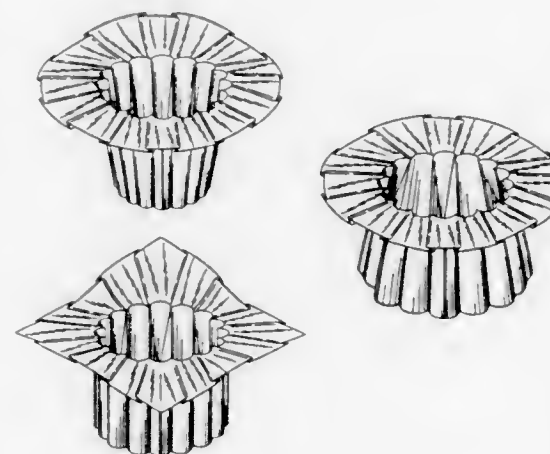
Donald E. Weder, and Joseph G. Straeter, both of Highland, Ill., assignors to Highland Supply Corporation, Highland, Ill.

Continuation-in-part of Ser. No. 807,904, Dec. 16, 1991, which is a continuation-in-part of Ser. No. 710,272, Jun. 4, 1991, which is a continuation-in-part of Ser. No. 617,454, Nov. 21, 1990, abandoned, Ser. No. 411,249, Sep. 22, 1989, Pat. No. Des. 358,113, Ser. No. 411,247, Sep. 22, 1989, and Ser. No. 411,245, Sep. 22, 1989. This application Jan. 6, 1993, Ser. No. 4,960

The portion of the term of this patent subsequent to Jan. 16, 2010, has been disclaimed.

Term of patent 14 years

U.S. Cl. D11—164



369,328

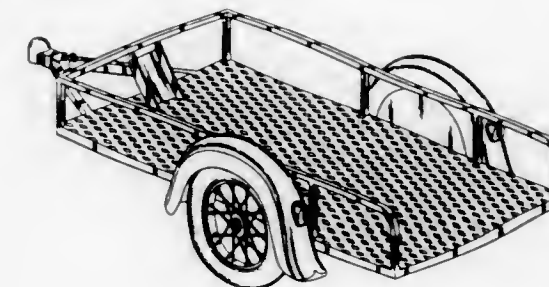
MOTORCYCLE TRAILER

John Acosta, 13992 Green Vista Dr., Fontana, Calif. 92337

Filed Mar. 16, 1995, Ser. No. 36,931

Term of patent 14 years

U.S. Cl. D12—101



369,329

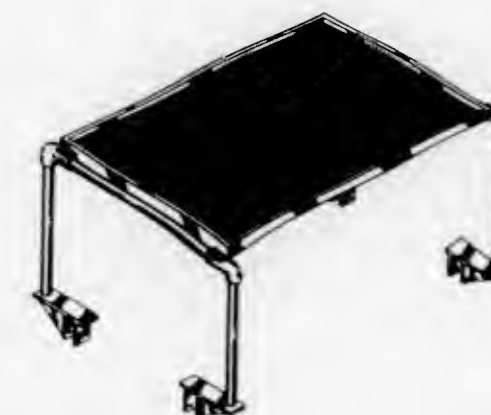
GUIDE FOR USE DURING BOAT LOADING AND UNLOADING

Joseph F. Harris, 15980 Lower Springs Rd., Redding, Calif. 96001, and Al Harris, 5264 Caterpillar Rd., Redding, Calif. 96003

Filed May 1, 1995, Ser. No. 38,283

Term of patent 14 years

U.S. Cl. D12—106



369,327

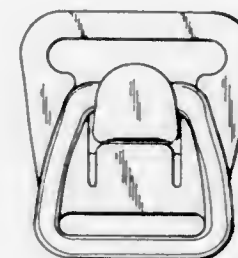
MATERNITY BRASSIERE CLOSURE

Gerhard Fildan, Wohnpark Alle Erlaa, Anton Baumgartner Str. 44, C 4 17 01, A-1232 Vienna, Austria

Filed Jan. 24, 1995, Ser. No. 33,947

Term of patent 14 years

U.S. Cl. D11—210



369,330

BICYCLE FRAME

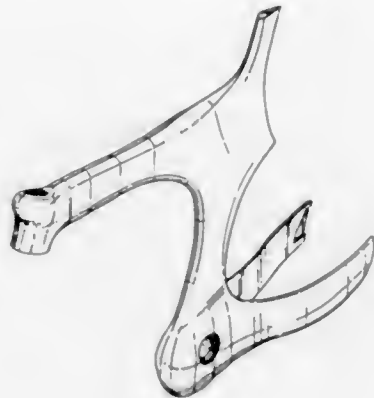
Richard D. Hill, Norfolk, and Rudy Thomann, Norwich, both of, United Kingdom, assignors to Lotus Cars Limited, United Kingdom

Filed Nov. 10, 1993, Ser. No. 15,167

Claims priority, application United Kingdom, May 14, 1993, 2031075

Term of patent 14 years

U.S. Cl. D12-111



369,332

BICYCLE RACK

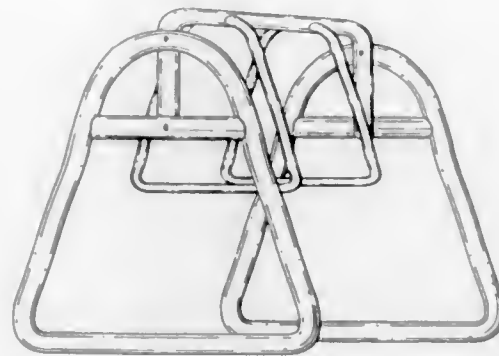
Terrance R. Smith, Nepean, Canada, assignor to Bike-Up Canada Inc., Nepean, Canada

Filed Apr. 14, 1995, Ser. No. 37,514

Claims priority, application Canada, Oct. 20, 1994, 1994-2093

Term of patent 14 years

U.S. Cl. D12-115



369,331

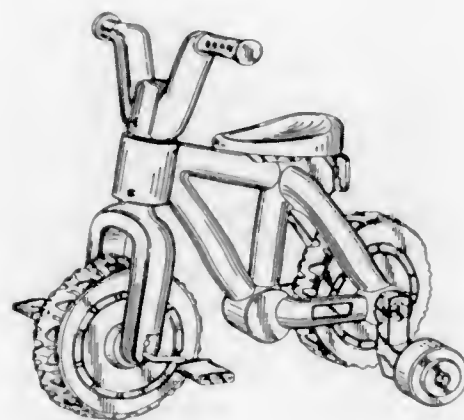
CHILD'S BICYCLE

Duane J. Niemeyer, Olney, Ill., assignor to Roadmaster Corporation, Olney, Ill.

Filed Jan. 24, 1995, Ser. No. 33,934

Term of patent 14 years

U.S. Cl. D12-112



369,333

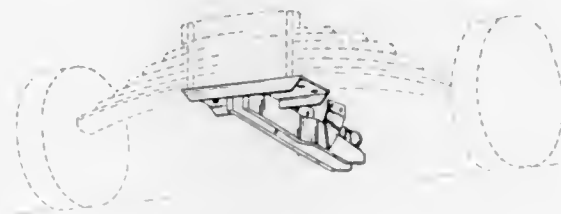
TRACTION BAR

David Juarez, 1576 Mt. Lebanon Rd., Steele, Ala. 35987

Filed Apr. 13, 1995, Ser. No. 37,480

Term of patent 14 years

U.S. Cl. D12-159



369,334

SUN SHADE

Leslie Berry, and Robert Berry, both of 605 Everett St., Lakewood, Colo. 80215

Filed May 22, 1995, Ser. No. 39,163

Term of patent 14 years

U.S. Cl. D12-191



369,336

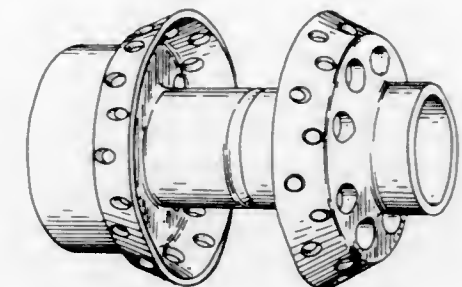
MOTORCYCLE WHEEL HUB

Alvin R. Zemlicka, Elkhart Lake, and William H. Brown, Menomonee Falls, both of Wis., assignors to Harley-Davidson Motor Company, Milwaukee, Wis.

Filed Oct. 6, 1994, Ser. No. 29,472

Term of patent 14 years

U.S. Cl. D12-207



369,335

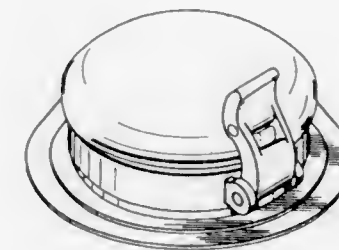
EXTERNALLY MOUNTED GAS CAP COVER

Tuck O. Benningfield, 3604 N. Bigelow, Peoria, Ill. 61604

Filed Jan. 10, 1995, Ser. No. 33,307

Term of patent 14 years

U.S. Cl. D12-197



369,337

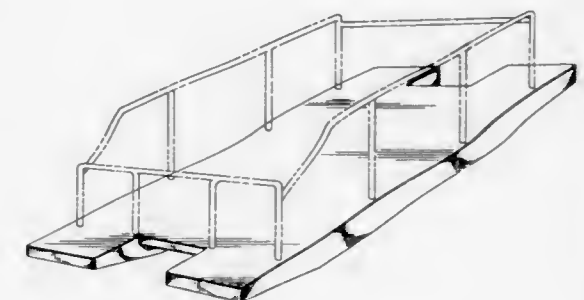
PONTOON BOAT

Jerry M. Stevens, W4599 Pope Rd., Merrill, Wis. 54452

Filed Jul. 27, 1995, Ser. No. 41,952

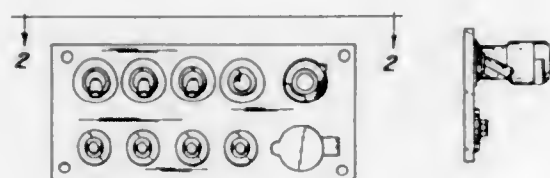
Term of patent 14 years

U.S. Cl. D12-316



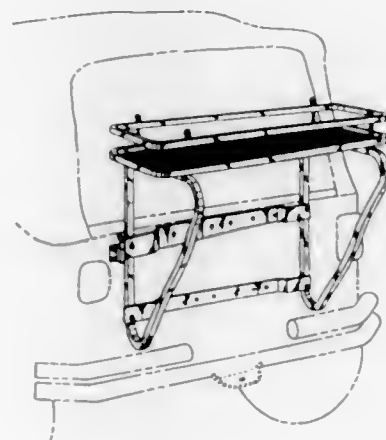
369,338

CENTRALIZED CONTROL PANEL FOR A BOAT
 Thomas R. Arpasi, 1104 E. Bond St., Benton, Ill. 62812
 Filed Aug. 29, 1994, Ser. No. 27,721
 Term of patent 14 years
 U.S. Cl. D12—317



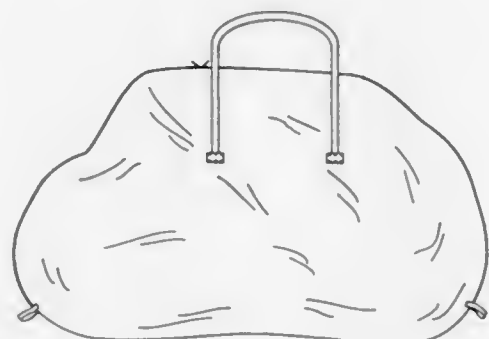
369,340

SPORT UTILITY REAR RACK
 Eric Lichtbach, 9940 Richeon Ave., Downey, Calif. 90240
 Filed Dec. 14, 1994, Ser. No. 32,203
 Term of patent 14 years
 U.S. Cl. D12—408



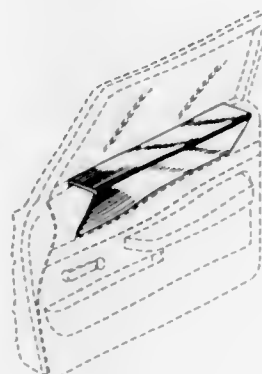
369,339

BICYCLE BAG
 David L. Alfonso, 1720 Ardmore Ave. #108, and Sandra Bakke, 415 Herondo #233, both of Hermosa Beach, Calif. 90254
 Filed Dec. 12, 1994, Ser. No. 32,030
 Term of patent 14 years
 U.S. Cl. D12—402



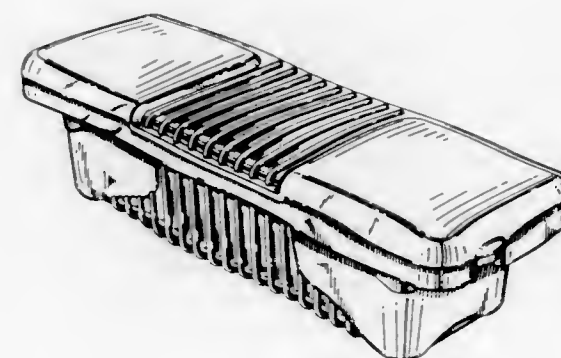
369,341

VEHICLE ARM REST
 Charles T. Davidson, 2633 Montclair La., Mesquite, Tex. 75150-1123
 Filed Mar. 28, 1994, Ser. No. 20,465
 Term of patent 14 years
 U.S. Cl. D12—421



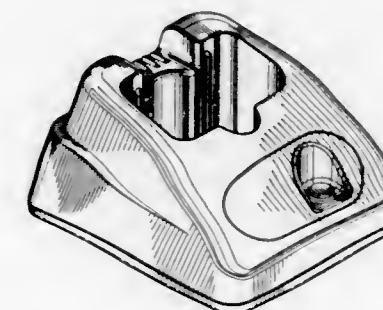
369,342

TRUCK BOX
 Matthew P. Williams, Wooster, Ohio, assignor to Rubbermaid Specialty Products, Inc., Wooster, Ohio
 Filed Jun. 6, 1995, Ser. No. 39,846
 Term of patent 14 years
 U.S. Cl. D12—423



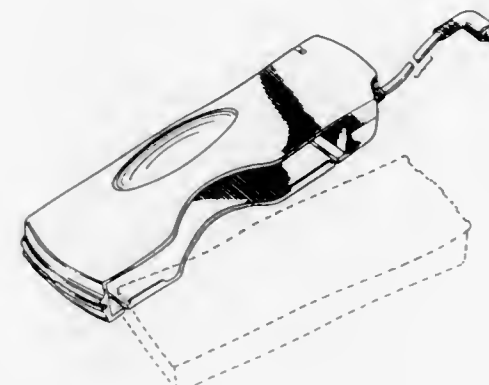
369,344

PORTABLE 2-WAY RADIO CHARGER
 Phillip E. Lindeman, 753 Sierra Pl., Gurnee, Ill. 60031; Julio C. Castaneda, 7010 NW 40th St., Coral Springs, Fla. 33065, and Leslie J. Clemens, 330 Geneva Ct., Schaumburg, Ill. 60193
 Filed Sep. 28, 1994, Ser. No. 29,038
 Term of patent 14 years
 U.S. Cl. D13—108



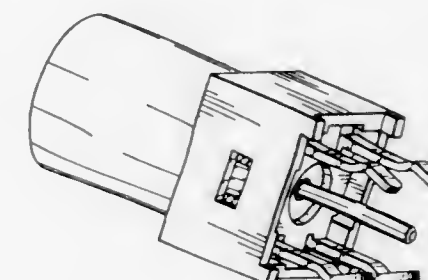
369,343

BATTERY CHARGER
 Robert P. Bliven, Corvallis, Oreg., assignor to Hewlett-Packard Company, Palo Alto, Calif.
 Filed Nov. 4, 1994, Ser. No. 30,646
 Term of patent 14 years
 U.S. Cl. D13—108



369,345

VERTICAL PRINTED CIRCUIT BOARD JACK
 Dennis M. Burroughs, Savage, and Edward F. Sonson, Coon Rapids, both of Minn., assignors to ADC Telecommunications, Inc., Minneapolis, Minn.
 Filed Dec. 1, 1994, Ser. No. 31,616
 Term of patent 14 years
 U.S. Cl. D13—133



369,346

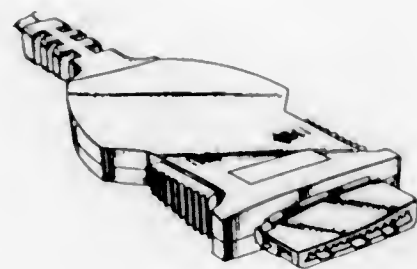
FEMALE CABLE CONNECTOR

Haw-Chan Tan, Diamond Bar, Calif., assignor to Hon Hai Precision Ind. Co., Ltd., Taiwan

Filed Jun. 30, 1995, Ser. No. 40,945

Term of patent 14 years

U.S. Cl. D13—133



369,348

LIGHT LEVEL CONTROLLER

Charles C. Hu, Saratoga, Calif., assignor to The Watt Stopper, Santa Clara, Calif.

Filed Mar. 29, 1995, Ser. No. 36,884

Term of patent 14 years

U.S. Cl. D13—165



369,347

TERMINAL BLOCK

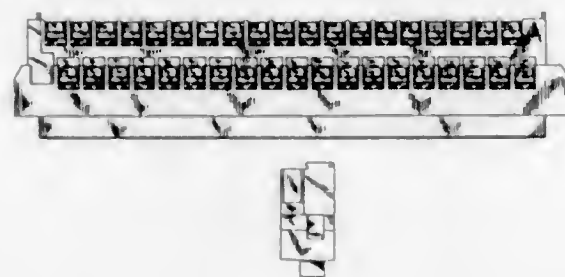
Hisao Kato, Yoshihisa Kato, and Yoshifumi Oshima, all of Chohu, Japan, assignors to Morimatsu Co., Ltd., Japan

Filed Aug. 17, 1994, Ser. No. 29,267

Claims priority, application Japan, Feb. 18, 1994, 6-3985

Term of patent 14 years

U.S. Cl. D13—147



369,349

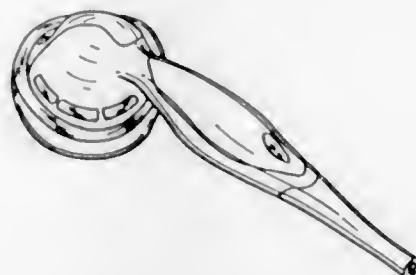
EARPHONE

Haruo Ilayashi, Tokyo, Japan, assignor to Sony Corporation, Japan

Filed Sep. 21, 1994, Ser. No. 28,738

Term of patent 14 years

U.S. Cl. D14—223



369,350

CONTROLLER UNIT

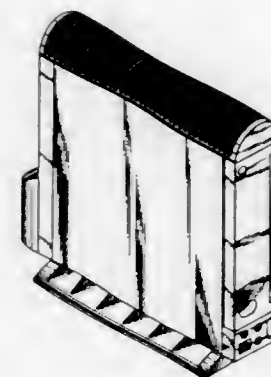
Tomoyuki Takahashi, Kanagawa, Japan, assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 22, 1994, Ser. No. 20,221

Claims priority, application Japan, Sep. 29, 1993, 5-29501

Term of patent 14 years

U.S. Cl. D14—100



369,352

AUXILIARY CONNECTOR FOR A CARTRIDGE FOR A VIDEO GAME MACHINE

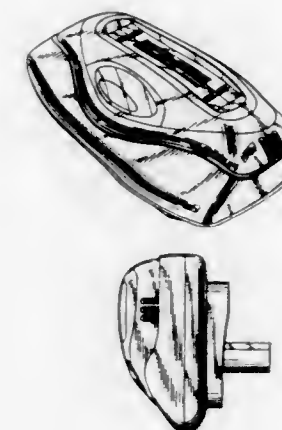
Yoshiaki Iwakami, Tokyo, Japan, assignor to Sega Enterprises, Ltd., Tokyo, Japan

Filed Oct. 5, 1994, Ser. No. 28,619

Claims priority, application Japan, Apr. 11, 1994, 6-10054

Term of patent 14 years

U.S. Cl. D14—114



369,351

ELECTRONIC COMPUTER

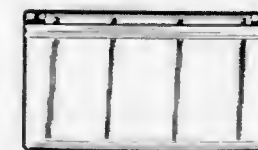
Osamu Kondo, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kanagawa, Japan

Filed Jan. 25, 1995, Ser. No. 34,008

Claims priority, application Japan, Jul. 25, 1994, 6-21914

Term of patent 14 years

U.S. Cl. D14—106



369,353

CONFOCAL LASER SCANNER FOR USE WITH A MICROSCOPE

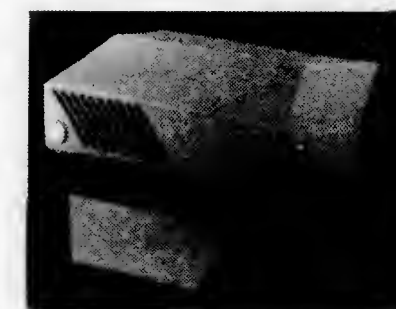
Ernest Hofmann-Igl, Davos-Platz, Switzerland, assignor to Leica Lasertechnik GmbH, Heidelberg, Germany

Filed Aug. 11, 1994, Ser. No. 27,012

Claims priority, application Germany, Feb. 11, 1994, 94 01 127.3

Term of patent 14 years

U.S. Cl. D14—116



369,354

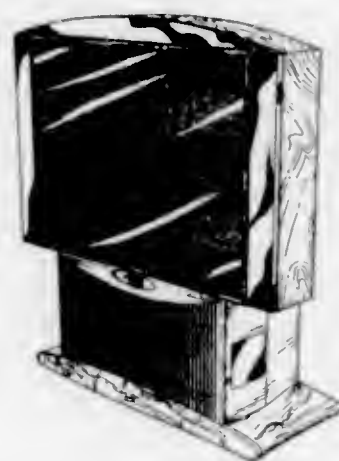
REAR PROJECTION TELEVISION

Richard A. Bourgerie, Noblesville, and Thomas E. Renk, Indianapolis, both of Ind., assignors to Thomson Consumer Electronics, Inc., Indianapolis, Ind.

Filed Jan. 5, 1994, Ser. No. 17,052

Term of patent 14 years

U.S. Cl. D14—128



369,356

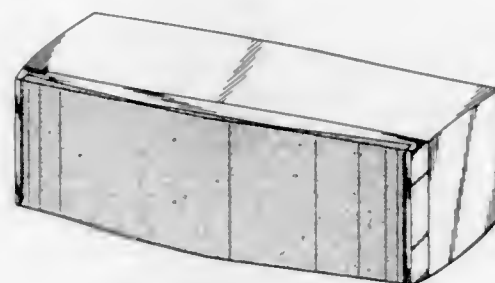
VIDEO SHIELDED LOUDSPEAKER

Norman J. Olson, Hillsborough, Calif., assignor to Audio-source, Inc., Burlingame, Calif.

Filed Feb. 9, 1995, Ser. No. 34,655

Term of patent 14 years

U.S. Cl. D14—214



369,355

AM/FM RADIO

Yuk Mei Li, Hong Kong, Hong Kong, assignor to Impex Handelsgesellschaft MBH (F.E.) Limited, North Point, Hong Kong

Filed Jun. 21, 1994, Ser. No. 24,818

Claims priority, application United Kingdom, Dec. 21, 1993, 2035947

Term of patent 14 years

U.S. Cl. D14—188



369,357

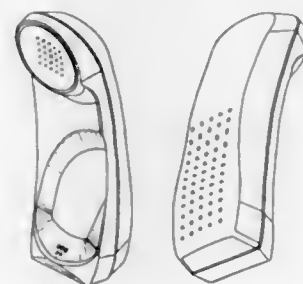
CORDLESS SHOWER TELEPHONE HANDSET

Joseph E. Ford, Cary; Donald N. Jursich, Chicago, both of Ill., and Raymond Chan, Vancouver, Canada, assignors to Jing Mei Industrial Holdings, Ltd., Cook Islands

Filed Jun. 15, 1995, Ser. No. 40,447

Term of patent 14 years

U.S. Cl. D14—248



369,358

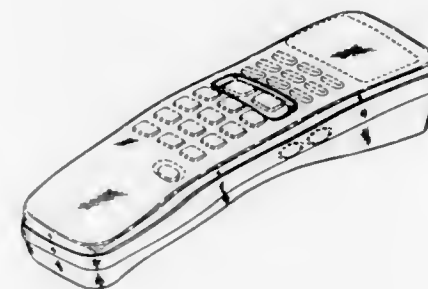
PORTABLE TELEPHONE HANDSET

Sonia M. Estevez-Alcolado, Holmdel; Dharendra M. Patel, Jersey City, and Robert T. Saizan, Holmdel, all of N.J., assignors to AT&T Corp., Murray Hill, N.J.

Filed Feb. 10, 1995, Ser. No. 34,688

Term of patent 14 years

U.S. Cl. D14—248



369,360

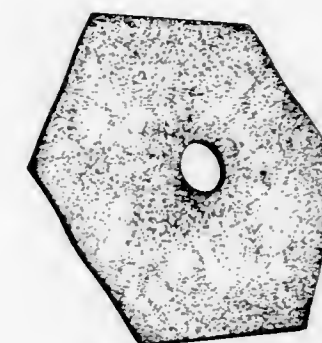
HEXAGONAL ABRASIVE SANDING DISK

Theodore K. Hunter, 501 Riverside Ave., Paso Robles, Calif. 93446

Filed May 2, 1995, Ser. No. 38,277

Term of patent 14 years

U.S. Cl. D15—126



369,359

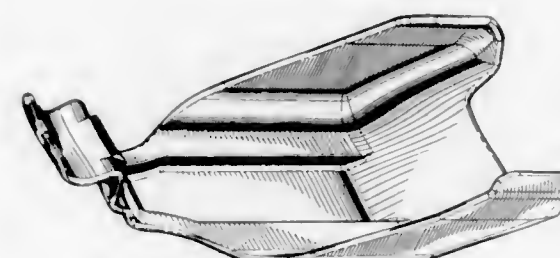
TELEPHONE RECEPTACLE

Laura S. Wright, Des Plaines; Albert L. Nagele, Wilmette; Richard J. Fedorowicz, Lake Zurich, and Scott R. Smith, Crystal Lake, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 24, 1995, Ser. No. 36,704

Term of patent 14 years

U.S. Cl. D14—253



369,361

ROLLER OF A ROLL UNIT FOR USE IN FLOUR MILLING MACHINES

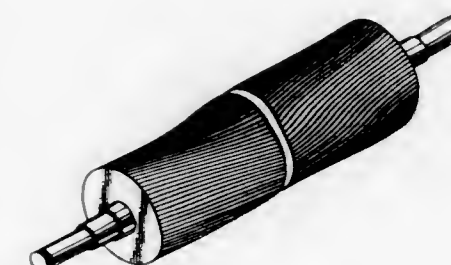
Satoru Satake, Tokyo, Japan, assignor to Satake Corporation, Tokyo, Japan

Filed May 3, 1995, Ser. No. 38,341

Claims priority, application Japan, Dec. 13, 1994, 6-38187

Term of patent 14 years

U.S. Cl. D15—131



369,362

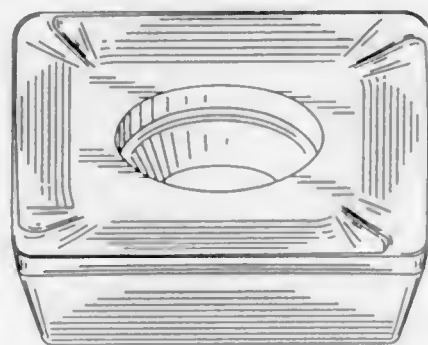
CUTTING INSERT FOR MILLING CUTTERS

Göran Pantzar, Årsunda, and Lars-Gunnar Wallström, Sandviken, both of, Sweden, assignors to Sandvik AB, Sandviken, Sweden

Filed Mar. 16, 1995, Ser. No. 36,274

Term of patent 14 years

U.S. Cl. D15—139



369,364

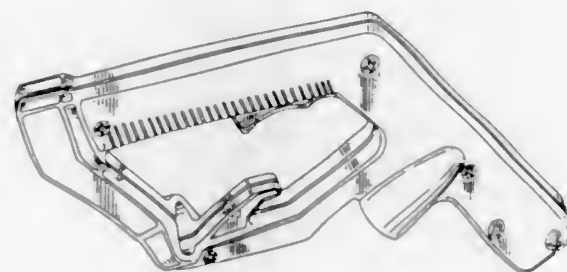
OUTDOOR POWER EQUIPMENT UNIT

Anthony N. Pink, Shorewood, Minn., assignor to The Toro Company, Minneapolis, Minn.

Filed Aug. 2, 1993, Ser. No. 11,342

Term of patent 14 years

U.S. Cl. D15—142



369,366

DATA IMPRINTING DEVICE FOR A CAMERA

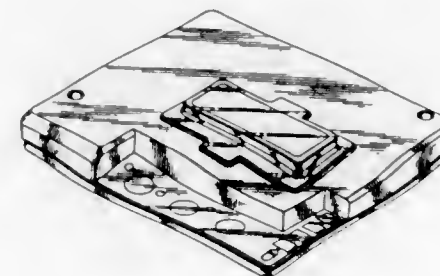
Shinobu Nakazawa, Suwa, Japan, assignor to Seiko Epson Corporation, Tokyo, Japan

Filed Feb. 21, 1995, Ser. No. 35,121

Claims priority, application Japan, Sep. 2, 1994, 6-26680; Sep. 2, 1994, 6-26682

Term of patent 14 years

U.S. Cl. D16—219



369,368

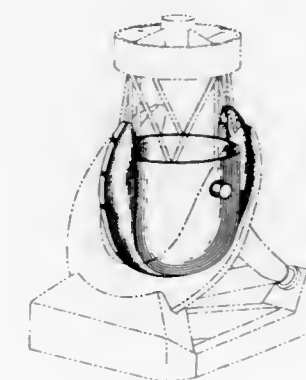
TUBE STRUCTURE FOR TELESCOPE

James D. Wray, 21200 Todd Valley Rd., #40, Foresthill, Calif. 95631

Filed Feb. 13, 1995, Ser. No. 34,815

Term of patent 14 years

U.S. Cl. D16—132



369,365

PIPE LINE INSPECTION DEVICE

Stephen T. Waring, 716 Woodmoore Dr., Coppell, Tex. 75019

Filed Dec. 23, 1994, Ser. No. 32,702

Term of patent 14 years

U.S. Cl. D16—130

369,363

INSERT HOLDER COMPONENT

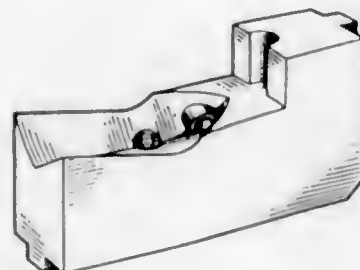
Wlajko Mihic, Gävle, Sweden, assignor to Mircona Aktiebolag, Gävle, Sweden

Filed Mar. 29, 1995, Ser. No. 36,864

Claims priority, application Sweden, Sep. 29, 1994, 94-1942

Term of patent 14 years

U.S. Cl. D15—140



369,367

SIGHT SCOPE

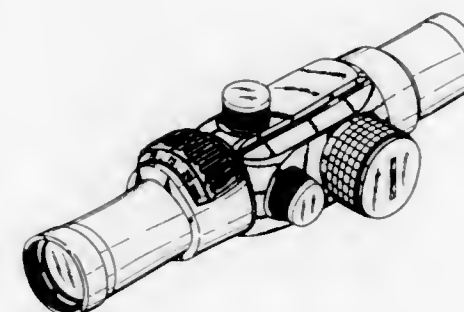
Saburo Tomita, Fujimi, Japan, assignor to Asia Optical Co., Ltd., Tokyo, Japan

Filed Jan. 10, 1995, Ser. No. 33,348

Claims priority, application Japan, Jul. 14, 1994, 6-21040

Term of patent 14 years

U.S. Cl. D16—132



369,369

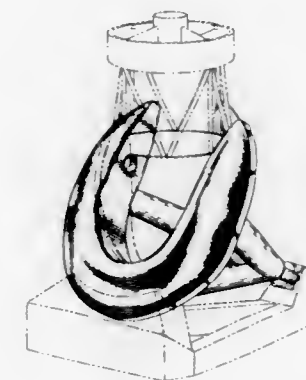
YOKE FOR TELESCOPE

James D. Wray, 21200 Todd Valley Rd., #40, Foresthill, Calif. 95631

Filed Feb. 13, 1995, Ser. No. 34,816

Term of patent 14 years

U.S. Cl. D16—132



369,370

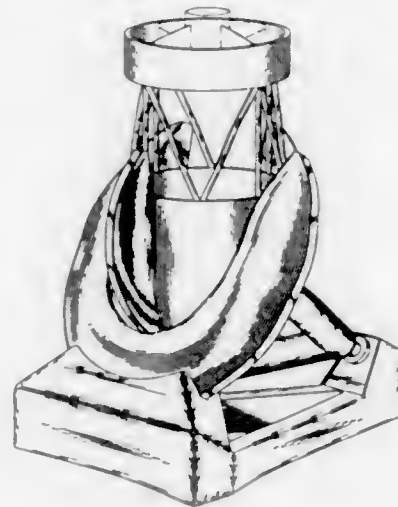
TELESCOPE

James D. Wray, 21200 Todd Valley Rd., #40, Foresthill, Calif. 95631

Filed Feb. 13, 1995, Ser. No. 34,817

Term of patent 14 years

U.S. Cl. D16—132



369,372

CAMERA

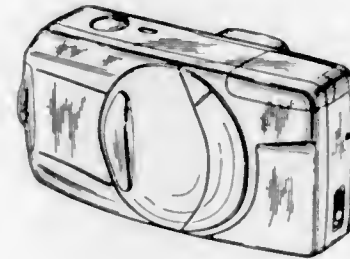
Yoshifumi Ishikawa, Tokyo, and Takanori Kodaira, Yokohama, both of, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 10, 1995, Ser. No. 35,976

Claims priority, application Japan, Sep. 12, 1994, 6-27669

Term of patent 14 years

U.S. Cl. D16—218



369,371

COMBINED TELEVISION CAMERA WITH VIDEO CASSETTE RECORDER

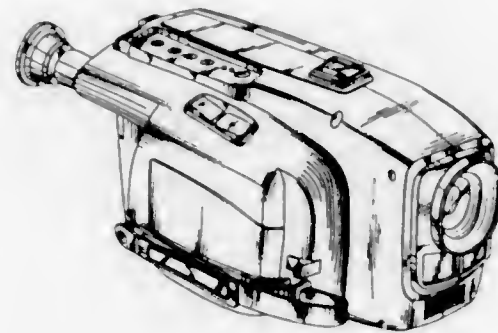
Takuji Kaneko, and Yuichi Sakagami, both of Daito, Japan, assignors to Funai Electric Co., Ltd., Daito, Japan

Filed May 9, 1994, Ser. No. 22,624

Claims priority, application Japan, Nov. 10, 1993, 5-33975

Term of patent 14 years

U.S. Cl. D16—202



369,373

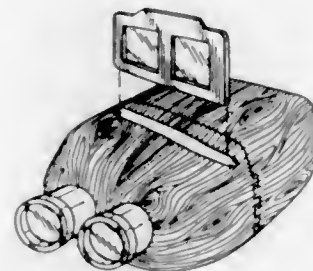
COMBINED STEREOSCOPE AND SLIDE

Kenneth S. Watkins, Jr., Rt. 7, Box 2760, Dahlonega, Ga. 30533

Filed Jul. 8, 1993, Ser. No. 10,376

Term of patent 14 years

U.S. Cl. D16—222



369,374

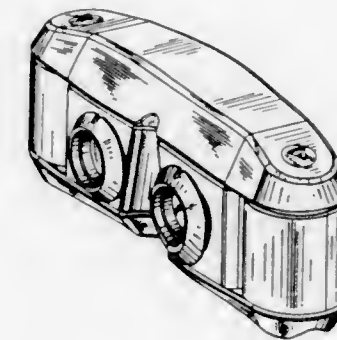
VIEWER

Michel Dallaire, 3575, St-Laurent Blvd. Bureau 902, Montréal (Québec), Canada

Filed Mar. 16, 1995, Ser. No. 36,239

Term of patent 14 years

U.S. Cl. D16—222



369,376

EYE-GLASS FRAME

Jin-Shoei Guo, No. 19, Sublane 2, Lane 279, Chungcheng Road, Yung Kang, Tainan, Taiwan

Filed Mar. 14, 1995, Ser. No. 36,184

Term of patent 14 years

U.S. Cl. D16—330



369,375

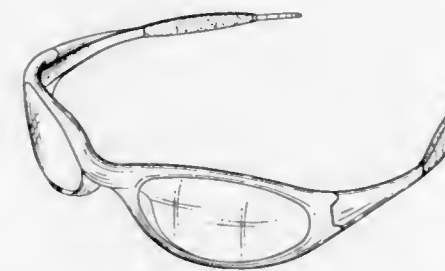
EYEGLASSES

James H. Jannard, Eastsound, Wash.; Peter Yee, Huntington Beach, and M. Neil Houston, Foothill Ranch, both of Calif., assignors to Oakley, Inc., Irvine, Calif.

Filed Nov. 9, 1994, Ser. No. 30,825

Term of patent 14 years

U.S. Cl. D16—326



369,377

TEMPLE FOR SUNGLASSES

Henri Brune, Rochester, N.Y., assignor to Bausch & Lomb Incorporated, Rochester, N.Y.

Filed Mar. 17, 1995, Ser. No. 36,350

Term of patent 14 years

U.S. Cl. D16—335



369,378

ELECTRONIC PIANO

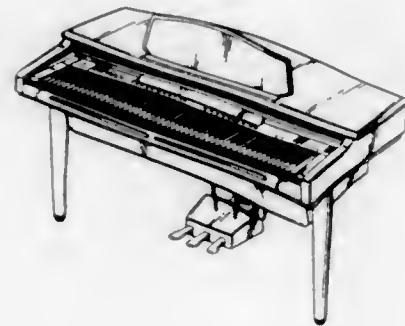
Sunao Okamura, Shizuoka, Japan, assignor to Yamaha Corporation, Japan

Filed Feb. 23, 1995, Ser. No. 35,254

Claims priority, application Japan, Aug. 24, 1994, 6-25382

Term of patent 14 years

U.S. Cl. D17—7



369,380

PAPER FEEDING DEVICE FOR PRINTER

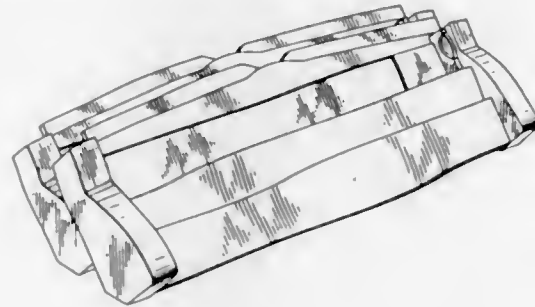
Kayomi Hosoya, Tsukuba, and Naoki Tashiro, Kawasaki, both of, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 24, 1994, Ser. No. 30,240

Claims priority, application Japan, Apr. 26, 1994, 6-12063

Term of patent 14 years

U.S. Cl. D18—49



369,381

COMPUTER OUTPUT MICROFILM PRINTER

David R. Gotham; Ilija N. Bucukovski, both of Rochester, and Eric Tyler, Pittsford, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 25, 1994, Ser. No. 21,857

Term of patent 14 years

U.S. Cl. D18—53

369,379

ELECTRONIC COPYING MACHINE

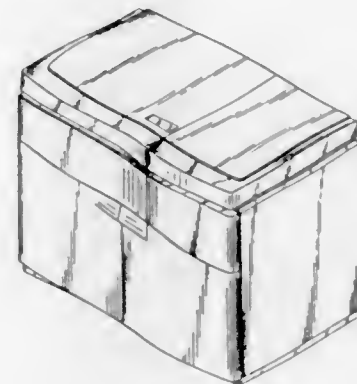
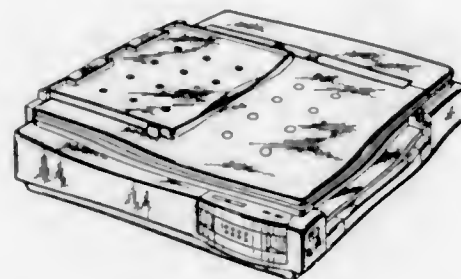
Masaki Takahashi, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 11, 1995, Ser. No. 33,359

Claims priority, application Japan, Jul. 13, 1994, 6-21092

Term of patent 14 years

U.S. Cl. D18—36



369,382

PRINTER FOR ELECTRONIC COMPUTER

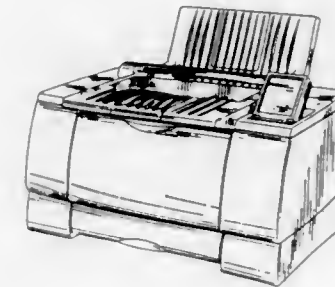
Naoki Matsunaga, Milan, Italy, and Hideki Ishida, Hitachinaka, Japan, assignors to Hitachi Koki Co., Ltd., Tokyo, Japan

Filed Jan. 19, 1995, Ser. No. 33,772

Claims priority, application Japan, Jul. 22, 1994, 6-22102

Term of patent 14 years

U.S. Cl. D18—55



369,384

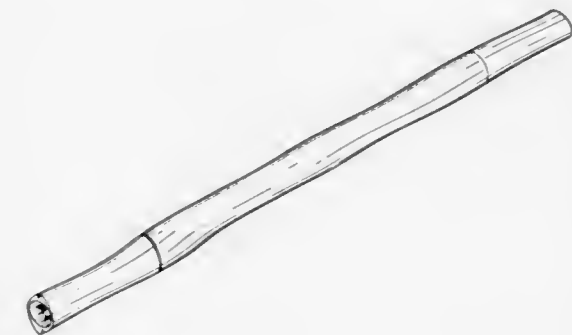
PLURAL-NIBBED MARKING PEN

Rira Yasoshima, Tokyo, Japan, assignor to Tsukineko, Inc., Redmond, Wash.

Filed Jun. 6, 1995, Ser. No. 39,825

Term of patent 14 years

U.S. Cl. D19—36



369,385

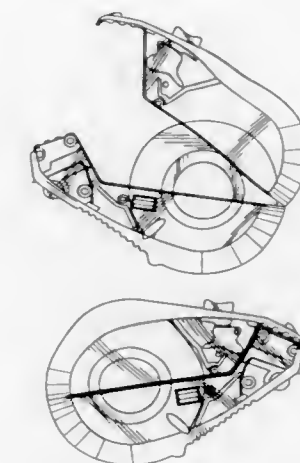
TAPE DISPENSER

Robin Lapointe, 223 Springdale, Pointe Claire, PQ H9R 2R4, Canada

Filed Nov. 10, 1994, Ser. No. 30,858

Term of patent 14 years

U.S. Cl. D19—69



369,383

INK CARTRIDGE FOR INK JET PRINTER

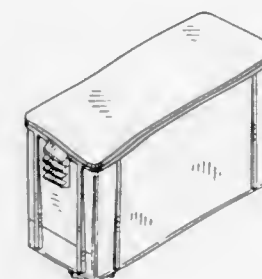
Hisashi Miyazawa; Takao Kobayashi; Tatsuya Seshimo, and Seiji Mochizuki, all of Suwa, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

Filed Jun. 3, 1994, Ser. No. 23,929

The portion of the term of this patent subsequent to Dec. 16, 2009, has been disclaimed.

Term of patent 14 years

U.S. Cl. D18—56



369,386

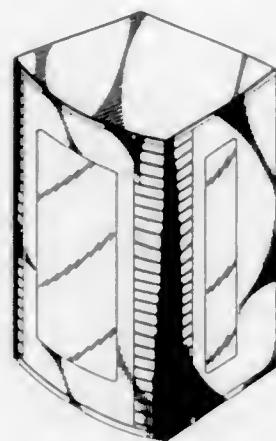
WATCH DISPLAY CABINET

Keith Arndt, New York, N.Y., assignor to Mechtronics Corporation, Stamford, Conn.

Filed May 4, 1995, Ser. No. 38,491

Term of patent 14 years

U.S. Cl. D20—10



369,388

NOISEMAKER

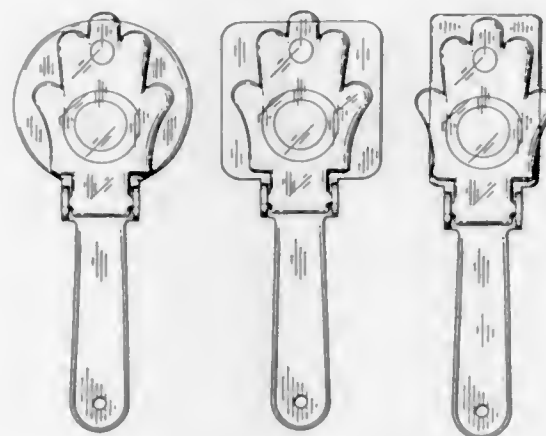
Lloyd Gilbert, Jr., Broken Arrow, and Mark S. Hanna, Tulsa, both of Okla., assignors to Michael B. Fine, Tulsa, Okla.

Continuation-in-part of Ser. No. 930,139, Aug. 14, 1992. This

application Jul. 21, 1993, Ser. No. 10,985

Term of patent 14 years

U.S. Cl. D21—64



369,387

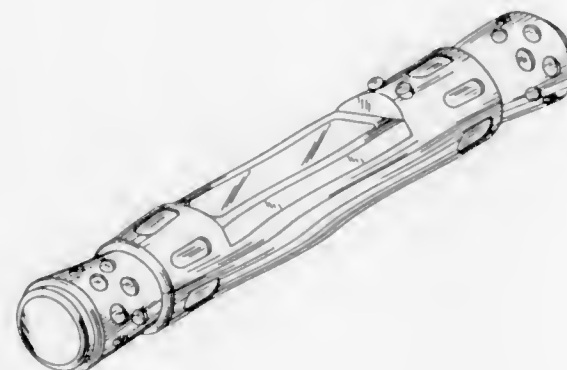
HAND-HELD ELECTRONIC GAME HOUSING

Zarko Stambolic, Oak Park; Shari L. Smith, Chicago, and Howard J. Morrison, Riverwoods, all of Ill., assignors to Tiger Electronics, Inc., Vernon Hills, Ill.

Filed Nov. 23, 1994, Ser. No. 31,364

Term of patent 14 years

U.S. Cl. D21—13



369,389

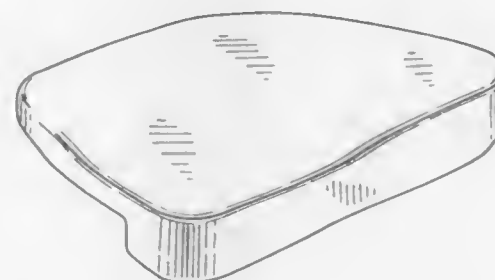
FOOT PEDAL FOR A PHYSICAL EXERCISER

Eric Beyer, Vincennes, Ind., assignor to Formula Ventures, Inc., North Miami Beach, Fla.

Filed Dec. 8, 1992, Ser. No. 2,346

Term of patent 14 years

U.S. Cl. D21—191



369,390

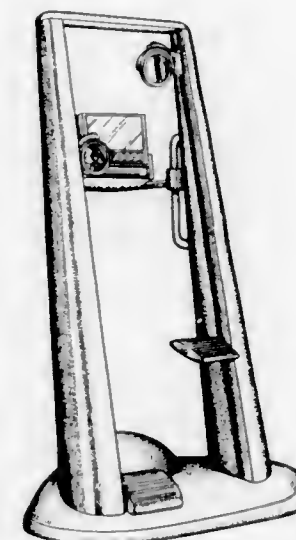
LADDER CLIMBING EXERCISER

Terry M. Haber, 25011 Castlewood, El Toro, Calif. 92630; William H. Smedley, 33285 Blanche Dr., Lake Elsinore, Calif. 92530, and Clark B. Foster, 23631 Wakefield Ct., Laguna Niguel, Calif. 92677

Filed Jun. 23, 1994, Ser. No. 24,918

Term of patent 14 years

U.S. Cl. D21—191



369,392

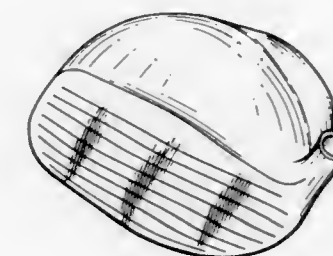
METAL WOOD TYPE GOLF CLUB HEAD

Byron H. Adams, Dallas, Tex., and Chia W. Lee, Kaohsiung, Taiwan, assignors to Adams Golf Inc., Richardson, Tex.

Filed Oct. 3, 1994, Ser. No. 29,815

Term of patent 14 years

U.S. Cl. D21—214



369,391

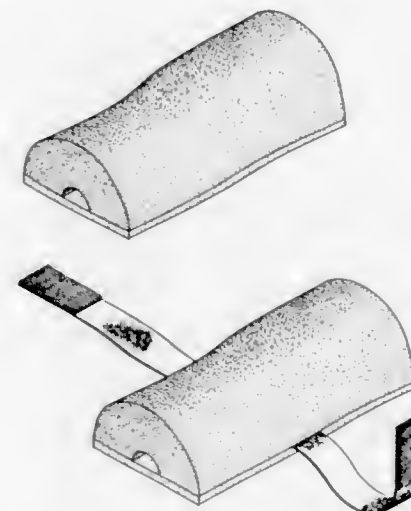
FOOT PAD EXERCISER

James E. Jump, Jr., 10662 Ivyridge, Houston, Tex. 77043

Filed Nov. 28, 1994, Ser. No. 31,475

Term of patent 14 years

U.S. Cl. D21—191



369,393

GOLF PUTTER HEAD

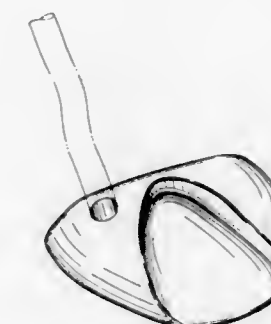
Kunihiko Takahashi, Musashino, and Yutaka Oku, Higashikurume, both of Japan, assignors to Daiwa Golf Co., Ltd., Higashikurume, Japan

Filed Jan. 30, 1995, Ser. No. 34,209

Claims priority, application Japan, Jul. 29, 1994, 6-23170

Term of patent 14 years

U.S. Cl. D21—217



369,394

GOLF CLUB PUTTER HANDLE AND SHAFT

Douglas R. North, Clarklake, Mich., assignor to Frederic M. Hetherwick, Clarklake, Mich.

Filed Aug. 1, 1994, Ser. No. 26,613

Term of patent 14 years

U.S. Cl. D21—222



369,396

IN-LINE SKATE

Raymond Losl, II, Westlake Village, Calif., assignor to Variflex, Inc., Moorpark, Calif.

Filed May 8, 1995, Ser. No. 38,553

Term of patent 14 years

U.S. Cl. D21—226



369,395

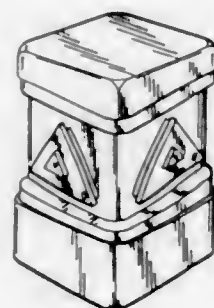
INSECT REPELLER

George M. Dewberry, 404 Baldwin St., Greenville, Mich. 48838

Filed Apr. 3, 1995, Ser. No. 37,037

Term of patent 14 years

U.S. Cl. D22—122



369,397

FISHING LINE RELEASE

Anson M. House, 4575 Pretty Good Rd., Placerville, Calif. 95667

Filed Jun. 6, 1994, Ser. No. 23,962

Term of patent 14 years

U.S. Cl. D22—134



369,398

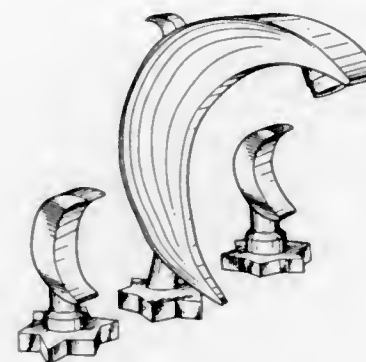
LAVATORY FAUCET SET

Gerhard E. Joerger, c/o Joerger Armaturen- und Accessoires Fabrik GmbH Seckenheimer Landstrasse 270-280, 6800 Mannheim 1, Germany

Filed Jun. 7, 1994, Ser. No. 24,063

Term of patent 14 years

U.S. Cl. D23—242



369,400

COMBINED TOILET BASIN, TOILET SEAT AND SEAT COVER

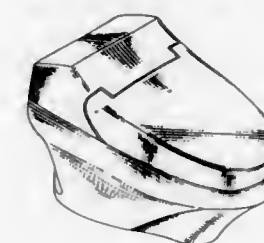
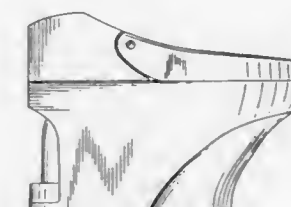
Seijiro Kawamura, and Noriko Y. Hashida, c/o Toto, Ltd., 1-1 Nakashima 2-chome, Kokurakita-ku, Kitakyushu City, Fukuoka, Japan

Continuation-in-part of Ser. No. 1,004, Oct. 30, 1992, Pat. No. Des. 354,121. This application Jun. 27, 1994, Ser. No. 25,034

Claims priority, application Japan, Dec. 28, 1993, 5-39883; Dec. 28, 1993, 5-39884; Dec. 28, 1993, 5-39885; Dec. 28, 1993, 5-39886; Dec. 28, 1993, 5-39887; Dec. 28, 1993, 5-39888

Term of patent 14 years

U.S. Cl. D23—295



369,399

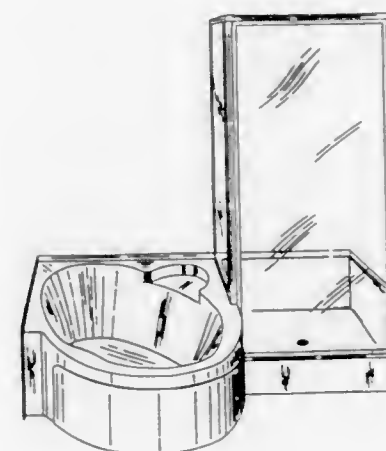
COMBINED BATHTUB AND SHOWER STALL

Alan B. Dworetzky, Norfolk, Va., assignor to LRH, Limited Company, Virginia Beach, Va.

Filed Mar. 2, 1994, Ser. No. 19,532

Term of patent 14 years

U.S. Cl. D23—275



369,401

COMBINED TOILET BASIN, TOILET SEAT AND SEAT COVER

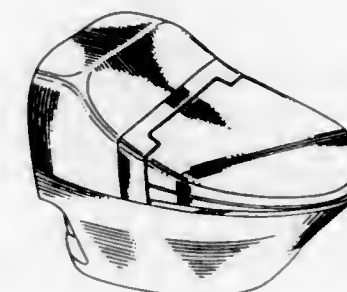
Seijiro Kawamura, and Noriko Y. Hashida, both of Kitakyushu, Japan, assignors to Toto, Ltd., Fukuoka, Japan

Filed Jun. 27, 1994, Ser. No. 25,077

Claims priority, application Japan, Dec. 28, 1993, 5-39889; Dec. 28, 1993, 5-39890

Term of patent 14 years

U.S. Cl. D23—295



369,402

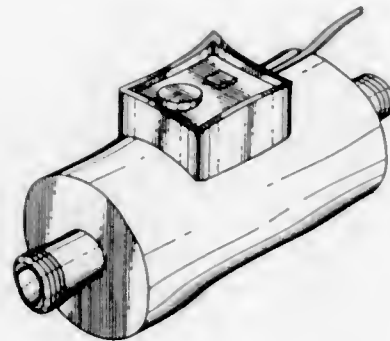
INLINE WATER HEATER

Richard E. Krishart, 100 Shelvey Rd., Kersey, Pa. 15846

Filed Jan. 26, 1994, Ser. No. 17,926

Term of patent 14 years

U.S. Cl. D23—318



369,404

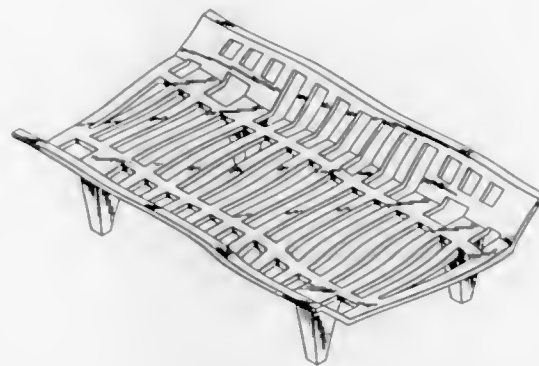
FIREPLACE GRATE

David M. Vestal, Sr., Sweetwater, Tenn., assignor to Vestal Manufacturing Company, Sweetwater, Tenn.

Filed Jul. 19, 1994, Ser. No. 26,097

Term of patent 14 years

U.S. Cl. D23—398



369,403

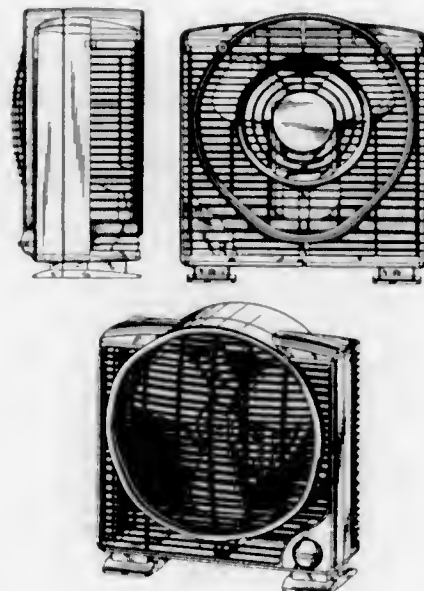
ELECTRIC FAN

Richard L. Reveal, North Chelmsford, Mass., and Robert L. Marvin, Jr., Farmington, Conn., assignors to Duracraft Corp., Southborough, Mass.

Filed Jun. 20, 1994, Ser. No. 24,735

Term of patent 14 years

U.S. Cl. D23—381



369,405

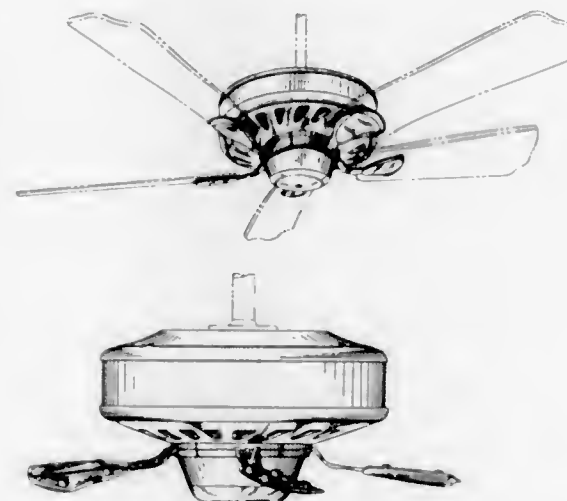
COMBINED MOTOR HOUSING AND BLADE IRONS UNIT FOR AN ELECTRIC CEILING FAN

Richard M. Holbrook, Pasadena, Calif., assignor to Casa-blanca Fan Company, City of Industry, Calif.

Filed Apr. 14, 1995, Ser. No. 37,511

Term of patent 14 years

U.S. Cl. D23—411



369,406

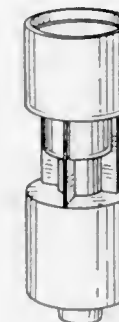
CANNULA

John J. Niedospial, Princeton Junction, N.J.; Linn C. Hoover, Webster, N.Y.; Michael T. Mallon, New Fairfield, Conn., and James E. Hoyes, Somerset, N.J., assignors to Sanofi Winthrop, Inc., New York, N.Y.

Filed Jan. 13, 1995, Ser. No. 33,453

Term of patent 14 years

U.S. Cl. D24—129



369,408

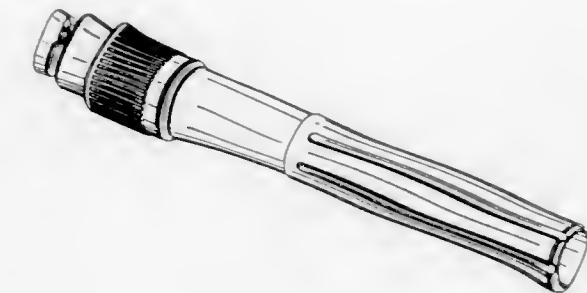
HANDLE FOR A DIAGNOSTIC MEDICAL INSTRUMENT

Deborah A. Laun, Syracuse, N.Y., assignor to Welch Allyn, Inc., Skaneateles Falls, N.Y.

Filed Jul. 1, 1994, Ser. No. 25,426

Term of patent 14 years

U.S. Cl. D24—137



369,407

LARYNGOSCOPE BLADE

Anthony J. Smith, 3006 Harrison St., Wall, N.J. 07719

Filed Apr. 4, 1994, Ser. No. 20,832

Term of patent 14 years

U.S. Cl. D24—137



369,409

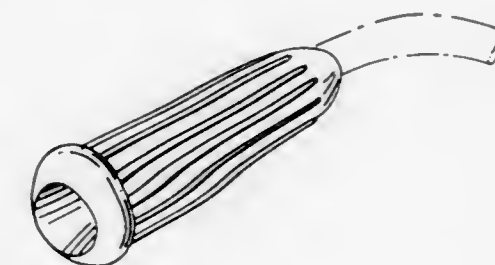
TUBING CONNECTOR

Peter Salter, Tehachapi, Calif., assignor to Salter Labs, Arvin, Calif.

Filed Nov. 4, 1994, Ser. No. 30,135

Term of patent 14 years

U.S. Cl. D24—129



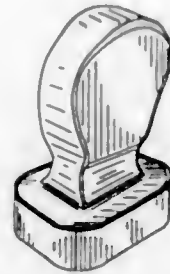
369,410

SKIN DERMABRADER

G. Richard Holt, 100 Pin Oak Forest, San Antonio, Tex. 78232
 Filed May 3, 1994, Ser. No. 22,260

Term of patent 14 years

U.S. Cl. D24—147



369,412

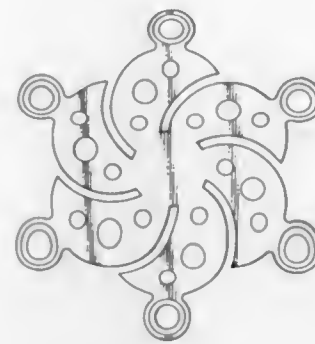
CRANIAL BONE PLATE

Frank H. Morgan, Las Vegas, Nev., assignor to TiMesh, Inc.,
 Las Vegas, Nev.

Filed May 3, 1994, Ser. No. 22,331

Term of patent 14 years

U.S. Cl. D24—155



369,414

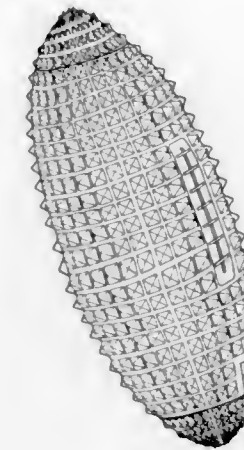
ACCU-PRESSURE MASSAGER

Jae A. Lee, 6980 Aragon Cir., Suite 5, Buena Park, Calif. 90620, assignor to Jae A. Lee, Buena Park, Calif.

Filed Apr. 13, 1994, Ser. No. 21,250

Term of patent 14 years

U.S. Cl. D24—200



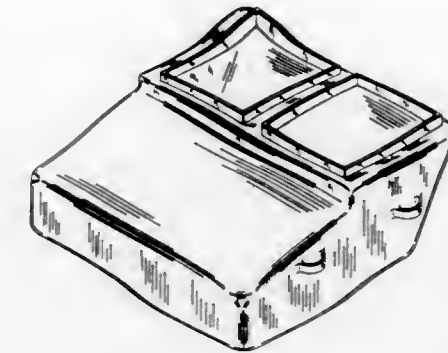
369,416

BLIND

Steven A. Davis, 100 Maupin Rd., Newbern, Tenn. 38059
 Filed Nov. 23, 1994, Ser. No. 31,335

Term of patent 14 years

U.S. Cl. D25—16



369,413

BABY BOTTLE HOLDER

Andrew Lodewyck, Jr.; Jerianne Lodewyck, both of 6743
 Greengrove Dr., Las Vegas, Nev. 89103; Joel Bledsoe, and
 Lisa Bledsoe, both of St. Rt. Box 31000, Pahrump, Nev.
 89041

Filed Apr. 26, 1994, Ser. No. 22,141

Term of patent 14 years

U.S. Cl. D24—199

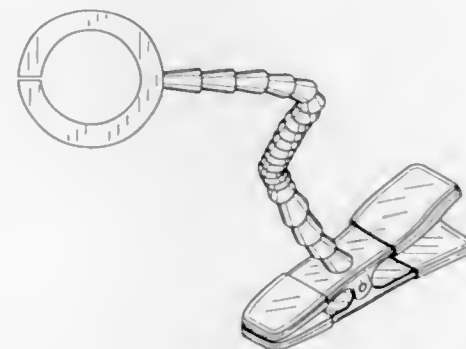
369,411

SKIN DERMABRADER

G. Richard Holt, 100 Pin Oak Forest, San Antonio, Tex. 78232
 Filed May 3, 1994, Ser. No. 22,268

Term of patent 14 years

U.S. Cl. D24—147



369,415

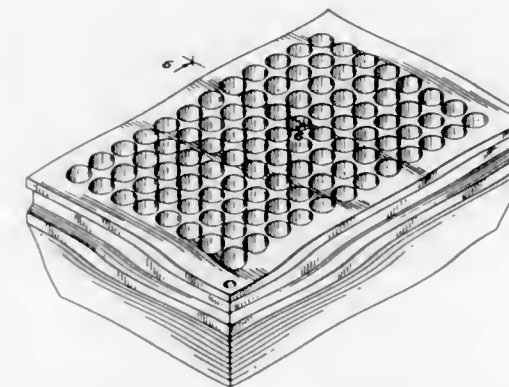
SAMPLE HOLDER

David Boulton, Tinton Falls, N.J., and Robert Zambias, Lex-
 ington, Mass., assignors to Arqule, Inc., Medford, Mass.

Filed Sep. 2, 1994, Ser. No. 28,034

Term of patent 14 years

U.S. Cl. D24—224



369,417

COMBINED CLEANOUT BLOCK AND TILE

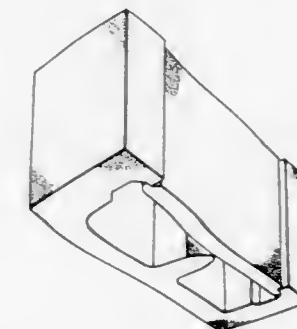
Allan J. Evans, Wacol, Australia, assignor to Boral Resources
 (QLD) Pty. Limited, Australia

Filed May 17, 1994, Ser. No. 23,061

Claims priority, application Australia, Nov. 18, 1993, 3656/93

Term of patent 14 years

U.S. Cl. D25—118



369,418

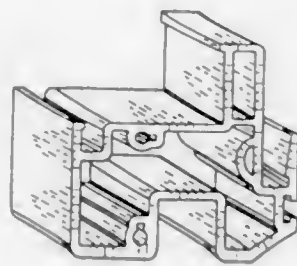
WINDOW COMPONENT EXTRUSION

Jeffrey R. Franson, Kent, Wash., assignor to Mikron Industries, Kent, Wash.

Filed May 31, 1995, Ser. No. 39,445

Term of patent 14 years

U.S. Cl. D25—124



369,420

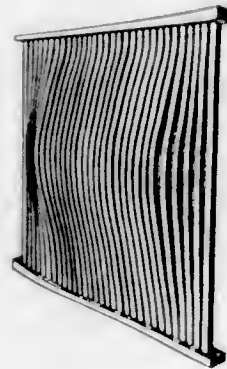
GRADIENT FENCE DESIGN

Vernon Haglund, 1910 NW. 18th St., Pompano Beach, Fla. 33069

Filed Jun. 3, 1994, Ser. No. 23,945

Term of patent 14 years

U.S. Cl. D25—38



369,421

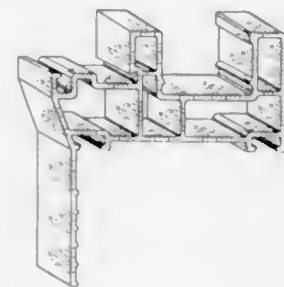
RANDOM CUT LAMINATED SHINGLE

Matti Klik, Richardson, Tex., and Michael L. Bryson, Northport, Ala., assignors to Elk Corporation of Dallas, Dallas, Tex.

Continuation of Ser. No. 22,539, May 6, 1994, abandoned, which is a continuation of Ser. No. 802,449, Dec. 3, 1991, abandoned. This application Mar. 17, 1995, Ser. No. 36,361

Term of patent 14 years

U.S. Cl. D25—139



369,419

WINDOW COMPONENT EXTRUSION

Jeffrey R. Franson, Kent, Wash., assignor to Mikron Industries, Kent, Wash.

Filed May 31, 1995, Ser. No. 39,444

Term of patent 14 years

U.S. Cl. D25—125

369,422

FLASHLIGHT

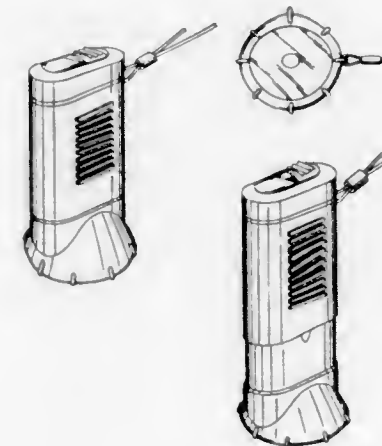
David Dalton, Turramurra, and John Brown, Northbridge, both of, Australia, assignors to Eveready Australia Pty. Limited, Rosebery, Australia

Filed Jun. 2, 1993, Ser. No. 8,989

Claims priority, application Australia, Dec. 3, 1992, 3523/92

Term of patent 14 years

U.S. Cl. D26—46



369,424

STAND ALONE TORCHIERE LAMP HAVING TASK LIGHT ON MULTI ADJUSTABLE ARM AND TRAY

Dennis K. Swanson, Woodland Hills, Calif., assignor to Lamps Plus, Inc., Chatsworth, Calif.

Filed Apr. 7, 1995, Ser. No. 37,263

Term of patent 14 years

U.S. Cl. D26—63



369,423

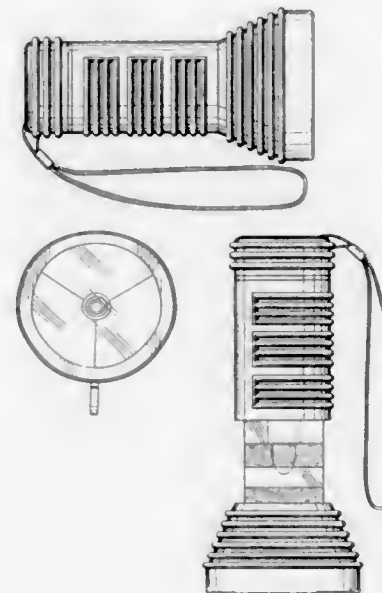
FLASHLIGHT

Kevin S. Garrity, Madison, Conn., assignor to Garrity Industries, Inc., Madison, Conn.

Filed Jan. 6, 1995, Ser. No. 33,202

Term of patent 14 years

U.S. Cl. D26—49



369,425

STAND ALONE TORCHIERE LAMP HAVING TASK LIGHT ON SWING ARM AND TRAY

Dennis K. Swanson, Woodland Hills, Calif., assignor to Lamps Plus, Inc., Chatsworth, Calif.

Filed Apr. 7, 1995, Ser. No. 37,264

Term of patent 14 years

U.S. Cl. D26—63



369,426

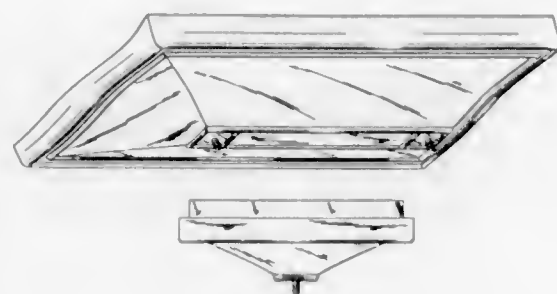
LIGHTING FIXTURE

Robert A. Sonneman, Mamaroneck, N.Y., assignor to Sonneman Design Group, Larchmont, N.Y.

Filed Feb. 10, 1995, Ser. No. 34,700

Term of patent 14 years

U.S. Cl. D26—76



369,428

WALL LIGHT FIXTURE

Ivo O. Deron, Inman, S.C., assignor to Progress Lighting, Spartanburg, S.C.

Filed Jan. 6, 1995, Ser. No. 33,229

Term of patent 14 years

U.S. Cl. D26—92



369,429

MULTIPLE FLEXIBLE NECK LAMP

Thomas M. Huang, 5649 N. Peck Rd., Arcadia, Calif. 91006

Filed Feb. 3, 1995, Ser. No. 34,387

Term of patent 14 years

U.S. Cl. D26—102



369,427

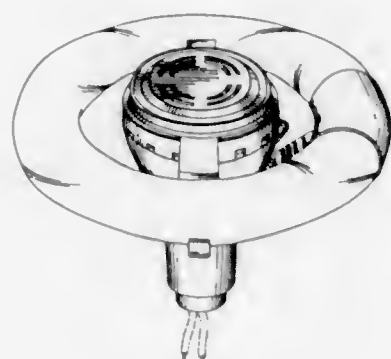
FLUORESCENT LIGHT FIXTURE

Usman Vakili, Walnut, and Henry Arias, Rowland Heights, both of Calif., assignors to Lights Of America, Inc., Walnut, Calif.

Filed Jul. 19, 1994, Ser. No. 26,083

Term of patent 14 years

U.S. Cl. D26—79



369,430

LAMP

Wen B. Huang, Taipei, Taiwan, assignor to Ben Caster Electric Industrial Co., Ltd., Taipei, Taiwan

Filed Jan. 26, 1995, Ser. No. 34,080

Term of patent 14 years

U.S. Cl. D26—110



369,432

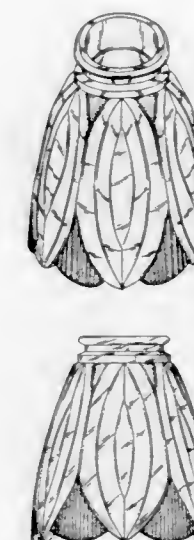
GLASS SHADE

Jyn Horng Jen, No. 244, Dahyang Rd., 8 Lin, Yngparn LI, Jwunan Jenn, Miau-Li Hsien, Taiwan

Filed Feb. 28, 1995, Ser. No. 35,460

Term of patent 14 years

U.S. Cl. D26—134



369,431

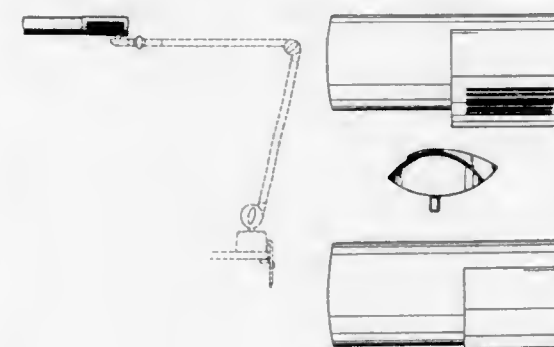
LAMP HEAD

Daniel Muellenmeister, Havixbeck, Germany, assignor to Herbert Waldmann GmbH & Co., Villenen-Schwenningen, Germany

Filed Nov. 17, 1994, Ser. No. 31,106

Claims priority, application Hague Agreement, May 31, 1994, DM/029 710

U.S. Cl. D26—118

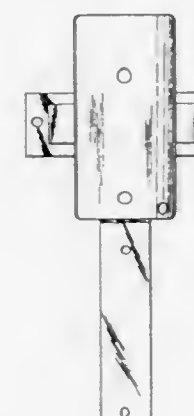


369,433

MOUNTING PLATE FOR A LIGHTING STANCHION
Robert C. Cochran, Stanford, Ky., assignor to Cochran Welding, Stanford, Ky.

Filed Feb. 2, 1995, Ser. No. 34,372

Term of patent 14 years



369,434

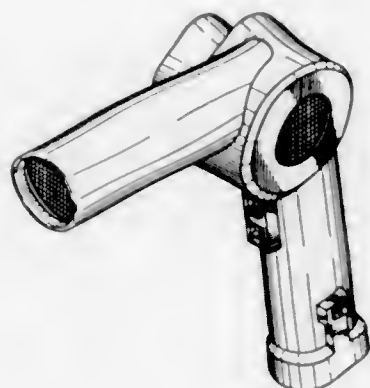
RECHARGEABLE CORDLESS HAIR DRYER

Daniel M. LeCompte, Sr., 114 N. Terrebonne Dr., Gray, La. 70359

Filed Feb. 7, 1995, Ser. No. 34,537

Term of patent 14 years

U.S. Cl. D28—13



369,436

HAIR CLIPPER

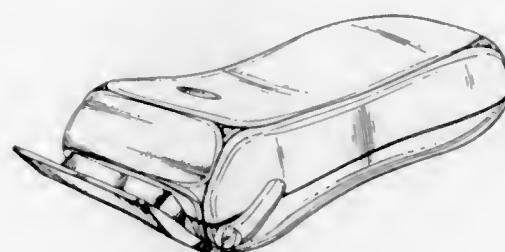
Mario Barker, Double Bay, Australia, assignor to Breville R & D Pty Limited, Pyrmont, Australia

Filed Aug. 5, 1994, Ser. No. 26,793

Claims priority, application Australia, Feb. 25, 1994, 605/94

Term of patent 14 years

U.S. Cl. D28—53



369,437

RAZOR

Joseph M. Armbruster, and Sue B. Armbruster, both of 2700 NE. 47 St., Lighthouse Point, Fla. 33064

Filed Feb. 17, 1995, Ser. No. 35,014

Term of patent 14 years

U.S. Cl. D28—46



369,435

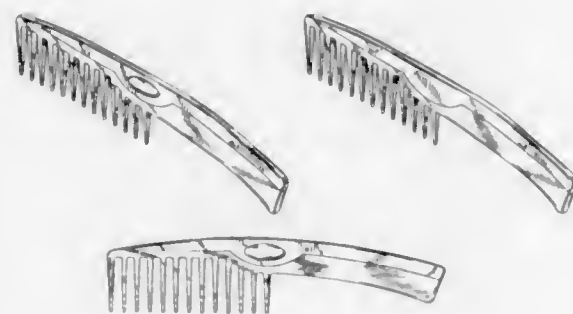
HANDLED COMB

John A. Bozak, Brooklyn, N.Y., assignor to Goody Products, Inc., Kearny, N.J.

Filed Dec. 30, 1994, Ser. No. 32,973

Term of patent 14 years

U.S. Cl. D28—30



369,438

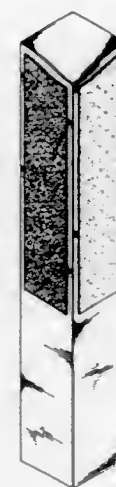
NAIL FILE

Renee S. Resler, 3046 E. Mariette, Phoenix, Ariz. 85016

Filed Mar. 7, 1995, Ser. No. 35,817

Term of patent 14 years

U.S. Cl. D28—59



369,440

THREE CUFF HANDCUFFS

John R. Mariano, Deer Hill Rd., P.O. Box 106, South Newfane, Vt. 05351

Filed Nov. 16, 1994, Ser. No. 31,040

Term of patent 14 years

U.S. Cl. D29—100



369,441

SKI HELMET

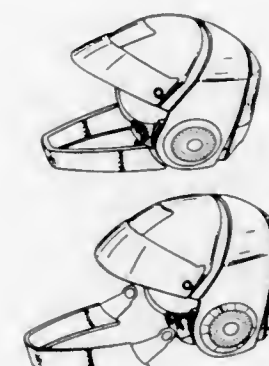
Laurent Crestin-Billet, Morez, France, assignor to Cebel International S.A., France

Filed Aug. 23, 1994, Ser. No. 27,506

Claims priority, application WIPO, Feb. 23, 1994, DM 028,782

Term of patent 14 years

U.S. Cl. D29—102



369,439

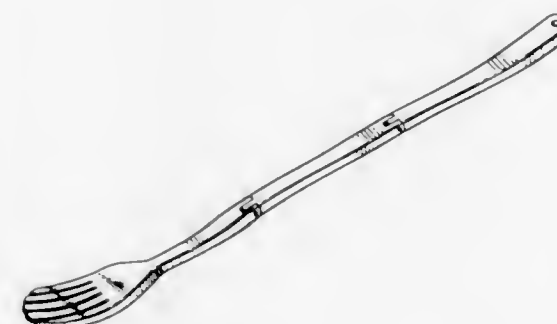
FOLDING BACK SCRATCHER

Joyce E. Fischer, 1820 Coolidge St., Hollywood, Fla. 33020-2424

Filed Dec. 21, 1994, Ser. No. 32,583

Term of patent 14 years

U.S. Cl. D28—99



369,442

COMBINATION MASK AND SCARF

Kent R. Jones, Salt Lake City, Utah, assignor to Gator Sports, Inc., Salt Lake City, Utah

Filed May 11, 1994, Ser. No. 22,764

Term of patent 14 years

U.S. Cl. D29—108



369,444

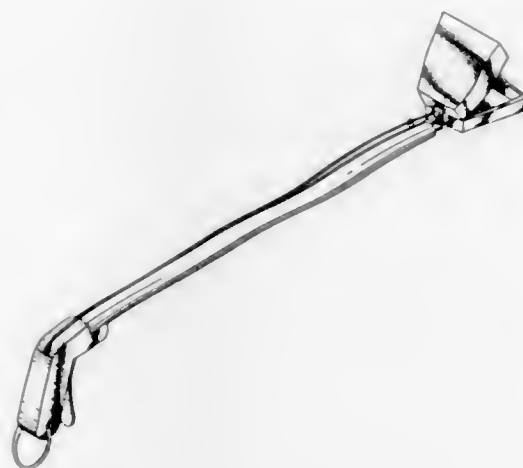
ANIMAL FECES RETRIEVER

Monte Ubdegrove, and Jason Ubdegrove, both of SS3 Site 6 Comp 69, Prince George, B.C., Canada

Filed Mar. 7, 1995, Ser. No. 35,828

Term of patent 14 years

U.S. Cl. D30—162



369,445

Patent Not Issued For This Number

369,446

FLOOR SCRUBBER

Barry W. Smith, Dublin, Ohio, assignor to White Consolidated Industries, Inc., Cleveland, Ohio

Filed Oct. 19, 1994, Ser. No. 29,936

Term of patent 14 years

U.S. Cl. D32—19

369,443

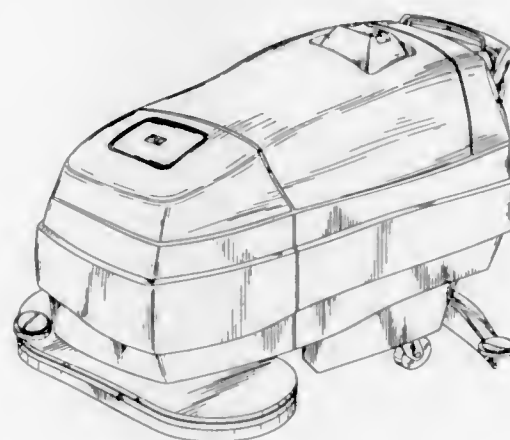
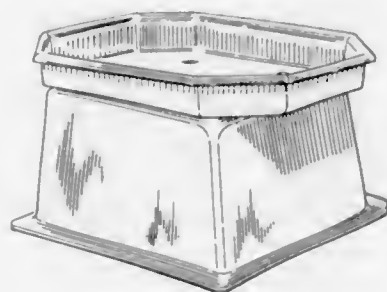
PET FURNITURE FOR SLEEPING, GROOMING OR BATHING

Babs J. Givens, 305 Spring Creek Village, Box 474, Dallas, Tex. 75248

Filed Oct. 17, 1994, Ser. No. 29,766

Term of patent 14 years

U.S. Cl. D30—118



369,447

ROTARY BRUSH

Lawrence J. Mann, Lake Elmo, and Michael J. Kubes, Maplewood, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Mar. 18, 1994, Ser. No. 20,103

Term of patent 14 years

U.S. Cl. D32—25



369,449

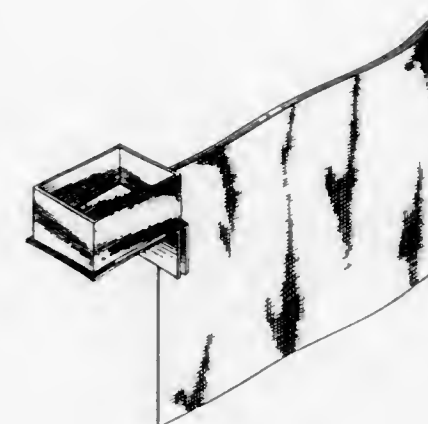
BUG CATCHER TO BE USE ON THE SIDE OF A POOL

Jerry R. Stiefel, and Sharon D. Stiefel, both of Rte. 3, Box 396, Henagar, Ala. 35978-9205

Filed Sep. 14, 1994, Ser. No. 28,399

Term of patent 14 years

U.S. Cl. D32—35



369,450

GARBAGE CONTAINER

Peng H. Hsu, No. 181, Kuang Ming Rd., Erh-Chung Li, Chu-Tung Town, Hsinchu Hsien, Taiwan

Filed Jan. 18, 1995, Ser. No. 33,672

Term of patent 14 years

U.S. Cl. D34—1

369,448

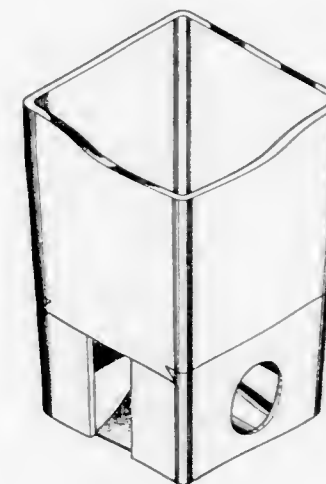
BRUSH ATTACHMENT FOR A VACUUM CLEANER

Bryan P. de Blois, West Haven; Stuart Naft, Fairfield, and Anthony B. Rorke, Guilford, all of Conn., assignors to Black & Decker Inc., Newark, Del.

Filed Nov. 14, 1994, Ser. No. 30,899

Term of patent 14 years

U.S. Cl. D32—33



LIST OF PATENTEEES

TO WHOM

PATENTS WERE ISSUED ON THE 30th DAY OF APRIL, 1996

NOTE— Arranged in accordance with the first significant character or word of the name
(in accordance with city and telephone directory practice).

- A. A. Doerr Mercantile Co.: *See—*
Wonseller, Charles M., 5,511,764, Cl. 266-49,000.
- A.G. (Patents) Limited: *See—*
Kenney, Alan G., 5,511,359, Cl. 53-413,000.
- A.R.T. Group, Inc.: *See—*
Shapanus, Vincent F.; and Phipps, Kevin J., 5,513,002, Cl. 356-313,000.
- A-Star Sports Group, Inc.: *See—*
Field, Michael R.; and Caldwell, Gregory D., 5,511,250, Cl. 2-418,000.
- A.W. Industries, Inc.: *See—*
Levin, Yuri, 5,511,996, Cl. 439-862,000.
- Aanstoot, Henk-Jan: *See—*
Baekkeskov, Steinunn; Aanstoot, Henk-Jan; Decamilli, Pietro; Folli, Franco; and Solimena, Michele, 5,512,447, Cl. 435-7,400.
- Aaronson, Stuart A.; Bottaro, Donald P.; Ishibashi, Toshio; and Miki, Toru, to United States of America, Health and Human Services. Expression cloning of a human phosphatase. 5,512,434, Cl. 435-6,000.
- Aarts, Veronika M. L. J.; Stanssens, Dirk A. W.; and Kierkels, Renier H. M., to DSM N.V. Imino-azacyclopentanepolyol. 5,512,204, Cl. 252-182,130.
- Abalos, Martin: *See—*
Moore, H. Jack, Jr.; and Abalos, Martin, 5,511,516, Cl. 122-17,000.
- ABB Carbon AB: *See—*
Barker, Stephen N.; and Wallin, Thomas, 5,511,725, Cl. 239-8,000.
- Abbott Laboratories: *See—*
Brooks, Dee W.; Bhatia, Pramila; and Kolasa, Teodozyi, 5,512,581, Cl. 514-311,000.
- Abbruzzese, Livio: *See—*
Romani, Ernesto; Abbruzzese, Livio; Theurer, Josef; Wörgötter, Herbert; and Oellerer, Friedrich, 5,511,485, Cl. 104-2,000.
- ABD Korea Telecommunications Authority: *See—*
Yoo, Chan H.; Lee, Byung S.; and Kim, Young S., 5,513,257, Cl. 379-220,000.
- Abe, Hiroyuki; Muramatsu, Masaru; Goto, Tetsuro; and Narisawa, Tsutomu, to Nikon Corporation. Target follow-up device and camera comprising the same. 5,512,974, Cl. 354-430,000.
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- Abe, Shinya: *See—*
Miyazawa, Shuhei; Hoshino, Yoro-hisa; Shibata, Hisashi; Hirota, Kazuo; Kameyama, Takaaki; Abe, Shinya; and Yamanaka, Takashi, 5,512,579, Cl. 514-299,000.
- Abe, Taizo, to Fujitsu Limited. Method and dispenser for filling liquid crystal into LCD cell. 5,511,591, Cl. 141-7,000.
- Abe, Takashi; Yoshino, Naoto; Okoshi, Takeshi; and Ishizuka, Hiroyasu, to Fuji Xerox Co., Ltd. Roll paper feeding apparatus facilitating roll paper setting operation. 5,511,744, Cl. 242-564,500.
- Abe, Tetsuya; Hasushita, Sachio; and Ito, Takayuki, to Asahi Kogaku Kogyo Kaisha. Real image type variable power finder. 5,513,043, Cl. 359-691,000.
- Abrams, Michael J.; Bossard, Gerald E.; Hill, Craig L.; Schinazi, Raymond F.; and Theobald, Brian R. C. In vitro inhibition of the HIV virus with ionic tungstoborate compounds. 5,512,305, Cl. 424-617,000.
- Abrams, Randy L.; Bernstein, Michael S.; and Crossley, David W., to Safety 1st, Inc. Wrist baby monitor. 5,512,880, Cl. 340-573,000.
- Abrasive Technology, Inc.: *See—*
Lowder, James T.; and Evans, Robert W., 5,511,718, Cl. 228-103,000.
- Abrokwah, Jonathan K.: *See—*
Cho, Jaeshin; Kyler, Kelly W.; Cronin, Wayne A.; Durlam, Mark; and Abrokwah, Jonathan K., 5,512,518, Cl. 437-235,000.
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Maso, Giovanna, 5,511,342, Cl. 47-83,000.
- Access Radiology Corporation: *See—*
Pinsky, Howard; Sheldon, Scott S.; Christakis, Nicholas A.; and Schmertzler, Michael, 5,513,101, Cl. 364-401,000.
- Acrlux S.p.A.: *See—*
Guzzini, Vinicio; Guzzini, Igino; Guzzini, Cherubino; and Guzzini, Alberto, 5,511,968, Cl. 425-564,000.
- Actava Group, Inc.: *See—*
Powers, James R.; Wilder, John W.; Hancock, Frank H., Jr.; and Hill, Amos G., 5,511,367, Cl. 56-11,200.
- Adachi, Jun, to Yamaha Corporation. Electronic sound signal generator achieving scratch sound effect using scratch readout from waveform memory. 5,512,704, Cl. 84-605,000.
- Adam, Gérard: *See—*
Mansour, Hamid A.; Taverne, Thierry; Houssin, Raymond; Lesieur, Isabelle; Depreux, Patrick; Adam, Gérard; Caignard, Daniel-Henri; Renard, Pierre; and Rettori, Marie-Claire, 5,512,569, Cl. 514-233,800.
- Adam, Jean: *See—*
Lapierre, Yves; Josef, Dieter; Adam, Jean; and Greber-Widmer, Susanne, 5,512,432, Cl. 435-5,000.
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- Adel, Jörg; and Czech, Erwin, to BASF Aktiengesellschaft. Finely divided blue molybdenum oxide. 5,512,264, Cl. 423-606,000.
- Aderka, Dan: *See—*
Wallach, David; Aderka, Dan; and Engelmann, Harmut, 5,512,544, Cl. 514-12,000.
- Adir et Compagnie: *See—*
Mansour, Hamid A.; Taverne, Thierry; Houssin, Raymond; Lesieur, Isabelle; Depreux, Patrick; Adam, Gérard; Caignard, Daniel-Henri; Renard, Pierre; and Rettori, Marie-Claire, 5,512,569, Cl. 514-233,800.
- Regnier, Gilbert; Guillonnet, Claude; Vilaine, Jean-Paul; Lenaers, Albert; and Breugnot, Christine, 5,512,595, Cl. 514-543,000.
- Adler, Uri; and Miller, Ori, to Idanit Technologies, Ltd. Method and apparatus for the production of photopolymeric relief printing plates. 5,511,477, Cl. 101-401,100.
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- Adrezn, Ronald S.; Cordaro, Marc A.; Wang, Fikre S.; and Fast, Avital. Method and apparatus for gait measurement. 5,511,571, Cl. 135-66,000.
- Adrian, Willy; Borchers, Peter; Fohrer, Michael; Wallbaum, Knuth; Wente, Gerald; and Zimmerman, Rainer, to Otis Elevator Company. Balustrade information display for a passenger conveying device. 5,511,647, Cl. 198-335,000.
- Advanced Accessory Systems L.L.C.: *See—*
Cronce, Gary M.; and Stapleton, Craig A., 5,511,708, Cl. 224-321,000.
- Advanced Micro Devices, Inc.: *See—*
Chang, Kuang-Yeh; Gardner, Mark I.; and Hause, Frederick N., 5,512,506, Cl. 437-44,000.
- Gulick, Dale E., 5,512,893, Cl. 341-26,000.
- Advanced Photonics Limited: *See—*
Wilde, Peter F., 5,512,285, Cl. 424-195,100.
- Advanced RISC Machines Limited: *See—*
Clarke, Keith S. P., 5,512,851, Cl. 327-144,000.
- Advanced Tissue Sciences, Inc.: *See—*
Naughton, Gail K.; and Naughton, Brian A., 5,512,475, Cl. 435-240,243.
- Advancement of Science and Art, The Cooper Union for the: *See—*
Hollenberg, Joel W., 5,512,145, Cl. 205-628,000.
- Aebi, Verle W.: *See—*
Green, Roger T.; Davis, Gary A.; and Aebi, Verle W., 5,512,375, Cl. 428-426,000.
- Aerospatiale Societe Nationale Industrielle: *See—*
Delest, Thierry; Regis, Olivier; and Schuster, Patrick, 5,511,430, Cl. 73-802,000.
- Parrot, Pierre; Lalanne, Philippe; Herman, Philippe; and Tisne, Jean-Louis, 5,511,747, Cl. 244-158,000.
- Afzali-Ardakani, Ali; Buchwalter, Stephen L.; Gelorme, Jeffrey D.; Kosbar, Laura L.; Newman, Bert H.; and Pompeo, Frank L., to International Business Machines Corporation. Cleavable diepoxide for removable epoxy compositions. 5,512,613, Cl. 523-443,000.
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- Ågårdh, Hans: *See—*
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 Deckers, Godefridus H. J.; and Kloosterboer, Helenius J., 5,512,556, Cl. 514-177.000.
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 Alcon Laboratories, Inc.: *See—*
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 Alexander, Samuel E., to Microchip Technologies, Inc. Memory device with switching of data stream modes. 5,513,334, Cl. 395-430.000.
 Alfors, Eugene D., to Honeywell Inc. Rotational position sensor with a two-part rotatable member to resist jamming. 5,512,820, Cl. 324-207.220.
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 All West Plastics, Inc.: *See—*
 Spanier, Barry E.; Leishman, L. Scott; and McDonald, Kevin J., 5,511,503, Cl. 114-39.200.
 Allaire, Michael J.: *See—*
 Riazzi, Timothy J.; Wolf, Michael L.; and Allaire, Michael J., 5,511,548, Cl. 128-641.000.
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 Scofield, Robert E.; and Annis, Jeffrey R., 5,512,744, Cl. 250-234.000.
 Allen, Donovan J. Golf ball retriever device and method of using same. 5,511,841, Cl. 294-66.100.
 Allen, Ivan C. Automatic sighting device for a projectile launcher. 5,511,317, Cl. 33-265.000.
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 Allen, Kristin: *See—*
 Hausmann, Ernest; Wobschall, Darold; Ortman, Lance; Kutlubay, Evren; Allen, Kristin; and Odobina, David, 5,513,240, Cl. 378-170.000.
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 Allergene, Inc.: *See—*
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 Alliance Semiconductor Corporation: *See—*
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 Alliance Winding Equipment, Inc.: *See—*
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 AlliedSignal Inc.: *See—*
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 Konicek, Jiri D.; and Yuhas, Donald E., 5,512,381, Cl. 428-607.000.
 Leung, Roger Y.; Stranford, Gerald T.; and Gonczy, Stephen T., 5,512,359, Cl. 428-288.000.
 Strangman, Thomas E., 5,512,382, Cl. 428-632.000.
 Suh, Peter J., 5,511,863, Cl. 303-113.400.
 Zolkower, Jeffry N.; and Thomas, Rudy V., 5,511,741, Cl. 242-381.100.
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 Allman, Gary L., to Crosspoint Solutions, Inc. Voltage regulator incorporating configurable feedback and source follower outputs. 5,512,814, Cl. 323-267.000.
 Allocca, David M.: *See—*
 Billmers, Richard I.; Contarino, Vincent M.; Allocca, David M.; Squicciarini, Martin F.; and Scharpf, William J., 5,513,032, Cl. 359-244.000.
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 Wang, Su-Sun, 5,512,656, Cl. 530-324.000.
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 Magome, Tetsuya; and Hayakawa, Hiroshi, 5,512,717, Cl. 200-295.000.
 Alt, Charles A., to Eli Lilly and Company. Process for preparing 3-(4-aminoethoxy-benzoyl) benzo[B]-thiophenes. 5,512,684, Cl. 549-51.000.

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 Alvimar Manufacturing Company, Inc.: *See—*
 Lieberman, Marvin S., 5,512,002, Cl. 446-221.000.
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 Landrau, Felix A.; Campbell, Patricia S.; Hall, Arthur W.; and Harrison, Juan M. E., 5,512,293, Cl. 424-449.000.
 Place, Virgil A.; Encarnacion, Myriam T.; Wong, Patrick S. L.; and Harrison, Juan M. E., 5,512,299, Cl. 424-464.000.
 AM International, Inc.: *See—*
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 Amada Metreco Company, Limited: *See—*
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 American Air Liquide: *See—*
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 American Cyanamid Company: *See—*
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 American Health Foundation: *See—*
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 American Home Products Corporation: *See—*
 Antane, Madeline M.; Butera, John A.; Hirth, Bradford H.; and Antane, Schuyler A., 5,512,585, Cl. 514-352.000.
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 Mewshaw, Richard E.; Commons, Thomas J.; and Strike, Donald P., 5,512,565, Cl. 514-227.500.
 American Laboratories: *See—*
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 Littman, Richard; Weingartner, Ulrich; Wildenberg, Thomas S.; Jesse, Jerry; and Galloway, Deane E., 5,512,337, Cl. 428-35.400.
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 Nubel, Philip O.; Yokelson, Howard B.; Cohen, Steven A.; Behrends, Raymond T.; Bouslog, William G.; and Nelson, James P., 5,512,635, Cl. 525-247.000.
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 Amoroso, Dennis J.; and Amoroso, Harold G., 5,511,662, Cl. 206-373.000.
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 Zhao, Yang; and Lewis, Stephen, 5,511,420, Cl. 73-514.180.
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 Andenmatten, Roy W.; and Andenmatten, Ronald P. Apparatus for permitting uninterrupted relief of cargo tank compartment internal pressure and preventing leakage of lading from the cargo tank during dynamic pressure surges. 5,511,575, Cl. 137-43.000.
 Andersen, James K.: *See—*
 Morningstar, Charles L., deceased; and Andersen, James K., 5,513,151, Cl. 367-154.000.
 Anderson, Charles A. Downhole stabiliser. 5,511,627, Cl. 175-73.000.
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 Mizikovskiy, Semyon; Anderson, Geoffrey; Doums, Peter; Akahane, Masaaki; and Yasuda, Hiroshi, 5,513,245, Cl. 379-59.000.
 Anderson, Gregory P.; Dancy, Julian H.; Love, Doris; and Lucas, Jayne M., to Texaco Inc. Lubricating oil composition providing anti-wear protection. 5,512,190, Cl. 252-47.000.
 Anderson, Jeffery T.: *See—*
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 Andersson, Sven B.: *See—*
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 Ando, Hamae: *See—*
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 Ando, Seigo; Matsufuji, Yasuhiro; Maki, Hiroshi; Inaba, Mamoru; Iwanaga, Kenichi; Takeshi, Atsuhisa; and Takenaka, Masaki, to NKK Corporation. Method and apparatus for magnetically detecting defects in an object with compensation for magnetic field shift. 5,512,821, Cl. 324-225.000.
 Andrade, Phillip: *See—*
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 Andreas, Philip B.: *See—*
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 Andrews, Christopher M.: *See—*
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 Antonious, Anthony J. Wood type aerodynamic golf club head having an air foil member on the upper surface. 5,511,786, Cl. 473-327.000.
 Anwunah, John: *See—*
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 Aoki, Minoru; Ohtaki, Hiroshi; Fukui, Nobuharu; Terada, Takashi; Nakada, Minoru, deceased (by Tomoko Nakaka, heiress), to Nippon Kayaku Kabushiki Kaisha. Cytarabine oc-fosfat hard capsule. 5,512,298, Cl. 424-452.000.
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Meier, John R.; and Capps, Stephen P., 5,513,309, Cl. 395-155.000.

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Applied Chemical Technologies, Inc.: See—

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Applied Materials, Inc.: See—

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Aqualon Company: See—

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ARA, Inc.: See—

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Uchikata, Yoshio; Hattori, Yoshifumi; Ara, Yoji; Kitani, Masashi; Suzuki, Etsuro; Wada, Toshihide; Hirabayashi, Hiromitsu; Saikawa, Hideo; Kojima, Masami; Hanabusa, Tadashi; Kawano, Kenji; Tanno, Koichi; Ohashi, Tetsuyo; Bekki, Toshihiko; Aono, Kenji; and Ikado, Masaharu, 5,512,926, Cl. 347-86.000.

Arai, Tatsuo; and Komatsu, Naotaka, to Agency of Industrial Science & Technology; and Ministry of International Trade & Industry. Micromotion stage, 5,511,931, Cl. 414-680.000.

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Cooper, Charles F.; and Harris, Stephen H., 5,512,313, Cl. 426-611.000.

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Fauteux, Denis G.; and Shi, Jie, 5,512,392, Cl. 429-218.000.

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Morgans, David, Jr.; Sjogren, Eric B.; Smith, David B.; Talamas, Francisco X.; Artis, Dean R.; Cervantes, Alicia; Elworthy, Todd R.; Fernandez, Mario; Franco, Fidencio; Hawley, Ronald C.; Lara, Teresa; Loughhead, David G.; Nelson, Peter H.; Patterson, John W.; Trejo, Alejandra; Walto, Ann M.; and Weikert, Robert J., 5,512,568, Cl. 514-233.500.

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Ono, Yasushi; Sakamoto, Satoshi; Murata, Yutaka; Kaji, Tetsuo; and Endo, Yasuhiko, 5,512,523, Cl. 501-127.000.

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Shimura, Kazuhiko; and Nakayama, Yoshiaki, 5,512,357, Cl. 428-283.000.

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Ito, Takayuki; and Sugano, Yasuyuki, 5,513,045, Cl. 359-750.000.

Okawa, Kimiaki, 5,512,997, Cl. 356-3.040.

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Tani, Kiyoshi, 5,512,016, Cl. 453-32.000.

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Kohata, Takashi; Aoyama, Toshihiko; Okada, Yuichi; and Asanuma, Nobuyoshi, 5,511,630, Cl. 180-142.000.

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Todd, Robert R.; and Ashcroft, Dale A., 5,511,932, Cl. 414-685.000.

Aso, Yasuhiro: See—

Miyake, Hiroshi; and Aso, Yasuhiro, 5,513,180, Cl. 370-60.100.

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De Lucia, Frank V.; Le, Tuong T.; and Jones, Robert W., 5,512,007, Cl. 451-75.000.

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Agrawal, Prathima; and Bose, Soumitra, 5,513,339, Cl. 395-500.000.

Benveniste, Mathilde; Greenberg, Albert G.; Hwang, Frank K.; Lubachevsky, Boris D.; and Wright, Paul E., 5,513,379, Cl. 455-33.100.

Blaker, David M.; Ellard, Gregory S.; Mohin, Mohammad S.; and Sam, Homayoon, 5,513,220, Cl. 375-340.000.

Bremer, Gordon, 5,513,212, Cl. 375-222.000.

Bresalier, Robert D.; Fairfield, Robert C.; and Loughran, Kevin, 5,513,181, Cl. 370-79.000.

Cheng, Kwang-Ting; and Krishnakumar, Anjur S., 5,513,122, Cl. 364-489.000.

Damen, Theodoor C., 5,513,203, Cl. 372-96.000.

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Evans, James G.; Lehder, Diane Z.; and Panagopoulos, Gregory, 5,513,248, Cl. 379-61.000.

Gadot, Shlomo; Im, Gi-Hong; Langberg, Ehud; and Wang, Jin-Der, 5,513,216, Cl. 375-233.000.

Griffin, Timothy G.; and Trickey, Howard W., 5,513,350, Cl. 395-600.000.

Holland, William R.; Pimpinella, Richard J.; and Schroeder, Charles M., 5,513,293, Cl. 385-134.000.

Jin, Sungho; Lotfi, Ashraf W.; and McCormack, Mark T., 5,512,818, Cl. 323-368.000.

Kleijn, Willem B.; and Kroon, Peter, 5,513,297, Cl. 395-2.320.

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Ludwiczak, Karen M.; Martz, Louis M.; and Wilson, Patricia Hart, 5,513,171, Cl. 370-13.000.

Maher, David P., 5,513,261, Cl. 380-23.000.

Majeti, Venkata C.; Midani, Mowaffak T.; Watson, Richard J.; and Zabriskie, Kenneth A., 5,512,935, Cl. 348-9.000.

Markowitz, Robert E., 5,513,254, Cl. 379-100.000.

Mukerjee, Sandip; and Snyder, Ralph J., 5,513,242, Cl. 379-58.000.

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Nagaraj, Krishnaswamy, 5,512,817, Cl. 323-316.000.

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Rochkind, Mark M.; and Strahs, Lee B., 5,513,251, Cl. 379-93.000.

Roll, Richard A.; and Shahid, Muhammed A., 5,513,294, Cl. 385-137.000.

Schmidt, Douglas C., 5,513,185, Cl. 371-5.500.

Vannucci, Giovanni, 5,513,184, Cl. 370-105.300.

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Cabaniss, Frank W., 5,513,152, Cl. 368-118.000.

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Atkins, Ian P., to Raychem Limited. Arrangement for protecting telecommunications equipment from voltage transients, 5,513,059, Cl. 361-56.000.

Atkinson, Linda E.: See—

Gale, Robert M.; Nedberge, Diane E.; and Atkinson, Linda E., 5,512,292, Cl. 424-448.000.

Atlantic Richfield Company: See—

Fletcher, Paul A., 5,512,889, Cl. 340-854.600.

Sicking, Charles J.; and Campbell, Bruce S., 5,513,150, Cl. 367-73.000.

Atoma International Inc.: See—

Polityka, Gregory A., 5,512,875, Cl. 340-456.000.

Tame, Omar D., 5,511,442, Cl. 74-502.600.

Atsumi, Shigeru; and Tanaka, Sumio, to Kabushiki Kaisha Toshiba. Non-volatile semiconductor memory device having a row decoder supplying a negative potential to word lines during erase mode, 5,513,146, Cl. 365-185.230.

Aucoin, B. Michael: See—

Russell, B. Don; and Aucoin, B. Michael, 5,512,832, Cl. 324-522.000.

Aurimedia Consulting Group, Inc.: See—

Aurimedia, Matthew J., 5,513,102, Cl. 364-408.000.

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Kandasamy, David R.; Butler, Mitchel B.; Foss, Andrew L.; Peterson, Bradley M.; Patwardhan, Chintamani M.; Ribble, Michael T.; Rothmeier, Dieter; and Ramil, Gaudencio, 5,513,314, Cl. 395-182.040.

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Bushman, Ronald C.; Harris, William E., Jr.; and Foch, Roger N., 5,511,468, Cl. 99-504.000.

Avanic, Branko; Yeh, Peter J.; and Ooi, Leng H., to Motorola, Inc. Oscillator with improved sideband noise, 5,512,862, Cl. 331-117.00D.

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McGrath, Michael C., 5,513,055, Cl. 360-99.080.

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Peters, Eric C., 5,513,375, Cl. 395-846.000.

Azon Corporation: See—

Ziegler, Guenther, 5,511,241, Cl. 2-2.500.

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Satoh, Isao; Fukushima, Yoshihisa; Takagi, Yuji; and Azumatani, Yasushi, 5,513,160, Cl. 369-47.000.

B. Braun Melsungen AG: See—

Jesch, Franz, 5,512,052, Cl. 604-158.000.

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Rubinstein, Boaz, 5,513,205, Cl. 372-99.000.

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Yoshioka, Toshihiko; Kawaguri, Mariko; Nankai, Shiro; Tsutsumi, Haruhiko; Baba, Hideyuki; Tokuno, Yoshinobu; and Miyazaki, Shoji, 5,512,159, Cl. 204-403.000.

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Bailey, Ralph T., 5,511,728, Cl. 239-423.000.

MacLauchlan, Daniel T.; Henderson, Karl C.; and Flora, John H., 5,511,424, Cl. 73-609.000.

Stats, David A., 5,512,070, Cl. 48-76.000.

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Hagenmaier, Hanspaul; and Mittelbach, Gunther, 5,512,259, Cl. 423-239.100.

Bacchi, Paul E.; and Filipksi, Paul S., to Kensington Laboratories, Inc. Noncentering specimen prealigner having improved specimen edge detection and tracking, 5,511,934, Cl. 414-783.000.

Bachmann, Andrew G.; and Cantor, Stephen E., to Dymax Corporation. Method for producing on adherent deposit using a chemically activated multi-part, solvent-free composition, 5,512,608, Cl. 522-170.000.

Bäckström, Reijo: See—

Nore, Pentti; Honkanen, Erkki; Bäckström, Reijo; Wikberg, Tom; Haikala, Heimo; and Haarala, Jorma, 5,512,571, Cl. 544-239.000.

Bäckström, Reijo J.: See—

Haikala, Heimo O.; Levijoki, Juoko M.; Bäckström, Reijo J.; Nore, Pentti T.; and Honkanen, Erkki J., 5,512,572, Cl. 514-247.000.

Bade, John P., Jr.: See—

Saito, Kimitsugu; Miyata, Koichi; Bade, John P., Jr.; Stoner, Brian R.; von Windheim, Jesko A.; and Sahaida, Scott R., 5,512,873, Cl. 338-22.0SD.

Bader, Glenn F.: See—

Wanderman, Steven M.; and Bader, Glenn F., 5,511,561, Cl. 128-779.000.

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Baggiolini, Barbara J., executrix: See—

Baggiolini, Enrico G., deceased; Shiuey, Shian-Jan; and Uskokovic, Milan R., 5,512,554, Cl. 514-167.000.

Baggiolini, Enrico G., deceased (by Barbara J. Baggiolini, executrix); Shiuey, Shian-Jan; and Uskokovic, Milan R., to Hoffmann-La Roche Inc. Method of treating hyperproliferative skin diseases with fluorinated vitamin D₃ analogs, 5,512,554, Cl. 514-167.000.

Bahjat, Zuhair S.; and Bean, Thomas R., to Otis Elevator Company. Instantaneous elevator up-peak sector assignment, 5,511,634, Cl. 187-383.000.

Bahnmann, Volker W.; and Loth, Stanislaw, to Arriflex Corporation. Video monitor contrast reference gray scale apparatus and method of use thereof, 5,512,943, Cl. 348-177.000.

Baichwal, Anand R., to Edward Mendell Co., Inc. Sustained release hetero-disperse hydrogel systems for insoluble drugs, 5,512,297, Cl. 424-451.000.

Bailey, David B.; Bowman, Wayne A.; Evans, Steven; Lawrence, Kristine B.; and Noonan, John M., to Eastman Kodak Company. Thermal dye transfer system with receiver containing reactive keto moiety, 5,512,532, Cl. 503-227.000.

Bailey, David S.: See—

Texter, John; Welter, Thomas R.; Southby, David T.; Mooberry, Jared B.; and Bailey, David S., 5,512,410, Cl. 430-203.000.

Bailey, Ralph T., to Babcock & Wilcox Company, The. Dual fluid atomizer for high solids soil paste containing pebbles or agglomerates, 5,511,728, Cl. 239-423.000.

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Van Aken, Morgan; and Paskell, Stefan L., 5,512,657, Cl. 530-350.000.

Baird, Brian W.; Marshall, George P.; Miller, Michael G.; and Minor, James C., to Lexmark International, Inc. Dry toner with gelled resin for high speed printer, 5,512,408, Cl. 430-110.000.

Baji, Toru, to Hitachi America, Inc. On-chip interface and DMA controller with interrupt functions for digital signal processor, 5,513,374, Cl. 395-846.000.

Baker, James V.: See—

Kroger, Bruce R.; Hassert, Richard A.; Storie, Anthony C.; and Baker, James V., 5,511,732, Cl. 241-166.000.

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Baker, Peter D.; Weinmann, Robert H., Jr.; Mercado, Robert; Nesselroad, Christopher W.; Baker, Lucy A.; and Bastien, Gilbert J., 5,511,434, Cl. 73-865.600.

Baker, Peter D.; Weinmann, Robert H., Jr.; Mercado, Robert; Nesselroad, Christopher W.; Baker, Lucy A.; and Bastien, Gilbert J., to Screening Systems, Inc. Variable volume test chamber, 5,511,434, Cl. 73-365.600.

Bakker, William J.; and Williams, N. A., to Bakker, William J. Container for receiving head shrinking film and method for forming a spill-resistant cover therefor, 5,511,360, Cl. 53-442.000.

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Ban, Hiroshi; Tanaka, Akinobu; Yagihashi, Fujio; Watanabe, Jun; and Takamizawa, Minoru, to Shin-Etsu Chemical Co., Ltd.; and Nippon Telegraph and Telephone Corp. Positive resist composition comprising a bis (t-butoxycarbonylmethyl)thymolphthalein as a dissolution inhibitor, 5,512,417, Cl. 430-270.140.

Ban, Mitsuru: See—

Iwanaga, Takashi; Kariya, Yasuhiro; Magario, Kenji; Kawaguchi, Takayoshi; Shima, Nobuhiko; and Ban, Mitsuru, 5,511,528, Cl. 123-467.000.

Banba, Susumu, to Murata Kikai Kabushiki Kaisha. Method and apparatus for piecing a sliver and at least one of a leading yarn and a bobbin yarn, 5,511,373, Cl. 57-328.000.

Bando, Katuya: See—

Miyake, Toshihiro; Bando, Katuya; Yagura, Toshiaki; and Kondo, Koji, 5,511,719, Cl. 228-106.000.

Bando, Niho: See—
Tsuchihashi, Hironori; Fujiwara, Osami; Satou, Tuiyoshi; Togoshi, Yoshikazu; Hamada, Toshihiko; Kawahara, Yoshihiro; and Bando, Niho, 5,511,631, Cl. 180-247.000.

Bando, Takeo: See—
Nakamura, Yasuhiko; Okuda, Kenji; and Bando, Takeo, 5,511,414, Cl. 73-162.000.

Bando, Shunichi: See—
Ide, Hideaki; Bando, Shunichi; and Yasuhara, Hiroshi, 5,511,944, Cl. 416-31.000.

Banike, Ronald A.; Choi, Michael; DeVries, David G.; Peekna, Andres; and Sensmeier, Christopher J., to R. R. Donnelley & Sons Co. Magnetic cylinder with surface gripping, 5,511,476, Cl. 101-389.100.

Banks, Gerald: See—
Concannon, David J.; Vala, John D.; and Banks, Gerald, 5,513,274, Cl. 382-138.000.

Banks, Scott A.; Kravets, Valery; and Fox, John C., to Penn Ventilator Co., Inc. Apparatus and method for starting and controlling a motor, 5,512,809, Cl. 318-778.000.

Banks, Thomas B.: See—
Buckley, Stephen P.; Robinson, Richard A.; Pfahl, Kurt A.; Doerflinger, Arthur E.; Banks, Thomas B.; and Vandemark, Lynn, 5,513,116, Cl. 416-479.000.

Baran, Bernardo: See—
Weissman, William R.; Liapi, Peter; Sanchez, George; and Baran, Bernardo, 5,511,693, Cl. 222-1.000.

Barasa, Robert A.: See—
Mirza, Daryl; and Barasa, Robert A., 5,512,073, Cl. 55-323.000.

Barcza, William K., to United Technologies Corporation. Axisymmetric vectoring nozzle, 5,511,376, Cl. 60-230.000.

Bard, Martin: See—
Lai, Margaret H. K.; Kirsch, Donald R.; and Bard, Martin, 5,512,472, Cl. 435-240.100.

Bargman, Dale L., Jr.: See—
Tashman, Fred E.; and Bargman, Dale L., Jr., 5,511,833, Cl. 292-145.000.

Barker, Dale E.: See—
Gruenbacher, Dana P.; and Barker, Dale E., 5,511,697, Cl. 222-107.000.

Barker, Stephen N.; and Wallin, Thomas, to ABB Carbon AB. Method and nozzle for supplying paste fuel to a fluidized bed, 5,511,725, Cl. 239-8.000.

Barkus, David A., to Du Pont de Nemours & E. I., and Company. Centrifuge rotor, 5,512,030, Cl. 494-16.000.

Barlow, Geoffrey: See—
Pulley, Christopher J.; Specht, Steven J.; and Barlow, Geoffrey, 5,512,388, Cl. 429-179.000.

Barna, Gabriel G.; Frank, James G.; VanMeurs, Richard P.; and Carter, Duane E., to Texas Instruments Incorporated. Method and apparatus of etching a clean trench in a semiconductor material, 5,512,130, Cl. 156-651.100.

Barnard, Charles; and Bell, Earl. Exercise and training device, 5,512,029, Cl. 482-129.000.

Barnett, Simon J.: See—
Knott, Kurt T.; Graves, James R.; Gauronski, John F.; Raymor, Herbert J.; Cole, Randall P.; Filomena, K. U.; DeNunzio, Frank J.; Crocker, David E.; and Barnett, Simon J., 5,513,017, Cl. 358-471.000.

Barnicki, Scott D.; Sumner, Charles E., Jr.; and Williams, H. Chip, to Eastman Chemical Company. Process for the production of tocopherol concentrates, 5,512,691, Cl. 549-413.000.

Baron, Robert A.; Dzek, Stanley M.; and Haber, Frederick. Pet litter box for collecting pet waste and elimination of odor, 5,511,513, Cl. 119-163.000.

Barr, Samuel P., Sr. Baby cradle, 5,511,258, Cl. 5-104.000.

Barrett, James P.: See—
Taylor, James E.; Alderman, Robert J.; and Barrett, James P., 5,511,388, Cl. 62-389.000.

Barrow, David A.; and Rullman, Richard L., to Helena Laboratories Corporation. Method of preparing a thromboplastin extract, 5,512,304, Cl. 424-570.000.

Barth, Klaus, to U.S. Philips Corporation. Arrangement for the transport of printed circuit boards, 5,511,651, Cl. 198-817.000.

Barthel, Thomas C.: See—
Finn, Miles A.; Vanden Hoek, John C.; Shockey, Richard L.; and Barthel, Thomas C., 5,512,034, Cl. 600-138.000.

Barton, Bobby L., to Modine Manufacturing Company. Self-centering, self-sealing, double-sealing, interference fit tube joint, 5,511,831, Cl. 285-382.000.

BASF Aktiengesellschaft: See—
Adel, Jörg; and Czech, Erwin, 5,512,264, Cl. 423-606.000.

Beckerle, Wilhelm F.; Petri, Rolf; Dotzauer, Bernhard; Schwartz, Manfred; and Angel, Maximilian, 5,512,629, Cl. 524-819.000.

Horn, Peter; Hinz, Werner; and Jung, Ludwig, 5,512,602, Cl. 521-114.000.

Schnurr, Werner; Fischer, Rolf; Bassler, Peter; and Harder, Wolfgang, 5,512,697, Cl. 558-459.000.

Sens, Benno; Espino, Andres C. G.; Albert, Bernhard, and Kipper, Juergen, 5,512,095, Cl. 106-412.000.

Steiner, Gerd; Unger, Liliane; Hofmann, Hans P.; Teschendorf, Hans-Juergen; Behl, Berthold; and Binder, Rudolf, 5,512,584, Cl. 514-330.000.

Tenten, Andreas; Hammon, Ulrich; Weidlich, Peter; and Doerflinger, Walter, 5,512,525, Cl. 502-26.000.

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BASF Corporation: See—
Cook, John H.; and Grinbergs, Egils, 5,512,319, Cl. 427-244.000.

Hagen, Gerry A.; and Li, Wei, 5,512,367, Cl. 428-362.000.

Rehfuess, John W.; and Ohrborn, Walter H., 5,512,639, Cl. 525-456.000.

Turcotte, David E.; Conville, John J.; Zeld, Stephen M.; Coker, Daniel E.; and Lyon, James T., 5,511,590, Cl. 141-7.000.

BASF Lacke & Farben Akt.: See—
Hille, Hans-Dieter; Wieditz, Stefan C.; Döbelstein, Arnold; and Müller, Horst, 5,512,322, Cl. 427-407.100.

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Basseur, Francis: See—
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Calgene, Inc.: See—
Voelker, Toni A.; and Davies, Huw M., 5,512,482, Cl. 435-320.100.

Calhoun, Jeffrey E.; Peragine, Daniel A., Jr.; Scordato, Emil A.; and Helstern, Gary C., to Medical Laboratory Automation, Inc. Automated feeder system and apparatus. 5,511,690, Cl. 221-197.000.

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Davis, Mark E.; and Lobo, Raul F., 5,512,267, Cl. 423-705.000.

Jones, Jack A., 5,512,197, Cl. 252-67.000.

Calis Holdings, Inc.: See—
de la Rocha, Daniel, 5,511,654, Cl. 206-15.300.

Calsonic Corporation: See—
Tajima, Makoto; Beppu, Kei; Mano, Tomoyuki; and Sasaki, Shigeru, 5,511,612, Cl. 165-167.000.

Calvert, Wendy L.: See—
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Camaño, Ricardo M., to Haidenvurcel, Teodoro P.; and Pinto, Eduardo H. Method for treating bacterial infections. 5,512,284, Cl. 424-195.100.

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Nair, Rajesh M.; Mansingh, Vivek; and Ismail, Raouf A., 5,511,415, Cl. 73-204.110.

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Holmes, Andrew; Bradley, Donal D.; Friend, Richard H.; Kraft, Arno; Burn, Paul; and Brown, Adam, 5,512,654, Cl. 528-373.000.

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Gore, Anthony R.; Cameron, Phillip C.; and Cole, David J., 5,512,017, Cl. 454-52.000.

Camilli, Andrew: See—
Mekalanos, John J.; and Camilli, Andrew, 5,512,452, Cl. 435-25.000.

Campbell, Bruce S.: See—
Sicking, Charles J.; and Campbell, Bruce S., 5,513,150, Cl. 367-73.000.

Campbell, Carlton W.: See—
Miller, Daniel C.; and Campbell, Carlton W., 5,512,987, Cl. 355-260.000.

Campbell, Patricia S.: See—
Landrau, Felix A.; Campbell, Patricia S.; Hall, Arthur W.; and Harrison, Juan M. E., 5,512,293, Cl. 424-449.000.

Campbell, Samuel, III; and Wenzel, Kenneth J., to Chrysler Corporation. Method of diagnosing an idle speed control system. 5,511,412, Cl. 73-117.300.

Campfield, Richard A. Method of repairing automobile windshield. 5,512,116, Cl. 156-94.000.

Canac International, Inc.: See—
Horst, Folkert; Szklar, Oleh; Doig, Kelly; Cass, George R.; and Bousquet, J. L., 5,511,749, Cl. 246-187.00A.

Cannon, Gregory L.: See—
Macko, William J.; and Cannon, Gregory L., 5,512,886, Cl. 340-825.070.

Cannon, Jesse N., III, to Eastman Chemical Company. Process for making cellulose acetate fibers. 5,512,230, Cl. 264-169.000.

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Albrecht, Otto; and Matsuda, Hiroshi, 5,512,326, Cl. 427-430.100.

Den, Tohru; and Kobayashi, Tamaki, 5,512,538, Cl. 505-126.000.

Den, Tohru; Kaneko, Norio; and Kobayashi, Tamaki, 5,512,542, Cl. 505-125.000.

Endo, Saijiro; Toyama, Yoshikuni; Senba, Hisaaki; Tahara, Hisatsugu; Matsumoto, Hiroshi; and Hasegawa, Keisuke, 5,512,993, Cl. 355-285.000.

Fukushima, Satoru; and Ohiki, Makoto, 5,512,983, Cl. 355-220.000.

Ito, Akio; Ichikawa, Hiroyuki; and Kutsuwade, Satoru, 5,513,007, Cl. 358-296.000.

Kawamura, Naoto, 5,513,280, Cl. 382-266.000.

Kitao, Teijiro; and Oda, Hironori, 5,512,423, Cl. 430-345.000.

Koike, Michio, 5,512,994, Cl. 355-298.000.

Kusaka, Kensaku; Masuda, Koji; and Takano, Manabu, 5,512,729, Cl. 219-216.000.

Maeda, Toru, 5,513,208, Cl. 375-231.000.

Miyazaki, Takeshi; Tanaka, Kazumi; Santo, Tsuyoshi; Ohnishi, Toshikazu; Fukui, Tetsuro; and Okamoto, Tadashi, 5,512,446, Cl. 435-7.200.

Murayama, Hitoshi; and Kojima, Satoshi, 5,512,510, Cl. 437-101.000.

Ohashi, Tetsuyo, 5,512,925, Cl. 347-86.000.

Okado, Kenji; Ugai, Toshiyuki; Fujita, Ryoichi; Kanbayashi, Makoto; Takiguchi, Tsuyoshi; Ichikawa, Yasuhiro; and Iida, Wakashi, 5,512,402, Cl. 430-106.600.

Sato, Mikio; Asada, Katsumi; and Wakui, Shinji, 5,511,930, Cl. 414-676.000.

Serizawa, Yoichi; Noguchi, Akio; Ushio, Yukihide; Matsuo, Shimpei; Yamada, Kazuro; Uchiyama, Seiji; Takeuchi, Makoto; Suwa, Koichi; Hiroshima, Koichi; Tsukida, Shinichi; Takano, Manabu; Goto, Masahiro; Inoue, Takahiro; Yamada, Hiromichi; Kato, Junichi; and Ojima, Masaki, 5,512,929, Cl. 347-153.000.

Sono, Koichi; Miyawaki, Mamoru; Ishizaki, Akira; Ogawa, Katsuhisa; Sakurai, Katsuhito; Sugawa, Shigetoshi; and Kondo, Shigeki, 5,513,028, Cl. 359-87.000.

Takada, Yoshihiro; Suzuki, Akio; Izumizaki, Masami; Tsuchi, Ken; Kadowaki, Hidejiro; Yanaka, Toshiyuki; Takahashi, Haruhiko; Takamiya, Makoto; Yamamoto, Kosuke; Wataya, Masafumi; Miura, Yasushi; Moriguchi, Haruhiko; and Murayama, Yasushi, 5,512,924, Cl. 347-18.000.

Takahashi, Koji; and Harigaya, Isao, 5,512,941, Cl. 348-81.000.

Takeda, Kenichi; Tada, Tatsuya; Itoh, Nobuyuki; Nakano, Masao; Kemmochi, Kazuhisa; and Itoh, Isami, 5,512,406, Cl. 430-110.000.

Takeuchi, Makoto; Noguchi, Akio; Ushio, Yukihide; Matsuo, Shimpei; Uchiyama, Seiji; Yamada, Kazuro; and Serizawa, Yoichi, 5,513,012, Cl. 358-401.000.

Takiguchi, Takao; Iwaki, Takashi; Togano, Takeshi; Yamada, Yoko; Nakamura, Shinichi; and Nakazawa, Ikuo, 5,512,209, Cl. 252-299.610.

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Uchikata, Yoshio; Iitani, Yoshifumi; Ara, Yoichi; Kitani, Masashi; Suzuki, Etsuro; Wada, Toshihide; Hirabayashi, Hiromitsu; Saikawa, Hideo; Kojima, Masami; Hanabusa, Tadashi; Kawano, Kenji; Tanno, Koichi; Ohashi, Tetsuo; Bekki, Toshihiko; Aono, Kenji; and Ikado, Masaharu, 5,512,926, Cl. 347-86.000.

Yoshida, Takehiro; Koizumi, Shigeru; Miura, Shigeo; Kurosawa, Yuji; Fujii, Yasuo; Noguchi, Hiroyuki; Nakayama, Toru; Kataoka, Junno-ku; and Okada, Masaaki, 5,513,253, Cl. 379-100.000.

Canstar Sports Groups, Inc.: See—
Shikatan, Brian H., 5,511,244, Cl. 2-16.000.

Cantor, Stephen E.: See—
Bachmann, Andrew G.; and Cantor, Stephen E., 5,512,608, Cl. 522-170.000.

Capaldi, Guido: Patient lift mechanism, 5,511,256, Cl. 5-83.100.

Capital Machine Company: See—
Brand, Robert, 5,511,598, Cl. 144-356.000.

Capitani, Teresa A.; Trzasko, Peter; Zallie, James P.; and Mason, William R., to National Starch and Chemical Investment Holding Corporation: Starch based lipid mimetic for foods, 5,512,311, Cl. 426-601.000.

Capon, Bernard, to Degremont: Filtering device for the clarification of liquids, 5,512,174, Cl. 210-264.000.

Capowski, Robert S.; Casper, Daniel F.; Cox, Frederick J.; Ferraiolo, Frank D.; and Halma, Marten J., to International Business Machines Corporation: Input-output element has self timed interface using a received clock signal to individually phase aligned bits received from a parallel bus, 5,513,377, Cl. 395-881.000.

Cappels, Richard D., Sr., to Apple Computer, Inc. Method and system of achieving accurate white point setting of a CRT display, 5,512,961, Cl. 348-658.000.

Capper, Harry M.; Denovich, Sam; and Robertson, James W., to Whitaker Corporation: The Module for electrically connecting conductor wires to circuits of flat surfaces such as solar panels, 5,513,075, Cl. 361-773.000.

Capps, Stephen P.: See—
Meier, John R.; and Capps, Stephen P., 5,513,309, Cl. 395-155.000.

Caputo, Ralph N.: Fabric cleaning aid and method thereof, 5,511,265, Cl. 8-159.000.

Caratsch, Thomas: See—
Bonacina, Guido; Caratsch, Thomas; and Moser, Rolf, 5,512,247, Cl. 422-67.000.

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Gibot, Claude; and Bouquet, Philippe, 5,511,379, Cl. 62-602.000.

Card, Stuart K.: See—
Robertson, George G.; Mackinlay, Jock; and Card, Stuart K., 5,513,303, Cl. 395-119.000.

Carder, Reuben C., to Hexacomb Corporation: Honeycomb corner protector, 5,511,667, Cl. 206-586.000.

Cardin, Alan D.; Mullins, Michael J.; Fordyce, William A.; Chamberlin, Thomas A.; and Fazio, Michael J., to Dow Chemical Co., The; and Merrell Dow Pharmaceuticals Inc.: Narrow poly- and mono-dispersed anionic oligomers, and their uses, formulations and process, 5,512,177, Cl. 210-635.000.

Carl-Zeiss-Stiftung: See—
Müller, Werner; and Lubert, Joachim, 5,513,005, Cl. 356-375.000.

Carles, Maurice: See—
Gavend, Gérard; Vulliermet, Bernard; Perre, Christian; and Carles, Maurice, 5,512,058, Cl. 8-94.180.

Carley, Scott G.: See—
Borchardt, Edward K.; Carley, Scott G.; Lindsey, Anthony H.; Mason, John T.; McKenna, George A.; Owens, Pamela B.; Whitenack, Bruce G., Jr.; and Wilson, Timothy, 5,513,317, Cl. 395-183.210.

Carlson, Bradley D.: See—
Heidel, Jeffrey C.; Carlson, Bradley D.; and Stansberry, Warren W., 5,511,320, Cl. 33-366.000.

Carlson, James G.; Anderson, Jeffery T.; and Rotto, Nelson T., to Minnesota Mining and Manufacturing Company: Strong carboxylic acid functional polyurethane polymers and blends thereof used in magnetic recording media, 5,512,651, Cl. 528-73.000.

Carlson, Ulf: See—
Carré, Bruno; and Carlson, Ulf, 5,512,135, Cl. 162-175.000.

Carlsson, Tommy; and Andersson, Sven B., to Pharmica AB: Smoking substitute, 5,512,306, Cl. 426-3.000.

Carobolante, Francesco: See—
Rohrbaugh, Mark E.; and Carobolante, Francesco, 5,512,805, Cl. 318-254.000.

Carpenter, Melissa K.: See—
Lyman, Stewart; Beckmann, M. Patricia; Baum, Peter R.; and Carpenter, Melissa K., 5,512,457, Cl. 435-69.500.

Carpenter, Thomas: See—
Landstrom, Peter H.; and Carpenter, Thomas, 5,511,535, Cl. 126-25.000.

Carper, Douglas M.: See—
Myers, Jeffrey L.; Aho, Robert W.; Carper, Douglas M.; Deaton, Earl D.; Dunyak, Thomas J.; and Halila, Ely E., 5,512,727, Cl. 219-201.000.

Carr, Richard V. C.; Lassila, Kevin R.; Listemann, Mark L.; Mercado, Lisa A.; Minnich, Kristen E.; Savoca, Ann C. L.; and Wresell, Amy L., to Air Products and Chemicals, Inc.: Hydroxy and amino functional pyrrolizidine catalyst compositions for the production of polyurethanes, 5,512,603, Cl. 521-118.000.

Carré, Bruno; and Carlson, Ulf, to Eka Nobel AB: Process for the production of paper, 5,512,135, Cl. 162-175.000.

Carrier Corporation: See—
Bush, James W.; Leyderman, Alexander D.; and Yannascoli, Donald, 5,511,389, Cl. 62-505.000.

Russ, Jeffrey S.; and McKallip, James M., 5,511,386, Cl. 62-285.000.

Carrington Laboratories, Inc.: See—
Eberendu, Alexis N. R.; and McAnalley, Bill H., 5,512,488, Cl. 436-94.000.

Carroll, Charles B.: See—
Epstein, Michael Y.; and Carroll, Charles B., 5,512,795, Cl. 310-339.000.

Carroll, David T., to Preventive Dental Specialties, Inc.: Variable engagement toothbrush, 5,511,273, Cl. 15-105.000.

Carter, Duane E.: See—
Barna, Gabriel G.; Frank, James G.; VanMeurs, Richard P.; and Carter, Duane E., 5,512,130, Cl. 156-651.100.

Carter, Mark C.: Collapsible shelter with flexible, collapsible canopy, 5,511,572, Cl. 135-145.000.

CAS Medical Systems, Inc.: See—
Johnson, David E., 5,511,552, Cl. 128-686.000.

Casara, Patrick, to Merrell Pharmaceuticals Inc.: Ethyl 6-formyloxy-4-hexenoate, 5,512,698, Cl. 560-183.000.

Case Corporation: See—
Mickelson, Roger D., 5,511,329, Cl. 37-468.000.

Case Engineering & Laboratory, Inc.: See—
Gramms, Lorne C.; Bowman, Ronald W.; and Craycraft, Robert R., 5,512,167, Cl. 210-108.000.

Casey, Patrick G.; Cruise, Tom; and Wilhite, Matthew, to Molex Incorporated: IC pack connector with detect switch, 5,511,986, Cl. 439-188.000.

Casio Computer Co., Ltd.: See—
Kitamura, Kazuhisa; and Nagashima, Sadao, 5,511,435, Cl. 73-865.900.

Casler, Richard J., Jr.; Daggett, Kenneth E.; Davis, Jeffrey R.; and Riehm, George E., to Connecticut Innovations, Inc.: Multi-axis motion controller and lid dispenser, 5,513,096, Cl. 364-140.000.

Casper, Daniel F.: See—
Capowski, Robert S.; Casper, Daniel F.; Cox, Frederick J.; Ferraiolo, Frank D.; and Halma, Marten J., 5,513,377, Cl. 395-881.000.

Cass, George R.: See—
Horst, Folkert; Szklar, Oleh; Doig, Kelly; Cass, George R.; and Bousquet, J. L., 5,511,749, Cl. 246-187.00A.

Cassada, William A., III, to Reynolds Metals Company: Method of making high strength, high toughness aluminum-copper-magnesium-type aluminum alloy, 5,512,112, Cl. 148-550.000.

Castuma, Celina: See—
Kornberg, Arthur; and Castuma, Celina, 5,512,295, Cl. 424-450.000.

Catalan, Gavriel: See—
Iddan, Gavriel J.; Pinsky, Ephraim; and Catalan, Gavriel, 5,512,749, Cl. 250-332.000.

Catalytica, Inc.: See—
Betta, Ralph A. D.; Shoji, Toru; Yee, David K.; and Magno, Scott A., 5,512,250, Cl. 422-173.000.

Dalla Betta, Ralph A.; Shoji, Toru; Tsurumi, Kazunori; and Ezawa, Nobuyasu, 5,511,972, Cl. 431-170.000.

Caterpillar Inc.: See—
Etfeld, Larry G., 5,511,868, Cl. 305-31.000.

Hawkins, Mark R.; Peterson, Joel L.; and Poppe, Kenneth E., 5,511,457, Cl. 91-6.000.

Cates, Michael C.; Hamm, Richard R.; and Chu, Edmond, to Maxwell Laboratories: Method for using pulsed optical energy to increase the bondability of a surface, 5,512,123, Cl. 156-272.600.

Caveney, Jack E.; Hayes, Christopher J.; Rinchiuso, Joseph; Stroede, Andrew J.; and Wiencek, Donald C., to Panduit Corp.: Communication connector with capacitor label, 5,513,065, Cl. 361-311.000.

Cedarapids, Inc.: See—
Macku, Charles G., 5,511,900, Cl. 404-84.100.

Cederstrand, Carl N.; Salimian, Sharam M.; and Siemon, Rolf W., to Rosemount Analytical, Inc.: Spectrophotometer and optical system thereof, 5,512,757, Cl. 250-373.000.

Cefis, Adolfo, to Arborea S.A.S. di Adolfo Cefis & C. Hair anchoring device, 5,511,567, Cl. 132-279.000.

Celeste, Salvatore; Cucinotta, Anthony; and Panora, Steven, to Biocybernetics Laboratories Inc.: Battery and method of battery control for enhancing electrochemical reactions, 5,512,384, Cl. 429-51.000.

Cellini, Ronald A.: See—
Wilson, James; Cellini, Ronald A.; and Sobol, James M., 5,512,897, Cl. 341-144.000.

Centennial Foods, Inc.: See—
Wang, Linji; Lynch, Ike E.; and Goering, Kenneth, 5,512,287, Cl. 424-195.100.

Center, Leslie T.: Instant levy block system, 5,511,902, Cl. 405-16.000.

Centre Technique Cuir-Chaussure-Marroquinerie: See—
Gavend, Gérard; Vulliermet, Bernard; Perre, Christian; and Carles, Maurice, 5,512,058, Cl. 8-94.180.

Centro Sviluppo Settori Impiego S.r.l.: See—
Addeo, Antonio; Bonari, Roberto; and Biscotti, Aurelio, 5,512,232, Cl. 264-240.000.

Ceramaspeed Limited: See—
McWilliams, Joseph A., 5,512,731, Cl. 219-467.000.

Ceri, Howard: See—
Olson, Merle E.; Ceri, Howard; and Morck, Douglas W., 5,512,288, Cl. 424-269.100.

Cerminara, Frank, Jr.: Chute to prevent clumping of grass ejected from a mower, 5,511,369, Cl. 56-320.200.

CertainTeed Corporation: See—
Clare, James; and Himmelberger, John, 5,511,826, Cl. 285-5.000.

Cerutti, David B.; and Marek, Henry S., to General Electric Company: Supported polycrystalline compacts having improved physical properties and method for making same, 5,512,235, Cl. 419-10.000.

Cervantes, Alicia: See—
Morgans, David, Jr.; Sjogren, Eric B.; Smith, David B.; Talamás, Francisco X.; Aris, Dean R.; Cervantes, Alicia; Elworthy, Todd R.; Fernández, Mario; Franco, Fidencio; Hawley, Ronald C.; Lara, Teresa; Loughhead, David G.; Nelson, Peter H.; Patterson, John W.; Trejo, Alejandra; Wallos, Ann M.; and Weikert, Robert J., 5,512,568, Cl. 514-233.500.

Cezanne, Rudolf; Gebhardt, Peter; Jahn, Ralf; and Laczy, Horst, to ITT Automotive Europe GmbH: Cup-seal non-return valve, 5,511,464, Cl. 92-240.000.

Chace, Mark S.: See—
Westrum, John W., Jr.; Chace, Mark S.; and Kuyava, Charles C., 5,512,033, Cl. 600-40.000.

Chakraborty, Amiya K., to Gesellschaft für Anlagen-und Reaktorsicherheit (GRS) mbH: Procedure for producing a highly porous catalyst layer consisting of a palladium or platinum alloy, 5,512,327, Cl. 427-455.000.

Chamberlin, Thomas A.: See—
Cardin, Alan D.; Mullins, Michael J.; Fordyce, William A.; Chamberlin, Thomas A.; and Fazio, Michael J., 5,512,177, Cl. 210-635.000.

Chambers, Timothy G.: See—
Ingram, Gratus; Meyers, Reuven I.; and Chambers, Timothy G., 5,512,100, Cl. 118-309.000.

Chambert, Georg W. R.: See—
Jonsson, Sven-Olof L.; Chambert, Georg W. R.; and Bodin, Stig R., 5,513,246, Cl. 379-60.000.

Chandler, Donald G.; and Banerman, Eric P., to Omniplanar, Inc.: Dual processor omnidirectional bar code reader with dual memory for bar code location and orientation, 5,512,739, Cl. 235-462.000.

Chandrakumar, Nizal S.; Huang, Hong-Chih; and Mueller, Richard A., to G. D. Searle & Co.: Aryl substituted dibenzoxazepine compounds, pharmaceutical compositions and methods of use, 5,512,561, Cl. 514-11.000.

Chang, Chin-Hsiung: Single-throw switch circuit controlling a ceiling fan and light assembly, 5,511,943, Cl. 416-5.000.

Chang, Kuang-Yeh; Gardner, Mark I.; and Hause, Frederick N., to Advanced Micro Devices, Inc.: Lightly doped drain profile optimization with high energy implants, 5,512,506, Cl. 437-44.000.

Chang, Ming C.: Rotary device of a projector, 5,513,083, Cl. 362-284.000.

Chang, Ted C.: See—
Drumheller, Steven W.; and Chang, Ted C., 5,511,800, Cl. 279-19.100.

Chapuis, Christian; Gautier, Antoine; and Blanc, Pierre-Alain, to Firmenich S.A.: Use of optically active isomers of (E)-3,3-dimethyl-5-(2,2,3-trimethyl-3-cyclopenten-1-yl)-4-penten-2-ol as perfuming ingredients, 5,512,543, Cl. 512-18.000.

Charlson, Cary: Method of acquiring and disseminating handicapping information, 5,513,103, Cl. 364-411.000.

Chau, Hin F.; and Tserng, Hua Q., to Texas Instruments Incorporated: Method of making collector-up bipolar transistor having improved emitter injection efficiency, 5,512,496, Cl. 437-31.000.

Chaudhary, Vijay K.: See—
Pastan, Ira; Fitzgerald, David; and Chaudhary, Vijay K., 5,512,658, Cl. 530-350.000.

Chemical Lime Company: See—
Huege, Fred R.; Graves, Robin E.; Salter, Timothy L.; Shields, Patrick; and Hains, Norman L., 5,512,093, Cl. 106-284.030.

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Hartan, Hans-Georg; and Landscheidt, Alfons, 5,512,646, Cl. 526-292.950.

Chemisky, Eric: See—
Bayer, Eberhard, deceased; Jahnke, Andreas; Chemisky, Eric; and Schnell, Ralf-Dieter, 5,512,756, Cl. 250-370.130.

Chen, Benjamin T.: See—

Edwards, James L.; Bell, Eric L.; Chen, Benjamin T.; and Parton, Richard L., 5,512,103, Cl. 430-383.000.

Chen, Chun-Hong H.; and Tsou, Hsi-Shen E., to TRW Inc.: Built-in radiation structure for a millimeter wave radar sensor, 5,512,901, Cl. 342-175.000.

Chen, Herbert; Ness, Ronald A.; and Woodard, John C., to Baxter International, Inc.: Blood pump system, 5,511,958, Cl. 417-412.000.

Chen, Ming-En: Telescopic side view mirror for automobiles, 5,513,048, Cl. 359-881.000.

Chen, Tsung-Yu: Rowing-type exercise device, 5,512,027, Cl. 482-72.000.

Chen, Victor J.; DiMarchi, Richard D.; Smiley, David L.; Stucky, Russell D.; and Kriacunas, Aidas V., to Eli Lilly and Company: Glucagon-like insulinotropic peptide analogs, compositions, and methods of use, 5,512,549, Cl. 514-12.000.

Chen, Zhenhai; and Luo, Ren C.: Solid-state micro proximity sensor, 5,512,836, Cl. 324-687.000.

Chenault, Rawson L.: See—
Adams, Brian M.; Luch, Daniel; and Chenault, Rawson L., 5,512,228, Cl. 264-152.000.

Chene, Mon-Ren: See—
Trimberger, Stephen M.; and Chene, Mon-Ren, 5,513,124, Cl. 364-491.000.

Cheng, Hwa: See—
Haase, Michael A.; DePuydt, James M.; Cheng, Hwa; and Qiu, Jun, 5,513,199, Cl. 372-44.000.

Cheng, Kwang-Ting; and Krishnakumar, Anjur S., to AT&T Corp.: Method and apparatus for determining the reachable states in a hybrid model state machine, 5,513,122, Cl. 364-489.000.

Cheng, Suzanne, to Hoffmann-La Roche Inc.: Methods and reagents for the polymerase chain reaction amplification of long DNA sequences, 5,512,462, Cl. 435-91.200.

Cheng, Tzu-ling: See—
Cheng, You-Jen; and Cheng, Tzu-ling, 5,511,989, Cl. 439-419.000.

Cheng, You-Jen; and Cheng, Tzu-ling: Structure of lamp socket, 5,511,989, Cl. 439-419.000.

Cheng, Yu F.: Direct current connector, 5,511,995, Cl. 439-638.000.

Chern, Ji-Wang; Lu, Guan-Yu; Lai, Yue-Jun; Yen, Mao-Hsiung; and Tao, Pao-Luh, to National Science Council: 3-substituted methyl-2,3-dihydroimidazo[1,2-c]quinazoline derivatives, the preparation and use thereof, 5,512,677, Cl. 544-250.000.

Chesapeake Composites Corporation: See—
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Chevron Chemical Company: See—
Toman, Jeffrey J.; and Biggs, Wilton R., 5,512,066, Cl. 44-300.000.

Chia, Julian-Y.-P.; and Jenne, Gary B., to Hero Industries, Inc.: Paint colorant dispenser, 5,511,695, Cl. 222-43.000.

Chiba, Kazunobu; Sato, Kenichi; and Arisaka, Yuichi, to Sony Corporation: Method and apparatus for magnetic recording digital video signals and magnetic recording medium therefor, 5,512,349, Cl. 428-141.000.

Chiba, Kiyoshi; Sato, Tetsuo; Sekiya, Masahiko; and Suzuki, Kazutomi, to Teijin Limited: Magneto-optical recording medium, 5,512,364, Cl. 428-332.000.

Chiba, Koichi: See—
Yamaguchi, Satoshi; Daimon, Masahiro; Chiba, Koichi; Kobayashi, Tetsuro; and Saito, Yoshimasa, 5,513,201, Cl. 372-75.000.

Chiba, Norio: See—
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Yam, Benny S.; Joseph, Amy L.; Winston, Anthony E.; and Jones, Keith A., 5,512,071, Cl. 51-307.000.

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Pastor, Stephen D.; Shum, Sai P.; and Odorisio, Paul A., 5,512,621, Cl. 524-119.000.

Cimba, John: See—
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Mathis, Gérard; Dumont, Christophe; Aspe, Daniel; Foyentin, Muriel; Jolu, Etienne J.; and Nuti, Dominique, 5,512,493, Cl. 436-537.000.

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Clark, Thomas R.: See—
Brooks, Harold L.; Clark, Thomas R.; and Schmidt, Donald H., 5,511,401, Cl. 70-303.00A.

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Coffman, John A., to Wright Malta Corporation. Apparatus for producing methanol. 5,512,255, Cl. 422-201.000.

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Coker, Daniel E.: See—
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Collins, Peter, to National Heart and Lung Institute. Coronary heart disease treated with 17 β oestradiol. 5,512,557, Cl. 514-182.000.

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Mewshaw, Richard E.; Commons, Thomas J.; and Strike, Donald P., 5,512,565, Cl. 514-227.500.

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Ham, Ronald E., 5,513,219, Cl. 375-272.000.

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Conley, Ralph F., Jr., to MIM Industries, Inc. Side-by-side programmable feed system for a sewing apparatus. 5,511,500, Cl. 112-470.050.

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Casler, Richard J., Jr.; Daggett, Kenneth E.; Davis, Jeffrey R.; and Riehm, George E., 5,513,096, Cl. 364-140.000.

Connell, Lawrence E.: See—
Reeser, Glen O.; and Connell, Lawrence E., 5,513,389, Cl. 455-311.000.

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Batterham, Robin J.; Hoffmann, Warwick A.; and Conochie, David S., 5,512,217, Cl. 261-36.100.

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Conville, John J.: See—
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Dempsey, Edward T.; Cooley, Kenneth B., Jr.; and Batty, Kenneth E., 5,511,837, Cl. 292-288.000.

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Wardell, Myron H., Jr.; and Schmidt, Phillip, 5,511,596, Cl. 144-208.00J.

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Adrezn, Ronald S.; Cordaro, Marc A.; Wang, Fikre S.; and Fast, Avital, 5,511,571, Cl. 135-66.000.

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Kay, Stanley E.; Corrigan III, John E.; Wendling, Daniel R.; Mehta, Ashok D.; and Parr, Michael J., 5,513,183, Cl. 370-95.300.

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Costanzo, Joseph. Spoon fishing lure assembly. 5,511,338, Cl. 43-42.280.

Coudert, A. T.: See—
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Legg, David B.; Coutrakon, George; Slater, Jon W.; Miller, Daniel W.; Moyers, Michael F.; and Siebers, Jeffrey V., 5,511,549, Cl. 128-653.100.

Covi, Christian; and Steinlechner, Werner, to D. Swarovski & Co. Zipper closure. 5,511,292, Cl. 24-410.000.

Cox, Frederick J.: See—
Capowski, Robert S.; Casper, Daniel F.; Cox, Frederick J.; Ferraiolo, Frank D.; and Halima, Marten J., 5,513,377, Cl. 395-881.000.

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CPI Packaging, Inc.: See—
Bussey, Harry, Jr.; and Ellison, Edward J., 5,511,536, Cl. 126-565.000.

Craig, Stewart: See—
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Crane Plastics Company Limited Partnership: *See—*
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Crawford, Jeffrey W. Power brake descender for rappelling. 5,511,291, Cl. 24-129.00R.
Crawley, Graham C.: *See—*
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Craycraft, Robert R.: *See—*
Gramms, Lorne C.; Bowman, Ronald W.; and Craycraft, Robert R., 5,512,167, Cl. 210-108.000.
Creative Packaging Corp.: *See—*
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Crede, Gerd-Dieter; and Schleich, Rainer, to Siemens Aktiengesellschaft. Fuel rod for a nuclear reactor and welding apparatus for producing the fuel rod. 5,513,230, Cl. 376-261.000.
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Cressel, Carmi D.; Hendel, David; Dror, Itai; Hadad, Isaac; and Arazzi, Benjamin, to Fortress U&T Ltd. Compact microelectronic device for performing modular multiplication and exponentiation over large numbers. 5,513,133, Cl. 364-754.000.
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Crocker, David E.: *See—*
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Cronin, Wayne A.: *See—*
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Cross, Carl E.: *See—*
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Tierney, James R.; and Cross, Noel, 5,513,315, Cl. 395-183.130.
Crossley, David W.: *See—*
Abrams, Randy L.; Bernstein, Michael S.; and Crossley, David W., 5,512,880, Cl. 340-573.000.
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Ng, M. K. C.; Lee, J. T. C.; Poon, G. C.; Pullia, L. S.; Prince, J. W.; and Crowell, W. J., 5,511,308, Cl. 29-889.100.
Crowl, Robert E.: *See—*
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Stanley, Gerald R., 5,513,094, Cl. 363-98.000.
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CTS Corporation: *See—*
Schroeder, Donald R., 5,512,710, Cl. 174-52.400.
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McSwigan, Brian J.; and Lindowski, Gerard E., 5,512,211, Cl. 252-353.000.
Ryan, Michael S.; Dauplaise, David L.; and Proverb, Robert J., 5,512,184, Cl. 210-734.000.
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Perry, David L.; and Weaver, Thomas S., 5,511,290, Cl. 24-115.00H.
D. Swarovski & Co.: *See—*
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Daggett, Kenneth E.: *See—*
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Dahlgren, Ray E. Footwear for facilitating the removal and dissipation of perspiration from the foot of a wearer. 5,511,323, Cl. 36-3.00A.
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Plessers, Hendrik; and Dahlmann, Dieter, 5,511,876, Cl. 366-153.100.
Dai Nippon Printing Co., Ltd.: *See—*
Watanabe, Hitomu; Honda, Makoto; Kojima, Hiroshi; and Nakamae, Satoshi, 5,513,036, Cl. 359-457.000.
Daicel Chemical Industries, Ltd.: *See—*
Matsuyama, Akinobu; and Kobayashi, Yoshinori, 5,512,465, Cl. 435-158.000.
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Tanaka, Tadashi; Sakamoto, Masaaki; Kidokoro, Hideyuki; Sato, Yoshiaki; and Masuda, Yutaka, 5,512,242, Cl. 420-561.000.
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Kinto, Kouichiro; and Ichihara, Tadashi, 5,511,495, Cl. 110-165.00A.
Daifuku Co., Ltd.: *See—*
Sakagami, Tatsuya; and Kaida, Yoshito, 5,511,487, Cl. 104-252.000.
Dailey, Charles M., to Liqui-Green Lawn Care Corporation. Portable vehicle wash containment liner system. 5,511,683, Cl. 220-573.000.
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Vogel, Thomas, 5,511,629, Cl. 180-79.300.
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Nukada, Hidemi; Tokida, Akihiko; Sakaguchi, Yasuo; Daimon, Katsumi; and Nukada, Katsumi, 5,512,674, Cl. 540-141.000.
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Dainippon Screen Mfg. Co., Ltd.: *See—*
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Daiwa Seiko, Inc.: *See—*
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Daiza, Setsuto: *See—*
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Dalebout, William T.; Standing, Donald J.; Watterson, Scott R.; Brewer, Dane P.; Robertson, Lee; and Rowley, David R., to ICON Health & Fitness, Inc. User-programmable computerized console for exercise machines. 5,512,025, Cl. 482-6.000.
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Olson, Darwin C.; and Hyska, John S., 5,511,830, Cl. 285-243.000.
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Ruprecht, Ruth M., 5,512,281, Cl. 424-93.600.
Springer, Timothy A.; Staunton, Donald E.; and Dustin, Michael L., 5,512,660, Cl. 530-395.000.
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Davidson Texton Inc.: *See—*
Gallagher, Michael J.; and Humphrey, William M., 5,512,233, Cl. 264-321.000.
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Wilkinson, Robert M.; Davies, Ann L.; Davies, Henry E.; and Osbon, Barbara A., 5,513,131, Cl. 364-578.000.
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Davis, Mark E.; and Lobo, Raul F., to California Institute of Technology. Zeolite CIT-1. 5,512,267, Cl. 423-705.000.
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Jarboe, Patrick G.; and Davis, Terry R., 5,511,818, Cl. 280-728.200.
Davison, Roger A.: *See—*
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Deacon, David A. G.: *See—*
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Dean, Richard F.; Antonio, Franklin P.; Gilhousen, Klein S.; and Wheatley, Charles E., III, to Qualcomm Incorporated. Dual distributed antenna system. 5,513,176, Cl. 370-18.000.
Deamaley, Geoffrey. Polyene precursors for diamond-like carbon coatings. 5,512,350, Cl. 427-525.000.
Dearstine, Walter R. Warm air mask. 5,511,541, Cl. 128-201.130.
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Myers, Jeffrey L.; Aho, Robert W.; Carper, Douglas M.; Deaton, Earl D.; Dunyak, Thomas J.; and Halila, Ely E., 5,512,727, Cl. 219-201.000.
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Hanawa, Tetsuro; and de Beeck, Maria O., 5,512,422, Cl. 430-325.000.
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Dederick, Robert. Facility for refueling of clean air vehicles/marine craft and power generation. 5,512,787, Cl. 290-4.00R.
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De Jongh, Mathijs: *See—*
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Freiberger, Ronald D.; Thayer, Peter A.; and Wills, Diane M., 5,511,724, Cl. 236-49.300.
Lachenmaier, Frank D.; Lake, Donald E., deceased; Martin, Timothy D.; Tagle, John D.; and Viduya, Lisa A., 5,512,790, Cl. 307-112.000.
Larose, Charles W., 5,512,718, Cl. 200-314.000.
Moller, David D., 5,513,218, Cl. 375-257.000.
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Kowert, Robert C., 5,513,340, Cl. 395-550.000.
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- Lammers, Franciscus W. M.; and De Loore, Bart J. S., 5,513,267, Cl. 381-104.000.
- DeLucca, Indawati: See—
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- De Lucia, Frank V.; Le, Tuong T.; and Jones, Robert W., to Astro Machine Works, Inc. System and process for manufacturing a flexible connection in a hollow metal device, 5,512,007, Cl. 451-75.000.
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- White, Richard E.; and Demange, Mark G., 5,513,263, Cl. 380-44.000.
- Demarest, David; and Blanch, John F., to Ethicon, Inc. Needle sorting device, 5,511,670, Cl. 269-540.000.
- DeMasters, Jimmie G., to Phillips Petroleum Company. Apparatus and method for producing a single coil of a double run pipe, 5,511,742, Cl. 242-470.000.
- Demo, Wayne A.; and Planchak, John P., to General Electric Company. Braze blocking insert for liquid phase brazing operations, 5,511,721, Cl. 228-216.000.
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- DeMoore, Howard W.; and Branson, John A., to DeMoore, Howard W. Method and apparatus for handling printed sheet material, 5,511,480, Cl. 101-492.000.
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- Dempo, Fumio, to Masuda, Yoshihisa, and Shimaya, Shiroh. Water treatment method and apparatus therefor, 5,512,178, Cl. 210-638.000.
- Dempsey, Edward T.; Cooley, Kenneth B., Jr.; and Batty, Kenneth E., to E. T. Dempsey Company Inc. Door block for emergency use, 5,511,837, Cl. 292-288.000.
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- Den, Tohru; and Kobayashi, Tamaki, to Canon Kabushiki Kaisha. Metal oxide material with Ln, Sr, Cu, Re, O, and optionally Ca, 5,512,538, Cl. 505-126.000.
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- Denovich, Sam: See—
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- Denton, Grant C.: See—
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- Denlon, Ronald D.; Bumgardner, George H.; McGuiggan, Timothy M.; and Mawer, Andrew J., to Compag Computer Corporation. Masking of circuit board vias to reduce heat-induced board and chip carrier package warp during wave solder process, 5,511,306, Cl. 29-840.000.
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- Depreux, Patrick: See—
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- Dere, Willard H.: See—
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- Deregibus, Andrea, to Deregibus A. & A. S.p.A. Machine for manufacturing vulcanized-rubber tubes, 5,512,127, Cl. 156-429.000.
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- Desai, Ranjit C.; and Hlasta, Dennis J., to Sterling Winthrop Inc. 2-substituted 1,2,5-thiadiazolidin-3-one 1,1-dioxides and compositions and method of use thereof, 5,512,576, Cl. 514-258.000.
- Desai, Ranjit C.: See—
Dunlap, Richard P.; Boaz, Neil W.; Mura, Albert J.; Kumar, Virendra; Subramanyam, Chakrapani; Desai, Ranjit C.; Hlasta, Dennis J.; Saindane, Manohar T.; Bell, Malcolm R.; Court, John J.; and Farrell, Robert P., 5,512,589, Cl. 514-373.000.
- DeSantis, Stephen A. Needle core biopsy instrument, 5,511,556, Cl. 128-754.000.
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- Deutsche Carbone AG: See—
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- DeVet, Johannes H. M.; Kemp, Johannes A. M.; and Van Deemter, Cornelis J., to U.S. Philips Corporation. Consumer appliance having both explanatory comment and extra-linguistic signalization upon actuation thereof and reversible stepping between those two, 5,513,269, Cl. 381-123.000.
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- Dhein, Rolf: See—
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- Digisonix, Inc.: See—
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- Fite, Barry A.; Mitchell, Michael L.; Kunz, Russ A.; and Brannon, Clifford R., 5,513,169, Cl. 369-272.000.
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- DiMarchi, Richard D.: See—
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- DiPietropolo, Al. Environmentally degradable munitions, 5,511,482, Cl. 102-426.000.
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- Doak, David B., to AT&T Corp. Method and apparatus for nonlinear compensation, 5,512,856, Cl. 330-1.00R.
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- Rosen, Robert K.; and Kolthammer, Brian W. S., 5,512,693, Cl. 556-7.000.
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- Drew, Diane G.; and Christians, Douglas L., to United Technologies Corp. Independent compartment temperature control for single-pack operation, 5,511,385, Cl. 62-172.000.
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- Boswell, George A.; DeLucca, Indawati; and Quan, Mimi L., 5,512,681, Cl. 548-300.700.
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 Borah, Ronald E., 5,512,202, Cl. 252-142.000.
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 Einkauf, Robert L.: See—
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 Eisai Co., Ltd.: See—
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 Carré, Bruno; and Carlson, Ulf, 5,512,135, Cl. 162-175.000.
 Eki, Toshio; and Ohtsuka, Toshiharu, to Toto Ltd. Combination faucet and method of mixing hot water with cold water, 5,511,723, Cl. 236-12.120.
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 Stemmer, Willem P. C., 5,512,463, Cl. 435-91.200.
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 Garrett, Billy J., Jr.; Aldridge, William L.; and Elliott, Harry R., 5,511,687, Cl. 414-407.000.
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 French, Nicholas A.; Ellis, W. Dale; and Rowell, Roger M., 5,512,098, Cl. 118-50.000.
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 Bussey, Harry, Jr.; and Ellison, Edward J., 5,511,536, Cl. 126-565.000.
 Elscint Ltd.: See—
 Berlad, Gideon, 5,513,120, Cl. 364-723.000.
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Morgans, David, Jr.; Sjogren, Eric B.; Smith, David B.; Talamás, Francisco X.; Artis, Dean R.; Cervantes, Alicia; Elworthy, Todd R.; Fernández, Mario; Franco, Fidencio; Hawley, Ronald C.; Lara, Teresa; Loughhead, David G.; Nelson, Peter H.; Patterson, John W.; Trejo, Alejandra; Wallos, Ann M.; and Weikert, Robert J., 5,512,568, Cl. 514-233.500.
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 Vishitzky, Natan; and Kopylovitz, Haim, 5,513,336, Cl. 395-463.000.
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 Kumar, Rajendra; and Emerson, Paul G., 5,513,363, Cl. 395-800.000.
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 Endo, Yasuhiko: See—
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 Kasahara, Tamiyoshi; Akatsu, Yohsuke; Kawagoe, Kenji; Endo, Yutaka; and Noguchi, Hiroshi, 5,511,817, Cl. 280-717.000.
 Eneroth, Lars G. V.: See—
 Gard, Bengt E. I.; Eneroth, Lars G. V.; Larsen, Stefan D.; and Nilsson, Tord R., 5,513,127, Cl. 364-514.00C.
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 Wallach, David; Aderka, Dan; and Engelmann, Harmut, 5,512,544, Cl. 514-12.000.
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 Lopes, Homero V. d. M.; and Monteiro, Douglas F., 5,511,969, Cl. 431-4.000.
 Enger, Jürgen; and Vest, Hermann-Josef, to W. Schlafhorst AG & Co. Method and apparatus for severing the free yarn end of a yarn reserve winding, 5,511,734, Cl. 242-18.0PW.
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 Miya, Yukio; Kizaki, Shigeru; Sugiyama, Osamu; Hatayama, Akiteru; Shibuya, Yoshitsugu; Enomoto, Mitsugu; Naoi, Koichi; Fukazawa, Yuji; Nanya, Takanori; Shimizu, Shotaro; and Tagawa, Hiroshi, 5,511,587, Cl. 139-192.000.
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 Hudson, Dannie B., 5,511,582, Cl. 137-494.000.
 Enviro-Chem, Inc.: See—
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 EnviroCare International, Inc.: See—
 Schwab, James J., 5,512,085, Cl. 95-200.000.
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 Steffan, Robert J., 5,512,479, Cl. 435-262.500.
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 Sabloewski, Horst; Cordes, Ingo; Beese, Jochen; and Schürbrock, Klaus, 5,511,433, Cl. 73-864.140.
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 Ullman, Edwin F.; Kirakossian, Hriar; Ericson, Mary C.; and Warts, Richard P., 5,512,659, Cl. 530-391.100.
 Ermis, Jerry J. Ladder with auxiliary support, 5,511,632, Cl. 182-172.000.
 Espino, Andres C. G.: See—

- Sens, Benno; Espino, Andres C. G.; Albert, Bernhard, and Kipper, Juergen, 5,512,095, Cl. 106-412.000.
- Essigmann, John M.: See—
Loeb, Lawrence A.; and Essigmann, John M., 5,512,431, Cl. 435-5.000.
- Essop, Saleem; and Bullard, Allen G. Particle separator, 5,512,171, Cl. 210-221.200.
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Paratte, Daniel, 5,513,027, Cl. 359-87.000.
- Etablissements Valois (Societe Anonyme): See—
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- Ethicon, Inc.: See—
Demarest, David; and Blanch, John F., 5,511,670, Cl. 209-540.000.
- Ethyl Corporation: See—
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- Perry, Newton A.; and Roos, Joseph W., 5,511,517, Cl. 123-1.00A.
- Rollin, Anthony J.; Colucci, William J.; and Smith, Isaac L., 5,512,068, Cl. 44-449.000.
- Evans, James G.; Leher, Diane Z.; and Panagopoulos, Gregory, to AT&T Corp. Cordless telephone micro-cellular system, 5,513,248, Cl. 379-61.000.
- Evans, Robert W.: See—
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- Evans, Steven: See—
Bailey, David B.; Bowman, Wayne A.; Evans, Steven; Lawrence, Kristine B.; and Noonan, John M., 5,512,532, Cl. 503-227.000.
- Evenson, Martin, to Morgan Industries, Inc. Mounting brackets for motor vehicle running boards, 5,511,750, Cl. 248-200.000.
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O'Brien, Michael P., 5,511,254, Cl. 4-532.000.
- Everson, Harold W., Jr.; Slaybaugh, Jon; and Juda, Charles C., to Namco Controls Corporation. Sensor connection system, 5,512,890, Cl. 340-870.130.
- Exar Corporation: See—
Lambert, Craig N., 5,512,816, Cl. 323-315.000.
- Exline, Donald E.: See—
Pearson, Ronald W.; Golden, Steven S.; Spoonmore, Kurt B.; Exline, Donald E.; and Hewitt, Carroll, 5,512,053, Cl. 604-167.000.
- Expandi Systems AB: See—
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- Extended Systems, Inc.: See—
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- Extrusion Dies, Inc.: See—
Lippert, Harry G., 5,511,962, Cl. 425-141.000.
- Exxon Chemical Patents Inc.: See—
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- Eyrie, Françoise: See—
Blanc, Isabelle; Eyrie, Françoise; and Gamber, Xavier, 5,512,372, Cl. 428-413.000.
- Ezaki, Yoichiro, to Arakawa Kagaku Kogyo Kabushiki Kaisha. Aromatic polyimine and process for preparing the same, and aromatic oligoimine used for aromatic polyimine and process for preparing the same, 5,512,641, Cl. 525-504.000.
- Ezawa, Nobuyasu: See—
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- Factory Mutual research: See—
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- Fague, Daniel E., to National Semiconductor Corporation. Digital oversampled quadrature modulator, 5,512,865, Cl. 332-103.000.
- Fairfield, Robert C.: See—
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- Fakespace, Inc.: See—
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- Fallas, Daryl C. Syringe needle cover holder/grasper, 5,512,049, Cl. 604-192.000.
- Fandrich, Mickey L.; Kynett, Virgil N.; Fedel, Salim B.; and Price, Thomas C., to Intel Corporation. Nonvolatile memory with blocks and circuitry for selectively protecting the blocks for memory operations, 5,513,136, Cl. 365-185.040.
- Fandrich, Mickey L.: See—
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- Farah, Lina S.: See—
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- Faré, Carlo, to Bull HN Information Systems Italia S.p.A. Electrophotographic apparatus incorporating offset stacking, 5,512,996, Cl. 355-322.000.
- Farkas, Allen D.; and Robb, Daniel C., to Vallen Safety Supply Company. Low lint protective garment, 5,511,246, Cl. 2-79.000.
- Farley, Charles; and Plawewski, Lawrence E., to Aldon Pattern, Inc. Shipping container for dunnage, 5,511,916, Cl. 410-2.000.
- Farmwald, Michael; and Horowitz, Mark, to Rambus, Inc. Integrated circuit I/O using a high performance bus interface, 5,513,327, Cl. 395-309.000.
- Farnham, William B., to Du Pont de Nemours & E. I., and Company. Fluorinated aldehyde containing polymers, 5,512,652, Cl. 528-244.000.
- Farooq, Shaji: See—
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- Farr Company: See—
Llanni, Robert S.; Raber, Robert R.; and Yu, Henry H. S., 5,512,074, Cl. 55-484.000.
- Farrell, Kenneth R. Paintball clip magazine, 5,511,333, Cl. 42-49.010.
- Farrell, Robert P.: See—
Dunlap, Richard P.; Boaz, Neil W.; Mura, Albert J.; Kumar, Virendra; Subramanyam, Chakrapani; Desai, Ranjit C.; Hlasta, Dennis J.; Saindane, Manohar T.; Bell, Malcolm R.; Court, John J.; and Farrell, Robert P., 5,512,589, Cl. 514-373.000.
- Fast, Avital: See—
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- Faubel, Werner: See—
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- Faughn, Jim, to United States of America, Army. Automatic guntube ember extinguisher system, 5,511,456, Cl. 89-1.200.
- Faupell, Lawrence C.; Wasson, Steven R.; and Kliger, Joseph J., to Thiokol Corporation. Vectorable nozzle having jet vanes, 5,511,745, Cl. 244-3.220.
- Fauteux, Denis G.; and Shi, Jie, to Arthur D. Little, Inc. Electrolytic cell using small particle graphite, 5,512,392, Cl. 429-218.000.
- Favre, Serge: See—
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- Fazio, Michael J.: See—
Cardin, Alan D.; Mullins, Michael J.; Fordyce, William A.; Chamberlin, Thomas A.; and Fazio, Michael J., 5,512,177, Cl. 210-635.000.
- Fedel, Salim B.: See—
Fandrich, Mickey L.; Kynett, Virgil N.; Fedel, Salim B.; and Price, Thomas C., 5,513,136, Cl. 365-185.040.
- Fedrigon, Richard: See—
Momot, Stanley; Oesterlin, Richard; Hudyma, Edward; Dabisch, Kenneth; Fedrigon, Richard; Goldberg, Ira; and Isaac, Ragy, 5,512,125, Cl. 156-353.000.
- Feehan, Timothy J.: See—
Norris, Philip R.; Slavitt, Frederick; Shown, Kenneth G.; and Feehan, Timothy J., 5,512,971, Cl. 354-311.000.
- Fehr, Ernst. Apparatus for needling a nonwoven web, 5,511,294, Cl. 28-113.000.
- Feigenbaum, Jeffrey J. Materials and methods for producing shot of various sizes and compositions, 5,511,449, Cl. 75-341.000.
- Feinauer, Roland: See—
Röber, Stefan; Jadamus, Hans; Boer, Michael; Feinauer, Roland; Her-mann, Hans-Dieter; and Ries, Hans, 5,512,342, Cl. 428-36.910.
- Fel-Pro Incorporated: See—
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- Felderman, William A.: See—
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- Fellowes Manufacturing Company: See—
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- Fendall, Brian; Sandu, Albulescu; Iosif, Nagy; Vasile, Neceae; and Gyorgy, Vajay, to Parkány Kft. Railway basket car for transporting semitrailers, 5,511,490, Cl. 105-375.000.
- Feng, George C.: See—
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- Fenoli, John C.: See—
Woodbridge, Thomas C.; and Fenoli, John C., 5,512,253, Cl. 422-186.000.
- Fenton, Robert. Composite speaker system having a directional adjustable tweeter, 5,512,714, Cl. 181-144.000.
- Ferenci, Jack: See—
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- Fernández, Mario: See—
Morgans, David, Jr.; Sjogren, Eric B.; Smith, David B.; Talamás, Francisco X.; Artis, Dean R.; Cervantes, Alicia; Elworthy, Todd R.; Fernández, Mario; Franco, Fidencio; Hawley, Ronald C.; Lara, Teresa; Loughhead, David G.; Nelson, Peter H.; Patterson, John W.; Trejo, Alejandra; Waltos, Ann M.; and Weikert, Robert J., 5,512,568, Cl. 514-233.500.
- Ferner, Michael: See—
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- Ferraiolo, Frank D.: See—
Capowski, Robert S.; Casper, Daniel F.; Cox, Frederick J.; Ferraiolo, Frank D.; and Halma, Marten J., 5,513,377, Cl. 395-881.000.
- Ferug, Werner, to Wella Aktiengesellschaft. Process for treatment of an object using a flow of hot air and hand-held air blower for carrying out this process, 5,511,322, Cl. 34-97.000.
- Fetner, Martin J.; and Seasholtz, Elwood F., to Applied Separations, Inc. Programmable solid phase extraction and elution device, 5,512,168, Cl. 210-198.200.
- Feydo, Mark H.: See—
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- Field, Michael R.; and Caldwell, Gregory D., to A-Star Sports Group, Inc. Adjustable protective helmet, 5,511,250, Cl. 2-418.000.
- Fielding, Alan: See—
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- Fierstein, Aaron R.: See—
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- Filipski, Paul S.: See—
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- Filomena, K. U.: See—
Knott, Kurt T.; Graves, James R.; Gauronski, John F.; Raymor, Herbert J.; Cole, Randall P.; Filomena, K. U.; DeNunzio, Frank J.; Crocker, David E.; and Barnett, Simon J., 5,513,017, Cl. 358-471.000.
- Finch, Richard; and Schieve, Eric, to Dell USA, L.P. Watchdog timer for computer system reset, 5,513,319, Cl. 395-185.080.
- Finer, Jeffrey; Simmons, Robert; Spudich, James A.; and Chu, Steven, to Leland Stanford Jr. University, Board of Trustees of the. Optical trap system and method, 5,512,745, Cl. 250-251.000.
- Fingerer, Joseph C.; and Alon, Ephraim I. Hand-operated snow plow with adjustable blades, 5,511,328, Cl. 37-285.000.
- Finn, Miles A.; Vanden Hoek, John C.; Shockey, Richard L.; and Barthel, Thomas C. Surgical instrument including viewing optics and a ball probe, 5,512,034, Cl. 600-138.000.
- Finsterwald, P. Michael, to Parallel Design, Inc. Ultrasonic transducer array with apodized elevation focus, 5,511,550, Cl. 128-662.030.
- Firmenich S.A.: See—
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- First National Bank Of West Chester, The: See—
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- Fisch, Fritz, to Hapich Fahrzeug-Dachsysteme GmbH. Roof rack for motor vehicles, 5,511,709, Cl. 224-321.000.
- Fischer, Eric S.: See—
Fischer, Rory T.; and Fischer, Eric S., 5,511,316, Cl. 33-1.00F.
- Fischer, Herbert: See—
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- Fischer, Rolf: See—
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- Fischer, Rory T.; and Fischer, Eric S. Stencil for cutting sandpaper, 5,511,316, Cl. 33-1.00F.
- Fischer, Timothy J.: See—
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- Fisher, Steven A.: See—
Spencer, Kevin C.; Boisrobert, Christine E.; Fisher, Steven A.; Rojak, Patricia A.; and Sabatini, Karen S., 5,512,464, Cl. 435-94.000.
- Fiskars Inc.: See—
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- Fisli, Tibor; and Grafton, David A., to Xerox Corporation. Multiple beam raster output scanner optical system having telecentric chief exit rays, 5,512,949, Cl. 347-259.000.
- Fite, Barry A.; Mitchell, Michael L.; Kunz, Russ A.; and Brannon, Clifford R., to Sony Corporation; and Digital Audio Disc Corporation. CD-ROM with machine-readable i.d. code, 5,513,169, Cl. 369-272.000.
- Fitzgerald, David: See—
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- Fleischer, Niles A., to E.C.R. - Electro-Chemical Research Ltd. Solid state electrochemical cell containing a proton-donating aromatic compound, 5,512,391, Cl. 429-213.000.
- Fletcher, David J. Shaker attachment, 5,511,879, Cl. 366-208.000.
- Fletcher, Paul A., to Atlantic Richfield Company. Downhole instruments for well operations, 5,512,889, Cl. 340-854.600.
- Flexsteel Industries, Inc.: See—
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- Flora, John H.: See—
MacLauchlan, Daniel T.; Henderson, Karl C.; and Flora, John H., 5,511,424, Cl. 73-609.000.
- Flow International Corporation: See—
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- Floyd, Jason. Trailer ball lock apparatus, 5,511,814, Cl. 280-507.000.
- Fluke Corporation: See—
Gibson, Robert T.; and Heydon, Paul H., 5,512,841, Cl. 324-756.000.
- FMC Corporation: See—
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- Williams, Michael R.; Van Orsdale, Richard D.; Mejia, Orlando A.; and Wafer, Don B., 5,511,286, Cl. 16-114.00R.
- FMT Ltd.: See—
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- Foamex L.P.: See—
Sabot, Edward; and Cushman, Thomas, 5,512,222, Cl. 264-51.000.
- Foch, Roger N.: See—
Bushman, Ronald C.; Harris, William E., Jr.; and Foch, Roger N., 5,511,468, Cl. 99-504.000.
- Focke & Co. (GmbH & Co.): See—
Focke, Heinz; and Gosebruch, Harald, 5,511,658, Cl. 206-271.000.
- Focke, Heinz; and Gosebruch, Harald, to Focke & Co. (GmbH & Co.). Soft pack for cigarettes, 5,511,658, Cl. 206-271.000.
- Fogo, Agnes: See—
Koh, Valentina; Fogo, Agnes; and Ichikawa, Iekuni, 5,512,580, Cl. 514-303.000.
- Fohrer, Michael: See—
Adrian, Willy; Borchers, Peter; Fohrer, Michael; Wallbaum, Knuth; Wente, Gerald; and Zimmerman, Rainer, 5,511,647, Cl. 198-335.000.
- Folk, Randall W. Storage rack for mechanical drive sockets, 5,511,673, Cl. 211-70.600.
- Folli, Franco: See—
Baekkeskov, Steinunn; Aanstoot, Henk-Jan; Decamilli, Pietro; Folli, Franco; and Solimena, Michele, 5,512,447, Cl. 435-7.400.
- Foot, Jonathan P. Car mat presser device, 5,511,471, Cl. 100-161.000.
- Ford Motor Company: See—
Gormley, Joseph, 5,513,107, Cl. 364-424.050.
- Hamburg, Douglas R.; Reed, Dennis C.; and Zorka, Nicholas G., 5,511,526, Cl. 123-424.000.
- Korwicki, Allan J., 5,511,377, Cl. 60-274.000.
- Lindlbauer, Michael P.; and Childress, Terry W., 5,511,378, Cl. 60-274.000.
- Lyon, Peter M., 5,512,789, Cl. 307-10.100.
- Fordyce, William A.: See—
Cardin, Alan D.; Mullins, Michael J.; Fordyce, William A.; Chamberlin, Thomas A.; and Fazio, Michael J., 5,512,177, Cl. 210-635.000.
- Fornelli, Saverio; and Souren, Illa, to Sandoz Ltd. Process for treating textile materials with enzyme containing compositions and high frequency fields, 5,512,060, Cl. 8-115.520.
- Forney, Robert B.; and Brown, Ernest C. Radiant wall oven and method of using the same, 5,512,312, Cl. 426-523.000.
- Forrest, Craig S.; Frank, Edward H.; and Naughton, Patrick J., to Sun Microsystems, Inc. High speed method and apparatus for generating animation by means of a three-region frame buffer and associated region pointers, 5,512,918, Cl. 345-122.000.
- Forsberg, John W.: See—
Jahnke, Richard W.; Forsberg, John W.; and Pearson, Nils O., 5,512,079, Cl. 71-64.080.
- Fortress U&T Ltd.: See—
Cressel, Carmi D.; Hendel, David; Dror, Itai; Hadad, Isaac; and Arazi, Benjamin, 5,513,133, Cl. 364-754.000.
- Foss, Andrew L.: See—
Kandasamy, David R.; Butler, Mitchell B.; Foss, Andrew L.; Peterson, Bradley M.; Patwardhan, Chintamani M.; Ribble, Michael T.; Rothmeier, Dieter; and Ramil, Gaudencio, 5,513,314, Cl. 395-182.040.
- Foster, Bruce W.: See—
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- Foster, Clark B.: See—
Haber, Terry M.; Foster, Clark B.; and Smedley, William H., 5,511,538, Cl. 128-200.140.
- Foster, David G.; and Rosenburgh, John H., to Eastman Kodak Company. Diagnostic method for determining agitation levels in low volume thin tanks, 5,512,398, Cl. 430-30.000.
- Fournier, Kirk D.: See—
Tuckey, Charles H.; Combett, John F.; and Fournier, Kirk D., 5,511,957, Cl. 417-313.000.
- Fox, John C.: See—
Banks, Scott A.; Kravets, Valery; and Fox, John C., 5,512,809, Cl. 318-778.000.
- Foyentin, Muriel: See—
Mathis, Gérard; Dumont, Christophe; Aspe, Daniel; Foyentin, Muriel; Jolu, Etienne J.; and Nuti, Dominique, 5,512,493, Cl. 436-537.000.
- Fraas, Lewis M.; Seal, Michael R.; and West, Edward M., to JX Crystals, Inc. Generator with thermophotovoltaic cells and hydrocarbon burner, 5,512,109, Cl. 136-253.000.
- Framatome: See—
Malmasson, Jacques, 5,513,228, Cl. 376-203.000.
- Franchitto, Anthony L.: See—
Lorraine, Jack R.; Franchitto, Anthony L.; and Vattelana, Gary D., 5,511,527, Cl. 123-456.000.
- Franco, Fidencio: See—
Morgans, David, Jr.; Sjogren, Eric B.; Smith, David B.; Talamás, Francisco X.; Artis, Dean R.; Cervantes, Alicia; Elworthy, Todd R.; Fernández, Mario; Franco, Fidencio; Hawley, Ronald C.; Lara, Teresa; Loughhead, David G.; Nelson, Peter H.; Patterson, John W.; Trejo, Alejandra; Waltos, Ann M.; and Weikert, Robert J., 5,512,568, Cl. 514-233.500.
- Frank, Edward H.: See—
Forrest, Craig S.; Frank, Edward H.; and Naughton, Patrick J., 5,512,918, Cl. 345-122.000.
- Frank, James G.: See—
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- Frank, Richard D. Dispensing device for adhesive-backed articles, 5,511,689, Cl. 221-73.000.
- Frank, Hans G.; and Bittner, Donald R., to Free-Flow Packaging Corporation. Compositions for resilient biodegradable packaging material products, 5,512,090, Cl. 106-154.100.
- Fransson, Roland: See—
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- Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H.: See—
Romani, Ernesto; Abbruzzese, Livio; Theurer, Josef; Wörgötter, Herbert; and Oellerer, Friedrich, 5,511,485, Cl. 104-2.000.
- Theurer, Josef; and Wörgötter, Herbert, 5,511,484, Cl. 104-2.000.
- Fraser, David: See—

- Henry, Arnold W.; Eddy, Clifford O.; Heeks, George J.; Chow, Che C.; Fratangelo, Louis D.; Fraser, David; Kaplan, Samuel; and Pan, David H., 5,512,409, Cl. 430-124.000.
- Fraser, Michael E., to Orthman Manufacturing, Inc. Quick hitch guidance device. 5,511,623, Cl. 172-6.000.
- Fratangelo, Louis D.: See—
- Henry, Arnold W.; Eddy, Clifford O.; Heeks, George J.; Chow, Che C.; Fratangelo, Louis D.; Fraser, David; Kaplan, Samuel; and Pan, David H., 5,512,409, Cl. 430-124.000.
- Frazier, Gary: See—
- Seabaugh, Alan C.; Mikkelsen, Chad H.; and Frazier, Gary, 5,512,764, Cl. 257-25.000.
- Frederick, Martin, to Unique Filing & Storage, Ltd. Simplified filing system. 5,511,675, Cl. 211-193.000.
- Free-Flow Packaging Corporation: See—
- Frank, Hans G.; and Bittner, Donald R., 5,512,090, Cl. 106-154.100.
- Freelander, Michael S. Platen for stacking wheeled articles. 5,511,757, Cl. 248-346.030.
- Freiberger, Ronald D.; Thayer, Peter A.; and Wills, Diane M., to Delco Electronics Corporation. Adaptive climate control system. 5,511,724, Cl. 236-49.300.
- Freitag, Dieter: See—
- Serini, Volker; Freitag, Dieter; and Grigo, Ulrich, 5,512,632, Cl. 525-67.000.
- French, Nicholas A.; Ellis, W. Dale; and Rowell, Roger M., to Haworth, Inc., and United States of America, Agriculture. Apparatus for impregnating wood. 5,512,098, Cl. 118-50.000.
- Fresenius AG: See—
- Pusinelli, Thomas; and Mushoff, Dieter, 5,512,046, Cl. 604-465.000.
- Frey, Rudolf, to Von Roll Umwelttechnik AG. Process for the treatment of fine particulates. 5,512,257, Cl. 423-98.000.
- Fried, Robert L.; Napolitano, Enrico F.; and Guillot, Marie, to Jerrold Communications, General Instrument Corporation. Surge protector semiconductor subassembly for 3-lead transistor aotline package. 5,512,784, Cl. 257-724.000.
- Friedmann, Theodore: See—
- Burns, Jane C.; Yee, Jiing-Kuan; and Friedmann, Theodore, 5,512,421, Cl. 435-320.100.
- Friedrich, Brent R.; and Knepler, John T., to Bunn-O-Matic Corporation. Combo grinder and brewer. 5,511,465, Cl. 99-286.000.
- Friel, David M.; Radulski, Charles A.; and Montfort, David B., to Xerox Corporation. Resonating assembly having a plurality of discrete resonator elements. 5,512,990, Cl. 355-273.000.
- Friend, Richard H.: See—
- Holmes, Andrew; Bradley, Donal D.; Friend, Richard H.; Kraft, Arno; Burn, Paul; and Brown, Adam, 5,512,654, Cl. 528-373.000.
- Frisch, Gerhard; and Maier, Thomas, to Hoechst Aktiengesellschaft. Crop-protection formulations. 5,512,534, Cl. 504-103.000.
- Fritz Fuss GmbH & Co.: See—
- Fuss, Fritz H.; Rutherford, John S.; and Gonser, Gerhard, 5,511,839, Cl. 292-341.180.
- Künzel, Reiner, 5,511,832, Cl. 292-144.000.
- Fritz, Victor J.; and Gold, Ronald S., to Hughes Aircraft Company. Polarizing beamsplitter for reflective light valve displays having opposing readout beams onto two opposing surfaces of the polarizer. 5,513,023, Cl. 359-40.000.
- Fu, Dechun; and Grebe, Vernon J., to Bayer Corporation. Cobalt-free, black, dual purpose porcelain enamel glass. 5,512,521, Cl. 501-65.000.
- Fu, Yi-Chang: See—
- Connor, Daniel S.; Fu, Yi-Chang; and Scheiber, Jeffrey J., 5,512,699, Cl. 564-153.000.
- Fuji Electric Co., Ltd.: See—
- Kawata, Noriaki; and Hikima, Kiyoshi, 5,512,399, Cl. 430-69.000.
- Kobayashi, Shinichi, 5,512,782, Cl. 257-691.000.
- Fuji Electrochemical Co. Ltd.: See—
- Mano, Yasuhiko; Mochizuki, Takeshi; Sasaki, Isamu; and Shimokawa, Akira, 5,512,195, Cl. 252-62.560.
- Fuji Photo Film Co.: See—
- Inoue, Yoshiaki, 5,513,016, Cl. 358-456.000.
- Fuji Photo Film Co., Ltd.: See—
- Aramaki, Satoshi; and Sato, Makoto, 5,511,664, Cl. 206-525.000.
- Ito, Wataru, 5,513,273, Cl. 382-132.000.
- Iwamatsu, Satoshi, 5,512,948, Cl. 348-255.000.
- Kase, Akira, 5,512,425, Cl. 430-533.000.
- Ryoke, Katsumi; Meguro, Katsuhiko; Doushita, Hiroaki; Suzuki, Masaki; Kitahara, Toshiyuki; and Sato, Masami, 5,512,350, Cl. 428-141.000.
- Sakaguchi, Yasunobu; Nakajima, Koji; and Kurumisawa, Junichi, 5,511,713, Cl. 226-199.000.
- Sawachi, Youchi; and Yoshida, Masanori, 5,512,947, Cl. 348-243.000.
- Fuji Photo Optical Co., Ltd.: See—
- Kamoda, Takashi; and Mashiko, Takashi, 5,512,970, Cl. 354-173.100.
- Sakaguchi, Yasunobu; Nakajima, Koji; and Kurumisawa, Junichi, 5,511,713, Cl. 226-199.000.
- Toyama, Nobuaki, 5,513,046, Cl. 359-752.000.
- Fuji Xerox Co., Ltd.: See—
- Abe, Takashi; Yoshino, Naoto; Okoshi, Takeshi; and Ishizuka, Hiroyasu, 5,511,744, Cl. 242-364.500.
- Kumazawa, Yukio, 5,513,367, Cl. 395-800.000.
- Nukada, Hidemi; Tokida, Akihiko; Sakaguchi, Yasuo; Daimon, Katsumi; and Nukada, Katsumi, 5,512,674, Cl. 540-141.000.
- Yoshinari, Toshiaki; Suzuki, Kazuhiro; Yokose, Taro; and Umezawa, Ken, 5,513,279, Cl. 382-232.000.
- Fuji Xerox Corporation: See—
- Spitz, A. Lawrence; and Dias, Antonio P., 5,513,304, Cl. 395-144.000.
- Fujibayashi, Kenji: See—
- Terada, Atsutosuke; Iizuka, Yoshio; Wachi, Kazuyuki; and Fujibayashi, Kenji, 5,512,567, Cl. 514-231.800.
- Fujihira, Masamichi; Muramatsu, Hiroshi; Chiba, Norio; and Ataka, Tatsuki, to Seiko Instruments Inc.; and Fujihira, Masamichi. Optical information read/write apparatus. 5,513,168, Cl. 369-126.000.
- Fujii, Kanako: See—
- Tsutsumi, Masato; Yamasita, Haruhisa; Sampei, Hideo; Fujii, Kanako; and Avakura, Hiroaki, 5,512,345, Cl. 428-69.000.
- Fujii, Yasuo; and Yamaguchi, Masami, to Fujitsu Limited. Supervisory system for network equipments. 5,513,341, Cl. 395-575.000.
- Fujii, Yasuo: See—
- Yoshida, Takehiro; Koizumi, Shigeru; Miura, Shigeo; Kurosawa, Yuji; Fujii, Yasuo; Noguchi, Hiroyuki; Nakayama, Toru; Kataoka, Junnosuke; and Okada, Masaaki, 5,513,253, Cl. 379-100.000.
- Fujikawa, Youichi: See—
- Hagiwara, Kanehiro; Ichihara, Yasushi; Mitake, Mitsuyoshi; Furuno, Takashi; Kishida, Saori; Iizuka, Jun; and Fujikawa, Youichi, 5,512,968, Cl. 353-094.000.
- Fujikura Ltd.: See—
- Otsuki, Akira, 5,512,942, Cl. 348-143.000.
- Fujimoto, Akihisa, to Kabushiki Kaisha Toshiba. Cache control system which permanently inhibits local but not global parameter data writes to main memory. 5,513,353, Cl. 395-600.000.
- Fujino, Takane: See—
- Ishihara, Yoshihisa; Sasakawa, Tetsuro; and Fujino, Takane, 5,513,067, Cl. 361-684.000.
- Fujioka, Hideaki, to Sumitomo Electric Industries, Ltd. Anti-lock brake controlling apparatus. 5,511,862, Cl. 303-113.400.
- Fujioaka, Kazuo: See—
- Misawa, Hiromitsu; Fujioka, Kazuo; Aoki, Koso; Kurita, Eiichi; Okano, Yoji; and Kozawa, Minoru, 5,512,405, Cl. 430-106.600.
- Fujirebio, Inc.: See—
- Yamamoto, Naoki; Nakashima, Hideki; Uryu, Toshiyuki; Yoshida, Takashi; Matsuzaki, Kei; Kaneko, Yutaro; and Mimura, Toru, 5,512,672, Cl. 536-118.000.
- Fujisawa, Katsuya: See—
- Watanabe, Rikuji; Fujisawa, Katsuya; and Onishi, Ikuro, 5,513,025, Cl. 359-68.000.
- Fujisawa Pharmaceutical Co., Ltd.: See—
- Takasugi, Hisashi; Katsura, Yousuke; Inoue, Yoshikazu; and Tomishi, Tetsuo, 5,512,588, Cl. 514-370.000.
- Fujishima, Hiromichi, to Toyota Jidosha Kabushiki Kaisha. Air bag system having a control system for determining the exact inflating time of an air bag. 5,513,109, Cl. 364-424.050.
- Fujishiro, Takatsugu: See—
- Kimura, Noriyuki; Suzuki, Minoru; and Fujishiro, Takatsugu, 5,512,984, Cl. 355-245.000.
- Fujita, Goro: See—
- Horimai, Hideyoshi; and Fujita, Goro, 5,513,161, Cl. 369-54.000.
- Fujita, Ryoichi: See—
- Okado, Kenji; Ugai, Toshiyuki; Fujita, Ryoichi; Kanbayashi, Makoto; Takiguchi, Tsuyoshi; Ichikawa, Yasuhiro; and Iida, Wakasui, 5,512,402, Cl. 430-106.600.
- Fujita, Takehiro; and Nomura, Takashi, to Xanavi Informatics Corporation; and Hitachi, Ltd. Navigation system and path search method using hierarchical road data. 5,513,110, Cl. 364-449.000.
- Fujitsu Limited: See—
- Abe, Taizo, 5,511,591, Cl. 141-7.000.
- Fujii, Yasuo; and Yamaguchi, Masami, 5,513,341, Cl. 395-575.000.
- Hanaoka, Yasuhiko; Ochi, Yoshiaki; Kitanaka, Yoshiyuki; Ohashi, Hiroki; Shimada, Hiroshi; Mase, Tomonori; Kato, Keiichi; and Takahashi, Youichi, 5,513,156, Cl. 369-34.000.
- Hattori, Hiroshi; and Sugiyama, Junich, 5,513,145, Cl. 365-221.000.
- Kato, Masayuki; Anikate, Hirokazu; Ishimoto, Manabu; Sato, Noriko; and Nakashima, Masato, 5,513,020, Cl. 359-9.000.
- Katori, Masayuki, 5,513,321, Cl. 395-200.150.
- Kitsu, Kunihiro; Uchiyama, Kaneatsu; Tanaka, Nobuyuki; and Kawai, Hiroyuki, 5,512,975, Cl. 355-200.000.
- Miyake, Hiroshi; and Aso, Yasuhiro, 5,513,180, Cl. 370-60.100.
- Nishida, Kenji; and Sato, Noriaki, 5,512,516, Cl. 437-200.000.
- Ryu, Tadami; Takahara, Toshio; Hirono, Shingo; and Matsumoto, Tohru, 5,513,348, Cl. 395-600.000.
- Sato, Yasuyuki; Miyazaki, Keiji; Iseda, Kohei; and Chujo, Takafumi, 5,513,345, Cl. 395-182.020.
- Takechi, Ryuichi; Kawasaki, Takeshi; Kamoi, Jyocei; Hajikano, Kazuo; Kuroyanagi, Satoshi; and Shimoe, Toshio, 5,513,191, Cl. 371-37.100.
- Tanaka, Kenji, 5,513,178, Cl. 370-58.200.
- Ueno, Norio; and Matsuyama, Toru, 5,512,853, Cl. 327-333.000.
- Yamaguchi, Yoshio; and Tooda, Toshio, 5,512,980, Cl. 355-206.000.
- Fujiwara, Osami: See—
- Tsuchihashi, Hironori; Fujiwara, Osami; Satou, Tuiyoshi; Togoshi, Yoshikazu; Hamada, Toshihiko; Kawahara, Yoshihiro; and Bando, Niro, 5,511,631, Cl. 180-247.000.
- Fujiwara, Shigeru: See—
- Takahashi, Masashi; Fujiwara, Shigeru; Yoshida, Minoru; and Watanabe, Takeshi, 5,512,982, Cl. 355-219.000.

- Fujiwara, Yoshito; Kobayashi, Yutaka; Kimura, Mituo; Iio, Masatoshi; and Takamura, Tohsaku, to Tokyo Radiator Mfg. Co., Ltd; Nippon Yakin Kogyo Co. Ltd.; and Nissan Motor Co., Ltd. Ferritic stainless steel for heat exchanger. 5,512,239, Cl. 420-68.000.
- Fukami, Akira: See—
- Ikeda, Takahide; Yamada, Kouichirou; Saito, Osamu; Odaka, Masanori; Tamba, Nobuo; Ogiue, Katsumi; Hiraishi, Atsushi; Watanabe, Atsuo; Hira, Mitsuru; Fukami, Akira; Ohayashi, Masayuki; and Kuramoto, Tadashi, 5,512,497, Cl. 437-34.000.
- Fukami, Tatsuya: See—
- Nakaki, Yoshiyuki; Tokunaga, Takashi; Fukami, Tatsuya; Taguchi, Motohisa; and Tsutsumi, Kazuhiko, 5,512,366, Cl. 428-332.000.
- Fukano, Norifumi: See—
- Ikegami, Yoshio; Konno, Masashi; Minagawa, Koji; Fukano, Norifumi; Uemura, Tatsuya; and Yagi, Tatsuo, 5,511,874, Cl. 366-100.000.
- Fukasawa, Yoshiharu, to Kabushiki Kaisha Toshiba. Film forming apparatus. 5,512,155, Cl. 204-298.110.
- Fukazawa, Yuji: See—
- Miya, Yukio; Kizaki, Shigeru; Sugiyama, Osamu; Hatayama, Akiteru; Shibuya, Yoshitsugu; Enomoto, Mitsugu; Naoi, Koichi; Fukazawa, Yuji; Nanya, Takanori; Shimizu, Shotaro; and Tagawa, Hiroshi, 5,511,587, Cl. 139-192.000.
- Fukuda, Eiji: See—
- Fukuda, Masaru; and Fukuda, Eiji, 5,512,833, Cl. 324-538.000.
- Fukuda, Masaru; and Fukuda, Eiji, to Yazaki Corporation. Connector checking device. 5,512,833, Cl. 324-538.000.
- Fukui, Nobuharu: See—
- Aoki, Minoru; Ohtaki, Hiroshi; Fukui, Nobuharu; Terada, Takashi; Nakada, Minoru; deceased, 5,512,298, Cl. 424-452.000.
- Fukui, Tetsuro: See—
- Miyazaki, Takeshi; Tanaka, Kazumi; Santo, Tsuyoshi; Ohnishi, Toshiyazu; Fukui, Tetsuro; and Okamoto, Tadashi, 5,512,446, Cl. 435-7.200.
- Fukukido, Takeshi: See—
- Kurek, Kenneth M.; Pierre, Alain M.; Maeda, Takashi; and Fukukido, Takeshi, 5,511,828, Cl. 285-49.000.
- Fukumura, Kouta: See—
- Sano, Yoshihiko; Kobayashi, Toshiyuki; Teramoto, Tsutomu; and Fukumura, Kouta, 5,511,551, Cl. 128-686.000.
- Fukunaga, Takao, to Kabushiki Kaisha Daikin Seisakusho. Lock-up device for torque converter. 5,511,640, Cl. 192-3.280.
- Fukuoka, Hiroki: See—
- Manabe, Katsuhiko; and Fukuoka, Hiroki, 5,513,138, Cl. 365-185.330.
- Fukushi, Tatsuo, to Minnesota Mining and Manufacturing Company. Method of increasing interlayer adhesion of multi-layer compositions having a fluoroplastic layer. 5,512,225, Cl. 264-127.000.
- Fukushima, Hirotaka: See—
- Kajitani, Koji; Fukushima, Hirotaka; Okubo, Manoru; Yanagida, Naoki; Takenaka, Mitsuhiko; Touji, Mitsuo; and Yamamoto, Kozo, 5,511,446, Cl. 74-573.000.
- Fukushima, Satoru; and Ohki, Makoto, to Canon Kabushiki Kaisha. Electrophotographing apparatus with first and second charge devices. 5,512,983, Cl. 355-220.000.
- Fukushima, Tsumoru: See—
- Yamashita, Haruo; Ishihara, Hideshi; and Fukushima, Tsumoru, 5,513,281, Cl. 382-278.000.
- Fukushima, Yoshihisa: See—
- Saroh, Isao; Fukushima, Yoshihisa; Takagi, Yuji; and Azumatani, Yasushi, 5,513,160, Cl. 369-47.000.
- Fukuta, Toshiaki: See—
- Ninomiya, Hitoshi; Katoh, Kenichi; and Fukuta, Toshiaki, 5,512,075, Cl. 55-497.000.
- Ful-Dye, Inc.: See—
- Fuller, B. Franklin; and Fuller, Franklin G., 5,512,062, Cl. 8-499.000.
- Fuller, B. Franklin; and Fuller, Franklin G., to Ful-Dye, Inc. Low temperature textile dyeing method using high temperature dye compositions. 5,512,062, Cl. 8-499.000.
- Fuller, Franklin G.: See—
- Fuller, B. Franklin; and Fuller, Franklin G., 5,512,062, Cl. 8-499.000.
- Fuller, Mark A., to Fuller Specialty Co., Inc. Rugged scuba tank carrier. 5,511,846, Cl. 294-149.000.
- Fuller Specialty Co., Inc.: See—
- Fuller, Mark A., 5,511,846, Cl. 294-149.000.
- Funahashi, Isao; Yamamoto, Kiwamu; and Suto, Koju, to Kureha Kagaku Kogyo Kabushiki Kaisha; and Kureha Engineering Co., Ltd. Method of producing aqueous solution of slaked lime and apparatus therefor. 5,512,265, Cl. 423-640.000.
- Funai Electric Co., Ltd.: See—
- Hashimoto, Hiroyuki, 5,512,735, Cl. 219-723.000.
- Funayama, Hidehiko: See—
- Kariya, Izumi; and Funayama, Hidehiko, 5,513,014, Cl. 358-448.000.
- Furon Company: See—
- Nikirk, Chris T.; and Seidel, Francis L., 5,511,797, Cl. 277-204.000.
- Furry, Kevin; and Tode, Jess, to Video Lottery Technologies, Inc. Method and apparatus for directly generating a random final outcome of a game. 5,511,784, Cl. 273-143.000.
- Furth, Mark E.: See—
- Shooter, Eric M.; Suter, Ulrich; Ip, Nancy P.; Squinto, Stephen P.; Furth, Mark E.; and Lindsay, Ronald M., 5,512,661, Cl. 530-399.000.
- Furukawa Electric Co., Ltd.: The: See—
- Ichii, Eiji; Morie, Hiroo; and Matsuda, Yutaka, 5,513,175, Cl. 370-17.000.
- Kobayashi, Takao; Sakai, Katsutoshi; and Kobayashi, Kenzou, 5,512,758, Cl. 250-461.100.
- Furukawa, Kazuyoshi: See—
- Nakagawa, Akio; Furukawa, Kazuyoshi; Ogura, Isuneco; and Tanzawa, Katsujino, 5,512,774, Cl. 257-501.000.
- Furuno, Takashi: See—
- Hagiwara, Kanehiro; Ichihara, Yasushi; Mitake, Mitsuyoshi; Furuno, Takashi; Kishida, Saori; Iizuka, Jun; and Fujikawa, Youichi, 5,512,968, Cl. 353-094.000.
- Furuta, Kazumi: See—
- Ozoe, Shinji; Matsumoto, Seiji; and Furuta, Kazumi, 5,512,647, Cl. 526-298.000.
- Fuson, William R., to Du Pont de Nemours, E. I., and Company. Anti-static woven coated fabric and flexible bulk container. 5,512,355, Cl. 428-244.000.
- Fuss, Fritz H.; Rutherford, John S.; and Gonser, Gerhard, to Fritz Fuss GmbH & Co. Door opener with a lockable, pivotable latch. 5,511,839, Cl. 292-341.180.
- Futami, Yuichi: See—
- Shimaya, Kazuhiko; and Futami, Yuichi, 5,512,019, Cl. 474-110.000.
- Futch, Walter B., Jr. Method for converting dental handpieces to quick disconnect. 5,511,977, Cl. 433-126.000.
- G. D. Searle & Co.: See—
- Chandrakumar, Nizal S.; Huang, Horng-Chih; and Mueller, Richard A., 5,512,561, Cl. 514-11.000.
- Dressel, Mark W.; and Bitner, John M., 5,511,665, Cl. 206-532.000.
- Gaard Automation, Inc.: See—
- Reiersgaard, William L.; Knebel, Andrew W., Jr.; Davis, Curtis A.; Reiersgaard, John M.; and Pelton, Lloyd E., 5,511,307, Cl. 29-863.000.
- Gadot, Shlomo; Im, Gi-Hong; Langberg, Ehud; and Wang, Jin-Der, to AT&T Corp. Hybrid equalizer arrangement for use in data communications equipment. 5,513,216, Cl. 375-233.000.
- Gagné, Robert R.; Marrocco, Matthew L., III; Trimmer, Mark S.; and Hendricks, Neil H., to Maxdem Incorporated. Macromonomers having reactive side groups. 5,512,630, Cl. 525-50.000.
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- Han, Tai-kang. Water pumping system using solar energy. 5,511,954, Cl. 417-121.000.
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- Hancock, Raymond R. Temporomandibular joint appliance. 5,511,562, Cl. 128-859.000.
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- Harris, Stephen H.: *See—*
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- Harris, William E., Jr.: *See—*
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- Hashimoto, Hiroyuki, to Funai Electric Co., Ltd. Electric cooking range having new safety features. 5,512,735, Cl. 219-723.000.
- Hashimoto, Hitokatsu: *See—*
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- Hashimoto, Kazuya: *See—*
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- Hashimoto, Kiyokazu, to NEC Corporation. Non-volatile semiconductor memory device capable of checking the threshold value of memory cells. 5,513,193, Cl. 371-67.100.
- Hashimoto, Osamu: *See—*
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- Hashimoto, Takeshi: *See—*
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- Hass, Karl-Heinz: *See—*
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- Hassett, Richard A.: *See—*
Kroger, Bruce R.; Hassett, Richard A.; Storie, Anthony C.; and Baker, James V. 5,511,732, Cl. 241-166.000.
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- Hatakeyama, Toshiya: *See—*
Shimada, Takashi; Okumura, Toshio; and Hatakeyama, Toshiya. 5,512,262, Cl. 423-245.100.
- Hatano, Takahisa, to Mitsushita Electric Industrial Co., Ltd. Adaptive type color demodulation apparatus for PAL system. 5,512,960, Cl. 348-640.000.
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- Haus, Hermann S.: *See—*
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- Hause, Frederick N.: *See—*
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- Haver, Harrison B.; and Griswold, Mark D., to Motorola, Inc. Semiconductor device having an emitter terminal separated from a base terminal by a composite nitride/oxide layer. 5,512,785, Cl. 257-758.000.
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- Hayakawa, Tadashi: *See—*
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- Hayamizu, Shunichi; Miyaura, Tomoko; and Saeki, Noboru, to Minolta Camera Kabushiki Kaisha. Method of making thin-layer component. 5,512,151, Cl. 204-192.150.
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- Hayashi, Kunihiko: *See—*
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Caveney, Jack E.; Hayes, Christopher J.; Rinchuso, Joseph; Stroede, Andrew J.; and Wiencek, Donald C. 5,513,065, Cl. 361-311.000.
- Hayes, Jerry R.: *See—*
Heren, Lawrence P.; Hayes, Jerry R.; and Kruet, Thomas R. 5,511,727, Cl. 239-242.000.
- Haynes, Howard D., to Martin Marietta Energy Systems, Inc. Monitoring method and apparatus using high-frequency carrier. 5,512,843, Cl. 324-772.000.
- Hayward, Ken: *See—*
Harkins, Larry E.; Hayward, Ken; Herceg, Thomas J.; Levine, Jonathan D.; and Parsons, David M. 5,513,126, Cl. 364-514.00A.
- Hazard, James T.; and Kidd, R. Vincent, III. Urine specimen collection device. 5,511,557, Cl. 128-760.000.
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Hitchins, Michael W.; Jamieson, Hamish T.; and Hearn, Bruce J. 5,511,514, Cl. 119-237.000.
- Heeb, Jay S.: *See—*
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- Heeks, George J.: *See—*
Henry, Arnold W.; Eddy, Clifford O.; Heeks, George J.; Chow, Che C.; Fratangelo, Louis D.; Fraser, David; Kaplan, Samuel; and Pan, David H. 5,512,409, Cl. 430-124.000.
- Heffner, Robert: *See—*
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- Hegge, James T.: *See—*
McAndrews, Glenn; Hegge, James T.; Koss, Christopher R.; Umney, Michael A.; and Jones, Douglas J. 5,511,288, Cl. 24-16.00R.
- Hegler, Ralph-Peter; and Hegler, Wilhelm, to Wilhelm Hegler. Apparatus for the production of plastic pipes. 5,511,964, Cl. 425-326.100.
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- Hehl, Karl. Mold closing unit for use in an injection molding machine for processing synthetic materials. 5,511,963, Cl. 425-190.000.
- Heide, David J.: *See—*
Panasiuk, Lubomir M.; Heide, David J.; and Lievens, Raymond P. 5,511,406, Cl. 72-453.130.
- Heidel, Jeffrey C.; Carlson, Bradley D.; and Stansberry, Warren W., to Cline Labs, Inc. Angle measurement device employing angle sensor and electronics with lead circuitry integrally formed on a printed circuit board. 5,511,320, Cl. 33-366.000.
- Heidelberger Druckmaschinen AG: *See—*
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- Phizenmaier, Wolfgang. 5,511,475, Cl. 101-349.000.
- Heimbecker, Blake E.: *See—*
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- Heimbürger, Norbert: *See—*
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- Helena Laboratories Corporation: *See—*
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- Guadagno, Philip A.; Rayachoti, Rajani; and Petersen, Eric H. 5,512,157, Cl. 204-616.000.
- Helfenbein, Eric D.; Fering, Richard D.; Lindauer, James M.; and Goodnature, Don, to Hewlett Packard Company. Real-time artifact removal from waveforms using a dynamic filter having a fixed delay. 5,511,554, Cl. 128-706.000.
- Hellered, Henry: *See—*
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- Helstern, Gary C.: *See—*
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- Henck, Steven A.: *See—*
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- Hendel, David: *See—*
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- Henderson, Jeffery L.: *See—*
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- Henderson, Karl C.: *See—*
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- Hendricks, Neil H.: *See—*
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- Hendrickson, Dahl. Handcuff carrying apparatus. 5,511,706, Cl. 224-269.000.
- Hendrickson-Benkoff, Hermann; Stockmeier, Dietrich; and Reiners, Ulrich, to Wolff Walsrode Aktiengesellschaft. Transparent, stretched polypropylene film. 5,512,649, Cl. 526-348.100.
- Hendriksen, Howard W.: *See—*
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- Henke, David C.: *See—*
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- Henke, Stephan: *See—*
Bickel, Martin; Brooks, Dietrich; Burghard, Harald; Günzler, Volkmar; Henke, Stephan; Hanauke, Abel; Hartmut; Mohr, Jürgen; and Tschank, Georg. 5,512,586, Cl. 514-354.000.
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- Henkel Kommanditgesellschaft auf Aktien: *See—*
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- Daute, Peter; Schreck, Berthold; and Hornfeck, Klaus. 5,512,134, Cl. 162-5.000.
- Eicken, Ulrich; Fischer, Herbert; Gress, Wolfgang; Nagorny, Ulrich; and Stork, Norbert. 5,512,614, Cl. 523-501.000.
- Klauck, Wolfgang; and Daute, Peter. 5,512,655, Cl. 528-74.500.
- Ritter, Wolfgang. 5,512,527, Cl. 502-150.000.
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- Henning, Jeffrey M.: *See—*
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- Henny Penny Corporation: *See—*
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- Henriksen, Dennis: *See—*
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- Henry, Arnold W.; Eddy, Clifford O.; Heeks, George J.; Chow, Che C.; Fratangelo, Louis D.; Fraser, David; Kaplan, Samuel; and Pan, David H., to Xerox Corporation. Fusing method and system with hydrofluoroelastomers fuser member for use with amino functional silicone oils. 5,512,409, Cl. 430-124.000.
- Hentzelt, Heinz: *See—*
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- Herceg, Thomas J.: *See—*
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- Hercules Incorporated: *See—*
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- Tise, Frank P.; and Weatherdon, Jennifer. 5,512,622, Cl. 524-272.000.
- Heren, Lawrence P.; Hayes, Jerry R.; and Kruet, Thomas R., to L. R. Nelson Corporation. Wave sprinkler with improved adjustable spray assembly. 5,511,727, Cl. 239-242.000.
- Herklotz, Jack F., to Trantek, Incorporated. Shuttle transfer with linear transducer feedback. 5,511,933, Cl. 414-749.000.
- Herman Miller, Inc.: *See—*
Kelley, James O.; and Otto, John G. 5,511,349, Cl. 52-287.100.
- Kusiak, James L.; and Schoenfelder, Rodney C. 5,511,852, Cl. 297-301.400.
- Herman, Philippe: *See—*
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- Hernandez, Walter C., to Monitoring Technology Corporation. Method and apparatus for analyzing and detecting faults in bearings and other rotating components that slip. 5,511,422, Cl. 73-593.000.
- Hernden, Michael R.: *See—*
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- Hero Industries, Inc.: *See—*
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- Herrenschmidt, Patrice; Cormerais, François-Xavier; and Patureaux, Thierry, to Total Raffinage Distribution, S.A. Process and apparatus for the continuous replacement of the catalyst in a moving-bed unit. 5,512,166, Cl. 208-152.000.
- Herrick, David L., to Lockheed Sanders, Inc. Apparatus and method for locating cellular telephones. 5,512,908, Cl. 342-387.000.
- Herring, William J.; and Trim, MacKenzie L., to Neopost Limited. Database system. 5,513,112, Cl. 364-464.020.
- Herrmann, Hans-Dieter: *See—*
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- Herrmannsen, Wulf: *See—*
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- Herron, James N.; Christensen, Douglas A.; Caldwell, Karin D.; Janotová, Vera; Huang, Shao-Chie; and Wang, Hsu-Kun, to University of Utah Research Foundation. Waveguide immunosensor with coating chemistry providing enhanced sensitivity. 5,512,492, Cl. 436-518.000.
- Hesch, Harold E.; Beers, Albert A.; and Smith, Stephen W., to Trinity Industries, Inc. Railway car. 5,511,491, Cl. 105-404.000.
- Hesse, Gregory N.; and McDonald, Daniel J., to Motorola Inc. User requested communication resource allocation. 5,512,884, Cl. 340-825.030.
- Hesse, Kenneth R.: *See—*

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 Hewitt, Carroll: See—
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 Millard, Robert A., 5,513,079, Cl. 361-823.000.
 Okazaki, Sandra Y., 5,511,770, Cl. 271-4.010.
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 Roach, Steven D., 5,512,838, Cl. 324-754.000.
 Vuilleumier, Raymond; Kraiczek, Karsten; and Wiese, Axel, 5,513,031, Cl. 359-227.000.
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 Hidaka, Hideto: See—
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 Hiebert, Gregory L.; and Johnson, Karl F., to Lubrizol Corporation, The. Deodorizing polysulfide materials, 5,512,637, Cl. 525-328.500.
 Hieblinger, Rudolf, to Puma AG, Shoe with a heel-mounted central rotary closure, 5,511,325, Cl. 36-50.100.
 Higaki, Kenjiro: See—
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 Hilpert, Hans, to Hoffmann-La Roche Inc., Nitrile compounds useful as intermediates in the production of beta amino alcohols, 5,512,682, Cl. 548-477.000.
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 Hinton, Christopher E., to Instron Limited, Structure testing machine, 5,511,431, Cl. 73-806.000.
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 Hirai, Shigeru: See—
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 Hiratsuka, Yasushi; Hashimoto, Osamu; Uematsu, Shoji; and Koseki, Toshio, to Mitsubishi Gas Chemical Company, Inc., Process for the production of methanol, 5,512,599, Cl. 518-703.000.
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 Hirano, Isao: See—
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- Hulyalkar, Samir N., to Philips Electronics North America Corp. Method and apparatus for combating co-channel NTSC interference for digital TV transmission. 5,512,957, Cl. 348-607.000.
- Humphrey, William M.: See—
Gallagher, Michael J.; and Humphrey, William M., 5,512,233, Cl. 264-321.000.
- Hunter, Erick D.: See—
Crutcher, John P.; Lucas, Delbert E.; D'Amico, David A.; and Hunter, Erick D., 5,511,715, Cl. 227-131.000.
- Hurley, John P.: See—
Allen, Norman S.; and Hurley, John P., 5,512,606, Cl. 522-048.000.
- Huru, Mark W., to Christian Brothers, Inc. Roller hockey stick blade. 5,511,776, Cl. 273-67.00A.
- Hurworth, Samuel G., to Dethur Industries, Inc. Air-operated conveyor belt tensioning apparatus. 5,511,650, Cl. 178-813.000.
- Husain, Paul, to Yeomans Chicago Corporation. Waste comminutor and cutter elements therefor. 5,511,729, Cl. 241-46.010.
- Husbands, George E. M.; and Tokolies, Joseph, to American Home Products Corporation. Quinuclidine and azabicyclo [2.2.1] heptane pyrazinyl ethers as muscarinic agonists. 5,512,574, Cl. 514-253.000.
- Huscroft, Charles K.; Smith, Graham B.; and Gerson, Brian D., to PMC-Sierra, Inc. Clock recovery phase locked loop control using clock difference detection and forced low frequency startup. 5,512,860, Cl. 331-1.00A.
- Hutchinson: See—
Guillon, Henri, 5,511,343, Cl. 49-479.100.
- Hutenlocher, Daniel P., to Xerox Corporation. Measuring character and stroke sizes and spacings for an image. 5,513,277, Cl. 382-171.000.
- Huynh, Long: See—
Parr, Michael; and Huynh, Long, 5,513,221, Cl. 375-344.000.
- Huynh-Ba, Tuong: See—
Duby, Philippe; and Huynh-Ba, Tuong, 5,512,290, Cl. 424-439.000.
- Hwang, Frank K.: See—
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- Hwang, Hyunsang, to Goldstar Electron Co., Ltd. Method of forming a silicon insulating layer in a semiconductor device. 5,512,519, Cl. 437-242.000.
- Hyska, John S.: See—
Olson, Darwin C.; and Hyska, John S., 5,511,830, Cl. 285-243.000.
- Hyundai Electronics Industries Co., Inc.: See—
Park, Kee W., 5,512,854, Cl. 327-374.000.
- Hyundai Electronics Industries Co., Ltd.: See—
Chung, In S.; and Kim, Youn J., 5,512,778, Cl. 257-629.000.
Han, Chung Soo, 5,512,509, Cl. 437-70.000.
Yuh, Jong H., 5,512,845, Cl. 326-88.000.
- I.P. Bardin Central Research Institute of Iron and Steel Industry: See—
Paramonov, Vladimir A.; Tyshinin, Anatolij I.; Moroz, Anatolij I.; and Birger, Boris L., 5,512,321, Cl. 427-405.000.
- Ibiden Co., Ltd.: See—
Iwata, Yutaka; Enomoto, Ryo; Nakamura, Akihito; and Demura, Akihiro, 5,512,712, Cl. 174-258.000.
- ICD Industries: See—
Suskind, Stuart P., 5,512,333, Cl. 427-536.000.
- Ichihara, Tadashi: See—
Kinto, Kouichiro; and Ichihara, Tadashi, 5,511,495, Cl. 110-165.00A.
- Ichihara, Yasushi: See—
Hagiwara, Kanehiro; Ichihara, Yasushi; Mitake, Mitsuyoshi; Furuno, Takashi; Kishida, Saori; Iizuka, Jun; and Fujikawa, Youichi, 5,512,968, Cl. 353-094.000.
- Ichii, Eiiji; Morise, Hiroo; and Matsuda, Yutaka, to Furukawa Electric Co., Ltd. The. Multiplex transmission apparatus. 5,513,175, Cl. 370-17.000.
- Ichikawa, Hiroyuki: See—
Ito, Akio; Ichikawa, Hiroyuki; and Kutsuwade, Satoru, 5,513,007, Cl. 358-296.000.
- Ichikawa, Iekuni: See—
Kon, Valentina; Fogo, Agnes; and Ichikawa, Iekuni, 5,512,580, Cl. 514-303.000.
- Ichikawa, Takashi; and Ohtsuka, Noboru, to Kabushiki Kaisha Tokai Rika Denki Seisakusho. Wheel cap for automobile. 5,511,857, Cl. 301-37.230.
- Ichikawa, Yasuhiro: See—
Okado, Kenji; Ugai, Toshiyuki; Fujita, Ryoichi; Kanbayashi, Makoto; Takiguchi, Tsuyoshi; Ichikawa, Yasuhiro; and Iida, Wakashi, 5,512,402, Cl. 430-106.600.
- Ichikoh Industries, Ltd.: See—
Ogawa, Shinji; and Matsumoto, Masayoshi, 5,511,988, Cl. 439-336.000.
- Ichinoi, Yutaka; and Turuta, Masahiko, to Victor Company of Japan, Ltd. High-definition picture signal recording/reproducing apparatus for recording and reproducing a high-definition picture signal controlled its amplitude level. 5,513,009, Cl. 358-335.000.
- ICON Health & Fitness, Inc.: See—
Dalebout, William T.; Standing, Donald J.; Watterson, Scott R.; Brewer, Dane P.; Robertson, Lee; and Rowley, David R., 5,512,025, Cl. 482-6.000.
- Idaho Research Foundation, Inc.: See—
Orser, Cindy S.; Xun, Luying; and Lange, Cleston C., II, 5,512,478, Cl. 435-252.330.
- Idanit Technologies, Ltd.: See—
Adler, Uri; and Miller, Ori, 5,511,477, Cl. 101-401.100.
- Iddan, Gavriel J.; Pinsky, Ephrat; and Catalan, Gavriel, to Rafael-Armament Development Authority. Infrared microscope. 5,512,749, Cl. 250-332.000.
- Ide, Hideaki; Bando, Shunichi; and Yasuhara, Hiroshi, to Kawasaki Jukogyo Kabushiki Kaisha. Pitch link for rotary wing aircraft and automatic adjuster thereof. 5,511,944, Cl. 416-31.000.
- Ide, Hiroshi; Kirino, Fumiyoshi; Toda, Tsuyoshi; Maeda, Takeshi; Tsuchinaga, Hiroyuki; Kugiyu, Fumio; Shigematsu, Kazuo; Mita, Seichi; Saito, Atsushi; and Kaku, Toshimitsu, to Hitachi, Ltd. Method for controlling the farm of a magnetic domain of a magneto-optical disk using pre-write testing. 5,513,165, Cl. 369-116.000.
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- Igarashi, Yoshiaki: See—
Sawazaki, Masatoshi; Shibata, Takao; Igarashi, Yoshiaki; Hayashi, Kiyoshi; and Ueda, Naganori, 5,511,392, Cl. 66-54.000.
- Ihara Chemical Industry Co., Ltd.: See—
Toriyabe, Keiji; Takehi, Takayoshi; Nezu, Yukio; Nakano, Yuki; and Shimazu, Tomonori, 5,512,551, Cl. 514-63.000.
- Iida, Masaru: See—
Hasegawa, Toshiyuki; Irikura, Koji; and Iida, Masaru, 5,511,436, Cl. 74-331.000.
- Iida, Osamu: See—
Kikumoto, Nobuo; and Iida, Osamu, 5,511,767, Cl. 266-143.000.
- Iida, Wakashi: See—
Okado, Kenji; Ugai, Toshiyuki; Fujita, Ryoichi; Kanbayashi, Makoto; Takiguchi, Tsuyoshi; Ichikawa, Yasuhiro; and Iida, Wakashi, 5,512,402, Cl. 430-106.600.
- Iio, Masatoshi: See—
Fujiwara, Yoshito; Kobayashi, Yutaka; Kimura, Mituo; Iio, Masatoshi; and Takamura, Tohsaku, 5,512,239, Cl. 420-68.000.
- Iizuka, Jun: See—
Hagiwara, Kanehiro; Ichihara, Yasushi; Mitake, Mitsuyoshi; Furuno, Takashi; Kishida, Saori; Iizuka, Jun; and Fujikawa, Youichi, 5,512,968, Cl. 353-094.000.
- Iizuka, Ken: See—
Kori, Teruhiko; Iizuka, Ken; and Oguro, Masaki, 5,513,010, Cl. 358-341.000.
- Iizuka, Yoshio: See—
Terada, Atsuke; Iizuka, Yoshio; Wachi, Kazuyuki; and Fujibayashi, Kenji, 5,512,567, Cl. 514-231.800.
- Ikado, Masaharu: See—
Uchikata, Yoshio; Hattori, Yoshifumi; Ara, Yoji; Kitani, Masashi; Suzuki, Etsuro; Wada, Toshihide; Hirabayashi, Hiromitsu; Saikawa, Hideo; Kojima, Masami; Hanabusa, Tadashi; Kawano, Kenji; Tanno, Koichi; Ohashi, Tetsuyo; Bekki, Toshihiko; Aono, Kenji; and Ikado, Masaharu, 5,512,926, Cl. 347-86.000.
- Ikeda, Masato: See—
Kusunoki, Mitsugu; Miyaoka, Shuichi; Nakayama, Michiaki; Kobayashi, Koji; Ikeda, Masato; and Ogata, Takashi, 5,512,766, Cl. 257-296.000.
- Ikeda, Takahide; Yamada, Kouichiro; Saito, Osamu; Odaka, Masanori; Tamba, Nobuo; Ogue, Katsumi; Hiraishi, Atsushi; Watanabe, Atsuo; Hirao, Mitsuru; Fukami, Akira; Ohayashi, Masayuki; and Kuramoto, Tadashi, to Hitachi, Ltd. Method of manufacturing a semiconductor integrated circuit device. 5,512,497, Cl. 437-34.000.
- Ikegami, Yoshio; Konno, Masashi; Minagawa, Koji; Fukano, Norifumi; Uemura, Tatsuya; and Yagi, Tatsuo, to Kabushiki Kaisha Kobe Seiko Sho. Drive transmission mechanism for biaxial extruder. 5,511,874, Cl. 366-100.000.
- Ikenoue, Tsuneo: See—
Sudo, Sukehisa; Hashimoto, Hitokatsu; Sasaki, Junichi; and Ikenoue, Tsuneo, 5,513,089, Cl. 363-21.000.
- Ikeya, Yoichiro: See—
Tamai, Tadamoto; and Ikeya, Yoichiro, 5,512,106, Cl. 134-7.000.
- Ikeyama, Hiromasa; and Asada, Takashi, to Sony Corporation. Rate converter for converting data rate. 5,512,894, Cl. 341-61.000.
- Ikoma, Munehisa: See—
Komori, Katsunori; Yamamoto, Osamu; Toyoguchi, Yoshinori; Suzuki, Kohei; Yamaguchi, Seiji; Tanaka, Ayako; and Ikoma, Munehisa, 5,512,385, Cl. 429-101.000.
- Ikuzawa, Kenzo; and Hika, Yoshimichi, to Leader Electronics Corporation. Phase shifting device for vectorscope. 5,512,944, Cl. 348-186.000.
- Iles, Frank. Movement of aircraft. 5,511,926, Cl. 414-428.000.
- Illinois Tool Works Inc.: See—
Hirose, Akihiko, 5,511,283, Cl. 16-8.000.
- Olsen, Robert C., 5,511,656, Cl. 206-150.000.
- Im, Gi-Hong: See—
Gadot, Shlomo; Im, Gi-Hong; Langberg, Ehud; and Wang, Jin-Der, 5,513,216, Cl. 375-233.000.
- Imagawa, Yasumi: See—
Saito, Yutaka; and Imagawa, Yasumi, 5,513,387, Cl. 455-243.100.

Imai, Hideki, to Pumpkin House Incorporated. Copying machine with encryption function. 5,512,977, Cl. 355-201.000.

Imai, Kazuo: *See—*

Machida, Katsuyuki; Murase, Katsumi; Shimoyama, Nobuhiro; Tsuchiya, Toshiaki; Takahashi, Junichi; Minegishi, Kazushige; Takahashi, Yasuo; Namatsu, Hideo; and Imai, Kazuo, 5,512,513, Cl. 437-195.000.

Imai, Masahiro: *See—*

Makino, Yoshiyuki; and Imai, Masahiro, 5,511,397, Cl. 68-12.270.

Imaide, Takuya: *See—*

Sakurai, Hiroshi; Ohtsubo, Hiroyasu; Asada, Kouji; Noda, Masaru; Iura, Noriyuki; Imaide, Takuya; Kamimura, Junji; Komatsu, Hiroyuki; and Kinugasa, Toshiro, 5,512,945, Cl. 348-221.000.

Imaji, Yoshiaki; Nakao, Satoshi; and Sawano, Hiroshi, to Kabushiki Kaisha Toshiba. Power module using IMS as heat spreader. 5,513,072, Cl. 361-707.000.

Imamura, Hitomi; Matsuda, Shin; Ito, Nobuyuki; and Kawabata, Kazuhiro, to Kyocera Corporation. Package for housing semiconductor elements. 5,512,786, Cl. 257-780.000.

Imazu, Katsuhiro: *See—*

Miyazawa, Tetsuo; Sato, Kazuhiro; Imazu, Katsuhiro; Kobayashi, Seishichi; and Sue, Toshio, 5,512,365, Cl. 428-332.000.

Immunex Corporation: *See—*

Lyman, Stewart; Beckmann, M. Patricia; Baum, Peter R.; and Carpenter, Melissa K., 5,512,457, Cl. 435-69.500.

Immunivest Corporation: *See—*

Liberti, Paul A.; and Piccoli, Steven P., 5,512,332, Cl. 427-550.000.

Impra, Inc.: *See—*

Bosse, Charles F.; and Kowligi, Rajagopal R., 5,512,229, Cl. 264-161.000.

Inaba, Mamoru: *See—*

Ando, Seigo; Matsufuji, Yasuhiro; Maki, Hiroshi; Inaba, Mamoru; Iwanaga, Kenichi; Takeoshi, Atsuhisa; and Takenaka, Masaki, 5,512,821, Cl. 324-225.000.

Inciong, Josefino T.: *See—*

Jain, Balbir; and Inciong, Josefino T., 5,511,518, Cl. 123-90.370.

Indiana Mills & Manufacturing, Inc.: *See—*

Merrick, David D.; Lortz, Allan R.; Chinni, James R.; and Peterson, Jeffrey E., 5,511,856, Cl. 297-476.000.

Indresco Inc.: *See—*

Langenohl, Mark C.; and Hughes, Gustav O., 5,512,325, Cl. 427-421.000.

Industri Ar Thule: *See—*

Ng, Daniel, 5,511,894, Cl. 403-320.000.

Inf-Shield: *See—*

House, William P.; and House, William K., 5,511,897, Cl. 404-25.000.

Infiltrator Systems, Inc.: *See—*

Nichols, James M.; Coppes, Bryan A.; and Sperry, Bruce T., Jr., 5,511,903, Cl. 405-43.000.

Ingersoll-Rand Company: *See—*

Drumheller, Steven W.; and Chang, Ted C., 5,511,800, Cl. 279-19.100.

Yates, Steve K., 5,511,901, Cl. 404-124.000.

Ingram, Gratus; Meyers, Reuven I.; and Chambers, Timothy G., to Nordson Corporation. Powder spray booth with multiple filter modules. 5,512,100, Cl. 118-309.000.

INMOS Limited: *See—*

Wakefield, Elwyn P. M.; and Walker, Christopher P. H., 5,512,783, Cl. 257-693.000.

Inner Ear Communications, Inc.: *See—*

Brennan, Christopher J.; Brennan, Terence P.; Phillips, Robert C.; Kenny, Philip B.; and Dvorkin, Vladimir, 5,513,384, Cl. 455-180.100.

Innotech, Inc.: *See—*

Gupta, Amitava; Blum, Ronald D.; Iyer, Venkatramani S.; and Nagg, Paul J., 5,512,371, Cl. 428-412.000.

Inoac Corporation: *See—*

Takeuchi, Nobuo; Kitano, Taishi; Mizuno, Fumio; Ishikawa, Hiroyoshi; Yoshimura, Sotaro; and Yamaguchi, Tomonari, 5,512,361, Cl. 428-319.300.

Inoue, Hiroshi: *See—*

Takezawa, Makoto; Miyao, Makiji; Wada, Sadahisa; and Inoue, Hiroshi, 5,512,119, Cl. 156-171.000.

Inoue, Kazuhiko, to Kabushiki Kaisha Toshiba. Semiconductor package device for super high-frequency band. 5,512,781, Cl. 257-676.000.

Inoue, Noboru: *See—*

Mizushiri, Toshitsugu; Yokota, Mamoru; Nakamura, Norimichi; Ota, Ken; Yoshino, Shuji; and Inoue, Noboru, 5,512,104, Cl. 134-1.000.

Inoue, Takahiro: *See—*

Serizawa, Yoji; Noguchi, Akio; Ushio, Yukihide; Matsuo, Shimpei; Yamada, Kazuro; Uchiyama, Seiji; Takeuchi, Makoto; Suwa, Koichi; Hiroshima, Koichi; Tsukida, Shinichi; Takano, Mamabu; Goto, Masahiro; Inoue, Takahiro; Yamada, Hiromichi; Kato, Junichi; and Ojima, Masaki, 5,512,929, Cl. 347-153.000.

Inoue, Yoshiaki, to Fuji Photo Film Co. Method and apparatus for processing image signal. 5,513,016, Cl. 358-456.000.

Inoue, Yoshikazu: *See—*

Takasugi, Hisashi; Katsura, Yosuke; Inoue, Yoshikazu; and Tomishi, Tetsuo, 5,512,588, Cl. 514-370.000.

Insalaco, Michael D.: *See—*

Kubler, John M.; and Insalaco, Michael D., 5,512,794, Cl. 310-329.000.

Institut De Catalyse Du Departement Siberien De L'Academie Des Sciences De Russie and Vniigaz: *See—*

Bouyvanov, Roman A.; Tsyboulesky, Albert M.; Klevtsov, Dimitri P.; and Mourine, Vladimir I., 5,512,258, Cl. 423-230.000.

Instron Limited: *See—*

Hinton, Christopher E., 5,511,431, Cl. 73-806.000.

Intel Corporation: *See—*

Alexander, James W.; Danowski, Terri A.; Peters, Stephen J.; and Whitsel, Ronald J., 5,513,338, Cl. 395-500.000.

Fandrich, Mickey L.; Kynett, Virgil N.; Fedel, Salim B.; and Price, Thomas C., 5,513,136, Cl. 365-185.040.

Gillespie, Byron R.; Garbus, Elliot D.; Kahn, Mitchell A.; Johnson, Thomas M.; O'Connor, Dennis M.; and Heeb, Jay S., 5,513,337, Cl. 395-479.000.

Kynett, Virgil N.; and Fandrich, Mickey L., 5,513,333, Cl. 395-430.000.

Ong, Nicholas; and Moaddah, Jamshid, 5,513,372, Cl. 395-821.000.

Pawlowski, Stephen; and MacWilliams, Peter D., 5,513,331, Cl. 395-401.000.

Satagopan, Ramprasad; and Regenold, David R., 5,513,346, Cl. 395-185.010.

Xie, Hong; Aghazadeh, Mostafa; Turturro, Gregory; and Chiu, Chia-Pin, 5,513,070, Cl. 361-700.000.

Young, Bruce A., 5,513,361, Cl. 395-750.000.

Interconnect Systems, Inc.: *See—*

Werther, William E., 5,513,076, Cl. 361-784.000.

Interglobe Gas Technology, Inc.: *See—*

McKenzie, Robert J., 5,512,088, Cl. 96-152.000.

International Business Machines Corporation: *See—*

Afzali-Ardakani, Ali; Buchwalter, Stephen L.; Gelorme, Jeffrey D.; Kosbar, Laura L.; Newman, Bert H.; and Pompeo, Frank L., 5,512,613, Cl. 523-443.000.

Agarwal, Ramesh C.; Groves, Randall D.; Gustavson, Fred G.; Johnson, Mark A.; and Olsson, Brett, 5,513,366, Cl. 395-800.000.

Ainsbury, Alan W.; and Kerklaan, Albert J., 5,513,074, Cl. 361-737.000.

Best, Margaret E.; Rosen, Hal J.; Rubin, Kurt A.; and Strand, Timothy C., 5,513,170, Cl. 369-275.100.

Block, Timothy R.; Gaio, David P.; Guenther, Charles J.; Karst, Dennis L.; Kidd, Thomas D.; and Leddige, Michael W., 5,513,073, Cl. 361-719.000.

Borchardt, Edward K.; Carley, Scott G.; Lindsey, Anthony H.; Mason, John T.; McKenna, George A.; Owens, Pamela B.; Whitenack, Bruce G., Jr.; and Wilson, Timothy, 5,513,317, Cl. 395-183.210.

Bruck, Jehoshua; Cypher, Robert E.; and Ho, Ching-Tien, 5,513,313, Cl. 395-182.020.

Bryant, Andres, 5,512,517, Cl. 437-203.000.

Capowski, Robert S.; Casper, Daniel F.; Cox, Frederick J.; Ferraio, Frank D.; and Halma, Marten J., 5,513,377, Cl. 395-881.000.

Clark, Michael W.; Combs, James L.; Crump, Dwayne T.; Kozel, Jerry T.; and Pancoast, Steven T., 5,513,359, Cl. 395-750.000.

Cook, John A.; Jensen, Stephanie L.; Miller, James A.; and Wiseman, Gary L., 5,513,365, Cl. 395-800.000.

Corballe, Liam P.; Rutledge, Joseph D.; and Selker, Edwin J., 5,512,892, Cl. 341-22.000.

Cypher, Robert E.; and Sanz, Jorge L. C., 5,513,371, Cl. 395-800.000.

David, Lawrence D.; Farooq, Shaji; Mastreani, Anthony; Reddy, Srinivasa S. N.; and Vallabhaneni, Rao V., 5,512,711, Cl. 174-257.000.

Deff, Timothy J.; Farah, Lina S.; Feng, George C.; and Kellogg, Mark W., 5,513,135, Cl. 365-52.000.

Dwork, Cynthia; Halpern, Joseph Y.; and Strong, Hovey R., Jr., 5,513,354, Cl. 395-650.000.

Garcia, Serafin J. E., Jr.; Hoch, Gary B.; Stelzer, Eric H.; and Williams, Donald G., 5,513,368, Cl. 395-842.000.

Grantz, Jeffrey A., 5,513,351, Cl. 395-600.000.

Horiguchi, Tsuneo; Porter, Eric L.; and Tallman, Richard, 5,513,349, Cl. 395-650.000.

Ishihara, Yoshihisa; Sasakawa, Tetsuroh; and Fujino, Takane, 5,513,067, Cl. 361-684.000.

Kelkar, Ram; Novof, Ilya I.; Strayer, Donald E.; and Wyatt, Stephen D., 5,513,225, Cl. 375-376.000.

Leong, Kevin K.; Love, Robert D.; and Tsuji, Hiroshi, 5,513,342, Cl. 395-157.000.

Levenson, Marc D.; and Santini, Hugo A. E., 5,512,394, Cl. 430-5.000.

McKiel, Frank A., Jr., 5,513,311, Cl. 395-161.000.

Miller, Thomas L.; Nelson, Richard F.; and Ostrom, John K., 5,512,335, Cl. 427-600.000.

Morton, Douglas J., 5,513,357, Cl. 395-700.000.

Noble, Wendell P., Jr., 5,512,767, Cl. 257-301.000.

Stanford, Vince M.; Klein, Alice G.; and Brickman, Norman F., 5,513,298, Cl. 395-2.520.

Williams, Marvin L.; and Yun, Roselyn H., 5,513,323, Cl. 395-200.180.

International Paper Company: *See—*

Markham, Larry D., 5,512,133, Cl. 162-4.000.

International Superconductivity Technology Center: *See—*

Konishi, Masaya; Hayashi, Kunihiko; Enomoto, Youichi; Tanaka, Shoji; Yamada, Yasuji; Ohtsu, Kanshi; Kanamori, Yasuo; and Shiohara, Yuh, 5,512,541, Cl. 505-474.000.

International Verifac Inc.: *See—*

Yuen, Ki S., 5,512,738, Cl. 235-382.000.

Inievac, Inc.: *See—*

Green, Roger T.; Davis, Gary A.; and Aebi, Verle W., 5,512,375, Cl. 428-426.000.

Iosif, Nagy: *See—*

Fendall, Burian; Sandu, Albulescu; Iosif, Nagy; Vasile, Neceae; and Gyorgy, Vajay, 5,511,490, Cl. 105-375.000.

Ip, Nancy P.: *See—*

Shooter, Eric M.; Suter, Ulrich; Ip, Nancy P.; Squinto, Stephen P.; Furth, Mark E.; and Lindsay, Ronald M., 5,512,661, Cl. 530-399.000.

Ipen, Erich P.: *See—*

Tamura, Kohichi; Ipen, Erich P.; Haus, Hermann S.; Nelson, Lynn E.; and Doerr, Christopher R., 5,513,194, Cl. 372-6.000.

Ippolito, Nicholas W. Stackable paint roller pan having an integral paint reservoir, a paint roller parking device for a roller with extended handle, and an adjustable one-hand carrying handle. 5,511,279, Cl. 15-257.060.

Iqnaszewski, Jay J.: *See—*

Erickson, Leif O.; Iqnaszewski, Jay J.; and Madsen, David D., 5,511,302, Cl. 29-521.000.

Iranmanesh, Ali A., to National Semiconductor Corporation. Method and apparatus for improvement of interconnection capacitance. 5,512,508, Cl. 437-70.000.

Irikura, Koji: *See—*

Hasegawa, Toshiyuki; Irikura, Koji; and Iida, Masaru, 5,511,436, Cl. 74-331.000.

Irwin, Bruce C.; Moore, Edward E.; and Baum, Raymond F., to Hauck Manufacturing Company. Combination burner with primary and secondary fuel injection. 5,511,970, Cl. 431-9.000.

Irwin, James S.: *See—*

Connors, Charles W., Jr.; and Irwin, James S., 5,511,762, Cl. 249-115.000.

Irwin, Joseph M.: *See—*

Varner, Richard; and Irwin, Joseph M., 5,512,087, Cl. 96-133.000.

Isaac, Ragy: *See—*

Momot, Stanley; Oesterlin, Richard; Hudyma, Edward; Dabisch, Kenneth; Fedrigon, Richard; Goldberg, Ira; and Isaac, Ragy, 5,512,125, Cl. 156-353.000.

Ise, Shinsuke: *See—*

Takikawa, Hiroyoshi; Yoshida, Yoshio; Kakimoto, Nobuko; and Ise, Shinsuke, 5,512,733, Cl. 219-620.000.

Iseda, Kohei: *See—*

Sato, Yasuyuki; Miyazaki, Keiji; Iseda, Kohei; and Chujo, Takafumi, 5,513,345, Cl. 395-182.020.

Iseler, Gerald W.: *See—*

Clark, Harry R., Jr.; Iseler, Gerald W.; and Ahern, Brian S., 5,512,808, Cl. 318-575.000.

Ishibashi, Marenizu: *See—*

Yoshitomi, Yasunari; Kuroki, Katsuro; Matsuo, Yukio; Masui, Hiroaki; Nakamura, Yoshio; Ishibashi, Marenizu; Kawano, Tsuyoshi; Haratani, Tsutomu; and Ushigami, Yoshiyuki, 5,512,110, Cl. 148-113.000.

Ishibashi, Toshio: *See—*

Aaronson, Stuart A.; Bottaro, Donald P.; Ishibashi, Toshio; and Miki, Toru, 5,512,434, Cl. 435-6.000.

Ishida Co., Ltd.: *See—*

Naito, Kazufumi; Utsunomiya, Michito; Konishi, Hiroyuki; and Tamai, Shotaro, 5,512,713, Cl. 177-211.000.

Ishida, Hiroshi: *See—*

Moriya, Shigeru; Ishida, Hiroshi; and Hirano, Isao, 5,511,362, Cl. 53-491.000.

Ishihara, Hideshi: *See—*

Yamashita, Haruo; Ishihara, Hideshi; and Fukushima, Tsumoru, 5,513,281, Cl. 382-278.000.

Ishihara Sangyo Kaisha, Ltd.: *See—*

Ogasawara, Makoto; Yada, Masakazu; Sakurai, Kaoru; Haga, Kazuya; Miyashita, Masahide; and Hirai, Yasumasa, 5,512,194, Cl. 252-62.560.

Ishihara, Yoshihisa; Sasakawa, Tetsuroh; and Fujino, Takane, to International Business Machines Corporation. Apparatus having a slider button and rotating body for ejecting a function-aid unit from an information processing system. 5,513,067, Cl. 361-684.000.

Ishii, Yoshihiro: *See—*

Nishioka, Yukiko; Kamiya, Ichiro; Shinjo, Ryoichi; Ishii, Yoshihiro; and Kosaka, Koichi, 5,511,264, Cl. 8-158.000.

Ishikawa Gasket Co., Ltd.: *See—*

Udagawa, Tsunekazu, 5,511,796, Cl. 277-180.000.

Ishikawa, Hiroyoshi: *See—*

Takeuchi, Nobuo; Kitano, Taishi; Mizuno, Fumio; Ishikawa, Hiroyoshi; Yoshimura, Sotaro; and Yamaguchi, Tomonari, 5,512,361, Cl. 428-319.300.

Ishikawa Prefecture: *See—*

Hamada, Saburo; Takahiro, Masahiko; and Morohashi, Kazuo, 5,511,395, Cl. 68-2.000.

Ishikawa, Shinji; Suganuma, Hiroshi; Yui, Dai; Semura, Shigeru; Saito, Masahide; and Hirai, Shigeru, to Sumitomo Electric Industries, Ltd. Coupling structure of optical fibers and optical waveguides. 5,513,290, Cl. 385-49.000.

Ishikawajima-Harima Jukogyo Kabushiki Kaisha: *See—*

Mori, Motoharu; Yoshida, Hironobu; Yamamura, Ikuro; Iura, Toru; Takeuchi, Osamu; and Ogushi, Masaki, 5,513,206, Cl. 373-80.000.

Ishikura, Kenji: *See—*

Shirai, Kazushi; Ishikura, Kenji; and Takeda, Nonno, 5,512,193, Cl. 252-62.570.

Ishimoto, Manabu: *See—*

Kato, Masayuki; Arikate, Hirokazu; Ishimoto, Manabu; Sato, Noriko; and Nakashima, Masato, 5,513,020, Cl. 359-9.000.

Ishinabe, Ikuro: *See—*

Ohtomo, Fumio; Sugai, Hiroo; Ishinabe, Ikuro; Yamazaki, Takaaki; and Kodaira, Junichi, 5,513,001, Cl. 356-249.000.

Ishizaki, Akira: *See—*

Sono, Koichi; Miyawaki, Mamoru; Ishizaki, Akira; Ogawa, Katsuhisa; Sakurai, Katsuhito; Sugawa, Shigetoshi; and Kondo, Shigeki, 5,513,028, Cl. 359-87.000.

Ishizuka, Hiroyasu: *See—*

Abe, Takashi; Yoshino, Naoto; Okoshi, Takeshi; and Ishizuka, Hiroyasu, 5,511,744, Cl. 242-564.500.

ISIS Pharmaceuticals, Inc.: *See—*

Ecker, David, 5,512,438, Cl. 435-6.000.

Isler, Mark B.; Saxon, Lawrence D.; Reinhart, Wayne, Jr.; and Batchelder, Kevin, to Sport Masters, Inc. Slant rail tonneau cover. 5,511,843, Cl. 296-100.000.

Ismail, Raouf A.: *See—*

Nair, Rajesh M.; Mansingh, Vivek; and Ismail, Raouf A., 5,511,415, Cl. 73-204.110.

Isobe, Akira, to NEC Corporation. Contact hole filling in a semiconductor device by irradiation with plasma of inert gas ions. 5,512,512, Cl. 437-187.000.

Ito, Akio; Ichikawa, Hiroyuki; and Kutsuwade, Satoru, to Canon Kabushiki Kaisha. Image processing apparatus and image processing method. 5,513,007, Cl. 358-296.000.

Ito, Nobuyuki: *See—*

Imamura, Hitomi; Matsuda, Shin; Ito, Nobuyuki; and Kawabata, Kazuhiro, 5,512,786, Cl. 257-780.000.

Ito, Takayuki; and Sugano, Yasuyuki, to Asahi Kogaku Kogyo Kabushiki Kaisha. Fast aspherical lens system. 5,513,045, Cl. 359-750.000.

Ito, Takayuki: *See—*

Abe, Tetsuya; Hasushita, Sachio; and Ito, Takayuki, 5,513,043, Cl. 359-691.000.

Ito, Wataru, to Fuji Photo Film Co., Ltd. Method for obtaining information about interstitial patterns of the lungs. 5,513,273, Cl. 382-132.000.

Ito, Yoshihiko: *See—*

Takahashi, Yoshitaka; Manabe, Akira; Kaneko, Tadataka; Okajima, Hiroshi; Ito, Yoshihiko; and Daiza, Setsuo, 5,512,080, Cl. 75-231.000.

Itoh, Isami: *See—*

Takeda, Kenichi; Tada, Tatsuya; Itoh, Nobuyuki; Nakano, Masao; Kemmochi, Kazuhisa; and Itoh, Isami, 5,512,406, Cl. 430-110.000.

Itoh, Masami; and Kikuchi, Shuichi, to Ricoh Company, Ltd. Lens system with master lens system and conversion lens. 5,513,042, Cl. 359-674.000.

Itoh, Nobuyuki: *See—*

Takeda, Kenichi; Tada, Tatsuya; Itoh, Nobuyuki; Nakano, Masao; Kemmochi, Kazuhisa; and Itoh, Isami, 5,512,406, Cl. 430-110.000.

Itoi, Kenji; Endo, Akira; and Okayasu, Yosuke, to Mitsuba Electric Manufacturing Co., Ltd. Diaphragm actuator. 5,511,462, Cl. 92-99.000.

Itozaki, Hideo: *See—*

Matsuura, Takashi; Higaki, Kenjiro; and Itozaki, Hideo, 5,512,539, Cl. 505-210.000.

ITT Automotive Europe GmbH: *See—*

Cezanne, Rudolf; Gebhardt, Peter; Jahn, Ralf; and Laczny, Horst, 5,511,464, Cl. 92-240.000.

Reinartz, Hans-Dieter; Beck, Erhard; and Dinkel, Dieter, 5,511,864, Cl. 303-119.200.

Iura, Noriyuki: *See—*

Sakurai, Hiroshi; Ohtsubo, Hiroyasu; Asada, Kouji; Noda, Masaru; Iura, Noriyuki; Imaide, Takuya; Kamimura, Junji; Komatsu, Hiroyuki; and Kinugasa, Toshiro, 5,512,945, Cl. 348-221.000.

Iura, Toru: *See—*

Mori, Motoharu; Yoshida, Hironobu; Yamamura, Ikuro; Iura, Toru; Takeuchi, Osamu; and Ogushi, Masaki, 5,513,206, Cl. 373-80.000.

Ivanov, Koli; and Schulz, Egon, to Siemens Aktiengesellschaft. Mobile speed dependent handover techniques in hierarchical mobile radio networks. 5,513,380, Cl. 455-33.200.

Iwaki, Takashi: *See—*

Takiguchi, Takao; Iwaki, Takashi; Togano, Takeshi; Yamada, Yoko; Nakamura, Shinichi; and Nakazawa, Ikuro, 5,512,209, Cl. 252-299.610.

Terada, Masahiro; Togano, Takeshi; Yamashita, Masataka; Iwaki, Takashi; Mori, Shosei; and Shinjo, Kenji, 5,512,208, Cl. 252-299.600.

Iwamatsu, Satoshi, to Fuji Photo Film Co., Ltd. Negative-image signal processing apparatus. 5,512,948, Cl. 348-255.000.

Iwamoto, Norihiro, to Toshiba Kikai Kabushiki Kaisha. Method and apparatus for vacuum die casting. 5,511,605, Cl. 164-457.000.

Iwamura, Masahiro: *See—*

Suzuki, Yukio; Masuda, Ikuro; Iwamura, Masahiro; Kadono, Shinji; Uragami, Akira; Yoshimura, Masayoshi; and Matsubara, Toshiaki, 5,512,847, Cl. 326-110.000.

Iwamura, Ryuichi, to Sony Corporation. Picture signal encoding and/or decoding apparatus. 5,512,952, Cl. 348-416.000.

Iwanaga, Kenichi: *See—*

Ando, Seigo; Matsufuji, Yasuhiro; Maki, Hiroshi; Inaba, Mamoru; Iwanaga, Kenichi; Takeoshi, Atsuhisa; and Takenaka, Masaki, 5,512,821, Cl. 324-225.000.

Iwanaga, Takashi; Kariya, Yasuhiro; Magario, Kenji; Kawaguchi, Takayoshi; Shima, Nobuhiko; and Ban, Mitsuru, to Nippondenso Co., Ltd. Accumulator type of fuel injection device. 5,511,528, Cl. 123-467.000.

Iwasaki, Motoya, to NEC Corporation. Combining circuit for a diversity receiving system. 5,513,222, Cl. 375-347.000.

Iwata, Yutaka; Enomoto, Ryo; Nakamura, Akihito; and Demura, Akihiro, to Ibiden Co., Ltd. Printed wiring board having indications thereon covered by insulation. 5,512,712, Cl. 174-258.000.

Iwauchi, Shigeharu: See—
Morita, Yoshikazu; Iwauchi, Shigeharu; and Ogiso, Tamotsu, 5,511,358, Cl. 53-128.100.

Iyer, Venkatramani S.: See—
Gupta, Amitava; Blum, Ronald D.; Iyer, Venkatramani S.; and Nagg, Paul J., 5,512,371, Cl. 428-412.000.

Izumi, Toru: See—
Kidera, Hiroyuki; and Izumi, Toru, 5,511,524, Cl. 123-196.00R.

Izumizaki, Masami: See—
Takada, Yoshihiro; Suzuki, Akio; Izumizaki, Masami; Tsuchii, Ken; Kadowaki, Hidejiro; Yanaka, Toshiyuki; Takahashi, Haruhiko; Takamiya, Makoto; Yamamoto, Kosuke; Wataya, Masafumi; Miura, Yasushi; Moriguchi, Haruhiko; and Murayama, Yasushi, 5,512,924, Cl. 347-18.000.

J. Eberspächer: See—
Pfister, Wolfgang; Blaschke, Walter; Burner, Erwin; Wacker, Heinrich; and Steiner, Peter, 5,511,413, Cl. 73-118.100.

Jackson, William E. Polymer liners in rod pumping wells. 5,511,619, Cl. 166-369.000.

Jacobs, Barry L. Neurological pin. 5,511,555, Cl. 128-744.000.

Jacobs, James K.: See—
Dasgupta, Sankar; and Jacobs, James K., 5,512,389, Cl. 429-192.000.

Jacobs, Robert T.; Klimas, Michael T.; Ohnmacht, Cyrus J.; and Terpko, Marc O., to Zeneca Limited. Methanoanthracenyl methyl piperidyl compounds. 5,512,575, Cl. 514-256.000.

Jacobson, Howard W.: See—
Goodrich, Charles W.; and Jacobson, Howard W., 5,512,369, Cl. 428-372.000.

Jadamus, Hans: See—
Röber, Stefan; Jadamus, Hans; Böer, Michael; Feinauer, Roland; Hermann, Hans-Dieter; and Ries, Hans, 5,512,342, Cl. 428-36.910.

Jaeschke, James R.: See—
Hansen, James E.; Henderson, Jeffery L.; and Jaeschke, James R., 5,512,810, Cl. 318-800.000.

Jahn, Ralf: See—
Cezanne, Rudolf; Gebhardt, Peter; Jahn, Ralf; and Laczny, Horst, 5,511,464, Cl. 92-240.000.

Jahnke, Andreas: See—
Bayer, Eberhard, deceased; Jahnke, Andreas; Chernisky, Eric; and Schnell, Ralf-Dieter, 5,512,756, Cl. 250-370.130.

Jahnke, Richard W.; Forsberg, John W.; and Pearson, Nils O., to Lubrizol Corporation, The. Water-in-oil emulsifiers for slow release fertilizers using tertiary alkanol amines. 5,512,079, Cl. 71-64.080.

Jain, Balbir; and Inciong, Josefino T., to Fel-Pro Incorporated. Sealing assembly with undercut groove. 5,511,518, Cl. 123-90.370.

Jakobson, Paul A., to Corning Incorporated. Packaging of high power semiconductor lasers. 5,513,198, Cl. 372-43.000.

Jakšić, Danilo. Electromagnetically activated jacquard machine with rotating lifting roll. 5,511,588, Cl. 139-455.000.

Jalbert, David, to Black & Decker Inc. Electric iron having integral stand and stabilizing method. 5,512,728, Cl. 219-246.000.

Jalbert, Ronald L.; Howe, David V.; Harris, Robert E.; and Gallucci, Robert R., to General Electric Company. Transparent blend compositions containing graft copolymers of (thioaromatic) alkylate rubber substrates. 5,512,631, Cl. 525-66.000.

Jalkanen, Sirpa; and Salmi, Marko. Detection of vascular adhesion protein-1 (VAP-1). 5,512,442, Cl. 435-7.210.

Jamar, Jacobus H. T., to U.S. Philips Corporation. Colour display tube including a convergence correction device. 5,512,802, Cl. 315-368.250.

James Madison University: See—
Dennis, Douglas E., 5,512,456, Cl. 435-69.100.

James River Paper Company, Inc.: See—
Altug, Mustafa N.; and Robert, Leo J., 5,512,136, Cl. 162-195.000.

Jamieson, Hamish T.: See—
Hitchins, Michael W.; Jamieson, Hamish T.; and Hearn, Bruce J., 5,511,514, Cl. 119-237.000.

Janatová, Vera: See—
Herron, James N.; Christensen, Douglas A.; Caldwell, Karin D.; Janatová, Vera; Huang, Shao-Chie; and Wang, Hsu-Kun, 5,512,492, Cl. 436-518.000.

Jang, Byoung G.: See—
Kang, Myung G.; Kang, Seong S.; Choi, Sung H.; Joong, Mun C.; Jang, Byoung G.; Ryu, Kye Y.; Yu, Hyo C.; and Lee, Sang J., 5,511,737, Cl. 242-355.100.

Jankowski, William C. Vacuum cleaner assembly with low vacuum inlet. 5,511,280, Cl. 15-327.200.

Janku, Jan A.; and Pranger, Maarten, to Sun Microsystems, Inc. Fault tolerant disk drive system with error detection and correction. 5,513,192, Cl. 371-50.100.

Januschke, Klaus: See—
Schicht, Heinz; Schindler, Herbert; Januschke, Klaus; Gregorowius, Werner; and Kaiser, Wilfried, 5,512,152, Cl. 204-192.260.

Japan Phonics Co., Ltd.: See—
Shimada, Takashi; Okumura, Toshio; and Hatakeyama, Toshiya, 5,512,262, Cl. 423-245.100.

Japan Radio Co., Ltd.: See—
Suganuma, Gen, 5,513,388, Cl. 455-258.000.

Jarboe, Patrick G.; and Davis, Terry R., to Morton International, Inc. Passenger side airbag module. 5,511,818, Cl. 280-728.200.

Jarrett, Paul; White, Philip F.; and Pethybridge, Nicole J., to Agricultural Genetics Company Limited. Biological control of dipteran pests of the genus *Lycoriella* using *Bacillus thuringiensis*. 5,512,279, Cl. 424-93.461.

Järvi, Antti: See—
Salmi, Pekka; Packalén, Jonas; and Järvi, Antti, 5,513,149, Cl. 367-1.000.

Jarvinen, Hannele; Lahtinen, Leila; Hormi, Osmo; Nasman, Jan; and Tammi, Anna-Liisa, to Neste Oy. Process for the preparation of 3-substituted thiophenes. 5,512,685, Cl. 549-86.000.

Jauhainen, Hannu: See—
Antikainen, Veijo; Paukkunen, Ari; Stormbom, Lars; Jauhainen, Hannu; and Ponkala, Jorma, 5,511,418, Cl. 73-335.030.

Jay, Eric C.: See—
Dinsmoor, John C., III; Denton, Grant C.; Jay, Eric C.; and Runkles, Richard R., 5,511,260, Cl. 5-451.000.

Jayaraman, Vijaysekhar, to Optical Concepts, Inc. Long wavelength, vertical cavity surface emitting laser with vertically integrated optical pump. 5,513,204, Cl. 372-96.000.

Jean Gallay S.A.: See—
Gallay, Pierre-Henri, 5,511,686, Cl. 220-667.000.

Jencks, Andrew D.; and DiGioia, John. Electromagnetic emission-shielding gasket. 5,512,709, Cl. 174-35.0GC.

Jenne, Gary B.: See—
Chia, Julian Y.-P.; and Jenne, Gary B., 5,511,695, Cl. 222-43.000.

Jennings, David R.: See—
Talbot, Pierre J.; and Jennings, David R., 5,513,287, Cl. 385-25.000.

Jennings, Kenneth L. Hydraulic system for servicing water pumps in wells. 5,511,614, Cl. 166-65.100.

Jennmar Corporation: See—
Calandra, Frank, Jr.; Stankus, John C.; and Oldsen, John G., 5,511,909, Cl. 405-259.600.

Jensen, Stephanie L.: See—
Cook, John A.; Jensen, Stephanie L.; Miller, James A.; and Wiseman, Gary L., 5,513,365, Cl. 395-800.000.

Jenson, Leslie M.: See—
Naqwi, Amir A.; and Jenson, Leslie M., 5,513,004, Cl. 356-357.000.

Jeon, Hyung W.: See—
Son, Jung Y.; Jeon, Hyung W.; Choi, Yong J.; and Bobrinev, Vladimir I., 5,513,022, Cl. 359-16.000.

Jerrold Communications, General Instrument Corporation: See—
Fried, Robert L.; Napoletano, Enrico F.; and Guillot, Marie, 5,512,784, Cl. 257-724.000.

Jesch, Franz, to B. Braun Melsungen AG. Catheterization set. 5,512,052, Cl. 604-158.000.

Jesse, Jerry: See—
Littmann, Richard; Weingartner, Ulrich; Wildenberg, Thomas S.; Jesse, Jerry; and Galloway, Deane E., 5,512,337, Cl. 428-35.400.

JGC Corporation: See—
Koyama, Takeshi; Tonosaki, Masao; Yamada, Nobuhiro; and Mori, Kenji, 5,512,528, Cl. 502-181.000.

Jin, Sungho; Lofth, Ashraf W.; and McCormack, Mark T., to AT&T Corp. Voltage proportional replication device using magnetoresistive sensing elements. 5,512,818, Cl. 323-368.000.

Jinotti, Walter J. Valve for pulmonary medical use. 5,511,545, Cl. 128-205.240.

Jimov, Alexei; and Jimov, Olga. Sliding-blade heat engine with vortex combustion chamber. 5,511,525, Cl. 123-204.000.

Jimov, Olga: See—
Jimov, Alexei; and Jimov, Olga, 5,511,525, Cl. 123-204.000.

Joao, Raymond A.; Joao, Raymond D.; and Garben, Thomas. Remote-controlled anti-theft, theft reporting, or vehicle recovery system and method for motor vehicles. 5,513,244, Cl. 379-58.000.

Joao, Raymond D.: See—
Joao, Raymond A.; Joao, Raymond D.; and Garben, Thomas, 5,513,244, Cl. 379-58.000.

Joh. Friedrich Behrens AG: See—
Bauer, Joachim; Albrecht, Klaus; and Krahmer, Rolf, 5,511,714, Cl. 227-130.000.

Johal, Sarjit S.; and Marold, Lorraine M., to EcoScience Corporation. Maintenance and long term stabilization of fungal conidia using surfactants. 5,512,280, Cl. 424-93.500.

Johannsen, Christian J. Cup holding device. 5,511,754, Cl. 248-311.200.

John B. Sanfilippo & Son, Inc.: See—
Mishkin, Martin A.; Villagran, Maria D.; Hsieh, Yen C.; and Zimmerman, Stephen P., 5,512,308, Cl. 426-93.000.

John F. Waymouth Intellectual Property and Educational Trust: See—
Waymouth, John F., 5,512,799, Cl. 313-567.000.

Johns Hopkins University, The: See—
Atalar, Ergin; and McVeigh, Elliot R., 5,512,825, Cl. 324-309.000.

Spall, James C.; and Cristion, John A., 5,513,096, Cl. 364-158.000.

Johnson & Johnson Consumer Products, Inc.: See—
Tseng, Chung-Ye; Wang, Jonas; Hudson, Marilyn; and Liu, Jue-Chen, 5,512,289, Cl. 424-426.000.

Johnson & Johnson Vision Products, Inc.: See—
Roffman, Jeffrey; LaBelle, Robert; Menezes, Edgar; and Crowe, Carl, 5,512,220, Cl. 264-2.500.

Johnson, Dale G.: See—

Komska, Dean M.; and Johnson, Dale G., 5,513,078, Cl. 361-816.000.

Johnson, David E., to CAS Medical Systems, Inc. Disposable blood pressure cuff. 5,511,552, Cl. 128-686.000.

Johnson, Eric A.; and Goodnough, Michael C., to Wisconsin Alumni Research Foundation. Pharmaceutical composition of botulinum neurotoxin and method of preparation. 5,512,547, Cl. 514-21.000.

Johnson, Gary M.; and Schaeper, Robert J., to Bayer Corporation. Test device for determining the presence of leukocyte cells, esterase or protease in a test sample. 5,512,450, Cl. 435-19.000.

Johnson, Karl F.: See—
Hebert, Gregory L.; and Johnson, Karl F., 5,512,637, Cl. 525-328.500.

Johnson, Kenneth M., to Owens-Corning Fiberglass Technology, Inc. Insulation assembly for compressible insulation material. 5,512,346, Cl. 428-74.000.

Johnson, Mark A.: See—
Agarwal, Ramesh C.; Groves, Randall D.; Gustavson, Fred G.; Johnson, Mark A.; and Olsson, Brett, 5,513,366, Cl. 395-800.000.

Johnson, Peter A.; and Wolski, Guntram K., to Sequoia Semiconductor, Inc. Built-in self-test tri-state architecture. 5,513,190, Cl. 371-22.500.

Johnson, Ronald L. Swimmer training paddle. 5,511,998, Cl. 441-56.000.

Johnson, Thomas M.: See—
Gillespie, Byron R.; Garbus, Elliot D.; Kahn, Mitchell A.; Johnson, Thomas M.; O'Connor, Dennis M.; and Heeb, Jay S., 5,513,337, Cl. 395-479.000.

Jolu, Etienne J.: See—
Mathis, Gérard; Dumont, Christophe; Aspe, Daniel; Foyentin, Muriel; Jolu, Etienne J.; and Nuti, Dominique, 5,512,493, Cl. 436-537.000.

Jones, Dale C.; and Lacy, Michael A., to Vantage Products Corporation. Unitary molded plastic structural member, lid form and lawn crypt constructed from same. 5,511,345, Cl. 52-136.000.

Jones, Douglas J.: See—
McAndrews, Glenn; Hegge, James T.; Koss, Christopher R.; Umney, Michael A.; and Jones, Douglas J., 5,511,288, Cl. 24-16.00R.

Jones, Jack A., to California Institute of Technology, The. Near azeotropic mixture substitute for dichlorodifluoromethane. 5,512,197, Cl. 252-67.000.

Jones, Keith A.: See—
Yam, Benny S.; Joseph, Amy L.; Winston, Anthony E.; and Jones, Keith A., 5,512,071, Cl. 51-307.000.

Jones, Kyle B.; Lehnert, Robert A.; McInnes, Ian D.; Quinn, Robert D.; Sisley, Steven E.; and Temus, Charles J., to Pacific Nuclear Systems, Inc. Skid for transporting a nuclear fuel transportation cask. 5,513,231, Cl. 376-261.000.

Jones, Kyle B.; Lehnert, Robert A.; McInnes, Ian D.; Quinn, Robert D.; Sisley, Steven E.; and Temus, Charles J., to Pacific Nuclear Systems, Inc. Transportation and storage cask for spent nuclear fuels. 5,513,232, Cl. 376-272.000.

Jones, Marvin S.; Dickten, Dirk; Green, Gary M.; Oleksy, Paul D.; Sims, Gregory R.; Tomescu, Ludwig; and Berger, Robert C., to Steinway Musical Properties, Inc. Piano escapement action. 5,511,454, Cl. 84-236.000.

Jones, Peter; and Lawcock, Roger, to Stackpole Limited. Sintered coining process. 5,512,236, Cl. 419-28.000.

Jones, Robert W.: See—
De Lucia, Frank V.; Le, Tuong T.; and Jones, Robert W., 5,512,007, Cl. 451-75.000.

Jones, Russell B.: See—
Glezer, Boris; Fierstein, Aaron R.; and Jones, Russell B., 5,511,945, Cl. 416-96.00R.

Jones, Russell W.: See—
Burton, Anthony; Williams, Andrew J. S.; Kirk, Andrew J.; and Jones, Russell W., 5,512,024, Cl. 477-102.000.

Jones, Stephen L. Decking system and clips therefor. 5,511,353, Cl. 52-536.000.

Jönsson, Lennart; and Knutsson, Stefan, to Gambro AB. System for the preparation of a fluid concentrate intended for medical use. 5,511,875, Cl. 366-136.000.

Jonsson, Sven-Olof L.; Chambert, Georg W. R.; and Bodin, Stig R., to Telefonaktiebolaget LM Ericsson. Radiotelephone locating and handoff using alternative criteria. 5,513,246, Cl. 379-60.000.

Jopson, Charles: See—
Wimer, Ted L.; and Jopson, Charles, 5,513,332, Cl. 395-427.000.

Josef, Dieter: See—
Lapierre, Yves; Josef, Dieter; Adam, Jean; and Greber-Widmer, Susanne, 5,512,432, Cl. 435-5.000.

Josef Gartner & Co.: See—
Brodalla, Dieter; Fransson, Roland; Breunig, Herbert; and Ferner, Michael, 5,512,129, Cl. 134-2.000.

Joseph, Amy L.: See—
Yam, Benny S.; Joseph, Amy L.; Winston, Anthony E.; and Jones, Keith A., 5,512,071, Cl. 51-307.000.

Josephson, Mark W.: See—
Guire, Patrick E.; Dunkirk, Shawn G.; Josephson, Mark W.; and Swanson, Melvin J., 5,512,329, Cl. 427-508.000.

Joshi, Masaharu, to Hosiden Corporation. Self-cleaning type switch. 5,512,723, Cl. 200-530.000.

Joshi, Narendra D.; and Ekstedt, Edward E., to General Electric Company. Dual fuel mixer for gas turbine combustor. 5,511,375, Cl. 60-39.463.

Joung, Mun C.: See—
Kang, Myung G.; Kang, Seong S.; Choi, Sung H.; Joong, Mun C.; Jang, Byoung G.; Ryu, Kye Y.; Yu, Hyo C.; and Lee, Sang J., 5,511,737, Cl. 242-355.100.

Jovanovic, Misa V.: See—

Markle, David R.; and Jovanovic, Misa V., 5,511,547, Cl. 128-633.000.

Juda, Charles C.: See—
Everson, Harold W., Jr.; Slaybaugh, Jon; and Juda, Charles C., 5,512,890, Cl. 340-870.130.

Jung, Ludwig: See—
Horn, Peter; Hinz, Werner; and Jung, Ludwig, 5,512,602, Cl. 521-114.000.

Junghans, Rudi, to Heidelberger Druckmaschinen AG. Drive for an oscillating roller in an inking unit of a rotary printing press. 5,511,474, Cl. 101-348.000.

Jurkowski, Kevin S.: See—
Jurkowski, Marlin G.; and Jurkowski, Kevin S., 5,511,327, Cl. 37-285.000.

Jurkowski, Marlin G.; and Jurkowski, Kevin S. Wheeled snow shovelling device. 5,511,327, Cl. 37-285.000.

JX Crystals, Inc.: See—
Fraas, Lewis M.; Seal, Michael R.; and West, Edward M., 5,512,109, Cl. 136-253.000.

K N Energy, Inc.: See—
Corte, Lawrence J., 5,511,573, Cl. 137-15.000.

Kabushiki Kaisha Daikin Seisakusho: See—
Fukunaga, Takao, 5,511,640, Cl. 192-3.280.

Kajitani, Koji; Fukushima, Hirotsuka; Okubo, Manoru; Yanagida, Naoki; Takenaka, Mitsuhiro; Tojii, Mitsuo; and Yamamoto, Kozo, 5,511,446, Cl. 74-573.00F.

Kabushiki Kaisha Isowa: See—
Yasui, Toshihiko; and Hatasa, Kazuhiro, 5,512,020, Cl. 474-151.000.

Kabushiki Kaisha Kobe Seiko Sho: See—
Ikegami, Yoshio; Konno, Masashi; Minagawa, Koji; Fukano, Norifumi; Uemura, Tatsuya; and Yagi, Tatsuo, 5,511,874, Cl. 366-100.000.

Kabushiki Kaisha Komatsu Seisakusho: See—
Kamata, Seiji; and Kuromoto, Kazunori, 5,511,458, Cl. 91-361.000.

Kabushiki Kaisha TEC: See—
Kamano, Tadao, 5,512,976, Cl. 355-200.000.

Kabushiki Kaisha Tokai Rika Denki Seisakusho: See—
Ichikawa, Takashi; and Ohtsuka, Noboru, 5,511,857, Cl. 301-37.230.

Kabushiki Kaisha TOPCON: See—
Ohtomo, Fumio; Sugai, Hiroo; Ishinabe, Ikuro; Yamazaki, Takaaki; and Kodaira, Junichi, 5,513,001, Cl. 356-249.000.

Kabushiki Kaisha Toshiba: See—
Atsumi, Shigeru; and Tanaka, Sumio, 5,513,146, Cl. 365-185.230.

Endo, Koichi, 5,512,777, Cl. 257-617.000.

Fujimoto, Akihisa, 5,513,353, Cl. 395-600.000.

Fukawasa, Yoshiharu, 5,512,155, Cl. 204-298.110.

Imaji, Yoshiaki; Nakao, Satoshi; and Sawano, Hiroshi, 5,513,072, Cl. 361-707.000.

Inoue, Kazuhiko, 5,512,781, Cl. 257-676.000.

Komuro, Isaku, 5,513,256, Cl. 379-156.000.

Maeda, Takeo; Momose, Hiroshi; Urakawa, Yukihiko; and Matsui, Masataka, 5,512,772, Cl. 257-370.000.

Makino, Yoshiyuki; and Imai, Masahiro, 5,511,397, Cl. 68-12.270.

Nakagawa, Akio; Furukawa, Kazuyoshi; Ogura, Isuneo; and Tanzawa, Katsujino, 5,512,774, Cl. 257-501.000.

Nisimura, Hiroyuki, 5,513,018, Cl. 358-474.000.

Nobuta, Yasuo; Toki, Yusuke; Hiraoka, Manabu; Sugihara, Naoki; and Ozaki, Masahiro, 5,513,237, Cl. 378-19.000.

Ogami, Keizo; and Akashi, Kazuo, 5,513,069, Cl. 361-685.000.

Oyamatsu, Hisato, 5,512,500, Cl. 437-40.000.

Saito, Tsuyoshi, 5,512,746, Cl. 250-310.000.

Suzuki, Atsuhide; Kodama, Hirotsugu; and Suzuki, Toshio, 5,511,948, Cl. 416-191.000.

Takahashi, Masashi; Fujiwara, Shigeru; Yoshida, Minoru; and Watanabe, Takeshi, 5,512,982, Cl. 355-219.000.

Tanaka, Masahiko; and Sugaya, Toshihiro, 5,513,164, Cl. 369-112.000.

Tsutsumi, Masato; Yamasita, Haruhisa; Sampa, Hideo; Fujii, Kanako; and Asakura, Hiroaki, 5,512,345, Cl. 428-69.000.

Uchida, Hideaki; and Ohashi, Kouji, 5,513,091, Cl. 363-60.000.

Kabushiki Kaisha Tokyo Kikai Seisakusho: See—
Ohmi, Takashi; and Shibuya, Yasuo, 5,511,473, Cl. 101-228.000.

Kade, Alexander; Walenty, Allen J.; and Leppke, Kevin G., to General Motors Corporation. Regenerative and friction brake blend control. 5,511,859, Cl. 303-3.000.

Kadono, Shinji: See—
Suzuki, Yukio; Masuda, Ikuro; Iwamura, Masahiro; Kadono, Shinji; Urakami, Akira; Yoshimura, Masayoshi; and Matsubara, Toshiaki, 5,512,847, Cl. 326-110.000.

Kadowaki, Hidejiro: See—
Takada, Yoshihiro; Suzuki, Akio; Izumizaki, Masami; Tsuchii, Ken; Kadowaki, Hidejiro; Yanaka, Toshiyuki; Takahashi, Haruhiko; Takamiya, Makoto; Yamamoto, Kosuke; Wataya, Masafumi; Miura, Yasushi; Moriguchi, Haruhiko; and Murayama, Yasushi, 5,512,924, Cl. 347-18.000.

Kagan, Richard S.: See—
Dolin, Robert A., Jr.; Einkauf, Robert L.; Kagan, Richard S.; Riley, Glen M.; and Von De Bur, James M., 5,513,324, Cl. 395-200.180.

Kage, Kouzou, to NEC Corporation. Person location system. 5,513,243, Cl. 379-58.000.

Kahn, Mitchell A.: See—
Gillespie, Byron R.; Garbus, Elliot D.; Kahn, Mitchell A.; Johnson, Thomas M.; O'Connor, Dennis M.; and Heeb, Jay S., 5,513,337, Cl. 395-479.000.

Kaida, Yoshito: *See*—
Sakagami, Tatsuya; and Kaida, Yoshito, 5,511,487, Cl. 104-252,000.

Kailath, Thomas: *See*—
Khalaf, Babak H.; Aghajan, Hamid K.; and Kailath, Thomas, 5,513,275, Cl. 382-149,000.

Kaiser, Hugh D.: *See*—
Bishop, William M.; and Kaiser, Hugh D., 5,511,905, Cl. 405-59,000.

Kaiser, Wilfried: *See*—
Schicht, Heinz; Schindler, Herbert; Januschke, Klaus; Gregorowius, Werner; and Kaiser, Wilfried, 5,512,152, Cl. 204-192,260.

Kaji, Hironori: *See*—
Yamada, Yoshiaki; and Kaji, Hironori, 5,512,170, Cl. 210-198,200.

Kaji, Tetsuo: *See*—
Ono, Yasushi; Sakamoto, Satoshi; Murata, Yutaka; Kaji, Tetsuo; and Endo, Yasuhiko, 5,512,523, Cl. 501-127,000.

Kajitani, Koji; Fukushima, Hiroaki; Okubo, Manoru; Yanagida, Naoki; Takenaka, Mitsuhiko; Touji, Mitsuo; and Yamamoto, Kozo, to Kabushiki Kaisha Daikin Seisakusho. Flywheel assembly, 5,511,446, Cl. 74-573,000.

Kakimoto, Nobuko: *See*—
Takikawa, Hiroyoshi; Yoshida, Yoshio; Kakimoto, Nobuko; and Ise, Shinsuke, 5,512,733, Cl. 219-620,000.

Kaku, Toshimitsu: *See*—
Ide, Hiroshi; Kirino, Pumiyo; Toda, Tsuyoshi; Maeda, Takeshi; Tsuchinaga, Hiroyuki; Kugiyama, Fumio; Shigematsu, Kazuo; Mita, Seichi; Saito, Atsushi; and Kaku, Toshimitsu, 5,513,165, Cl. 369-116,000.

Kakuta, Hideo: *See*—
Hasegawa, Koji; Kakuta, Hideo; and Mizutani, Junya, 5,512,673, Cl. 536-128,000.

Kalb, Helmut: *See*—
Dingelreiter, Heinz; Kalb, Helmut; and Rapp, Richard, 5,512,161, Cl. 205-67,000.

Kalchauer, Wilfried; Pachaly, Bernd; Straussberger, Herbert; and Streckel, Willi, to Wacker-Chemie GmbH. Process for preparing methylchlorosilanes, 5,512,662, Cl. 512-472,000.

Kalisher, Murray H., to Santa Barbara Research Center. Process for growing HgCdTe base and contact layer in one operation, 5,512,511, Cl. 437-130,000.

Kaliszewski, Thomas S.: *See*—
Snell, William M.; Kaliszewski, Thomas S.; and Eaton, Rodney L., 5,511,641, Cl. 192-4,000.

Kalsi, Swarn S., to Northrop Grumman Corporation. Negative radius coil winders, 5,511,733, Cl. 242-437,300.

Kaltenbach & Voigt GmbH & Co.: *See*—
Eibofner, Eugen; and Kuhn, Bernhard, 5,512,245, Cl. 422-28,000.

Kamano, Tadao, to Kabushiki Kaisha TEC. Image forming apparatus having rotation resistance adjusting means for adjusting rotation resistance on a photosensitive drum, 5,512,976, Cl. 355-200,000.

Kamata, Seiji, and Kuramoto, Kazunori, to Kabushiki Kaisha Komatsu Seisakusho. Automatic cushioning control apparatus for cylinder of working machine, 5,511,458, Cl. 91-361,000.

Kambara, Goro. Post installable self locking machine leveling device, 5,511,760, Cl. 248-650,000.

Kameda, Osamu; Masuno, Masami; Nomoto, Yoshitaka; and Hiraoka, Youchi, to Mazda Motor Corporation. Power transfer apparatus for four-wheel drive automotive vehicle, 5,511,448, Cl. 74-665,000.

Kameli, Nader, to Otis Elevator Company. Floor population detection for an elevator system, 5,511,635, Cl. 187-392,000.

Kameoka, Teruhiko: *See*—
Tokunaga, Takahiro; Uemura, Yukio; Asano, Hideo; Sugi, Hikaru; Kameoka, Teruhiko; and Kondo, Yasushi, 5,511,939, Cl. 415-206,000.

Kameyama, Reiko: *See*—
Suzuki, Takumi; Kameyama, Reiko; Kamoi, Sumio; Kikuchi, Hisashi; Komori, Satoshi; Suetake, Tomomi; and Matsuki, Yumi, 5,513,026, Cl. 359-81,000.

Kameyama, Takaaki: *See*—
Miyazawa, Shuhei; Hoshino, Yohsuke; Shibata, Hisashi; Hirota, Kazuo; Kameyama, Takaaki; Abe, Shinya; and Yamanaka, Takashi, 5,512,579, Cl. 514-299,000.

Kamimura, Junji: *See*—
Sakurai, Hiroshi; Ohtsubo, Hiroyasu; Asada, Kouji; Noda, Masaru; Iura, Noriyuki; Imade, Takuya; Kamimura, Junji; Komatsu, Hiroyuki; and Kinugasa, Toshiro, 5,512,945, Cl. 348-221,000.

Kaminski, Ronald S.; and Eggert, Noel B., to Owens-Illinois Plastic Products Inc. Method and apparatus for trimming and inspecting plastic containers, 5,511,648, Cl. 198-379,000.

Kamishima, Osam: *See*—
Ozeki, Kumio; Watanabe, Fumio; Yoshida, Haruo; Kamishima, Osam; and Sakai, Yosuke, 5,512,722, Cl. 200-517,000.

Kamiya, Ichiro: *See*—
Nishioka, Yukiko; Kamiya, Ichiro; Shino, Ryoichi; Ishii, Yoshihiro; and Koseki, Koichi, 5,511,264, Cl. 8-158,000.

Kamoda, Takashi; and Mashiko, Takashi, to Fuji Photo Optical Co., Ltd. Film loading apparatus using planet gear, 5,512,970, Cl. 354-173,100.

Kamoi, Jyocei: *See*—
Takechi, Ryuchi; Kawasaki, Takeshi; Kamoi, Jyocei; Hajikano, Kazuo; Kuroyanagi, Satoshi; and Shimoe, Toshio, 5,513,191, Cl. 371-37,100.

Kamoi, Sumio: *See*—
Suzuki, Takumi; Kameyama, Reiko; Kamoi, Sumio; Kikuchi, Hisashi; Komori, Satoshi; Suetake, Tomomi; and Matsuki, Yumi, 5,513,026, Cl. 359-81,000.

Kanaan, Roger J.; and Martin, Edward H., to Power Tool Holders, Inc. Integrated collet and chuck device, 5,511,801, Cl. 279-52,000.

Kanamori, Yasuo: *See*—
Konishi, Masaya; Hayashi, Kunihiko; Enomoto, Youichi; Tanaka, Shoji; Yamada, Yasuji; Ohtsu, Kanishi; Kanamori, Yasuo; and Shiohara, Yuh, 5,512,541, Cl. 505-474,000.

Kanamoto, Shigeharu: *See*—
Satake, Satoru; Kanamoto, Shigeharu; Okada, Yutaka; and Matsumoto, Nobuhiro, 5,511,469, Cl. 99-519,000.

Kanbayashi, Makoto: *See*—
Okado, Kenji; Ugai, Toshiyuki; Fujita, Ryoichi; Kanbayashi, Makoto; Takiguchi, Tsuyoshi; Ichikawa, Yasuhiro; and Iida, Wakashi, 5,512,402, Cl. 430-106,600.

Kanda, Patrick: *See*—
Kushwaha, Rampratap; Born, Kathleen; McGill, Henry C., Jr.; Kanda, Patrick; and Dunham, Raymond G., 5,512,548, Cl. 514-12,000.

Sparrow, James T.; Kneib-Cordonier, Nancy; Kanda, Patrick; and Lanford, Robert E., 5,512,648, Cl. 526-307,300.

Kandasamy, David R.; Butler, Mitchell B.; Foss, Andrew L.; Peterson, Bradley M.; Patwardhan, Chintamani M.; Ribble, Michael T.; Rothmeier, Dieter; and Ramil, Gaudencio, to Auspex Systems, Inc. Fault tolerant NFS server system and mirroring protocol, 5,513,314, Cl. 395-182,040.

Kandler, Richard L.: *See*—
Buchholz, Donald H.; and Kandler, Richard L., 5,512,187, Cl. 210-767,000.

Kanehl, Donald A., Jr. Vehicle mountable table, 5,511,493, Cl. 108-44,000.

Kaneko, Kyoichi, to Daiwa Seiko, Inc. Spinning reel for fishing with drag operation and spool free states, 5,511,735, Cl. 242-245,000.

Kaneko, Norio: *See*—
Den, Tohru; Kaneko, Norio; and Kobayashi, Tamaki, 5,512,542, Cl. 505-125,000.

Kaneko, Tadataka: *See*—
Takahashi, Yositaro; Manabe, Akira; Kaneko, Tadataka; Okajima, Hiroshi; Ito, Yoshihiko; and Daiza, Setsuo, 5,512,080, Cl. 75-231,000.

Kaneko, Yoshiyuki: *See*—
Kobayashi, Noboru; and Kaneko, Yoshiyuki, 5,511,505, Cl. 114-270,000.

Kaneko, Yutaro: *See*—
Yamamoto, Naoki; Nakashima, Hideki; Uryu, Toshiyuki; Yoshida, Takashi; Matsuzaki, Kei; Kaneko, Yutaro; and Mimura, Toru, 5,512,672, Cl. 536-118,000.

Kaneshiro, Ronald; and Straznicki, Joseph, to Hewlett-Packard Company. Optical detectors and sources with merged holographic optical elements suitable for optoelectronic interconnects, 5,513,021, Cl. 359-15,000.

Kang, Chao M., to H. M. Electronics, Inc. Drive-up station vehicle detection system and method of using same, 5,512,891, Cl. 340-941,000.

Kang, Hyoung J.; Lee, Young M.; and Choi, Joon S., to Goldstar Co., Ltd. Auto-load impedance matching device of a microwave oven, 5,512,736, Cl. 219-750,000.

Kang, Jin-Kyu, to Samsung Display Devices Co., Ltd. Liquid crystal display and method for making the same, 5,513,024, Cl. 359-62,000.

Kang, Myung G.; Kang, Seong S.; Choi, Sung H.; Jung, Mun C.; Jang, Byoung G.; Ryu, Kye Y.; Yu, Hyo C.; and Lee, Sang J., to Goldstar Co., Ltd. Brake device for magnetic recording and reproducing apparatus, 5,511,737, Cl. 242-355,100.

Kang, Seong S.: *See*—
Kang, Myung G.; Kang, Seong S.; Choi, Sung H.; Jung, Mun C.; Jang, Byoung G.; Ryu, Kye Y.; Yu, Hyo C.; and Lee, Sang J., 5,511,737, Cl. 242-355,100.

Kannabiran, Rengan; and Vargas, Leroy C., to Polaroid Corporation. Optical laminator, 5,512,126, Cl. 156-380,900.

Kanno, Hajime: *See*—
Saito, Kenichi; Mita, Kanji; and Kanno, Hajime, 5,513,157, Cl. 369-34,000.

Kanzaki Kokyukoki Mfg. Co., Ltd.: *See*—
Hasegawa, Toshiyuki; Irikura, Koji; and Iida, Masaru, 5,511,436, Cl. 74-331,000.

Kao Corporation: *See*—
Uemura, Tomohiro; Tanahashi, Masanori; Muroi, Yoshiyuki; and Kono, Yoshinao, 5,512,277, Cl. 424-78,030.

Kaplan, Samuel: *See*—
Henry, Arnold W.; Eddy, Clifford O.; Heeks, George J.; Chow, Che C.; Fratangelo, Louis D.; Fraser, David; Kaplan, Samuel; and Pan, David H., 5,512,409, Cl. 430-124,000.

Kariya, Izumi; and Funayama, Hidehiko, to Sony Corporation. Video printer, 5,513,014, Cl. 358-448,000.

Kariya, Yasuhiro: *See*—
Iwanaga, Takashi; Kariya, Yasuhiro; Magario, Kenji; Kawaguchi, Takayoshi; Shima, Nobuhiko; and Ban, Mitsuru, 5,511,528, Cl. 123-467,000.

Karlis, Robert G.; and Vinther, Gordon A., to Clix Products, Inc. Plastic paper clip and integral sheet-like packaging thereof, 5,511,661, Cl. 206-338,000.

Karlson, Jorgen. Alpine style ski, 5,511,815, Cl. 280-609,000.

Karst, Dennis L.: *See*—
Block, Timothy R.; Gajo, David P.; Guenther, Charles J.; Karst, Dennis L.; Kidd, Thomas D.; and Leddige, Michael W., 5,513,073, Cl. 361-719,000.

Kasahara, Tamiyoshi; Akatsu, Yohsuke; Kawagoe, Kenji; Endo, Yutaka; and Noguchi, Hiroshi, to Nissan Motor Co., Ltd. Vehicle axle suspension system, 5,511,817, Cl. 280-717,000.

Kase, Akira, to Fuji Photo Film Co., Ltd. Silver halide color photographic light-sensitive material and method for forming color image therewith, 5,512,425, Cl. 430-533,000.

Kashii, Masaharu; Yasuhara, Nae; and Kusano, Hiroko, to Sony Corporation. Graphic image generating apparatus with automatic demonstration image generating program, 5,511,983, Cl. 434-365,000.

Kashiwai, Shinichi: *See*—
Hidaka, Masataka; Kashiwai, Shinichi; Saito, Yoshinori; and Kawasaki, Terufumi, 5,513,233, Cl. 376-352,000.

Kass, Volker: *See*—
Meier, Jurgen-Dietrich; Munster, Christian; Kass, Volker; and Siffrin, Horst, 5,512,679, Cl. 546-339,000.

Kasukawa, Hiroaki: *See*—
Uchiyama, Hideki; Kasukawa, Hiroaki; Takeda, Eiko; Watanabe, Junichiro; and Nanba, Ryoichi, 5,512,665, Cl. 536-4,100.

Katamotou, Tohru, to American Sammy Corporation. Coin game machine requiring player skill, 5,511,794, Cl. 273-440,000.

Kataoka, Junnosuke: *See*—
Yoshida, Takehiro; Koizumi, Shigeru; Miura, Shigeo; Kurosawa, Yuji; Fujii, Yasuo; Noguchi, Hiroyuki; Nakayama, Toru; Kataoka, Junnosuke; and Okada, Masaki, 5,513,253, Cl. 379-100,000.

Kaibi, Karl; Noggle, Ken; Lowe, Tony; and Patterson, John, to Valente Inc. Cutting insert, 5,511,911, Cl. 407-114,000.

Kato, Hisato: *See*—
Goto, Narito; Koyama, Noboru; and Kato, Hisato, 5,512,363, Cl. 428-323,000.

Kato, Junichi: *See*—
Serizawa, Yoji; Noguchi, Akio; Ushio, Yukihide; Matsuo, Shimpei; Yamada, Kazuro; Uchiyama, Seiji; Takeuchi, Makoto; Suwa, Koichi; Hiroshima, Koichi; Tsukida, Shinichi; Takano, Manabu; Goto, Masahiro; Inoue, Takahiro; Yamada, Hiromichi; Kato, Junichi; and Ojima, Masaki, 5,512,929, Cl. 347-153,000.

Kato, Keichi: *See*—
Haseoka, Yasuhiko; Ochi, Yoshiaki; Kitanaka, Yoshiyuki; Ohashi, Hiroki; Shimada, Hiroshi; Mase, Tomonori; Kato, Keichi; and Takahashi, Youchi, 5,513,156, Cl. 369-34,000.

Kato, Kuniharu: *See*—
Kawashima, Toshiyuki; Utsunomiya, Jiro; Kurosawa, Kiyoshi; Saburo, Iida; Nagase, Ryo; Himeno, Akira; Yukimatsu, Ken-ichi; Okyno, Masayuki; Kato, Kuniharu; and Kawachi, Masao, 5,513,285, Cl. 385-16,000.

Kato, Masayuki; Arikate, Hirokazu; Ishimoto, Manabu; Sato, Noriko; and Nakashima, Masato, to Fujitsu Limited. Stereoscopic display apparatus use a holographic phase distribution formed from two-dimensional images, 5,513,020, Cl. 359-9,000.

Kato, Takao: *See*—
Sakurai, Yoshito; Gohara, Shinobu; Ohtsuki, Kenichi; Kato, Takao; Kuwahara, Hiroshi; and Amada, Eiichi, 5,513,177, Cl. 370-58,100.

Kato, Takeshi; and Saitoh, Shouji, to Hitachi, Ltd. Information printing system having information processing apparatuses and printer including printing medium cassettes, 5,512,928, Cl. 347-138,000.

Katoh, Kenichi: *See*—
Ninomiya, Hitoshi; Katoh, Kenichi; and Fukuta, Toshiaki, 5,512,075, Cl. 55-497,000.

Katori, Masayuki, to Fujitsu Limited. Multiprocessor system discharging data in networking apparatus in response to off-line information from receiver-side processor, 5,513,321, Cl. 395-200,150.

Katsuda, Ai: *See*—
Nakajima, Atsushi; Matsumoto, Shinji; Maejima, Katsumi; Nakatani, Koichi; Kawakami, Sota; and Katsuda, Ai, 5,512,931, Cl. 347-213,000.

Katsura, Yousuke: *See*—
Takasugi, Hisashi; Katsura, Yousuke; Inoue, Yoshikazu; and Tomishi, Tetsuo, 5,512,588, Cl. 514-370,000.

Kauer, John S.: *See*—
Walt, David R.; and Kauer, John S., 5,512,490, Cl. 436-171,000.

Kauffman, Kenneth A. Optimizing controller, 5,511,402, Cl. 72-14,800.

Kauffman, Christoph, to Zellweger Luwa AG. System for increasing the production of spinning machines, 5,511,371, Cl. 57-264,000.

Kaunmagraph Flint Corporation: *See*—
Rosica, George B.; and Smith, Vance E., 5,512,226, Cl. 264-132,000.

Kauschke, Wolfgang, to Drägerwerk AG. Process for determining the percentage of combustible gases in a gas mixture as well as their classification according to gas class factors, 5,513,125, Cl. 364-498,000.

Kavia, Mukund N., to Thermal Kinetic Systems, Inc. Melting furnace and method, 5,513,207, Cl. 373-116,000.

Kawabata, Kazuhiro: *See*—
Imamura, Hitomi; Matsuda, Shin; Ito, Nobuyuki; and Kawabata, Kazuhiro, 5,512,786, Cl. 257-780,000.

Kawachi, Masao: *See*—
Kawashima, Toshiyuki; Utsunomiya, Jiro; Kurosawa, Kiyoshi; Saburo, Iida; Nagase, Ryo; Himeno, Akira; Yukimatsu, Ken-ichi; Okyno, Masayuki; Kato, Kuniharu; and Kawachi, Masao, 5,513,285, Cl. 385-16,000.

Kawagoe, Kenji: *See*—
Kasahara, Tamiyoshi; Akatsu, Yohsuke; Kawagoe, Kenji; Endo, Yutaka; and Noguchi, Hiroshi, 5,511,817, Cl. 280-717,000.

Kawaguchi, Takayoshi: *See*—
Iwanaga, Takashi; Kariya, Yasuhiro; Magario, Kenji; Kawaguchi, Takayoshi; Shima, Nobuhiko; and Ban, Mitsuru, 5,511,528, Cl. 123-467,000.

Kawaguri, Mariko: *See*—
Yoshioka, Toshihiko; Kawaguri, Mariko; Nankai, Shiro; Tsutsumi, Haruhiro; Baba, Hideyuki; Tokuno, Yoshinobu; and Miyazaki, Shoji, 5,512,159, Cl. 204-403,000.

Kawahara, Yoshihiro: *See*—
Tsuchihashi, Hironori; Fujiwara, Osami; Satou, Tuiyoshi; Togoshi, Yoshikazu; Hamada, Toshihiko; Kawahara, Yoshihiro; and Bando, Niho, 5,511,631, Cl. 180-247,000.

Kawai, Hiroyuki: *See*—
Kitsu, Kunihiko; Uchiyama, Kaneatsu; Tanaka, Nobuyuki; and Kawai, Hiroyuki, 5,512,975, Cl. 355-200,000.

Kawakami, Sota: *See*—
Nakajima, Atsushi; Matsumoto, Shinji; Maejima, Katsumi; Nakatani, Koichi; Kawakami, Sota; and Katsuda, Ai, 5,512,931, Cl. 347-213,000.

Kawamoto, Ryusaburo; and Suzuki, Kengo, to NEC Corporation. EMI gasket, 5,511,798, Cl. 277-205,000.

Kawamura, Harumi; and Satoh, Keiko, to Sony Corporation. Star configuration network system, 5,513,182, Cl. 370-94,300.

Kawamura, Koichiro: *See*—
Takeuchi, Hideki; and Kawamura, Koichiro, 5,512,515, Cl. 437-196,000.

Kawamura, Naoto, to Canon Kabushiki Kaisha. Discrimination of an edge portion of an image from a screen dot portion in an image processing system, 5,513,280, Cl. 382-266,000.

Kawamura, Noriaki: *See*—
Sobda, Takashi; Yamazaki, Iwao; Kawamura, Noriaki; and Taketomi, Shigehisa, 5,512,552, Cl. 514-102,000.

Kawano, Kenji: *See*—
Uchikata, Yoshio; Hattori, Yoshifumi; Ara, Yoji; Kitani, Masashi; Suzuki, Etsuro; Wada, Toshihide; Hirabayashi, Hiromitsu; Saikawa, Hideo; Kojima, Masami; Hanabusa, Tadashi; Kawano, Kenji; Tanno, Koichi; Ohashi, Tetsuyo; Bekki, Toshihiko; Aono, Kenji; and Ikado, Masaharu, 5,512,926, Cl. 347-86,000.

Kawano, Susumu, to Amada Metals Company, Limited. Upper tool for press brake, 5,511,407, Cl. 72-482,910.

Kawano, Tsuyoshi: *See*—
Yoshitomi, Yasunari; Kuroki, Katsuro; Matsuo, Yukio; Masui, Hiroaki; Nakamura, Yoshio; Ishibashi, Maremizu; Kawano, Tsuyoshi; Haratani, Tsutomu; and Ushigami, Yoshiyuki, 5,512,110, Cl. 148-113,000.

Kawasaki Kokugyo Kabushiki Kaisha: *See*—
Ide, Hideaki; Bandoh, Shunichi; and Yasuhara, Hiroshi, 5,511,944, Cl. 416-31,000.

Kawasaki, Mikio; Ohmori, Takahiro; and Tomiyasu, Hiroshi, to Matsushita Electric Industrial Co., Ltd. Magnetic head slider, 5,513,056, Cl. 360-103,000.

Kawasaki, Takeshi: *See*—
Takechi, Ryuchi; Kawasaki, Takeshi; Kamoi, Jyocei; Hajikano, Kazuo; Kuroyanagi, Satoshi; and Shimoe, Toshio, 5,513,191, Cl. 371-37,100.

Kawasaki, Terufumi: *See*—
Hidaka, Masataka; Kashiwai, Shinichi; Saito, Yoshinori; and Kawasaki, Terufumi, 5,513,233, Cl. 376-352,000.

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- Kimura, Koji: See—
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- Kimura, Mituo: See—
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- Kimura, Noriyuki; Suzuki, Minoru; and Fujishiro, Takatsugu, to Ricoh Company, Ltd. Revolver type developing device for an image forming apparatus. 5,512,984, Cl. 355-245.000.
- Kimura, Taizo: See—
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- King, Leonard T., to Komax Systems, Inc. Staged rotary mixer. 5,511,877, Cl. 366-169.200.
- Kinne, Daniel J., to Procter and Gamble Company. The. Tear-away canister lid. 5,511,680, Cl. 206-276.000.
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- Kirino, Fumiyoshi: See—
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- Kirk, Andrew J.: See—
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- Kittiver, Charles: See—
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- Klemen, Donald, to General Motors Corporation. Electrical interface connector assembly. 5,511,990, Cl. 439-559.000.
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- Klockner Hansel GmbH: See—
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- Kneib-Cordonier, Nancy: See—
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- Knepler, John T.: See—
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- Knodt, Kurt T.; Graves, James R.; Gauronski, John F.; Raymor, Herbert J.; Cole, Randall P.; Filomena, K. U.; DeNunzio, Frank J.; Crocker, David E.; and Barnett, Simon J., to Xerox Corporation. Automatic document imaging mode selection system. 5,513,017, Cl. 358-471.000.
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- Kobayashi, Kenzou: See—
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- Kobayashi, Koji: See—
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- Kobayashi, Noboru; and Kaneko, Yoshiyuki, to Yamaha Hatsudoki Kabushiki Kaisha. Personal watercraft with V-type engine. 5,511,505, Cl. 114-270.000.
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- Kooy, Richard J.: *See—*
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- Kosbar, Laura L.: *See—*
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- Koskovich, Gregory N., to ReSound Corporation. Class AB amplifier allowing quiescent current and gain to be set independently, 5,512,857, Cl. 330-252,000.
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- Kotwicki, Allan J., to Ford Motor Company. Engine air/fuel ratio control responsive to stereo ego sensors, 5,511,377, Cl. 60-274,000.
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- Kowert, Robert C., to Dell USA, L.P. Video memory clock selection circuit and method, 5,513,340, Cl. 395-550,000.
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- Kraft, Arno: *See—*
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- Krahling, Joseph D. Fixture for retrofitting and wiring security alarm door jamb switches to security systems, 5,511,915, Cl. 409-143,000.
- Krahmer, Rolf: *See—*
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- Kraiczek, Karsten: *See—*
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- Krause, Stewart W., to Wyo-Ben, Inc. Flexible grouting composition, 5,512,096, Cl. 106-718,000.
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- Kravets, Valery: *See—*
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- Kravitz, Harley A. Adjustable width trailer hitch, 5,511,813, Cl. 280-495,000.
- Kreczko, Gregory: *See—*
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- Kremet, Gerhard H.: *See—*
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- Kreutzer, Kristina A.; and Tam, Wilson, to Du Pont de Nemours, E. I., and Company. Hydrocyanation process and multidentate phosphite and nickel catalyst composition therefor, 5,512,696, Cl. 558-338,000.
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- Kricka, Larry J., to British Technology Group Limited. Enhancement of chemiluminescent reactions, 5,512,451, Cl. 435-28,000.
- Krijn, Marcellinus P. C. M.: *See—*
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- Krishnakumar, Anjur S.: *See—*
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- Krones, Daniel K. Vehicle security system, 5,513,105, Cl. 364-424,010.
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- Krueger, Mark K., to Cincinnati Milacron Inc. Aqueous functional fluid having improved resistance to micro-organisms, 5,512,191, Cl. 252-49,300.
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- Krymsky, Mark D., to WM Technologies. Apparatus and method for magnetically applying a lubricant, 5,511,403, Cl. 72-42,000.
- Krzysik, Duane G., to Dow Corning Corporation. Cosmetics with enhanced durability, 5,512,272, Cl. 424-59,000.
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- Kumar, Rajendra; and Emerson, Paul G., to Hewlett-Packard Company. Scalable register file organization for a computer architecture having multiple functional units or a large register file, 5,513,363, Cl. 395-800,000.
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- Makino, Yoshiyuki; and Imai, Masahiro, to Kabushiki Kaisha Toshiba. Washing machine with means for storing and displaying data of contents of washing operation. 5,511,397, Cl. 68-12,270.
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- Maley, Jerry P. Ball game device and method of using the same. 5,511,782, Cl. 273-93,000.
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- Malmasson, Jacques, to Framatome. Clamp for two tubular components, having a safety blocking device, and use of such clamp. 5,513,228, Cl. 376-203,000.
- Malone, Barry T.: *See—*
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- Man Design Co., Ltd.: *See—*
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- Man Gutehoffnungshütte Aktiengesellschaft: *See—*
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- MAN Roland Druckmaschinen AG: *See—*
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- Manabe, Akira: *See—*
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- Manero, Javier; Schlosser, Hubert; and Wingen, Rainer, to Hoechst Aktiengesellschaft. Azaaromatic compounds, process for their preparation, and their use in liquid-crystalline mixtures. 5,512,207, Cl. 252-299,610.
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- Manley, Michael P.; Corder, William; and Cullon, David A. Golf wrist training apparatus. 5,511,788, Cl. 473-213,000.
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- Mannesmann Tally Corporation: *See—*
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- Manning, Shane: *See—*
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- Mano, Tomoyuki: *See—*
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- Mano, Yasuhiko; Mochizuki, Takeshi; Sasaki, Isamu; and Shimokawa, Akira, to Fuji Electrochemical Co. Ltd. Process for producing single phase magnetite powder. 5,512,195, Cl. 252-62,560.
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- Mansour, Hamid A.; Taverne, Thierry; Houssin, Raymond; Lesieur, Isabelle; Depreux, Patrick; Adam, Gérard; Caignard, Daniel-Henri; Renard, Pierre; and Retton, Marie-Claire, to Adir et Compagnie. Aminoalkyl benzothiazolones. 5,512,569, Cl. 514-233,800.
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- Marcato, Forrest C., to Rainline Corporation. The. Method for applying a night-visible traffic stripe to a road. 5,511,896, Cl. 404-72,000.
- Marchetto, Robert F.; Stewart, Todd A.; and Ho, Paul K., to Glenayre Electronics, Inc. High speed simulcast data system using adaptive compensation. 5,513,215, Cl. 375-233,000.
- Marcus, Robert S., executor: *See—*
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- Marek, Henry S.: *See—*
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- Margotta, Kenneth V.; Radant, Russell R.; Porter, Douglas S.; and Yorns, Mark W., to Combustion Engineering Inc. Readily disconnectable nozzle arrangement for use with a nuclear reactor. 5,513,227, Cl. 376-203,000.
- Marion, Millard C.: *See—*
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- Mark, Jannik: *See—*
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- Marker Deutschland GmbH: *See—*
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- Markham, Larry D., to International Paper Company. Method for demking recycled paper using a low flow elongated open top flotation vessel. 5,512,133, Cl. 162-4,000.
- Markle, David R.; and Jovanovic, Misa V., to Biomedical Sensors, Ltd. Solid state sensors. 5,511,547, Cl. 128-633,000.
- Markowitz, Robert E., to AT&T Corp. Method and apparatus for processing facsimile transmissions. 5,513,254, Cl. 379-100,000.
- Marks, Joel S., to Worktools, Inc. Forward acting, staple machine with passive release. 5,511,716, Cl. 227-132,000.
- Markwardt, Klaus: *See—*
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- Marold, Lorraine M.: *See—*
Johal, Sarjit S.; and Marold, Lorraine M., 5,512,280, Cl. 424-93,500.
- Marrocco, Matthew L., III: *See—*
Gagné, Robert R.; Marrocco, Matthew L., III; Trimmer, Mark S.; and Hendricks, Neil H., 5,512,630, Cl. 525-50,000.
- Marshall, Dale C.: *See—*
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- Marshall, George P.: *See—*
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- Martersteck, Timothy M.: *See—*
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- Martin, Berthold: *See—*
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- Martin, David C.: *See—*
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- Martin, Edward H.: *See—*
Kanaan, Roger J.; and Martin, Edward H., 5,511,801, Cl. 279-52,000.
- Martin, Frederick L., to Almel, Ltd. Top nail coat composition. 5,512,273, Cl. 424-61,000.
- Martin, John R. Computer controlled fins for improving seakeeping in marine vessels. 5,511,504, Cl. 114-61,000.
- Martin Marietta Corporation: *See—*
Kramer, Lawrence S.; Pickens, Joseph R.; and Cross, Carl E., 5,512,241, Cl. 420-528,000.
- Yanka, Robert W.; and Noble, Milton L., 5,512,750, Cl. 250-338,400.
- Martin Marietta Energy Systems, Inc.: *See—*
Bates, John B.; and Dudley, Nancy J., 5,512,147, Cl. 204-192,150.
- Haynes, Howard D., 5,512,843, Cl. 324-772,000.
- Hively, Lee M., 5,511,537, Cl. 126-702,000.
- Martin, Timothy D.: *See—*
Lachenmaier, Frank D.; Lake, Donald E., deceased; Martin, Timothy D.; Tagle, John D.; and Viduya, Lisa A., 5,512,790, Cl. 307-112,000.
- Martinetz, Thomas: *See—*
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- Martz, Louis M.: *See—*
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- Maruyama, Naosuke; Kokubo, Hiroyasu; and Nakamura, Shin-Ichiro, to Shin-Etsu Chemical Co., Ltd. Method for preparing aqueous emulsion for coating solid pharmaceutical preparations. 5,512,092, Cl. 106-198,000.
- Mas-Hamilton Group: *See—*
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- Mase, Tomonori: *See—*
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- Mashiko, Takashi: *See—*
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- Maskasky, Joe E., to Eastman Kodak Company. Tabularly banded emulsions with high bromide central grain portions. 5,512,427, Cl. 430-567,000.

- Maso, Giovanna, to Abruzzovasi Srl. Flower-pots forming a modular structure. 5,511,342, Cl. 47-83.000.
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Borchardt, Edward K.; Carley, Scott G.; Lindsey, Anthony H.; Mason, John T.; McKenna, George A.; Owens, Pamela B.; Whitenack, Bruce G., Jr.; and Wilson, Timothy, 5,513,317, Cl. 395-183.210.
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Mason, William R.: See—
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Massachusetts Institute of Technology: See—
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Goldberg, Howard D.; and Schmidt, Martin A., 5,511,428, Cl. 73-777.000.
Mikos, Antonios G.; and Langer, Robert S., 5,512,600, Cl. 521-61.000.
Peoples, Oliver P.; and Sinskey, Anthony J., 5,512,669, Cl. 536-23.200.
Sachs, Emanuel; and Tsao, Che-Chih, 5,512,162, Cl. 205-91.000.
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Mastreani, Anthony: See—
David, Lawrence D.; Farooq, Shaji; Mastreani, Anthony; Reddy, Srinivasa S-N.; and Vallabhaneni, Rao V., 5,512,711, Cl. 174-257.000.
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Shibuta, Nobuhiro; Sato, Kenichi; Mukai, Hidehito; and Masuda, Takato, 5,512,867, Cl. 335-216.000.
Masuda, Tatsuyuki, to Yamaha Hatsudoki Kabushiki Kaisha. Lubricating system for engine. 5,511,523, Cl. 123-196.00R.
Masuda, Yoshihisa: See—
Dempo, Fumio, 5,512,178, Cl. 210-638.000.
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Yoshitomi, Yasunari; Kuroki, Katsuro; Matsuo, Yukio; Masui, Hiroaki; Nakamura, Yoshio; Ishibashi, Maremizu; Kawano, Tsuyoshi; Haratani, Tsutomu; and Ushigami, Yoshiyuki, 5,512,110, Cl. 148-113.000.
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Matchett, Stephen A., to Nalco Chemical Company. Removing silica from cooling waters with colloidal alumina and dialysis. 5,512,181, Cl. 210-644.000.
Mathews, Paul K. Spinal traction device. 5,512,040, Cl. 602-36.000.
Mathis, Gérard; Dumont, Christophe; Aspe, Daniel; Foyentin, Muriel; Jolu, Etienne J.; and Nuti, Dominique, to CIS Bio International. Method of amplifying the emission signal of a luminescent compound. 5,512,493, Cl. 436-537.000.
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Matsui, Masataka: See—
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Matsui, Tsutomu, to NEC Corporation. Actuator for an optical head. 5,513,047, Cl. 359-824.000.
Matsui, Tsuyoshi, to Nissei ASB Machine Co., Ltd. Biaxially stretch blow-molded article and bottom mold therefor. 5,511,966, Cl. 425-522.000.
Matsuki, Yumi: See—

- Suzuki, Takumi; Kameyama, Reiko; Kamoi, Sumio; Kikuchi, Hisashi; Komori, Satoshi; Suetsake, Tomomi; and Matsuki, Yumi, 5,513,026, Cl. 359-81.000.
Matsumoto, Hiroshi: See—
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Matsumoto, Kentaro: See—
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Matsumoto, Masayoshi: See—
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Matsumoto, Mitsujiro; Satoh, Kensuke; and Uchimura, Kiyoshi, to Matsushita Electric Industrial Co., Ltd. Method and apparatus for recording or reproducing video data on or from storage media. 5,513,011, Cl. 358-341.000.
Matsumoto, Nobuhiro: See—
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Matsuo, Toshiro; and Kikuchi, Noahiko, to Sumitomo Rubber Industries, Ltd. Rubber compositions for base tread and tires using the same. 5,512,626, Cl. 524-495.000.
Matsuo, Yukio: See—
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- Yamashita, Haruo; Ishihara, Hideshi; and Fukushima, Tsumoru, 5,513,281, Cl. 382-278.000.
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Matsura, Takashi; Higaki, Kenjiro; and Itozaki, Hideo, to Sumitomo Electric Industries, Ltd. Microwave component of compound oxide superconductor material having crystal orientation for reducing electromagnetic field penetration. 5,512,539, Cl. 505-210.000.
Matsuyama, Akinobu; and Kobayashi, Yoshinori, to Daicel Chemical Industries, Ltd. Process for producing optically active 1,3-butanediol. 5,512,465, Cl. 435-158.000.
Matsuyama, Toru: See—
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Matsuzaki, Kei: See—
Yamamoto, Naoki; Nakashima, Hideki; Uryu, Toshiyuki; Yoshida, Takashi; Matsuzaki, Kei; Kaneko, Yutaro; and Mimura, Toru, 5,512,672, Cl. 536-118.000.
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Matson, Brad A. Solar energy and tracking system. 5,512,742, Cl. 250-203.400.
Matsuda, Fukuhisa; Ushio, Masao; Hasegawa, Kiyoyuki; Akabane, Katsuyoshi; and Matsuno, Takashi, to Toho Kinzoku Co., Ltd.; and Hokkai Tungsten Industrial Co. Ltd. Tungsten electrode material. 5,512,240, Cl. 420-430.000.
Maus, Steven M.; and Galic, George J., to Galic Maus Ventures. Lens thickness adjustment method and apparatus in a thermoplastic injection mold for ophthalmic finished spectacle lenses. 5,512,221, Cl. 264-2.500.
Mauterer, David, to Contaminant Separations, Inc. Method of removing organic contaminants. 5,512,084, Cl. 95-199.000.
Mawer, Andrew J.: See—
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Maxdem Incorporated: See—
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Mayer, Klaus-Michael, to Robert Bosch GmbH. Optical polymer element for coupling photoelements onto integrated-optical circuits. 5,512,288, Cl. 385-30.000.
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Mazda Motor Corporation: See—
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Saito, Kenichi; Mita, Kanji; and Kanno, Hajime, 5,513,157, Cl. 369-34.000.

Mita, Seiichi: See—
Ide, Hiroshi; Kirino, Fumiyoshi; Toda, Tsuyoshi; Maeda, Takeshi; Tsuchinaga, Hiroyuki; Kugiyu, Fumio; Shigematsu, Kazuo; Mita, Seiichi; Saito, Atsushi; and Kaku, Toshimitsu, 5,513,165, Cl. 369-116.000.

Mitake, Mitsuyoshi: See—
Hagiwara, Kanehiro; Ichihara, Yasushi; Mitake, Mitsuyoshi; Furuno, Takashi; Kishida, Saori; Iizuka, Jun; and Fujikawa, Youichi, 5,512,968, Cl. 353-094.000.

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Mitchell, Stephen C.: See—
Ravenhall, Richard; Wojciechowski, Charles R.; Mitchell, Stephen C.; Mercer, Gary D.; Kelly, Thomas J.; Schobert, Melvin A.; and MacLain, Harvey M., 5,511,604, Cl. 164-97.000.

Mitra, Sumita B., to Minnesota Mining and Manufacturing Company. Cements from Bdicarbonyl polymers. 5,512,611, Cl. 523-116.000.

Mitsuba Electric Manufacturing Co., Ltd.: See—
Ito, Kenji; Endo, Akira; and Okayasu, Yosuke, 5,511,462, Cl. 92-99.000.

Mitsubishi Chemical Corporation: See—
Sawayama, Shigeru; Mori, Yasuharu; and Nagai, Yukino, 5,512,645, Cl. 526-264.000.

Mitsubishi Denki Kabushiki Kaisha: See—
Arano, Yukari; and Onishi, Ken, 5,513,008, Cl. 358-310.000.

Arimoto, Kazutami; Tomishima, Shigeki; and Hidaka, Hideto, 5,513,142, Cl. 365-189.110.

Hanawa, Tetsuro; and de Beek, Maria O., 5,512,422, Cl. 430-325.000.

Hidaka, Hideto; Tsuruda, Takahiro; and Suma, Katsuhiko, 5,512,501, Cl. 437-41.000.

Hori, Toshihiko, 5,512,846, Cl. 326-105.000.

Matsumoto, Kouki, 5,513,114, Cl. 364-474.350.

Miyakuni, Shinichi, 5,512,331, Cl. 427-528.000.

Mukogawa, Yasukazu, 5,511,569, Cl. 134-104.100.

Nakaki, Yoshiyuki; Tokunaga, Takashi; Fukami, Tatsuya; Taguchi, Motohisa; and Tsutsumi, Kazuhiko, 5,512,366, Cl. 428-332.000.

- Ono, Takahiko, 5,512,812, Cl. 322-28.000.
 Shikama, Toshihiro; and Sato, Hiroyuki, 5,513,172, Cl. 370-13.000.
 Takikawa, Hiroyoshi; Yoshida, Yoshio; Kakimoto, Nobuko; and Ise, Shinsuke, 5,512,733, Cl. 219-620.000.
 Tsutsui, Teiji; and Watanabe, Sinji, 5,513,104, Cl. 364-424.100.
 Uchinami, Masanobu, 5,512,813, Cl. 322-28.000.
 Mitsubishi Electric Research Laboratories, Inc.: See—
 Gibson, Sarah F. F., 5,512,920, Cl. 345-163.000.
 Mitsubishi Gas Chemical Company, Inc.: See—
 Hiramatsu, Yasushi; Hashimoto, Osamu; Uematsu, Shoji; and Koseki, Toshio, 5,512,599, Cl. 518-703.000.
 Morita, Yoshikazu; Iwauchi, Shigeharu; and Ogiso, Tamotsu, 5,511,358, Cl. 53-128.100.
 Shirai, Kazushi; Ishikura, Kenji; and Takeda, Norio, 5,512,193, Cl. 252-62.570.
 Mitsubishi Jidosha Kogyo Kabushiki Kaisha: See—
 Kishimoto, Naohiro; Yoshida, Hiroaki; and Yamada, Kiichi, 5,513,108, Cl. 364-424.050.
 Mitsubishi Materials Corporation: See—
 Kikumoto, Nobuo; and Iida, Osamu, 5,511,767, Cl. 266-143.000.
 Mitsubishi Semiconductor America, Inc.: See—
 Moore, Wesley; and Huffman, Ward, 5,513,119, Cl. 364-491.000.
 Mitsui Toatsu Chemicals, Inc.: See—
 Ohta, Masahiro; Obuchi, Shoji; and Yoshida, Yasunori, 5,512,653, Cl. 528-361.000.
 Mitsubishi Electric Industrial Co., Ltd.: See—
 Hatano, Takahisa, 5,512,960, Cl. 348-640.000.
 Mittelbach, Gunther: See—
 Hagenmaier, Hanspaul; and Mittelbach, Gunther, 5,512,259, Cl. 423-239.100.
 Miura, Naoko: See—
 Yoshimura, Toshiyuki; Miura, Naoko; Okazaki, Shinji; Toriumi, Minoru; and Shiraiishi, Hiroshi, 5,512,328, Cl. 427-498.000.
 Miura, Norio; and Komamura, Tawara, to Konica Corporation, Thermal transfer recording material and image forming method, 5,512,531, Cl. 503-227.000.
 Miura, Shigeo: See—
 Yoshida, Tadahiro; Koizumi, Shigeru; Miura, Shigeo; Kurosawa, Yuji; Fujii, Yasuo; Noguchi, Hiroyuki; Nakayama, Toru; Kataoka, Junnosuke; and Okada, Masaki, 5,513,253, Cl. 379-100.000.
 Miura, Yasushi: See—
 Takada, Yoshihiro; Suzuki, Akio; Izumizaki, Masami; Tsuchii, Ken; Kadowaki, Hidejiro; Yanaka, Toshiyuki; Takahashi, Haruhiko; Takamiya, Makoto; Yamamoto, Kosuke; Wataya, Masafumi; Miura, Yasushi; Moriguchi, Haruhiko; and Murayama, Yasushi, 5,512,924, Cl. 347-18.000.
 Miura, Yoshinori, to Sony Corporation; and Sony Electronics Inc. Tape cassette and guide pin, 5,511,736, Cl. 242-346.000.
 Miya, Yukio; Kizaki, Shigeru; Sugiyama, Osamu; Hatayama, Akiteru; Shibuya, Yoshitsugu; Enomoto, Mitsugu; Naoi, Koichi; Fukazawa, Yuji; Nanya, Takanori; Shimizu, Shotaro; and Tagawa, Hiroshi, to Citizen Watch Co., Ltd. Wear-resistant shoe for a high-speed loom, 5,511,587, Cl. 139-192.000.
 Miyachi, Hiroshi; Araki, Mitsutoshi; Ueno, Yoshiteru; and Yamase, Norihide, to SMC Kabushiki Kaisha. Actuator with slide table, 5,511,461, Cl. 92-13.500.
 Miyake, Hiroshi; and Aso, Yasuhiro, to Fujitsu Limited. Television signal and ATM cell switching system, 5,513,180, Cl. 370-60.100.
 Miyake, Toshihiro; Bando, Katuya; Yagura, Toshiaki; and Kondo, Koji, to Nipponendo Co., Ltd. Process of joining metal members, 5,511,719, Cl. 228-106.000.
 Miyakuni, Shinichi, to Mitsubishi Denki Kabushiki Kaisha. Etching method for indium series compound semiconductors, 5,512,331, Cl. 427-528.000.
 Miyamichi, Kazuo; and Nakamura, Hiroyuki, to Nikkiso Company Limited. Prepreg, process for preparation of prepreg, and products derived therefrom, 5,512,351, Cl. 428-195.000.
 Miyo, Makiji: See—
 Takezawa, Makoto; Miyao, Makiji; Wada, Sadahisa; and Inoue, Hiroshi, 5,512,119, Cl. 156-171.000.
 Miyazaki, Shuichi: See—
 Kusunoki, Mitsugu; Miyazaki, Shuichi; Nakayama, Michiaki; Kobayashi, Kouji; Ikeda, Masato; and Ogata, Takashi, 5,512,766, Cl. 257-296.000.
 Miyashita, Masahide: See—
 Ogatawara, Makoto; Yada, Masakazu; Sakurai, Kaoru; Haga, Kazuya; Miyashita, Masahide; and Hirai, Yasumasa, 5,512,194, Cl. 252-62.560.
 Miyashita, Yoshiaki: See—
 Takahashi, Sadao; Yamazaki, Kouichi; Kikuchi, Nobuo; Matsumoto, Kentaro; Hayakawa, Tadashi; Miyashita, Yoshiaki; and Tabuchi, Takeshi, 5,512,708, Cl. 118-653.000.
 Miyata, Koichi: See—
 Saito, Kimitsugu; Miyata, Koichi; Bade, John P., Jr.; Stoner, Brian R.; von Windheim, Jesko A.; and Sahaid, Scott R., 5,512,873, Cl. 338-22.05D.
 Miyatake, Yoshito; and Sannohe, Shinya, to Matsushita Electric Industrial Co., Ltd. Infrared polarizer, 5,513,035, Cl. 359-352.000.
 Miyaura, Tomoko: See—
 Hayamizu, Shunichi; Miyaura, Tomoko; and Saeki, Noboru, 5,512,151, Cl. 204-192.150.
 Miyawaki, Mamoru: See—
 Sono, Koichi; Miyawaki, Mamoru; Ishizaki, Akira; Ogawa, Katsuhisa; Sakurai, Katsuhito; Sugawa, Shigetoshi; and Kondo, Shigeki, 5,513,028, Cl. 359-87.000.
 Miyazaki, Hiroki: See—
 Tahara, Shozo; Kimura, Taizo; Miyazaki, Hiroki; and Hanaki, Kazuhiro, 5,512,111, Cl. 148-440.000.
 Miyazaki, Keiji: See—
 Sato, Yasuyuki; Miyazaki, Keiji; Iseda, Kohei; and Chajo, Takafumi, 5,513,345, Cl. 395-182.020.
 Miyazaki, Shoji: See—
 Yoshioka, Toshihiko; Kawaguri, Mariko; Nankai, Shiro; Tsutsumi, Haruhiro; Baba, Hideyuki; Tokuno, Yoshinobu; and Miyazaki, Shoji, 5,512,159, Cl. 204-403.000.
 Miyazaki, Takeshi; Tanaka, Kazumi; Santo, Tsuyoshi; Ohnishi, Toshikazu; Fukui, Tetsuro; and Okamoto, Tadashi, to Canon Kabushiki Kaisha. Labeled complex, 5,512,446, Cl. 435-7.200.
 Miyazawa, Shuhei; Hoshino, Yorohisa; Shibata, Hisashi; Hirota, Kazuo; Kameyama, Takaaki; Abe, Shinya; and Yamanaka, Takashi, to Eisai Co., Ltd. Aminobenzoic acid derivatives, 5,512,579, Cl. 514-299.000.
 Miyazawa, Tetsuo; Sato, Kazuhiro; Imazu, Katsuhiko; Kobayashi, Seishichi; and Sue, Toshio, to Toyo Seikan Kaisha, Ltd. Laminated sheet metal for container manufacture and primer used in conjunction with same, 5,512,365, Cl. 428-332.000.
 Mizikovsky, Semyon; Anderson, Geoffrey; Doums, Peter; Akahane, Masaaki; and Yasuda, Hiroshi, to Sony Corporation; and Sony Electronics, Inc. Automatic generation of private authentication key for wireless communication systems, 5,513,245, Cl. 379-59.000.
 Mizuno, Fumio: See—
 Takeuchi, Nobuo; Kitano, Taishi; Mizuno, Fumio; Ishikawa, Hiroyoshi; Yoshimura, Sotaro; and Yamaguchi, Tomonari, 5,512,361, Cl. 428-319.300.
 Mizushiri, Toshitsugu; Yokota, Mamoru; Nakamura, Norimichi; Ota, Ken; Yoshino, Shuji; and Inoue, Noboru, to Yazaki Industrial Chemical Co., Ltd. Method to separate and recover resin and steel pipe from resin-coated steel pipe, 5,512,104, Cl. 134-1.000.
 Mizutani, Junya: See—
 Hasegawa, Koji; Kakuta, Hideo; and Mizutani, Junya, 5,512,673, Cl. 536-128.000.
 MKM Electronics, Inc.: See—
 Majumdar, Kashyap, 5,512,881, Cl. 340-574.000.
 Mo, Zhong H., to TelCom Semiconductor, Inc. Switched high-slew rate buffer, 5,512,850, Cl. 327-108.000.
 Moaddab, Jamshid: See—
 Ong, Nicholas; and Moaddab, Jamshid, 5,513,372, Cl. 395-821.000.
 Mobil Oil Corporation: See—
 Bert, David R., 5,511,616, Cl. 166-272.000.
 Bianchini, Eber C.; Knoerzer, Anthony R.; Parr, Larry A.; and Reid, Leland W., 5,512,338, Cl. 428-35.400.
 Kiliany, Thomas R.; McWilliams, John P.; and Pappal, David A., 5,512,260, Cl. 423-242.100.
 Wu, Shi-Ming; and Horodysky, Andrew G., 5,512,189, Cl. 252-46.600.
 Mobin, Mohammad S.: See—
 Blaker, David M.; Ellard, Gregory S.; Mobin, Mohammad S.; and Sam, Homayoon, 5,513,220, Cl. 375-340.000.
 Mobley, Herbert O. Pickup truck bed, 5,511,848, Cl. 296-183.000.
 Mochizuki, Isao: See—
 Okada, Hiroaki; Mochizuki, Isao; and Takagi, Takeyuki, 5,512,719, Cl. 200-344.000.
 Mochizuki, Takeshi: See—
 Mano, Yasuhiko; Mochizuki, Takeshi; Sasaki, Isamu; and Shimokawa, Akira, 5,512,195, Cl. 252-62.560.
 Modine Manufacturing Company: See—
 Barton, Bobby L., 5,511,831, Cl. 285-382.000.
 Mohr, Walter; and Zeigler, Douglas D., to Hudson Products Corporation. Elongated heat exchanger tubes having internal stiffening structure, 5,511,613, Cl. 165-177.000.
 Mohr, Jürgen: See—
 Bickel, Martin; Brocks, Dietrich; Burghard, Harald; Günzler, Volkmar; Henke, Stephan; Hanauske Abel, Hartmut; Mohr, Jürgen; and Tschank, Georg, 5,512,586, Cl. 514-354.000.
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 Klaus, Michael; and Mohr, Peter, 5,512,683, Cl. 549-9.000.
 Molex Incorporated: See—
 Casey, Patrick G.; Cruise, Tom; and Wilhite, Matthew, 5,511,986, Cl. 439-188.000.
 Molina y Vedia, Luis M.; Stutts, Monroe J.; Boucher, Richard C., Jr.; and Henke, David C., to Burroughs Wellcome, Co.; and University of North Carolina at Chapel Hill. Method of treating retained pulmonary secretions, 5,512,269, Cl. 424-45.000.
 Moller, David D., to Delco Electronics Corp. Compensation for ground voltage variation on a communication bus, 5,513,218, Cl. 375-257.000.
 Momose, Hiroaki, to Seiko Epson Corporation. Method and apparatus for controlling the movement of a printing head in a printer, 5,511,890, Cl. 400-323.000.
 Momose, Hiroshi: See—
 Maeda, Takeo; Momose, Hiroshi; Urakawa, Yukihiko; and Matsui, Masataka, 5,512,772, Cl. 257-370.000.
 Momot, Stanley; Oesterlin, Richard; Hudyma, Edward; Dabisch, Kenneth; Fedrigon, Richard; Goldberg, Ira; and Isaac, Ragy. Magnetic marker applying device for a printing press, 5,512,125, Cl. 156-353.000.
 Monarch Knitting Machinery Corporation: See—

- Bell, Cecil R.; Moyer, Charles R.; Poole, Gregory S.; and Silvers, Kenneth B., 5,511,501, Cl. 112-470.150.
 Monitoring Technology Corporation: See—
 Hernandez, Walter C., 5,511,422, Cl. 73-593.000.
 Monsanto Company: See—
 Ho, Sa V., 5,512,180, Cl. 210-643.000.
 Klee, Harry J.; and Kishore, Ganesh M., 5,512,466, Cl. 435-172.300.
 Monte, Woodrow C. Dietary vaccine for inhibiting metabolism of methanol, 5,512,598, Cl. 514-724.000.
 Monteiro, Douglas F.: See—
 Lopes, Homero V. d. M.; and Monteiro, Douglas F., 5,511,969, Cl. 431-4.000.
 Montfort, David B., to Xerox Corporation. Resonator coupling cover for use in electrostatic applications, 5,512,989, Cl. 355-273.000.
 Montfort, David B., to Xerox Corporation. Resonator assembly having an angularly segmented waveguide member, 5,512,991, Cl. 355-273.000.
 Montfort, David B.: See—
 Friel, David M.; Radulski, Charles A.; and Montfort, David B., 5,512,990, Cl. 355-273.000.
 Montoya, Jean P.; and Merz, Scott I., to Michigan Critical Care Consultants, Inc. Venous blood reservoir with increased level and volume sensitivity, 5,512,042, Cl. 604-4.000.
 Mooberry, Jared B.: See—
 Texter, John; Welter, Thomas R.; Southby, David T.; Mooberry, Jared B.; and Bailey, David S., 5,512,410, Cl. 430-203.000.
 Moore, Cheryl L.: See—
 Brown, Mary L.; Goetz, Richard J.; Moore, Cheryl L.; and Battles, Donald R., 5,512,612, Cl. 523-218.000.
 Moore, Edward E.: See—
 Irwin, Bruce C.; Moore, Edward E.; and Baum, Raymond F., 5,511,970, Cl. 431-9.000.
 Moore, Grant M. Drainage system for decks, 5,511,351, Cl. 52-302.100.
 Moore, H. Jack, Jr.; and Abalos, Martin, to SABH (U.S.) Water Heater Group, Inc. Water heater with low NO_x ceramic burner, 5,511,516, Cl. 122-17.000.
 Moore, Wesley; and Huffman, Ward, to Mitsubishi Semiconductor America, Inc. Hierarchical floorplanner for gate array design layout, 5,513,119, Cl. 364-491.000.
 Moraveji, Farhood, to National Semiconductor Corporation. Amplifier stage having compensation for NPN, PNP beta mismatch and improved slew rate, 5,512,859, Cl. 3303-267.000.
 Morawiecki, Andrew: See—
 Song, Suk-Zu; and Morawiecki, Andrew, 5,512,301, Cl. 424-484.000.
 Morek, Douglas W.: See—
 Olson, Merle E.; Ceri, Howard; and Morek, Douglas W., 5,512,288, Cl. 424-269.100.
 Morena, John: See—
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 Morgan, Avery A., to Honeywell Inc. Fiber optic gyro digital control with rate extension, 5,513,003, Cl. 356-350.000.
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 Morgans, David, Jr.; Sjogren, Eric B.; Smith, David B.; Talamas, Francisco X.; Artis, Dean R.; Cervantes, Alicia; Elworthy, Todd R.; Fernández, Mario; Franco, Fidencio; Hawley, Ronald C.; Lara, Teresa; Loughhead, David G.; Nelson, Peter H.; Patterson, John W.; Trejo, Alejandra; Walots, Ann M.; and Weikert, Robert J., to Syntex (U.S.A.) Inc. Method of using 4-amino derivatives of 5-substituted mycophenolic acid, 5,512,568, Cl. 514-233.500.
 Mori, Kenji: See—
 Koyama, Takeshi; Tonosaki, Masao; Yamada, Nobuhiro; and Mori, Kenji, 5,512,528, Cl. 502-181.000.
 Mori, Motoharu; Yoshida, Hironobu; Yamamura, Ikuo; Iura, Toru; Takeuchi, Osamu; and Ogushi, Masaki, to Ishikawajima-Harima Jukogyo Kabushiki Kaisha. Apparatus for preheating and charging scrap materials, 5,513,206, Cl. 373-80.000.
 Mori, Shosei: See—
 Terada, Masahiro; Togano, Takeshi; Yamashita, Masataka; Iwaki, Takashi; Mori, Shosei; and Shinjo, Kenji, 5,512,208, Cl. 252-299.600.
 Mori, Toshiya, to Matsushita Electric Industrial Co., Ltd. Device and method for determining a series of operations for interactive assistance, 5,513,308, Cl. 395-155.000.
 Mori, Yasuharu: See—
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 Moriguchi, Haruhiko: See—
 Takada, Yoshihiro; Suzuki, Akio; Izumizaki, Masami; Tsuchii, Ken; Kadowaki, Hidejiro; Yanaka, Toshiyuki; Takahashi, Haruhiko; Takamiya, Makoto; Yamamoto, Kosuke; Wataya, Masafumi; Miura, Yasushi; Moriguchi, Haruhiko; and Murayama, Yasushi, 5,512,924, Cl. 347-18.000.
 Morikita, Nobuo, to Sumitomo Heavy Industries, Ltd. Apparatus and method for local pressurizing type injection molding, 5,512,223, Cl. 264-71.000.
 Morinaga, Shozo: See—
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 Morita, Shigeru; Ishida, Hiroshi; and Hirano, Isao, to Nippon Flute Co., Ltd. Box sealing method and apparatus, 5,511,362, Cl. 53-491.000.
 Morita, Yoshikazu; Iwauchi, Shigeharu; and Ogiso, Tamotsu, to Mitsubishi Gas Chemical Company, Inc. Securing small bags to belt-like member, 5,511,358, Cl. 53-128.100.
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 Ebisuno, Tadahiro; Moriyama, Keiji; Sugimoto, Kazushige; and Hirau, Tsutomu, 5,511,791, Cl. 473-354.000.
 Mork, Orlan H. Soil leveling apparatus with improved frame and hitch, 5,511,625, Cl. 172-445.100.
 Morningstar, Charles L., deceased (by Kelly L. Morningstar, executor); and Andersen, James K., to Whitehall Corporation. Towed hydrophone streamer with integrated module coupler, 5,513,151, Cl. 367-154.000.
 Morningstar, Kelly L., executor: See—
 Morningstar, Charles L., deceased; and Andersen, James K., 5,513,151, Cl. 367-154.000.
 Morningstar, Randy L., to American Medical Systems, Inc. Dual action syringe, 5,512,054, Cl. 604-191.000.
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 Paramonov, Vladimir A.; Tychinin, Anatolij I.; Moroz, Anatolij I.; and Birger, Boris L., 5,512,321, Cl. 427-405.000.
 Morris, Brian G., to Scitex Digital Printing, Inc. Charge plate fabrication process, 5,512,117, Cl. 156-155.000.
 Morris, George. Dissipator for flue gas desulfurization system, 5,512,252, Cl. 422-176.000.
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 Morton International, Inc.: See—
 Jarboe, Patrick G.; and Davis, Terry R., 5,511,818, Cl. 280-728.200.
 Meyer, Scott A.; and Martersteck, Timothy M., 5,511,821, Cl. 280-743.100.
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 Mortson, Douglas J., to International Business Machines Corporation. Use of build status indicators in connection with building of complex computer programs from source code parts, 5,513,357, Cl. 395-700.000.
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 Moser, Rasin: See—
 Mosher, Ralph A.; Moser, Rasin; Larson, James R.; and Berkes, John S., 5,512,978, Cl. 355-203.000.
 Moser, Rolf: See—
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 Mosher, Ralph A.; Moser, Rasin; Larson, James R.; and Berkes, John S., to Xerox Corporation. Replenishing system, 5,512,978, Cl. 355-203.000.
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 Moss, Arthur Z.: See—
 Howard, Edward G., Jr.; and Moss, Arthur Z., 5,512,624, Cl. 524-462.000.
 Moss, Owen R.: See—
 Greenspan, Bernard J.; Moss, Owen R.; Schleiffer, Keith E.; and Eick, James L., 5,511,726, Cl. 239-102.200.
 Motley, Daniel L.; Petrisk, Joseph P., Jr.; and Genty, Gordon L. Steam table pan handling apparatus, 5,511,467, Cl. 99-426.000.
 Motorola: See—
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 Motorola, Inc.: See—
 Cambou, Bertrand F.; Gilbert, James G.; and Hansell, Gregory L., 5,512,499, Cl. 437-39.000.
 Motorola, Inc.: See—
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 Avanic, Branko; Yeh, Peter J.; and Ooi, Leng H., 5,512,862, Cl. 331-117.00D.
 Cho, Jaeshin; Kyler, Kelly W.; Cronin, Wayne A.; Durlam, Mark; and Abrokwa, Jonathan K., 5,512,518, Cl. 437-235.000.
 Damkier, John L., 5,513,373, Cl. 395-836.000.
 Haver, Harrison B.; and Griswold, Mark D., 5,512,785, Cl. 257-758.000.
 Hesse, Gregory N.; and McDonald, Daniel J., 5,512,884, Cl. 340-825.030.
 Komrska, Dean M.; and Johnson, Dale G., 5,513,078, Cl. 361-816.000.
 Luodberg, James R.; and Nuckolls, Charles E., 5,513,358, Cl. 395-750.000.
 Macko, William J.; and Cannon, Gregory L., 5,512,886, Cl. 340-825.070.
 Merchant, Zaffer; and Saidi, Ali, 5,512,916, Cl. 345-98.000.
 Reeser, Glen O.; and Connell, Lawrence E., 5,513,389, Cl. 455-311.000.
 Vangala, Reddy R.; and Hoang, Truc, 5,512,866, Cl. 333-134.000.
 Vook, Frederick W.; Doss, William K.; and Demange, Mark G., 5,513,210, Cl. 375-202.000.
 Warfield, Timothy J., 5,512,163, Cl. 205-109.000.
 White, Richard E.; and Demange, Mark G., 5,513,263, Cl. 380-44.000.
 Mouri, Toshiyuki: See—

- Toyomura, Yuuji, and Mouri, Toshiyuki, 5,512,986, Cl. 355-246.000.
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Mueller, Richard A.: *See—*
Chandrakumar, Nizal S.; Huang, Horng-Chih; and Mueller, Richard A., 5,512,561, Cl. 514-11.000.
Mueller, Richard H.: *See—*
Poss, Michael A.; Pansegrau, Paul D.; Wang, Shaopeng; Thottathil, John K.; Singh, Janak; and Mueller, Richard H., 5,512,690, Cl. 549-300.000.
Muessel, Dan C.: *See—*
Halberstadt, Louis; Mertinook, Peter E.; Perry, Joseph V.; and Muessel, Dan C., 5,512,601, Cl. 521-79.000.
Mukai, Hidehito: *See—*
Shibata, Nobuhiko; Sato, Kenichi; Mukai, Hidehito; and Masuda, Takato, 5,512,867, Cl. 335-216.000.
Mukerjee, Sandip; and Snyder, Ralph J., to AT&T Corp. Method and apparatus for facilitating the ultimate making of wireless data transfers, 5,513,242, Cl. 379-58.000.
Mukerjee, Sandip; and Utano, Ralph, to AT&T Corp. Method and apparatus for facilitating the making of wireless telephone calls, 5,513,247, Cl. 379-60.000.
Mukogawa, Yasukazu, to Mitsubishi Denki Kabushiki Kaisha. Cleaning apparatus, 5,511,569, Cl. 134-104.100.
Mulder, Jakob W., to U.S. Philips Corporation. X-ray examination apparatus, 5,513,239, Cl. 378-98.700.
Müller, Horst: *See—*
Hille, Hans-Dieter; Wieditz, Stefan C.; Döbelstein, Arnold; and Müller, Horst, 5,512,322, Cl. 427-407.100.
Müller, Michael P.: *See—*
Richards, Kevin; and Müller, Michael P., 5,511,577, Cl. 137-202.000.
Müller, Werner; and Luber, Joachim, to Carl-Zeiss-Stiftung. Method of operating a surgical microscope arrangement for computer-supported stereotactic microsurgery on a patient, 5,513,005, Cl. 356-375.000.
Müller-Schwelling, Dieter: *See—*
Bischofberger, Ulrich; and Müller-Schwelling, Dieter, 5,511,521, Cl. 123-193.600.
Mullins, Michael J.: *See—*
Cardin, Alan D.; Mullins, Michael J.; Fordyce, William A.; Chamberlin, Thomas A.; and Fazio, Michael J., 5,512,177, Cl. 210-635.000.
Mulric Hydro Projects (Proprietary) Limited: *See—*
Richards, Kevin; and Muller, Michael P., 5,511,577, Cl. 137-202.000.
Mundschchenk, David D., to PhyloMed Corporation. Ointment base useful for pharmaceutical preparations, 5,512,278, Cl. 424-78.000.
Munekhoff, Bernd, to Brose Fahrzeugteile GmbH & Co. KG. Cable window lifter with a driving unit, 5,511,443, Cl. 74-505.000.
Munster, Christian: *See—*
Meier, Jürgen-Dietrich; Munster, Christian; Kass, Volker; and Siffrin, Horst, 5,512,679, Cl. 546-339.000.
Mura, Albert J.: *See—*
Dunlap, Richard P.; Boaz, Neil W.; Mura, Albert J.; Kumar, Virendra; Subramanyam, Chakrapani; Desai, Ranjit C.; Hlasta, Dennis J.; Saindane, Manohar T.; Bell, Malcolm R.; Court, John J.; and Farrell, Robert P., 5,512,589, Cl. 514-373.000.
Murakami, Yasuhide: *See—*
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Murakami, Yasuo: *See—*
Takesue, Atsushi; Murakami, Yasuo; Watanabe, Takanobu; and Anzai, Mitsutoshi, 5,512,400, Cl. 430-78.000.
Murakami, Yuichi; and Kiyokazu, Ieda, to Aisin Seiki, Co., Ltd. Microstrip antenna device having three resonance frequencies, 5,512,910, Cl. 343-700.0M5.
Muramatsu, Hiroshi: *See—*
Fujihira, Masamichi; Muramatsu, Hiroshi; Chiba, Norio; and Ataka, Tatsuki, 5,513,168, Cl. 369-126.000.
Muramatsu, Masaru: *See—*
Abe, Hiroyuki; Muramatsu, Masaru; Goto, Tetsuro; and Narisawa, Tsutomu, 5,512,974, Cl. 354-430.000.
Kusaka, Yosuke; Muramatsu, Masaru; Utagawa, Ken; and Yamano, Shozo, 5,512,973, Cl. 354-402.000.
Muranaka, Masayuki: *See—*
Yoshida, Takahiko; Hirata, Koji; Yoshikawa, Hiroki; Muranaka, Masayuki; Yoshizaki, Isao; and Osawa, Atsuo, 5,513,037, Cl. 359-457.000.
Murasaki, Ryuichi: *See—*
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Murata Kikai Kabushiki Kaisha: *See—*
Banba, Susumu, 5,511,373, Cl. 57-328.000.
Okada, Yasuaki; Yoshikawa, Shinji; and Urano, Eihiro, 5,513,113, Cl. 364-474.210.
Murata, Kiyohito, to Toyota Jidosha Kabushiki Kaisha. Frictional engagement device for an automatic transmission, 5,511,644, Cl. 192-85.00A.
Murata Mfg. Co., Ltd.: *See—*
Masuda, Noboru, 5,512,822, Cl. 324-235.000.
Murata, Nobuo; and Yoshimura, Yasuo, to Hitachi Denchi Kabushiki Kaisha. Digital video signal processing device and TV camera device arranged to use it, 5,512,946, Cl. 348-222.000.
Murata, Yutaka: *See—*
Ono, Yasushi; Sakamoto, Satoshi; Murata, Yutaka; Kaji, Tetsuo; and Endo, Yasuhiko, 5,512,523, Cl. 501-127.000.
Murayama, Hitoshi; and Kojima, Satoshi, to Canon Kabushiki Kaisha. Method of manufacturing amorphous silicon electrophotographic photosensitive member, 5,512,510, Cl. 437-101.000.
Murayama, Yasushi: *See—*
Takada, Yoshihiro; Suzuki, Akio; Izumizaki, Masami; Tsuchii, Ken; Kadowaki, Hidejiro; Yamaka, Toshiyuki; Takahashi, Haruhiko; Takamiya, Makoto; Yamamoto, Kosuke; Wataya, Masafumi; Miura, Yasushi; Moriguchi, Haruhiko; and Murayama, Yasushi, 5,512,924, Cl. 347-18.000.
Muroi, Yoshiyuki: *See—*
Uemura, Tomohiro; Tanahashi, Masanori; Muroi, Yoshiyuki; and Kono, Yoshinao, 5,512,277, Cl. 424-78.030.
Murphy, Gerald K. Security device for bulkhead doors, 5,511,836, Cl. 292-259.00R.
Murphy, Oliver J.: *See—*
Cisar, Alan J.; and Murphy, Oliver J., 5,512,831, Cl. 324-426.000.
Murray, Richard C., Jr.; and Zetter, Mark S., to UOP Calibration of NIR spectra in measuring properties of petroleum products, 5,512,751, Cl. 250-339.090.
Mushoff, Dieter: *See—*
Pustinielli, Thomas; and Mushoff, Dieter, 5,512,046, Cl. 604-465.000.
Musschoot, Albert, to General Kinematics Corporation. Vibratory tumbling apparatus, 5,512,008, Cl. 451-85.000.
Muth, Gordon E. Bin unloading apparatus, 5,511,925, Cl. 414-310.000.
Mychajlowski, Walter: *See—*
Sacripante, Guerin G.; Mychajlowski, Walter; and Kittelberger, J. Stephen, 5,512,401, Cl. 430-106.000.
Myers, Jeffrey L.; Aho, Robert W.; Carper, Douglas M.; Deaton, Earl D.; Durnak, Thomas J.; and Halila, Ely E., to General Electric Company. Hot grip assembly, 5,512,727, Cl. 219-201.000.
Myers, John E., to Torque Converter Rebuilding, Inc. Torque converter locking adaptor, 5,511,895, Cl. 403-370.000.
N. V. Bekaert S.A.: *See—*
De Vos, Xavier; and Van Giel, Frans, 5,512,380, Cl. 428-592.000.
Nagai, Yukino: *See—*
Sawayama, Shigeru; Mori, Yasuharu; and Nagai, Yukino, 5,512,645, Cl. 526-264.000.
Nagao, Yuichi, to Honda Giken Kogyo Kabushiki Kaisha. Method of manufacturing forming die, 5,511,450, Cl. 76-107.100.
Nagaraj, Krishnaswamy, to AT&T Corp. Bandgap voltage reference generator, 5,512,817, Cl. 323-316.000.
Nagase, Ryo: *See—*
Kawashima, Toshiyuki; Utsunomiya, Jiro; Kurosawa, Kiyoshi; Saburo, Iida; Nagase, Ryo; Himeno, Akira; Yukimatsu, Ken-ichi; Okyno, Masayuki; Kato, Kuniharu; and Kawachi, Masao, 5,513,285, Cl. 385-16.000.
Nagashima, Sadao: *See—*
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Nagg, Paul J.: *See—*
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Nagorny, Ulrich: *See—*
Eicken, Ulrich; Fischer, Herbert; Gress, Wolfgang; Nagorny, Ulrich; and Stork, Norbert, 5,512,614, Cl. 523-501.000.
Nahumi, Dror, to AT&T Corp. Method and apparatus for conversion of compressed bit stream representation of video signal, 5,512,953, Cl. 348-441.000.
Nair, Rajesh M.; Mansingh, Vivek; and Ismail, Raouf A., to Cambridge Aeroflow, Inc. Gas flow and temperature probe and gas flow and temperature monitor system including one or more such probes, 5,511,415, Cl. 73-204.110.
Naito, Kazufumi; Utsunomiya, Michito; Konishi, Hiroyuki; and Tamai, Shotaro, to Ishida Co., Ltd. Load cell having a hollow and a strain gauge formed on a substrate attached inside the hollow, 5,512,713, Cl. 177-211.000.
Naka, Yuji; and Yamamoto, Masanobu, to Sega of America, Inc. Video game with switchable collision graphics, 5,513,307, Cl. 395-152.000.
Nakaba, Katsuji: *See—*
Sakumoto, Yukinori; Hashimoto, Takeshi; Nakaba, Katsuji; Kobayashi, Masaharu; Nishigaya, Takeshi; and Yamanashi, Fumiyoshi, 5,512,628, Cl. 524-530.000.

- Nakada, Minoru, deceased (by Tomoko Nakada, heiress): *See—*
Aoki, Minoru; Ohtaki, Hiroshi; Fukui, Nobuharu; Terada, Takashi; Nakada, Minoru, deceased, 5,512,298, Cl. 424-452.000.
Nakagawa, Akio; Furukawa, Kazuyoshi; Ogura, Isuneo; and Tanzawa, Katsujino, to Kabushiki Kaisha Toshiba. Dielectrically isolated substrate and semiconductor device using the same, 5,512,774, Cl. 257-501.000.
Nakagawa, Shiro: *See—*
Namba, Kenryo; Kuroiwa, Akihiko; and Nakagawa, Shiro, 5,512,416, Cl. 430-270.210.
Nakajima, Atsushi; Matsumoto, Shinji; Maejima, Katsumi; Nakatani, Koichi; Kawakami, Sota; and Katsuda, Ai, to Konica Corporation. Heat transfer recording process using an intermediate recording sheet, 5,512,931, Cl. 347-213.000.
Nakajima, Sadaaki: *See—*
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Nakajima, Koji: *See—*
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Nakaka, Tomoko, heiress: *See—*
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Nakaki, Yoshiyuki; Tokunaga, Takashi; Fukami, Tatsuya; Taguchi, Motohisa; and Tsutsumi, Kazuhiko, to Mitsubishi Denki Kabushiki Kaisha. Magneto-optic recording medium and apparatus, 5,512,366, Cl. 428-332.000.
Nakakura, Yasuhiro; and Yoshizaki, Shouichi, to Matsushita Electric Industrial Co., Ltd. Output circuit with high output voltage protection means, 5,512,844, Cl. 326-81.000.
Nakamae, Satoshi: *See—*
Watanabe, Hitomaru; Honda, Makoto; Kojima, Hiroshi; and Nakamae, Satoshi, 5,513,036, Cl. 359-457.000.
Nakamura, Akihito: *See—*
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Nakamura, Hiroyuki: *See—*
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Nakamura, Kazunari: *See—*
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Nakamura, Norihisa, to NEC Corporation. Method of testing cache memories used for an information processing apparatus, 5,513,344, Cl. 395-185.180.
Nakamura, Norimichi: *See—*
Mizushima, Toshiyuki; Yokota, Mamoru; Nakamura, Norimichi; Ota, Ken; Yoshino, Shuji; and Inoue, Noboru, 5,512,104, Cl. 134-1.000.
Nakamura, Norio: *See—*
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Nakamura, Shinichi: *See—*
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Nakamura, Shin-ichiro: *See—*
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Nakamura, Takashi: *See—*
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Nakamura, Yasuhiko; Okuda, Kenji; and Bando, Takeo, to Mazda Motor Corporation. Method of analyzing gear sets, 5,511,414, Cl. 73-162.000.
Nakamura, Yoshikazu. Golf swing training device, 5,511,789, Cl. 473-202.000.
Nakamura, Yoshio: *See—*
Yoshitomi, Yasunari; Kuroki, Katsuro; Matsuo, Yukio; Masui, Hiroaki; Nakamura, Yoshio; Ishibashi, Maremizu; Kawano, Tsuyoshi; Haratani, Tsutomu; and Ushigami, Yoshiyuki, 5,512,110, Cl. 148-113.000.
Nakano, Masao: *See—*
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Nakano, Yuki: *See—*
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Nakao, Satoshi: *See—*
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Nakashima, Hideki: *See—*
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Nakashima, Masato: *See—*
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Nakayama, Michiaki: *See—*
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Nakayama, Toru: *See—*
Yoshida, Takehiro; Koizumi, Shigeru; Miura, Shigeo; Kurosawa, Yuji; Fujii, Yasuo; Noguchi, Hiroyuki; Nakayama, Toru; Kataoka, Junnosuke; and Okada, Masaaki, 5,513,253, Cl. 379-100.000.
Nakayama, Yoshiaki: *See—*
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Nakazawa, Ikuo: *See—*
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Nalco Chemical Company: *See—*
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Namatsu, Hideo: *See—*
Machida, Katsuyuki; Murase, Katsumi; Shimoyama, Nobuhiko; Tsuchiya, Toshiaki; Takahashi, Junichi; Minegishi, Kazushige; Takahashi, Yasuo; Namatsu, Hideo; and Imai, Kazuo, 5,512,513, Cl. 437-195.000.
Namba, Kenryo; Kuroiwa, Akihiko; and Nakagawa, Shiro, to TDK Corporation. Optical recording medium, 5,512,416, Cl. 430-270.210.
Namco Controls Corporation: *See—*
Everson, Harold W., Jr.; Slaybaugh, Jon; and Juda, Charles C., 5,512,890, Cl. 340-870.130.
Nanba, Ryoichi: *See—*
Uchiyama, Hideki; Kasukawa, Hiroaki; Takeda, Eiko; Watanabe, Junichiro; and Nanba, Ryoichi, 5,512,665, Cl. 536-4.100.
Nankai, Shiro: *See—*
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Nanya, Takanori: *See—*
Miya, Yukio; Kizaki, Shigeru; Sugiyama, Osamu; Hatayama, Akiteru; Shibuya, Yoshitsugu; Enomoto, Mitsugu; Naoi, Koichi; Fukazawa, Yuji; Nanya, Takanori; Shimizu, Shotaro; and Tagawa, Hiroshi, 5,511,587, Cl. 139-192.000.
Naoi, Koichi: *See—*
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Napoleto, Enrico F.: *See—*
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Naqwi, Amir A.; and Jensen, Leslie M., to TSI Incorporated. Device for interferometric measurements with compensation for tilt and position of measured cylindrical objects, 5,513,004, Cl. 356-357.000.
Narisawa, Tsutomu: *See—*
Abe, Hiroyuki; Muramatsu, Masaru; Goto, Tetsuro; and Narisawa, Tsutomu, 5,512,974, Cl. 354-430.000.
Naruse, Hiroshi: *See—*
Sakano, Hiroshi; Naruse, Hiroshi; Masubuchi, Akihiko; and Tachibana, Ikuo, 5,513,343, Cl. 395-183.020.
Nasman, Jan: *See—*
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National Heart and Lung Institute: *See—*
Collins, Peter, 5,512,557, Cl. 514-182.000.
National Rejectors Inc.: *See—*
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National Science Council: *See—*
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National Semiconductor Corporation: *See—*
Fague, Daniel E., 5,512,865, Cl. 332-103.000.
Gaverick, Timothy L., 5,512,765, Cl. 257-202.000.
Iranmanesh, Ali A., 5,512,508, Cl. 437-70.000.
Lohmeyer, Michael G., 5,513,376, Cl. 395-873.000.
Moraveji, Farhood, 5,512,859, Cl. 3303-267.000.
Paul, Prasun K., 5,513,370, Cl. 395-800.000.
Schrader, Victor P., 5,512,815, Cl. 323-315.000.
Wolstenholme, Graham; Bergemont, Albert; and Shacham, Etan, 5,512,504, Cl. 437-43.000.
Young, Desmond W.; and Hamstra, James R., 5,513,320, Cl. 395-200.010.
National Space Development Agency of Japan: *See—*
Osawa, Yuji; and Sezai, Toshihiro, 5,512,899, Cl. 342-25.000.
National Starch and Chemical Investment Holding Corporation: *See—*
Capitani, Teresa A.; Trzasko, Peter; Zallie, James P.; and Mason, William R., 5,512,311, Cl. 426-601.000.
DeWacker, Dennis R.; Rosenberg, Leon; and Lacamera, Nicholas J., Jr., 5,512,619, Cl. 524-56.000.
Naughton, Brian A.: *See—*
Naughton, Gail K.; and Naughton, Brian A., 5,512,475, Cl. 435-240.243.
Naughton, Gail K.; and Naughton, Brian A., to Advanced Tissue Sciences, Inc. Three-dimensional skin cell and tissue culture system, 5,512,475, Cl. 435-240.243.
Naughton, Patrick J.: *See—*
Forrest, Craig S.; Frank, Edward H.; and Naughton, Patrick J., 5,512,918, Cl. 345-122.000.
Naumann, Hans J., to Niles-Simmons Industrieanlagen GmbH. Wheelset processing method and apparatus, 5,511,913, Cl. 409-131.000.

- Nauro, Ken-ichi; Seko, Chisako; Kurokawa, Tsutomu; and Kondo, Tatsuya, to Takeda Chemical Industries, LTD. Glia activating factor and its production. 5,512,460, Cl. 435-69.100.
- Naylor, Nancy R.: See—
Young, Carol; Elliott, Michael N.; Fischer, Timothy J.; and Naylor, Nancy R., 5,512,485, Cl. 436-10.000.
- NCR Corporation: See—
Patel, Chiman R.; and Hsu, Henry Y., 5,513,369, Cl. 395-800.000.
- Neal, George H.; and Kelley, William C., to Sola International Holdings Ltd. Ophthalmic lens manufacture. 5,512,344, Cl. 428-64.100.
- NEC Corporation: See—
Hashimoto, Kiyokazu, 5,513,193, Cl. 371-67.100.
Hirano, Akihiro, 5,513,265, Cl. 381-66.000.
Homma, Hideki, 5,512,962, Cl. 348-699.000.
Isobe, Akira, 5,512,512, Cl. 437-187.000.
Iwasaki, Motoya, 5,513,222, Cl. 375-347.000.
Kage, Kouzou, 5,513,243, Cl. 379-58.000.
Kawamoto, Ryusaburo; and Suzuki, Kengo, 5,511,798, Cl. 277-205.000.
Kida, Tomoyuki, 5,512,842, Cl. 324-765.000.
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Matsui, Tsutomu, 5,513,047, Cl. 359-824.000.
Nakamura, Norihisa, 5,513,344, Cl. 395-185.180.
Ogino, Tooru; and Hashimoto, Kazuya, 5,513,386, Cl. 455-234.100.
Sakano, Hiroshi; Naruse, Hiroshi; Masubuchi, Akihiko; and Tachibana, Ikuko, 5,513,343, Cl. 395-183.020.
Shoji, Takashi, 5,512,223, Cl. 375-350.000.
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Wakasu, Yutaka, 5,513,301, Cl. 395-114.000.
- NEC USA, Inc.: See—
Dey, Sujit; Potkonjak, Miodrag; and Roy, Rabintra K., 5,513,118, Cl. 364-490.000.
Dey, Sujit; and Potkonjak, Miodrag, 5,513,123, Cl. 364-489.000.
- Nedberge, Diane E.: See—
Gale, Robert M.; Nedberge, Diane E.; and Atkinson, Linda E., 5,512,292, Cl. 424-448.000.
- Neely, John A.: See—
Machemer, Kevin S.; and Neely, John A., 5,513,173, Cl. 370-17.000.
- Negas, Taki; and Yeager, Glenn J., to Trans-Tech, Inc. Dielectric ceramic compositions. 5,512,524, Cl. 501-138.000.
- Negrin, Dan: See—
Lucevich, Mark S.; and Negrin, Dan, 5,511,867, Cl. 303-191.000.
- Nehowig, Kelly R.; Gale, David T.; Kullman, Scott W.; and Rogers, Brynn D., to Varitronic Systems, Inc. Tape printing machine with IR sensing. 5,511,891, Cl. 400-583.000.
- Nelle, Günther, to Dr. Johannes Heidenhain GmbH. Linear encoder. 5,511,321, Cl. 33-704.000.
- Nelson, James P.: See—
Nubel, Philip O.; Yokelson, Howard B.; Cohen, Steven A.; Behrends, Raymond T.; Bouslog, William G.; and Nelson, James P., 5,512,635, Cl. 525-247.000.
- Nelson, Lynn E.: See—
Tamura, Kohichi; Ipen, Erich P.; Haus, Hermann S.; Nelson, Lynn E.; and Doerr, Christopher R., 5,513,194, Cl. 372-6.000.
- Nelson, Peter H.: See—
Morgans, David, Jr.; Sjogren, Eric B.; Smith, David B.; Talamás, Francisco X.; Artis, Dean R.; Cervantes, Alicia; Elworthy, Todd R.; Fernández, Mario; Franco, Fidencio; Hawley, Ronald C.; Lara, Teresa; Loughhead, David G.; Nelson, Peter H.; Patterson, John W.; Trejo, Alejandra; Walton, Ann M.; and Weikert, Robert J., 5,512,568, Cl. 514-233.500.
- Nelson, Richard A., to Revell-Monogram, Inc. Mug simulating a helmet and helmet wearer. 5,511,685, Cl. 220-662.000.
- Nelson, Richard F.: See—
Miller, Thomas L.; Nelson, Richard F.; and Ostrom, John K., 5,512,335, Cl. 427-600.000.
- Nelson, Thomas G.: See—
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- Ness, Ronald A.: See—
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- Nesselroad, Christopher W.: See—
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- Nestec S.A.: See—
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Holzheimer, Günter; Neubauer, Hans R.; and Sretz, Manfred, 5,511,953, Cl. 417-68.000.
- Neumann, Rainer; and Schwalm, Dieter, to Vulkan Lörking GmbH & Co. KG. Pliers for mounting purposes. 5,511,453, Cl. 81-362.000.
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- New Holland North America, Inc.: See—
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- NexGen, Inc.: See—
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- Nezu, Yukio: See—
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- Ng, M. K. C.; Lee, J. T. C.; Poon, G. C.; Pullia, L. S.; Prince, J. W.; and Crowell, W. J., to Ontario Hydro. Method and apparatus for turbine blade rehabilitation. 5,511,308, Cl. 29-889.100.
- NGK Insulators, Ltd.: See—
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- Nichols, James M.; Coppes, Bryan A.; and Sperry, Bruce T., Jr., to Infiltrator Systems, Inc. Leaching chamber with perforated web sidewall. 5,511,903, Cl. 405-43.000.
- Nichols, Mark E.; and Talbot, Nicholas C., to Trimble Navigation Limited. Pole-tilt sensor for surveyor range pole. 5,512,905, Cl. 342-357.000.
- Nicolaisen, Bernd: See—
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- Nielsen, Erik B.: See—
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- Nikirk, Chris T.; and Seidel, Francis L., to Furon Company. Tandem seal gasket assembly. 5,511,797, Cl. 277-204.000.
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- Miyamichi, Kazuo; and Nakamura, Hiroyuki, 5,512,351, Cl. 428-195.000.
- Nikon Corporation: See—
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Abe, Jun, 5,513,038, Cl. 359-580.000.
Kusaka, Yosuke; Muramatsu, Masaru; Utagawa, Ken; and Yamano, Shozo, 5,512,973, Cl. 354-402.000.
- Niles-Simmons Industries, Inc.: See—
Naumann, Hans J., 5,511,913, Cl. 409-131.000.
- Nilssen, Ole K. Ballast for instant-start parallel-connected lamps. 5,512,801, Cl. 315-209.000.
- Nilsson, Benkt-Olov. Active fishing line brake. 5,511,337, Cl. 43-25.000.
- Nilsson, Tord R.: See—
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- Ninomiya, Hitoshi; Katoh, Kenichi; and Fukuta, Toshiaki, to Nippondenso Co., Ltd. Folded filter element for filtering fluid. 5,512,075, Cl. 55-497.000.
- Nippon Flute Co., Ltd.: See—
Morita, Shigeru; Ishida, Hiroshi; and Hirano, Isao, 5,511,362, Cl. 53-491.000.
- Nippon Kayaku Kabushiki Kaisha: See—
Aoki, Minoru; Ohtaki, Hiroshi; Fukui, Nobuharu; Terada, Takashi; Nakada, Minoru, deceased, 5,512,298, Cl. 424-452.000.
- Nippon Oil Company, Ltd.: See—
Hamada, Saburo; Takahiro, Masahiko; and Morohashi, Kazuo, 5,511,395, Cl. 68-2.000.
- Kinoshita, Hirotugu; Nomura, Souichi; and Mishima, Masaru, 5,512,188, Cl. 252-18.000.
Sasaki, Umekichi; Sunami, Motoshi; and Hasegawa, Hiroshi, 5,512,198, Cl. 252-68.000.
- Nippon Paper Industries Co., Ltd.: See—
Shimizu, Yasubumi; and Morinaga, Shozo, 5,512,137, Cl. 162-198.000.
- Nippon Reusui Co.: See—
Uchino, Hajime; Tajima, Motohiko; and Horie, Hiroshi, 5,512,173, Cl. 204-632.000.
- Nippon Steel Corporation: See—
Takeuchi, Hideki; and Kawamura, Koichiro, 5,512,515, Cl. 437-196.000.
- Yamaguchi, Satoshi; Daimon, Masahiro; Chiba, Koichi; Kobayashi, Tetsuro; and Saito, Yoshimasa, 5,513,201, Cl. 372-75.000.

- Yoshitomi, Yasunari; Kuroki, Katsuro; Matsuo, Yukio; Masui, Hiroaki; Nakamura, Yoshio; Ishibashi, Marenz; Kawano, Tsuyoshi; Haratani, Tsutomu; and Ushigami, Yoshiyuki, 5,512,110, Cl. 148-113.000.
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Yabusaki, Masami; Yamamoto, Kouji; and Uebayashi, Shinji, 5,513,211, Cl. 375-219.000.
- Nippon Telegraph and Telephone Corp.: See—
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- Nippon Yakin Kogyo Co. Ltd.: See—
Fujiwara, Yoshio; Kobayashi, Yutaka; Kimura, Mituo; Iio, Masatoshi; and Takamura, Tohsaku, 5,512,239, Cl. 420-68.000.
- Nippondenso Co., Ltd.: See—
Iwanaga, Takashi; Kariya, Yasuhiro; Magario, Kenji; Kawaguchi, Takayoshi; Shima, Nobuhiko; and Ban, Mitsuru, 5,511,528, Cl. 123-467.000.
Miyake, Toshihiro; Bando, Katuya; Yagura, Toshiaki; and Kondo, Koji, 5,511,719, Cl. 228-106.000.
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Tokunaga, Takahiro; Uemura, Yukio; Asano, Hideo; Sugi, Hikaru; Kameoka, Teruhiko; and Kondo, Yasushi, 5,511,939, Cl. 415-206.000.
- Nishida, Kenji; and Sato, Noriaki, to Fujitsu Limited. Contact structure for connecting an electrode to a semiconductor device and a method of forming the same. 5,512,516, Cl. 437-200.000.
- Nishigaya, Takeshi: See—
Sakumoto, Yukinori; Hashimoto, Takeshi; Nakaba, Katsuji; Kobayashi, Masaharu; Nishigaya, Takeshi; and Yamanashi, Fumiyoshi, 5,512,628, Cl. 524-530.000.
- Nishikawa, Junji, to Matsushita Electric Industrial Co., Ltd. Data transfer device and multiprocessor system. 5,513,364, Cl. 395-287.000.
- Nishio, Yukio; Kamiya, Ichiro; Shinjo, Ryoichi; Ishii, Yoshihiro; and Kosaka, Koichi, to Ebara Corporation. Method for deodorizing and refreshing for dry cleaning. 5,511,264, Cl. 8-158.000.
- Nishishita, Kunihiko, to Zexel Corporation. Heat exchanger. 5,511,611, Cl. 165-153.000.
- Nisimura, Hiroyuki, to Kabushiki Kaisha Toshiba. Digital image forming apparatus having a function of compensating shadings using a white reference plate. 5,513,018, Cl. 358-474.000.
- Nissan Motor Co., Ltd.: See—
Fujiwara, Yoshio; Kobayashi, Yutaka; Kimura, Mituo; Iio, Masatoshi; and Takamura, Tohsaku, 5,512,239, Cl. 420-68.000.
Kasahara, Tamiyoshi; Akatsu, Yohsuke; Kawagoe, Kenji; Endo, Yutaka; and Noguchi, Hiroshi, 5,511,817, Cl. 280-717.000.
Okada, Yasuaki; Yoshikawa, Shinji; and Urano, Eihiro, 5,513,113, Cl. 364-474.210.
- Nissei ASB Machine Co., Ltd.: See—
Matsui, Tsuyoshi, 5,511,966, Cl. 425-522.000.
- Nishinbo Industries, Inc.: See—
Tanaka, Takao, 5,511,636, Cl. 188-1.110.
- Nitivy Co., Ltd.: See—
Uchino, Hajime; Tajima, Motohiko; and Horie, Hiroshi, 5,512,173, Cl. 204-632.000.
- Nivens, Kirk N. Block wall system. 5,511,350, Cl. 52-293.300.
- NKK Corporation: See—
Ando, Seigo; Matsufuji, Yasuhiro; Maki, Hiroshi; Inaba, Mamoru; Iwanaga, Kenichi; Takeoshi, Atsuhisa; and Takenaka, Masaki, 5,512,821, Cl. 324-225.000.
Sekiguchi, Goichi; and Morito, Hisatomo, 5,511,922, Cl. 414-139.600.
- Noble, Milton L.: See—
Yanka, Robert W.; and Noble, Milton L., 5,512,750, Cl. 250-338.400.
- Noble, Wendell P., Jr., to International Business Machines Corp. Trench capacitor field shield with sidewall contact. 5,512,767, Cl. 257-301.000.
- Nobuta, Yasuo; Toki, Yusuke; Hiraoka, Manabu; Sugihara, Naoki; and Ozaki, Masahiro, to Kabushiki Kaisha Toshiba. Computerized tomography apparatus. 5,513,237, Cl. 378-19.000.
- Noda, Masanori, to Sony Corporation. Semiconductor memory device having silicon nitride overlying only peripheral circuit areas. 5,512,779, Cl. 257-640.000.
- Noda, Masaru: See—
Sakurai, Hiroshi; Ohtsubo, Hiroyasu; Asada, Kouji; Noda, Masaru; Iura, Noriyuki; Imai, Takuya; Kamimura, Junji; Komatsu, Hiroyuki; and Kinugasa, Toshiro, 5,512,945, Cl. 348-221.000.
- Nogaki, Paul V. Electrical test clips for slotted and Phillips screw heads. 5,512,840, Cl. 324-756.000.
- Noggle, Ken: See—
Kaibi, Karl; Noggle, Ken; Lowe, Tony; and Patterson, John, 5,511,911, Cl. 407-114.000.
- Noguchi, Akio: See—
Serizawa, Yoji; Noguchi, Akio; Ushio, Yukihide; Matsuo, Shimpei; Yamada, Kazuro; Uchiyama, Seiji; Takeuchi, Makoto; Suwa, Koichi; Hiroshima, Koichi; Tsukida, Shinichi; Takano, Manabu; Goto, Masahiro; Inoue, Takahiro; Yamada, Hiromichi; Kato, Junichi; and Ojima, Masaki, 5,512,929, Cl. 347-153.000.
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- Noguchi, Hiroshi: See—
Kasahara, Tamiyoshi; Akatsu, Yohsuke; Kawagoe, Kenji; Endo, Yutaka; and Noguchi, Hiroshi, 5,511,817, Cl. 280-717.000.
- Noguchi, Hiroyuki: See—
Yoshida, Takehiro; Koizumi, Shigeru; Miura, Shigeo; Kurosawa, Yuji; Fujii, Yasuo; Noguchi, Hiroyuki; Nakayama, Toru; Kataoka, Junnosuke; and Okada, Masaki, 5,513,253, Cl. 379-100.000.
- Nolan, Shari J.: See—
Harris, George W., Jr.; and Nolan, Shari J., 5,513,325, Cl. 395-200.200.
- Nomoto, Kazumasa: See—
Suzuki, Toshikazu; Nomoto, Kazumasa; and Ugajin, Ryuichi, 5,512,762, Cl. 257-15.000.
- Nomoto, Yoshitaka: See—
Kameda, Osamu; Masuno, Masami; Nomoto, Yoshitaka; and Hiraoka, Youichi, 5,511,448, Cl. 74-665.0GE.
- Nomura, Souichi: See—
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- Nomura, Takashi: See—
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- Nonaka, Yusuke: See—
Otsuka, Fumio; Nonaka, Yusuke; and Aoki, Atsumi, 5,512,502, Cl. 437-41.000.
- Noonan, John M.: See—
Bailey, David B.; Bowman, Wayne A.; Evans, Steven; Lawrence, Kristine B.; and Noonan, John M., 5,512,532, Cl. 503-227.000.
- Nordgren, Gregory N.: See—
Bardorf, David B.; Nordgren, Gregory N.; and Schryver, Charles A., 5,511,965, Cl. 425-381.000.
- Nordica S.p.A.: See—
Pellegrini, Alfred, Jr.; and Tormena, Andrea, 5,511,804, Cl. 280-11.200.
- NordicTrack, Inc.: See—
Loubert, Craig A.; Peterson, Stephen S.; and Rose, Stephen A., 5,511,740, Cl. 242-381.000.
- Nordson Corporation: See—
Ingram, Gratus; Meyers, Reuben I.; and Chambers, Timothy G., 5,512,100, Cl. 118-309.000.
- Nore, Pentti; Honkanen, Erkki; Bäckström, Reijo; Wikberg, Tom; Haikala, Heimo; and Haara, Jorma, to Orion-yhtymä Oy. (-) [14-(1,4,5,6-tetrahydro-4-methyl-6-oxo-3-pyridazinyl)phenyl]-hydrozono]propanedinitrile. 5,512,571, Cl. 544-239.000.
- Nore, Pentti T.: See—
Haikala, Heimo O.; Levijoki, Juoko M.; Bäckström, Reijo J.; Nore, Pentti T.; and Honkanen, Erkki J., 5,512,572, Cl. 514-247.000.
- Noreen, Darryl L., to R & D Technologies, Inc. Thermophotovoltaic systems. 5,512,108, Cl. 136-253.000.
- Noren, Doug: See—
Noren, Lars T.; and Noren, Doug, 5,511,570, Cl. 134-105.000.
- Noren, Lars T.; and Noren, Doug, to Stero Company. The. Warewasher employing infrared burner. 5,511,570, Cl. 134-105.000.
- Norris, Philip R.; Slavitter, Frederick; Shown, Kenneth G.; and Feehan, Timothy J., to Polaroid Corporation. Method of and apparatus for transferring film. 5,512,971, Cl. 354-311.000.
- Norsworthy, Steven R.; and Shaw, David G., to AT&T Corp. Data converter with minimum phase FIR filter and method for calculating filter coefficients. 5,512,898, Cl. 341-155.000.
- North American Philips Corporation: See—
Wong, Stephen L., 5,512,849, Cl. 327-77.000.
- Northeastern University: See—
Giese, Roger W.; and Wang, Puguang, 5,512,486, Cl. 436-63.000.
- Northern Telecom Limited: See—
Bricheno, Terry; Fielding, Alan; and Davis, Sandra, 5,513,033, Cl. 359-341.000.
- Epworth, Richard E., 5,513,030, Cl. 359-187.000.
- Roberts, Kim B., 5,513,029, Cl. 359-177.000.
- Northrop Grumman Corporation: See—
Guthrie, Warren E.; Haag, John A.; and Williams, Roger B., 5,512,902, Cl. 342-357.000.
- Kalsi, Swarn S., 5,511,733, Cl. 242-437.300.
- Northwestern Univ.: See—
Sandstrom, Craig; Papoutsakis, E. T.; Miller, William M.; and Bender, James G., 5,512,480, Cl. 435-289.100.
- Norton Chemical Process Products Corp.: See—
Gerdes, William H.; Remus, Donald J.; and Szymanski, Thomas, 5,512,530, Cl. 502-351.000.
- Noschese, Rocco J.; Piorunneck, Heinz; and Ramirez, Fernando J., to Burndy Corporation. Angled card edge connector. 5,511,985, Cl. 439-157.000.
- Novamont S.p.A.: See—
Bastoli, Catia; Romano, Giancarlo; Scarati, Mario; and Tosin, Maurizio, 5,512,378, Cl. 428-484.000.
- Novo Nordisk A/S: See—
Hohweg, Rolf; and Nielsen, Erik B., 5,512,562, Cl. 514-215.000.
- Novof, Ilya I.: See—

- Kelkar, Ram; Novof, Ilya I.; Strayer, Donald E.; and Wyatt, Stephen D., 5,513,225, Cl. 375-376.000.
- NSK Ltd.: See—
Watanabe, Yasushi; Okubo, Kiyoshi; and Yokoi, Koichi, 5,511,440, Cl. 74-492.000.
- Yamaguchi, Mikio; and Matsumoto, Sakae, 5,511,823, Cl. 280-777.000.
- NTT Mobile Communications Network Inc.: See—
Yabusaki, Masami; Yamamoto, Kouji; and Uebayashi, Shinji, 5,513,211, Cl. 375-219.000.
- Nubel, Philip O.; Yokelson, Howard B.; Cohen, Steven A.; Behrends, Raymond T.; Bouslog, William G.; and Nelson, James P., to Amoco Corporation, Process for preparing linear monofunctional and telechelic difunctional polymers and compositions obtained thereby, 5,512,635, Cl. 525-247.000.
- Nuckolls, Charles E.: See—
Lundberg, James R.; and Nuckolls, Charles E., 5,513,358, Cl. 395-750.000.
- Nukada, Hidemi; Tokida, Akihiko; Sakaguchi, Yasuo; Daimon, Katsumi; and Nukada, Katsumi, to Fujii Xerox Co., Ltd. Process for preparing titanyl phthalocyanine crystal by solvent dilution, 5,512,674, Cl. 540-141.000.
- Nukada, Katsumi: See—
Nukada, Hidemi; Tokida, Akihiko; Sakaguchi, Yasuo; Daimon, Katsumi; and Nukada, Katsumi, 5,512,674, Cl. 540-141.000.
- Nute, Robert A., to Quantum Corporation, System for optimizing data transfer, 5,513,326, Cl. 395-250.000.
- Nuti, Dominique: See—
Mathis, Gérard; Dumont, Christophe; Aspe, Daniel; Foyentin, Muriel; Jolu, Etienne J.; and Nuti, Dominique, 5,512,493, Cl. 436-537.000.
- Nynex Corporation: See—
Beierle, John D., 5,512,937, Cl. 348-14.000.
- Obayashi Corporation: See—
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- Öberg, Per O., to Expand Systems AB, Arrangement for a boom, 5,511,906, Cl. 405-68.000.
- Obersteller, Udo: See—
Manusch, Christoph; Obersteller, Udo; and Hermannsen, Wulf, 5,512,128, Cl. 156-577.000.
- O'Brien, George A. Method of removing dried paint from a surface, 5,512,105, Cl. 134-6.000.
- O'Brien, Michael J.: See—
Eckberg, Richard P.; and O'Brien, Michael J., 5,512,605, Cl. 522-31.000.
- O'Brien, Michael P., to Evergreen Soft Spa, Inc. Portable steam sauna, 5,511,254, Cl. 4-532.000.
- Obuchi, Shoji: See—
Ohta, Masahiro; Obuchi, Shoji; and Yoshida, Yasunori, 5,512,653, Cl. 528-361.000.
- Obushenko, Ivan M., to Photran Corporation, Light-weight electrical-storage battery, 5,512,390, Cl. 429-204.000.
- Occidental Chemical Corporation: See—
Rutan, Charles R., 5,512,140, Cl. 202-158.000.
- Schwartz, Willis T.; Dinan, Frank J.; and Snits, Jeffrey S., 5,512,686, Cl. 549-234.000.
- Ocean Power Technologies, Inc.: See—
Epstein, Michael Y.; and Carroll, Charles B., 5,512,795, Cl. 310-339.000.
- Ochi, Yoshiaki: See—
Hanaoka, Yasuhiko; Ochi, Yoshiaki; Kitanaka, Yoshiyuki; Ohashi, Hiroki; Shimada, Hiroshi; Mase, Tomonori; Kato, Kenichi; and Takahashi, Youichi, 5,513,156, Cl. 369-34.000.
- O'Connor, Dennis M.: See—
Gillespie, Byron R.; Garbus, Elliot D.; Kahn, Mitchell A.; Johnson, Thomas M.; O'Connor, Dennis M.; and Heeb, Jay S., 5,513,337, Cl. 395-479.000.
- Oda, Hironori: See—
Kitao, Teijiro; and Oda, Hironori, 5,512,423, Cl. 430-345.000.
- Odaka, Masanori: See—
Ikeda, Takahide; Yamada, Kouichirou; Saito, Osamu; Odaka, Masanori; Tamba, Nobuo; Ogiue, Katsumi; Hiraishi, Atsushi; Watanabe, Atsuo; Hirao, Mitsuru; Fukami, Akira; Ohayashi, Masayuki; and Kuramoto, Tadashi, 5,512,497, Cl. 437-34.000.
- Odanaka, Shinji: See—
Hiroki, Akira; Kurimoto, Kazumi; and Odanaka, Shinji, 5,512,771, Cl. 257-369.000.
- Oden, Kenneth W.: See—
Duncan, David W.; Lee, Larry D.; and Oden, Kenneth W., 5,511,688, Cl. 221-67.000.
- Oder, Reuben E., to Procter & Gamble Company, The, Container having a tamper evidency system, 5,511,677, Cl. 215-252.000.
- O'Donnell, Kevin, to Exxon Chemical Patents Inc. Curing systems for compositions containing halogenated copolymers of isobutylene and paramethylstyrene, 5,512,638, Cl. 525-333.400.
- Odorisio, Paul A.: See—
Pastor, Stephen D.; Shum, Sai P.; and Odorisio, Paul A., 5,512,621, Cl. 524-119.000.
- Odrobina, David: See—
Hausmann, Ernest; Wobschall, Darold; Ortman, Lance; Kutubay, Evren; Allen, Kristin; and Odrobina, David, 5,513,240, Cl. 378-170.000.
- Oellerer, Friedrich: See—
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- Oesterlin, Richard: See—
Momot, Stanley; Oesterlin, Richard; Hudyma, Edward; Dabisch, Kenneth; Fedrigon, Richard; Goldberg, Ira; and Isaac, Ragy, 5,512,125, Cl. 156-353.000.
- Offord, Glen E., to AT&T Corp. Single port register, 5,513,141, Cl. 365-189.050.
- Ogasawara, Makoto; Yada, Masakazu; Sakurai, Kaoru; Higa, Kazuya; Miyashita, Masahide; and Hirai, Yasunasa, to Ishihara Sangyo Kaisha, Ltd. Acicular ferromagnetic iron oxide particles and process for producing the same, 5,512,194, Cl. 252-62.560.
- Ogata, Takashi: See—
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- Ogawa, Katsuhisa: See—
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- Ogawa, Kimiaki, to Asahi Kogaku Kogyo Kabushiki Kaisha, Distance measuring device, 5,512,997, Cl. 356-3.040.
- Ogawa, Shinji; and Matsumoto, Masayoshi, to Sumitomo Wiring Systems, Ltd.; and Ichihoh Industries, Ltd. Bulb socket and terminal installed thereon, 5,511,988, Cl. 439-336.000.
- Ogino, Tooru; and Hashimoto, Kazuya, to NEC Corporation, Receiver for a cellular mobile radio communication system, 5,513,386, Cl. 455-234.100.
- Ogiso, Tamotsu: See—
Morita, Yoshikazu; Iwauchi, Shigeharu; and Ogiso, Tamotsu, 5,511,358, Cl. 513-128.100.
- Ogiue, Katsumi: See—
Ikeda, Takahide; Yamada, Kouichirou; Saito, Osamu; Odaka, Masanori; Tamba, Nobuo; Ogiue, Katsumi; Hiraishi, Atsushi; Watanabe, Atsuo; Hirao, Mitsuru; Fukami, Akira; Ohayashi, Masayuki; and Kuramoto, Tadashi, 5,512,497, Cl. 437-34.000.
- Ogura, Isunoe: See—
Nakagawa, Akio; Furukawa, Kazuyoshi; Ogura, Isunoe; and Tanzawa, Katsujino, 5,512,774, Cl. 257-501.000.
- Ogura, Kuniyoshi; and Sasaki, Kouji, to Toyo Boseki Kabushiki Kaisha, Ampholytic polymer capable of absorbing aqueous electrolyte solution, 5,512,644, Cl. 526-258.000.
- Ogura, Masaaki, to Ricoh Co., Ltd. System for remote diagnosis of image forming apparatuses, including intelligent communications control for data therefrom, 5,512,979, Cl. 355-204.000.
- Oguro, Masaki: See—
Kori, Teruhiko; Iizuka, Ken; and Oguro, Masaki, 5,513,010, Cl. 358-341.000.
- Oguruma, Wakako: See—
Takahashi, Tsutomu; Sugino, Kazuhiro; Oguruma, Wakako; and Onari, Hisashi, 5,513,356, Cl. 395-700.000.
- Ogushi, Masaki: See—
Mori, Motoharu; Yoshida, Hironobu; Yamamura, Ikuo; Iura, Toru; Takeuchi, Osamu; and Ogushi, Masaki, 5,513,206, Cl. 373-80.000.
- Oh, Dong Y.: See—
Kim, Jung C.; Oh, Dong Y.; Choe, Gyu S.; Hong, Kyung S.; Kim, Kyung H.; Lee, Joo H.; Lee, Ha I.; Park, Kyeong B.; Gil, Dong S.; Kwon, Oh H.; and Kwon, Byoung H., 5,511,396, Cl. 68-3.055.
- Oh, Min-Chul: See—
Whang, Wol-Yon; Kim, Jang-Joo; Zyung, Tae-Hyoung; and Oh, Min-Chul, 5,513,283, Cl. 385-8.000.
- Ohashi, Hiroki: See—
Hanaoka, Yasuhiko; Ochi, Yoshiaki; Kitanaka, Yoshiyuki; Ohashi, Hiroki; Shimada, Hiroshi; Mase, Tomonori; Kato, Kenichi; and Takahashi, Youichi, 5,513,156, Cl. 369-34.000.
- Ohashi, Hiroshi: See—
Osawa, Yoshihito; and Ohashi, Hiroshi, 5,512,640, Cl. 525-476.000.
- Ohashi, Ken, to Shin-Etsu Chemical Co., Ltd. Permanent magnet arrangement for use in magnetron plasma processing, 5,512,872, Cl. 335-306.000.
- Ohashi, Tetsuyo, to Canon Kabushiki Kaisha, Ink jet head cartridge and ink tank therefor, 5,512,925, Cl. 347-86.000.
- Ohashi, Tetsuyo: See—
Uchikata, Yoshio; Hattori, Yoshifumi; Ara, Yoji; Kitani, Masashi; Suzuki, Eisuru; Wada, Toshihide; Hirabayashi, Hiromitsu; Saikawa, Hideo; Kojima, Masami; Hanabusa, Tadashi; Kawano, Kenji; Tanno, Koichi; Ohashi, Tetsuyo; Bekki, Toshihiko; Aono, Kenji; and Ikado, Masaharu, 5,512,926, Cl. 347-86.000.
- Ohayashi, Masayuki: See—
Ikeda, Takahide; Yamada, Kouichirou; Saito, Osamu; Odaka, Masanori; Tamba, Nobuo; Ogiue, Katsumi; Hiraishi, Atsushi; Watanabe, Atsuo; Hirao, Mitsuru; Fukami, Akira; Ohayashi, Masayuki; and Kuramoto, Tadashi, 5,512,497, Cl. 437-34.000.
- Oheda, Kenji: See—
Yamamoto, Mika; and Oheda, Kenji, 5,512,484, Cl. 435-320.100.
- Ohgami, Keizo; and Akashi, Kazuo, to Kabushiki Kaisha Toshiba, Electronic apparatus with storing portion into which a detachable unit with a slidably attached unit holder is slidably connected, 5,513,069, Cl. 361-685.000.
- Ohia, S. Edet: See—
Roche, Victoria F.; Ohia, S. Edet; and Roche, Edward B., 5,512,577, Cl. 514-281.000.
- Ohio State University Research Foundation, The: See—
Ryan, James A.; Logan, Terry J.; Ma, Qi Y.; and Traina, Samuel J., 5,512,702, Cl. 588-256.000.
- Ohkawa, Hiromi: See—

- Yoshioka, Nobuki; and Ohkawa, Hiromi, 5,511,408, Cl. 73-1.09R.
- Ohki, Makoto: See—
Fukushima, Satoru; and Ohki, Makoto, 5,512,983, Cl. 355-220.000.
- Ohlsen, James R.: See—
Brown, J. Michael; Ohlsen, James R.; and McBride, Richard D., 5,512,212, Cl. 252-387.000.
- Ohmi, Takashi; and Shibuya, Yasuo, to Kabushiki Kaisha Tokyo Kikai Seisakusho, Width adjusting device for a paper web, 5,511,473, Cl. 101-228.000.
- Ohmori, Takahiro: See—
Kawasaki, Mikio; Ohmori, Takahiro; and Tomiyasu, Hiroshi, 5,513,056, Cl. 360-103.000.
- Ohnishi, Shuji, to Rohm Co., Ltd. Voltage drop detecting circuit, 5,512,837, Cl. 324-704.000.
- Ohnishi, Toshikazu: See—
Miyazaki, Takeshi; Tanaka, Kazumi; Santo, Tsuyoshi; Ohnishi, Toshikazu; Fukui, Tetsuro; and Okamoto, Tadashi, 5,512,446, Cl. 435-7.200.
- Ohnmacht, Cyrus J.: See—
Jacobs, Robert T.; Klimas, Michael T.; Ohnmacht, Cyrus J.; and Terpko, Marc O., 5,512,575, Cl. 514-256.000.
- Ohno, Kenzo, to Matsushita Electric Industrial Co., Ltd. Teleconference terminal, 5,512,938, Cl. 348-15.000.
- Ohrbom, Walter H.: See—
Rehfuss, John W.; and Ohrbom, Walter H., 5,512,639, Cl. 525-456.000.
- Ohsato, Kiyoshi, to Sony Corporation, Optical disk pickup device with focusing correction by electrostriction, 5,513,158, Cl. 369-44.230.
- Ohshima, Osamu, to Yamaha Corporation, Control panel having a graphical user interface for setting control panel data with stylus, 5,512,707, Cl. 84-658.000.
- Ohta, Masahiro; Obuchi, Shoji; and Yoshida, Yasunori, to Mitsui Toatsu Chemicals, Inc. Lactic acid containing hydroxycarboxylic acid for the preparation of polyhydroxycarboxylic acid, 5,512,653, Cl. 528-361.000.
- Ohta, Masumi: See—
Udagawa, Toshiki; Yoshimura, Shunji; and Ohta, Masumi, 5,513,167, Cl. 369-116.000.
- Ohtaki, Hiroshi: See—
Aoki, Minoru; Ohtaki, Hiroshi; Fukui, Nobuharu; Terada, Takashi; Nakada, Minoru; deceased, 5,512,298, Cl. 424-452.000.
- Ohtomo, Fumio; Sugai, Hiroo; Ishinabe, Ikuo; Yamazaki, Takaaki; and Kodaira, Junichi, to Kabushiki Kaisha TOPCON, Tilt angle automatic compensator in all directions, 5,513,001, Cl. 356-249.000.
- Ohtsu, Kanishi: See—
Konishi, Masaya; Hayashi, Kunihiko; Enomoto, Youichi; Tanaka, Shoji; Yamada, Yasuji; Ohtsu, Kanishi; Kanamori, Yasuo; and Shiohara, Yuh, 5,512,541, Cl. 505-474.000.
- Ohtsubo, Hiroyasu: See—
Sakurai, Hiroshi; Ohtsubo, Hiroyasu; Asada, Kouji; Noda, Masaru; Iura, Noriyuki; Imade, Takuya; Kamimura, Junji; Komatsu, Hiroyuki; and Kinugasa, Toshiro, 5,512,945, Cl. 348-221.000.
- Ohtsuka, Noboru: See—
Ichikawa, Takashi; and Ohtsuka, Noboru, 5,511,857, Cl. 301-37.230.
- Ohtsuka, Toshiharu: See—
Eki, Toshiro; and Ohtsuka, Toshiharu, 5,511,723, Cl. 236-12.120.
- Ohtsuki, Kenichi: See—
Sakurai, Yoshito; Gohara, Shinobu; Ohtsuki, Kenichi; Kato, Takao; Kuwahara, Hiroshi; and Amada, Eiichi, 5,513,177, Cl. 370-58.100.
- Oiles Corporation: See—
Kurek, Kenneth M.; Pierre, Alain M.; Maeda, Takashi; and Fukukido, Takeshi, 5,511,828, Cl. 285-49.000.
- Ojima, Masaki: See—
Serizawa, Yoji; Noguchi, Akio; Ushio, Yukihide; Matsuo, Shimpei; Yamada, Kazuo; Uchiyama, Seiji; Takeuchi, Makoto; Suwa, Koichi; Hiroshima, Koichi; Tsukida, Shinichi; Takano, Manabu; Goto, Masahiro; Inoue, Takahiro; Yamada, Hiromichi; Kato, Junichi; and Ojima, Masaki, 5,512,929, Cl. 347-153.000.
- Okada, Hiroaki; Mochizuki, Isao; and Takagi, Takeyuki, to Brother Kogyo Kabushiki Kaisha, Key switch having elastic portions for facilitating attachment of scissors-type support linkage to keytop and holder, and removal of keytop from linkage, 5,512,719, Cl. 200-344.000.
- Okada, Masaaki: See—
Yoshida, Takehiro; Koizumi, Shigeru; Miura, Shigeo; Kurosawa, Yuji; Fujii, Yasuo; Noguchi, Hiroyuki; Nakayama, Toru; Kataoka, Junnosuke; and Okada, Masaaki, 5,513,253, Cl. 379-100.000.
- Okada, Yasuaki; Yoshikawa, Shinji; and Urano, Eihiro, to Murata Kikai Kabushiki Kaisha; and Nissan Motor Co., Ltd. Method of and device for correcting position of cutting-edge of tool in numerically controlled machine tool, 5,513,113, Cl. 364-474.210.
- Okada, Yuichi: See—
Kohata, Takashi; Aoyama, Toshihiko; Okada, Yuichi; and Asanuma, Nobuyoshi, 5,511,630, Cl. 180-142.000.
- Okada, Yutaka: See—
Satake, Satoru; Kanamoto, Shigeharu; Okada, Yutaka; and Matsumoto, Nobuhiro, 5,511,469, Cl. 99-519.000.
- Okado, Kenji; Ugai, Toshiyuki; Fujita, Ryoichi; Kanbayashi, Makoto; Takiguchi, Tsuyoshi; Ichikawa, Yasuhiro; and Iida, Wakashu, to Canon Kabushiki Kaisha, Carrier for electrophotography, two-component type developer, and image forming method, 5,512,402, Cl. 430-106.600.
- Okajima, Hiroshi: See—
- Takahasi, Yosataka; Manabe, Akira; Kaneko, Tadataka; Okajima, Hiroshi; Ito, Yoshihiko; and Daiza, Setsuo, 5,512,080, Cl. 75-231.000.
- Okamoto, Tadashi: See—
Miyazaki, Takeshi; Tanaka, Kazumi; Santo, Tsuyoshi; Ohnishi, Toshikazu; Fukui, Tetsuro; and Okamoto, Tadashi, 5,512,446, Cl. 435-7.200.
- Okamoto, Toyoo, to Ricoh Co., Ltd. Image forming apparatus having a photosensitive drum rotatable at different speeds, 5,512,927, Cl. 347-129.000.
- Okamoto, Yutaka, to Sony Corporation, Method of producing semiconductor device, 5,512,498, Cl. 437-35.000.
- Okano, Yoji: See—
Misawa, Hiromitsu; Fujioka, Kazuo; Aoki, Koso; Kurita, Eiichi; Okano, Yoji; and Kozawa, Minoru, 5,512,405, Cl. 430-106.600.
- Okayasu, Yosuke: See—
Itoi, Kenji; Endo, Akira; and Okayasu, Yosuke, 5,511,462, Cl. 92-99.000.
- Okazaki, Sandra Y., to Hewlett-Packard Company, Sheet media handling system with interrelated input alignment and output support, 5,511,770, Cl. 271-4.010.
- Okazaki, Shinji: See—
Yoshimura, Toshiyuki; Miura, Naoko; Okazaki, Shinji; Toriumi, Minoru; and Shiraishi, Hiroshi, 5,512,328, Cl. 427-498.000.
- Ok Electric Industry Co.Ltd.: See—
Kawashima, Toshiyuki; Utsunomiya, Jiro; Kurosawa, Kiyoshi; Saburo, Iida; Nagase, Ryo; Himeno, Akira; Yukimatsu, Ken-ichi; Okyno, Masayuki; Kato, Kuniharu; and Kawachi, Masao, 5,513,285, Cl. 385-16.000.
- Okoshi, Takeshi: See—
Abe, Takashi; Yoshino, Naoto; Okoshi, Takeshi; and Ishizuka, Hiroyasu, 5,511,744, Cl. 242-564.500.
- Okubo, Kiyoshi: See—
Watanabe, Yasushi; Okubo, Kiyoshi; and Yokoi, Koichi, 5,511,440, Cl. 74-492.000.
- Okubo, Manoru: See—
Kajitani, Koji; Fukushima, Hirotsugu; Okubo, Manoru; Yanagida, Naoki; Takenaka, Mitsuhiro; Touji, Mitsuo; and Yamamoto, Kozo, 5,511,446, Cl. 74-573.000.
- Okuda, Kenji: See—
Nakamura, Yasuhiko; Okuda, Kenji; and Bando, Takeo, 5,511,414, Cl. 73-162.000.
- Okumura, Toshio: See—
Shimada, Takashi; Okumura, Toshio; and Hatakeyama, Toshiya, 5,512,262, Cl. 423-245.100.
- Okuyama, Toshiharu: See—
Wakatsuki, Yoshio; Okuyama, Toshiharu; Takeuchi, Hajime; Shimizu, Misao; and Shimizu, Giichiro, 5,513,347, Cl. 395-185.050.
- Okyno, Masayuki: See—
Kawashima, Toshiyuki; Utsunomiya, Jiro; Kurosawa, Kiyoshi; Saburo, Iida; Nagase, Ryo; Himeno, Akira; Yukimatsu, Ken-ichi; Okyno, Masayuki; Kato, Kuniharu; and Kawachi, Masao, 5,513,285, Cl. 385-16.000.
- Olden, John G.: See—
Calandra, Frank, Jr.; Stankus, John C.; and Olden, John G., 5,511,909, Cl. 405-259.600.
- O'Leary, Stephen H. IV Buid delivery system, 5,511,951, Cl. 417-53.000.
- Oleksy, Paul D.: See—
Jones, Marvin S.; Dicken, Dirk; Green, Gary M.; Oleksy, Paul D.; Sims, Gregory R.; Tomescu, Ludwig; and Berger, Robert C., 5,511,454, Cl. 84-236.000.
- Olin Corporation: See—
Kay, Robert J., 5,513,087, Cl. 363-13.000.
- Olsen, Robert C., to Illinois Tool Works Inc. Carrier stock having finger-gripping straps curved inwardly toward each other, 5,511,656, Cl. 206-150.000.
- Olsen, Rosalyn N. Psychological or psychiatric evaluation, communication, and educational apparatus, 5,511,981, Cl. 434-238.000.
- Olsen, Thomas O., to Tamko Roofing Products, Inc. Silicone binder material and products formed therefrom, 5,512,615, Cl. 524-3.000.
- Olson, Darwin C.; and Hyska, John S., to Dana Corporation, Quick connect tube couplings, 5,511,830, Cl. 285-243.000.
- Olson, Merle E.; Ceri, Howard; and Morck, Douglas W., to University Technologies International, Inc. Giardia vaccine, 5,512,288, Cl. 424-269.000.
- Olson, Stanley W.; and Robertson, Mark, to Berg Technology, Inc. Electrical connector, 5,511,984, Cl. 439-79.000.
- Olsson, Brett: See—
Agarwal, Ramesh C.; Groves, Randall D.; Gustavson, Fred G.; Johnson, Mark A.; and Olsson, Brett, 5,513,366, Cl. 395-800.000.
- Olympus Optical Co., Ltd.: See—
Sugawara, Ken; and Komiya, Masaaki, 5,513,121, Cl. 369-44.140.
- Takasugi, Kei; and Nakamura, Kazunari, 5,512,940, Cl. 348-71.000.
- Togino, Takayoshi, 5,513,041, Cl. 359-631.000.
- Omniplanar, Inc.: See—
Chandler, Donald G.; and Batterman, Eric P., 5,512,739, Cl. 235-462.000.
- Omnron Corporation: See—
Sano, Yoshihiko; Kobayashi, Toshiyuki; Teramoto, Tsutomu; and Fukumura, Kouta, 5,511,551, Cl. 128-686.000.
- Omnron Tateisi Electronics: See—

- Hosokawa, Hayami; and Yamashita, Tsukasa, 5,513,289, Cl. 385-33.000.
- Omura, Hideaki; Wakamiya, Masayuki; Tabata, Munehiro; and Takeuchi, Nobuyoshi, to Matsushita Electric Industrial Co., Ltd. Long life metal halide lamp and an illumination optical apparatus and image display system using same. 5,512,800, Cl. 313-637.000.
- Onari, Hisashi: See—
Takahashi, Tsutomu; Sugino, Kazuhiro; Oguruma, Wakako; and Onari, Hisashi, 5,513,356, Cl. 395-700.000.
- O'Neal, Darrell D.; and Schiess, Robert J., III. Spinal retractor apparatus having a curved blade. 5,512,038, Cl. 600-210.000.
- Ong, Nicholas; and Moaddab, Jamshid, to Intel Corporation. Peripheral interface having hold control logic for generating stall signals to arbitrate two read and one write operations between processor and peripheral. 5,513,372, Cl. 395-821.000.
- Onishi, Ikuo: See—
Watanabe, Rikuiji; Fujisawa, Katsuya; and Onishi, Ikuo, 5,513,025, Cl. 359-68.000.
- Onishi, Ken: See—
Arano, Yukari; and Onishi, Ken, 5,513,008, Cl. 358-310.000.
- Ono, Takahiko, to Mitsubishi Denki Kabushiki Kaisha. Vehicle generator control device. 5,512,812, Cl. 322-28.000.
- Ono, Yasushi; Sakamoto, Satoshi; Murata, Yutaka; Kaji, Tetsuo; and Endo, Yasuhiko, to Asahi Glass Company Ltd. Monolithic refractory powder mixture. 5,512,523, Cl. 501-127.000.
- Onoe, Atsushi: See—
Chikuma, Kiyofumi; and Onoe, Atsushi, 5,512,383, Cl. 428-689.000.
- Ontario Hydro: See—
Ng, M. K. C.; Lee, J. T. C.; Poon, G. C.; Pullia, L. S.; Prince, J. W.; and Crowell, W. J., 5,511,308, Cl. 29-889.100.
- Oohashi, Kouji: See—
Uchida, Hideaki; and Oohashi, Kouji, 5,513,091, Cl. 363-60.000.
- Ooi, Leng H.: See—
Avanic, Branko; Yeh, Peter J.; and Ooi, Leng H., 5,512,862, Cl. 331-117.000.
- Ootsuka, Fumio; Nonaka, Yusuke; and Aoki, Atsumi, to Hitachi, Ltd. Manufacturing method for semiconductor integrated circuit device. 5,512,502, Cl. 437-41.000.
- Opdam, Nicolaas J. M.: See—
van Rump, Harm W.; van Maanen, Jan; Opdam, Nicolaas J. M.; and Vervoorn, Willem J., 5,513,262, Cl. 380-29.000.
- Opfer, Mark H.: See—
Ziems, Tom S.; and Opfer, Mark H., 5,512,031, Cl. 494-37.000.
- Opwer, Hans; Huegel, Helmut; and Giesen, Adolf, to Deutsche Forschungsanstalt fuer Luft- und Raumfahrt e.V.; and Universitaet Stuttgart Institut fuer Strahlwerkzeuge. Phase-controlled, fractal laser system. 5,513,195, Cl. 372-18.000.
- Oprea, Alexandru, to Dysys Corporation. Microwave integrated tuned detector. 5,512,911, Cl. 343-700.000.
- Optical Concepts, Inc.: See—
Jayaraman, Vijaysekhar, 5,513,204, Cl. 372-96.000.
- Orbeck, Inc.: See—
Snook, Richard K., 5,512,965, Cl. 351-205.000.
- Snook, Richard K., 5,512,966, Cl. 351-205.000.
- Origin Medsystems, Inc.: See—
Buchin, Michael P.; and Gresl, Charles, Jr., 5,513,291, Cl. 385-93.000.
- Orion Industries, Inc.: See—
Hadzoglou, James; Warner, Michael E.; and Stevens, Harold E., 5,512,914, Cl. 343-816.000.
- Orion-yhtymä Oy: See—
Haikala, Heimo O.; Levijoki, Juoko M.; Bäckström, Reijo J.; Nore, Pentti T.; and Honkanen, Erkki J., 5,512,572, Cl. 514-247.000.
- Nore, Pentti; Honkanen, Erkki; Bäckström, Reijo; Wikberg, Tom; Haikala, Heimo; and Haarala, Jorma, 5,512,571, Cl. 544-239.000.
- Orser, Cindy S.; Xun, Luying; and Lange, Cleston C., II, to Idaho Research Foundation, Inc. Genes and enzymes involved in the microbial degradation of pentachlorophenol. 5,512,478, Cl. 435-252.330.
- Orthman Manufacturing, Inc.: See—
Frasier, Michael E., 5,511,623, Cl. 172-6.000.
- Ortho Pharmaceutical Corporation: See—
Baxter, Ellen W.; and Reitz, Allen B., 5,512,566, Cl. 514-230.200.
- Ortman, Lance: See—
Hausmann, Ernest; Wobschall, Darold; Ortman, Lance; Kutubay, Evren; Allen, Kristin; and Odrobina, David, 5,513,240, Cl. 378-170.000.
- Osawa, Atsuo: See—
Yoshida, Takahiko; Hirata, Koji; Yoshikawa, Hiroki; Muranaka, Masayuki; Yoshizaki, Isao; and Osawa, Atsuo, 5,513,037, Cl. 359-457.000.
- Osawa, Yoshihiro; and Ohashi, Hiroshi, to Shin-Etsu Chemical Co., Ltd. Method of producing epoxy-modified silicones using aliphatic alcohol gelation inhibitors. 5,512,640, Cl. 525-476.000.
- Osawa, Yuji; and Sezai, Toshihiro, to National Space Development Agency of Japan. Method of evaluating the image quality of a synthetic aperture radar. 5,512,899, Cl. 342-25.000.
- Osbon, Barbara A.: See—
Wilkinson, Robert M.; Davies, Ann L.; Davies, Henry E.; and Osbon, Barbara A., 5,513,131, Cl. 364-578.000.
- Oshino Electric Lamp Works, Ltd.: See—
Asano, Yoichi, 5,513,082, Cl. 362-226.000.
- Osinga, Theo J.: See—
Brown, Graham T.; Osinga, Theo J.; Parkinson, Michael J.; and Steel, Andrew T., 5,512,266, Cl. 423-700.000.
- Ostrom, John K.: See—
Miller, Thomas L.; Nelson, Richard F.; and Ostrom, John K., 5,512,335, Cl. 427-600.000.
- Oswald, Kurt D.: See—
Gordon, Michael W.; Zlatkin, Mikhail; Bauer, Kurt A.; and Oswald, Kurt D., 5,511,974, Cl. 431-329.000.
- Ota, Ken: See—
Mizushiri, Toshitsugu; Yokota, Mamoru; Nakamura, Norimichi; Ota, Ken; Yoshino, Shuji; and Inoue, Noboru, 5,512,104, Cl. 134-1.000.
- Otis Elevator Company: See—
Adrian, Willy; Borchers, Peter; Fohrer, Michael; Wallbaum, Knuth; Wente, Gerald; and Zimmerman, Rainer, 5,511,647, Cl. 198-335.000.
- Bahjat, Zuhair S.; and Bean, Thomas R., 5,511,634, Cl. 187-383.000.
- Kameli, Nader, 5,511,635, Cl. 187-392.000.
- O'Toole, James E., to Micron Technology, Inc. On-chip memory redundancy circuitry for programmable non-volatile memories, and methods for programming same. 5,513,144, Cl. 365-200.000.
- Otsuki, Akira, to Fujikura Ltd.; and FMT Ltd. Anomaly surveillance device. 5,512,942, Cl. 348-143.000.
- Otto, John G.: See—
Kelley, James O.; and Otto, John G., 5,511,349, Cl. 52-287.100.
- Oudet, Claude; and Prudham, Daniel, to Moving Magnet Technologies S.A. Rotatable single-phase electromagnetic actuator. 5,512,871, Cl. 335-220.000.
- Ouno, Taiichi. Table pot for liquid seasoning. 5,511,700, Cl. 222-481.500.
- Overdie, Joseph. Jewelry tray. 5,511,653, Cl. 206-6.100.
- Ovonic Battery Company, Inc.: See—
Ovshinsky, Stanford R., 5,512,387, Cl. 429-152.000.
- Ovshinsky, Stanford R., to Ovonic Battery Company, Inc. Thin-film, solid state battery employing an electrically insulating, ion conducting electrolyte material. 5,512,387, Cl. 429-152.000.
- Owens-Brockway Glass Container Inc.: See—
Welker, Mathias P., 5,512,077, Cl. 65-29.180.
- Owens-Corning Fiberglass Technology, Inc.: See—
Johnson, Kenneth M., 5,512,346, Cl. 428-74.000.
- Owens-Illinois Plastic Products Inc.: See—
Kaminski, Ronald S.; and Eggert, Noel B., 5,511,648, Cl. 198-379.000.
- Owens, Pamela B.: See—
Borchardt, Edward K.; Carley, Scott G.; Lindsey, Anthony H.; Mason, John T.; McKenna, George A.; Owens, Pamela B.; Whitenack, Bruce G., Jr.; and Wilson, Timothy, 5,513,317, Cl. 395-183.210.
- Oyamatsu, Hisato, to Kabushiki Kaisha Toshiba. Method of fabricating semiconductor device. 5,512,500, Cl. 437-40.000.
- Ozaki, Masahiro: See—
Nobuta, Yasuo; Toki, Yusuke; Hiraka, Manabu; Sugihara, Naoki; and Ozaki, Masahiro, 5,513,237, Cl. 378-19.000.
- Ozeki, Kumio; Watanabe, Fumio; Yoshida, Haruo; Kamishima, Osamu; and Sakai, Yosuke, to SMK Corporation. Key switch. 5,512,722, Cl. 200-517.000.
- Ozoe, Shinji; Matsumoto, Seiji; and Furuta, Kazumi, to Tosoh Corporation. Copolymer rubber and method for its production. 5,512,647, Cl. 526-298.000.
- Paccar Inc.: See—
Buringrud, Elmore S.; and Stephens, Jan B., 5,511,530, Cl. 123-549.000.
- Pace, George S. Portable animal waste collector/storage apparatus. 5,511,682, Cl. 220-404.000.
- Pachaly, Bernd: See—
Kallchauer, Wilfried; Pachaly, Bernd; Straussberger, Herbert; and Streckel, Willi, 5,512,662, Cl. 512-472.000.
- Pacific Nuclear Systems, Inc.: See—
Jones, Kyle B.; Lehnert, Robert A.; McInnes, Ian D.; Quinn, Robert D.; Sisley, Steven E.; and Temus, Charles J., 5,513,231, Cl. 376-261.000.
- Jones, Kyle B.; Lehnert, Robert A.; McInnes, Ian D.; Quinn, Robert D.; Sisley, Steven E.; and Temus, Charles J., 5,513,232, Cl. 376-272.000.
- Packalén, Jonas: See—
Salmi, Pekka; Packalén, Jonas; and Järvi, Antti, 5,513,149, Cl. 367-1.000.
- Packard Instrument, B.V.: See—
Thomson, James; ter Wiel, Jan; van Lune, Harry; Bösel, Herbert M.; and Kremer, Gerhard H., 5,512,753, Cl. 250-361.000.
- Pajonk, Manfred, to Siemens Aktiengesellschaft. Flexible automation system for variable industrial processes. 5,513,095, Cl. 364-131.000.
- Pallek, Anton: See—
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- Pastan, Ira; Fitzgerald, David; and Chaudhary, Vijay K., to United States of America, Health and Human Services. Pseudomonas exotoxins (PE) and conjugates thereof having lower animal toxicity with high cytotoxic activity through substitution of positively charged amino acids. 5,512,658, Cl. 530-350.000.
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- Pastan, Ira; Fitzgerald, David; and Chaudhary, Vijay K., to United States of America, Health and Human Services. Pseudomonas exotoxins (PE) and conjugates thereof having lower animal toxicity with high cytotoxic activity through substitution of positively charged amino acids. 5,512,658, Cl. 530-350.000.
- Pastor, Stephen D.; Shum, Sai P.; and Odorisio, Paul A., to Ciba-Geigy Corporation. Alpha crystalline modification of 2,2',2'-nitro[triethyl-tris-(3,3',5,5'-tetra-tert-butyl-1,1'-biphenyl-2,2'-diyl) phosphite]. 5,512,621, Cl. 524-119.000.
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- Peters, Eric C., to Avid Technology, Inc. System for compensating data rate between a storage device and a data compression processor using a buffer memory mapped twice into contiguous address space of a host processing unit. 5,513,375, Cl. 395-846.000.
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- Roederstein Electronics, Inc.: See—
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- Ohnishi, Shuji, 5,512,837, Cl. 324-704.000.
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- Rostoker, Michael D.; Pasch, Nicholas F.; and Zelayeta, Joe, to LSI Logic Corporation. Image masks for semiconductor lithography, 5,512,395, Cl. 430-5.000.
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- Rothenburg, Jacques-Henri: See—
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- Rothmeier, Dieter: See—
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- Rotter, Martin J. Nail, 5,511,918, Cl. 411-441.000.
- Rotto, Nelson T.: See—
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- Rowell, Roger M.: See—
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- Rowland, Rodney K., to Deere & Company. Flexible fender mount, 5,511,808, Cl. 280-157.000.
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- Ruault, Pierre M. P.: See—
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- Rubin, Kurt A.: See—
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- Rubinstein, Boaz, to B.C.C. Ltd. End-pumping laser configuration utilizing a retroreflector as an input coupler, 5,513,205, Cl. 372-99.000.
- Rubscha, Robert F., to Xerox Corporation. Document handler with variable size input tray varying with registration, 5,511,771, Cl. 271-4.010.
- Ruigrok, Jacobus J. M.: See—
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- Runkles, Richard R.: See—
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- Ruprecht, Ruth M., to Dana-Farber Cancer Institute, Inc. Mammalian model system and methods of testing immuno- or drug prophylaxis of fetal infection by HIV-1 or other lentiviruses, 5,512,281, Cl. 424-93.600.
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- Russ, Jeffrey S.; and McKallip, James M., to Carrier Corporation. Adjustable pitch condensate drain with integral overflow, 5,511,386, Cl. 62-285.000.
- Russ, Werner H.: See—
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- Russell, B. Don; and Aucoin, B. Michael, to Texas A & M University System. The Energy analysis fault detection system, 5,512,832, Cl. 324-522.000.
- Russell, Brian G.; and Tovey, H. Jonathan, to United States Surgical Corporation. Percutaneous surgical retractor, 5,512,037, Cl. 600-206.000.
- Rutan, Charles R., to Occidental Chemical Corporation. In-service cleaning of columns, 5,512,140, Cl. 202-158.000.
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- Ryan, Michael S.; Dauplaise, David L.; and Proverb, Robert J., to Cytec Technology Corp. Ampholytic polymers and polymeric microemulsions, 5,512,184, Cl. 210-734.000.
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- Ryther, Robert J.: See—
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- Ryu, Kye Y.: See—
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- Rzeszewski, Theodore S., to Matsushita Electric Corporation of America. System for controlling the effects of noise in television receivers, 5,512,958, Cl. 348-607.000.
- Sabatini, Karen S.: See—
Spencer, Kevin C.; Boisrobert, Christine E.; Fisher, Steven A.; Rojak, Patricia A.; and Sabatini, Karen S., 5,512,464, Cl. 435-94.000.
- SABH (U.S.) Water Heater Group, Inc.: See—
Moore, H. Jack, Jr.; and Abalos, Martin, 5,511,516, Cl. 122-17.000.
- Sabloewski, Horst; Cordes, Ingo; Beese, Jochen; and Schilbrock, Klaus, to Eppendorf-Nethelher-Hinz GmbH. Pipette device, 5,511,433, Cl. 73-864.140.
- Sabol, Edward; and Cushman, Thomas, to Foamex L.P. Method of using a chilled trough for producing slabs of polyurethane foam, 5,512,222, Cl. 264-51.000.
- Sabol, Jeffrey S.: See—
McCarthy, James R.; Matthews, Donald P.; and Sabol, Jeffrey S., 5,512,678, Cl. 544-310.000.
- Saburo, Iida: See—
Kawashima, Toshiyuki; Utsunomiya, Jiro; Kurosawa, Kiyoshi; Saburo, Iida; Nagase, Ryo; Himeno, Akira; Yukimatsu, Ken-ichi; Okyno, Masayuki; Kato, Kuniharu; and Kawachi, Masao, 5,513,285, Cl. 385-16.000.
- Sachs, Emanuel; and Tsao, Che-Chih, to Massachusetts Institute of Technology. Method for photo-forming small shaped metal containing articles from porous precursors, 5,512,162, Cl. 205-91.000.
- Sacripante, Guerino G.; Mychajlowski, Walter; and Kittelberger, J. Stephen, to Xerox Corporation. Polyimide-amic acid toner compositions, 5,512,401, Cl. 430-106.000.
- Saeki, Noboru: See—
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- Safety 1st, Inc.: See—
Abrams, Randy L.; Bernstein, Michael S.; and Crossley, David W., 5,512,880, Cl. 340-573.000.
- Safta, Eugen: See—
Beane, Bobby E.; and Safta, Eugen, 5,512,323, Cl. 427-408.000.
- Sagi, David P. Pedal-powered four-wheel vehicle, 5,511,809, Cl. 280-209.000.
- Saha, Bijay S., to Eastman Kodak Company. Developer compositions exhibiting high development speeds, 5,512,404, Cl. 430-106.600.
- Sahaida, Scott R.: See—
Saito, Kimitsugu; Miyata, Koichi; Bade, John P., Jr.; Stoner, Brian R.; von Windheim, Jesko A.; and Sahaida, Scott R., 5,512,873, Cl. 338-22.05D.
- Saidi, Ali: See—
Merchant, Zaffer; and Saidi, Ali, 5,512,916, Cl. 345-98.000.
- Saikawa, Hideo: See—
Uchikata, Yoshio; Hamori, Yoshifumi; Ara, Yoji; Kitani, Masashi; Suzuki, Etsuro; Wada, Toshihide; Hirabayashi, Hiromitsu; Saikawa, Hideo; Kojima, Masami; Hanabusa, Tadashi; Kawano, Kenji; Tanno, Koichi; Ohashi, Tetsuyo; Bekki, Toshihiko; Aono, Kenji; and Ikado, Masaharu, 5,512,926, Cl. 347-86.000.
- Saindane, Manohar T.: See—
Dunlap, Richard P.; Boaz, Neil W.; Mura, Albert J.; Kumar, Virendra; Subramanyam, Chakrapani; Desai, Ranjit C.; Hlasta, Dennis J.; Saindane, Manohar T.; Bell, Malcolm R.; Court, John J.; and Farrell, Robert P., 5,512,589, Cl. 514-373.000.
- Saint Gobain Vitre: See—
Schicht, Heinz; Schindler, Herbert; Januschewitz, Klaus; Gregorowius, Werner; and Kaiser, Wilfried, 5,512,152, Cl. 204-192.260.
- Saint Gobain/Norton Industrial Ceramic Corporation: See—
Yeckley, Russell L., 5,512,522, Cl. 501-97.000.
- Saito, Atsushi: See—
Ide, Hiroshi; Kirino, Fumiyoshi; Toda, Tsuyoshi; Maeda, Takeshi; Tsuchinaga, Hiroyuki; Kugiya, Fumio; Shigematsu, Kazuo; Mita, Seichi; Saito, Atsushi; and Kaku, Toshimitsu, 5,513,165, Cl. 369-116.000.
- Saito, Kenichi; Mita, Kanji; and Kanno, Hajime, to Sony Corporation. Loading apparatus for recording medium and method for controlling the same, 5,513,157, Cl. 369-34.000.
- Saito, Kimitsugu; Miyata, Koichi; Bade, John P., Jr.; Stoner, Brian R.; von Windheim, Jesko A.; and Sahaida, Scott R. Highly-oriented diamond film thermistor, 5,512,873, Cl. 338-22.05D.
- Saito, Masahide: See—
Ishikawa, Shinji; Suganuma, Hiroshi; Yui, Dai; Semura, Shigeru; Saito, Masahide; and Hirai, Shigeru, 5,513,290, Cl. 385-49.000.
- Saito, Mikio; and Yamaguchi, Tsuneo, to Wako Industrial Co., Ltd. Assembly for removing hydrophilic contaminants, method of the same, and apparatus for producing phenol, 5,512,175, Cl. 210-229.000.
- Saito, Osamu: See—
Ikeda, Takahide; Yamada, Kouichirou; Saito, Osamu; Odaka, Masanori; Tamba, Nobuo; Ogino, Katsumi; Hiraishi, Atsushi; Watanabe, Atsuo; Hira, Mitsuru; Fukami, Akira; Obayashi, Masayuki; and Kuramoto, Tadashi, 5,512,497, Cl. 437-34.000.
- Saito, Tsuyoshi, to Kabushiki Kaisha Toshiba. Micro-pattern measuring apparatus, 5,512,746, Cl. 250-310.000.
- Saito, Yoshimasa: See—
Yamaguchi, Satoshi; Daimon, Masahiro; Chiba, Koichi; Kobayashi, Tetsuro; and Saito, Yoshimasa, 5,513,201, Cl. 372-75.000.
- Saito, Yoshinori: See—
Hidaka, Masataka; Kashiwai, Shinichi; Saito, Yoshinori; and Kawasaki, Terufumi, 5,513,233, Cl. 376-352.000.
- Saito, Yutaka; and Imagawa, Yasumi, to Matsushita Electric Industrial Co., Ltd. Automatic gain control circuit, 5,513,387, Cl. 455-243.100.
- Saitoh, Shouji: See—
Kato, Takeshi; and Saitoh, Shouji, 5,512,928, Cl. 347-138.000.
- Saizev, Slava: See—
Minin, Leonid; and Saizev, Slava, 5,512,573, Cl. 514-248.000.
- Sakagami, Tatsuya; and Kaida, Yoshito, to Daifuku Co., Ltd. Transport system with electric movers, 5,511,487, Cl. 104-252.000.
- Sakaguchi, Yasuobu; Nakajima, Koji; and Kurumisawa, Junichi, to Fuji Photo Film Co., Ltd.; and Fuji Photo Optical Co., Ltd. Lateral static guide for a web loop of variable width, 5,511,713, Cl. 226-199.000.
- Sakaguchi, Yasuo: See—
Nukada, Hidemi; Tokida, Akihiko; Sakaguchi, Yasuo; Daimon, Katsumi; and Nukada, Katsumi, 5,512,674, Cl. 540-141.000.
- Sakai, Katsutoshi: See—
Kobayashi, Takao; Sakai, Katsutoshi; and Kobayashi, Kenzou, 5,512,758, Cl. 250-461.100.
- Sakai, Toshiyuki: See—
Terada, Michiaki; Ando, Masamoto; and Sakai, Toshiyuki, 5,511,866, Cl. 303-152.000.
- Sakai, Yosuke: See—
Ozeki, Kumio; Watanabe, Fumio; Yoshida, Haruo; Kamishima, Osamu; and Sakai, Yosuke, 5,512,722, Cl. 200-517.000.
- Sakamoto, Masaaki: See—
Tanaka, Tadashi; Sakamoto, Masaaki; Kidokoro, Hideyuki; Sato, Yoshiaki; and Masuda, Yutaka, 5,512,242, Cl. 420-561.000.
- Sakamoto, Satoshi: See—
Ono, Yasushi; Sakamoto, Satoshi; Murata, Yutaka; Kaji, Tetsuo; and Endo, Yasuhiko, 5,512,523, Cl. 501-127.000.
- Sakano, Hiroshi; Naruse, Hiroshi; Masubuchi, Akihiko; and Tachibana, Ikuko, to NEC Corporation. Network management system, 5,513,343, Cl. 395-183.020.
- Sakumoto, Yukinori; Hashimoto, Takeshi; Nakaba, Katsuji; Kobayashi, Masaharu; Nishigaya, Takeshi; and Yamanashi, Fumiyoshi, to Toemogawa Paper Co., Ltd. Adhesive tape for electronic parts and liquid adhesive, 5,512,628, Cl. 524-530.000.
- Sakurai, Hiroshi; Ohtsubo, Hiroyasu; Asada, Kouji; Noda, Masaru; Iura, Noriyuki; Imade, Takuya; Kamimura, Junji; Komatsu, Hiroyuki; and Kinugasa, Toshiro, to Hitachi, Ltd. Still picture recording digital camera which outputs a dynamic picture when incident light is limited and outputs a still picture when incident light is interrupted, 5,512,945, Cl. 348-221.000.
- Sakurai, Kaoru: See—

- Ogasawara, Makoto; Yada, Masakazu; Sakurai, Kaoru; Haga, Kazuya; Miyashita, Masahide; and Hirai, Yasumasa, 5,512,194, Cl. 252-62.560.
- Sakurai, Katsuhito: See—
Sano, Koichi; Miyawaki, Mamoru; Ishizaki, Akira; Ogawa, Katsuhisa; Sakurai, Katsuhito; Sugawa, Shigetoshi; and Kondo, Shigeki, 5,513,028, Cl. 359-87.000.
- Sakurai, Yoshito; Gohara, Shinobu; Ohtsuki, Kenichi; Kato, Takao; Kuwahara, Hiroshi; and Amada, Eiichi, to Hitachi, Ltd. Distributed switching system having at least one module, 5,513,177, Cl. 370-58.100.
- Salasoo, Lembit; Laskaris, Evangelos T.; and Ranze, Richard A., to General Electric Company. Superconducting switch, 5,512,870, Cl. 335-216.000.
- Salcudean, Septimiu E.: See—
Parker, Niall R.; Lawrence, Peter D.; and Salcudean, Septimiu E., 5,513,100, Cl. 364-167.010.
- Salimian, Sharam M.: See—
Cederstrand, Carl N.; Salimian, Sharam M.; and Siemon, Rolf W., 5,512,757, Cl. 250-373.000.
- Salisbury State University: See—
Holland, Mark A.; and Polacco, Joseph C., 5,512,069, Cl. 47-57.600.
- Salmi, Marko: See—
Jalkanen, Sirpa; and Salmi, Marko, 5,512,442, Cl. 435-7.210.
- Salmi, Pekka; Paekälén, Jonas; and Järvi, Antti, to Kvaerner Masa-Yards OY. Sound damping arrangement, 5,513,149, Cl. 367-1.000.
- Salter, Timothy L.: See—
Huege, Fred R.; Graves, Robin E.; Salter, Timothy L.; Shields, Patrick; and Hains, Norman L., 5,512,093, Cl. 106-284.030.
- Sam, Homayoon: See—
Blaker, David M.; Ellard, Gregory S.; Mobin, Mohammad S.; and Sam, Homayoon, 5,513,220, Cl. 375-340.000.
- Samachisa, Gheorghe: See—
Yuan, Jack H.; Samachisa, Gheorghe; Guterman, Daniel C.; and Harari, Eliyahou, 5,512,505, Cl. 437-43.000.
- Samilo, John S., to Tapistron International, Inc. Dye applicator, 5,511,398, Cl. 68-200.000.
- Sampei, Hideo: See—
Tsutsumi, Masato; Yamasita, Haruhisa; Sampei, Hideo; Fujii, Kanako; and Asakura, Hiroaki, 5,512,345, Cl. 428-69.000.
- Samsung Display Devices Co., Ltd.: See—
Kang, Jin-Kyu, 5,513,024, Cl. 359-62.000.
- Samsung Electronics Co., Ltd.: See—
Kim, Kang H., 5,512,964, Cl. 348-806.000.
- Kim, Seong-Ho; and Kwon, Joong-Ki, 5,512,992, Cl. 355-285.000.
- Kim, Young H.; and Byun, Young K., 5,513,155, Cl. 369-32.000.
- Seo, Jae K.; Choi, Do Y.; and Park, Gun C., 5,511,738, Cl. 242-356.000.
- Samuel, James E.: See—
Krivan, Howard C.; and Samuel, James E., 5,512,282, Cl. 424-169.100.
- Samukawa, Hiroshi: See—
Kinashi, Keiichi; Samukawa, Hiroshi; and Chiba, Reiko, 5,512,607, Cl. 522-100.000.
- Sanborn, Kimberly B.: See—
Loftin, Rachel M.; and Sanborn, Kimberly B., 5,512,623, Cl. 524-462.000.
- Sanchez, George: See—
Weissman, William R.; Liapis, Peter; Sanchez, George; and Baran, Bernardo, 5,511,693, Cl. 222-1.000.
- Sanden Corporation: See—
Sato, Tadashi, 5,511,952, Cl. 417-63.000.
- Sandford, Paul A.: See—
Grinstaff, Mark W.; Desai, Neil P.; Suslick, Kenneth S.; Soon-Shiong, Patrick; Sandford, Paul A.; and Merideth, Noma R., 5,512,268, Cl. 424-9.322.
- SanDisk Corporation: See—
Yuan, Jack H.; Samachisa, Gheorghe; Guterman, Daniel C.; and Harari, Eliyahou, 5,512,505, Cl. 437-43.000.
- Sandoz Ltd.: See—
Fornelli, Saverio; and Souren, Illa, 5,512,060, Cl. 8-115.520.
- Sandstrom, Craig; Papoutsakis, E. T.; Miller, William M.; and Bender, James G., to Baxter International Inc.; and Northwestern Univ. Flow-through bioreactor with grooves for cell retention, 5,512,480, Cl. 435-289.100.
- Sandu, Albuлесcu: See—
Fendall, Burian; Sandu, Albuлесcu; Iosif, Nagy; Vasile, Neceae; and György, Vajay, 5,511,490, Cl. 105-375.000.
- Sandvik AB: See—
Stigenberg, Anna H., 5,512,237, Cl. 420-49.000.
- Sanilift Company, Ltd.: See—
Kreemer, Gary A., 5,511,252, Cl. 4-246.100.
- Sanitarios Azteca: See—
Zamudio-Castillo, Mario-Rodolfo; Vazquez-Acosta, Francisco; and Melendez-Rodriguez, Francisco-Javier, 5,511,253, Cl. 4-325.000.
- Sankyo Company, Limited: See—
Terada, Atsunuke; Iizuka, Yoshio; Wachi, Kazuyuki; and Fujibayashi, Kenji, 5,512,567, Cl. 514-231.800.
- Sannohe, Shinya: See—
Miyatake, Yoshito; and Sannohe, Shinya, 5,513,035, Cl. 359-352.000.
- Sano, Yoshihiko; Kobayashi, Toshiyuki; Teramoto, Tsutomu; and Fukumura, Kouta, to Omron Corporation. Cuff for blood pressure meter, 5,511,551, Cl. 128-686.000.
- Sanofi: See—
Descamps, Marcel; Radisson, Joël; and Anne-Archard, Gilles, 5,512,680, Cl. 546-224.000.
- Sanshin Kogyo Kabushiki Kaisha: See—
Yoshida, Sadato, 5,511,997, Cl. 440-52.000.
- Santa Barbara Research Center: See—
Kalisher, Murray H., 5,512,511, Cl. 437-130.000.
- Santana, Jose: See—
Thorgersen, Harold; and Santana, Jose, 5,513,153, Cl. 368-227.000.
- Santini, Hugo A. E.: See—
Levenson, Marc D.; and Santini, Hugo A. E., 5,512,394, Cl. 430-5.000.
- Santo, Tsuyoshi: See—
Miyazaki, Takeshi; Tanaka, Kazumi; Santo, Tsuyoshi; Ohnishi, Toshiyuki; Fukui, Tetsuro; and Okamoto, Tadashi, 5,512,446, Cl. 435-7.200.
- Sanyo Electric Co., Ltd.: See—
Terasaki, Hajime; and Takahashi, Hironobu, 5,513,299, Cl. 395-90.000.
- Sanz, Jorge L. C.: See—
Cypher, Robert E.; and Sanz, Jorge L. C., 5,513,371, Cl. 395-800.000.
- Sasakawa, Tetsuro: See—
Ishihara, Yoshihisa; Sasakawa, Tetsuro; and Fujino, Takane, 5,513,067, Cl. 361-684.000.
- Sasaki, Hiroyuki: See—
Hashizume, Tatsuo; Sasaki, Hiroyuki; Shitanda, Hideki; and Nakamura, Norio, 5,513,278, Cl. 382-187.000.
- Sasaki, Isamu: See—
Mano, Yasuhiko; Mochizuki, Takeshi; Sasaki, Isamu; and Shimokawa, Akira, 5,512,195, Cl. 252-62.560.
- Sasaki, Junichi: See—
Sudo, Sukehisa; Hashimoto, Hitokatsu; Sasaki, Junichi; and Ikenoue, Tsuneo, 5,513,089, Cl. 363-21.000.
- Sasaki, Kouji: See—
Ogura, Kuniyoshi; and Sasaki, Kouji, 5,512,644, Cl. 526-258.000.
- Sasaki, Shigeru: See—
Tajima, Makoto; Beppu, Kei; Mano, Tomoyuki; and Sasaki, Shigeru, 5,511,612, Cl. 165-167.000.
- Sasaki, Umeichi; Sunami, Motoshi; and Hasegawa, Hiroshi, to Nippon Oil Co., Ltd. Lubricating compositions comprising fluoroalkane refrigerant, an ester and/or polyglycol oil, and an inorganic boron compound, 5,512,198, Cl. 252-68.000.
- Sasuta, Michael D. Method for placing a communication group call in a multiple site trunked system, 5,513,381, Cl. 455-34.100.
- Satagopan, Ramprasad; and Regenold, David R., to Intel Corporation. Error condition detector for handling interrupt in integrated circuits having multiple processors, 5,513,346, Cl. 395-185.010.
- Satake Corporation: See—
Satake, Satoru; Kanamoto, Shigeharu; Okada, Yutaka; and Matsumoto, Nobuhiro, 5,511,469, Cl. 99-519.000.
- Satake, Satoru; Kanamoto, Shigeharu; Okada, Yutaka; and Matsumoto, Nobuhiro, to Satake Corporation. Abrasive type vertical grain milling machine, 5,511,469, Cl. 99-519.000.
- Sato, Hiroyuki: See—
Shikama, Toshihiro; and Sato, Hiroyuki, 5,513,172, Cl. 370-13.000.
- Sato, Kazuhiro: See—
Miyazawa, Tetsuo; Sato, Kazuhiro; Imazu, Katsuhiko; Kobayashi, Seishichi; and Sue, Toshio, 5,512,365, Cl. 428-332.000.
- Sato, Kenichi: See—
Chiba, Kazunobu; Sato, Kenichi; and Arisaka, Yuichi, 5,512,349, Cl. 428-141.000.
- Shibuta, Nobuhiro; Sato, Kenichi; Mukai, Hidehiro; and Masuda, Takato, 5,512,867, Cl. 335-216.000.
- Sato, Makoto: See—
Aramaki, Satoshi; and Sato, Makoto, 5,511,664, Cl. 206-525.000.
- Sato, Masami: See—
Ryoke, Katsumi; Meguro, Katsuhiko; Doushita, Hiroaki; Suzuki, Masaki; Kitahara, Toshiyuki; and Sato, Masami, 5,512,350, Cl. 428-141.000.
- Sato, Mikio; Asada, Katsumi; and Wakui, Shinji, to Canon Kabushiki Kaisha. Precision positioning apparatus, 5,511,930, Cl. 414-676.000.
- Sato, Noriaki: See—
Nishida, Kenji; and Sato, Noriaki, 5,512,516, Cl. 437-200.000.
- Sato, Noriko: See—
Kato, Masayuki; Arikate, Hirokazu; Ishimoto, Manabu; Sato, Noriko; and Nakashima, Masato, 5,513,020, Cl. 359-9.000.
- Sato, Tadashi, to Sanden Corporation. Refrigerant displacement apparatus with an improved thermal sensing device, 5,511,952, Cl. 417-63.000.
- Sato, Tetsuo: See—
Chiba, Kiyoshi; Sato, Tetsuo; Sekiya, Masahiko; and Suzuki, Kazutomi, 5,512,364, Cl. 428-332.000.
- Hoshino, Masakazu; and Sato, Tetsuo, 5,512,888, Cl. 340-825.650.
- Sato, Yasuyuki; Miyazaki, Keiji; Iseda, Kohei; and Chujo, Takafumi, to Fujitsu Limited. Searching system for determining alternative routes during failure in a network of links and nodes, 5,513,345, Cl. 395-182.020.
- Sato, Yoshiaki: See—
Tanaka, Tadashi; Sakamoto, Masaaki; Kidokoro, Hideyuki; Sato, Yoshiaki; and Masuda, Yutaka, 5,512,242, Cl. 420-561.000.
- Sato, Isao; Fukushima, Yoshihisa; Takagi, Yuji; and Azumatanai, Yasushi, to Matsushita Electric Industrial Co., Ltd. Optical disc and contamination detection system in an apparatus for recording and reproducing the same, 5,513,160, Cl. 369-47.000.
- Sato, Keiko: See—
Kawamura, Harumi; and Sato, Keiko, 5,513,182, Cl. 370-94.300.
- Sato, Kensuke: See—

- Matsumoto, Mitsujiro; Satoh, Kensuke; and Uchimura, Kiyoshi, 5,513,011, Cl. 358-341.000.
- Satou, Tuiyoshi: See—
Tsuchihashi, Hironori; Fujiwara, Osami; Satou, Tuiyoshi; Togoshi, Yoshikazu; Hamada, Toshihiko; Kawahara, Yoshihiro; and Bando, Niro, 5,511,631, Cl. 180-247.000.
- Saudi Basic Industries Corporation: See—
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- Saur, Reinhold: See—
Wingert, Horst; Sauter, Hubert; Ammermann, Eberhard; Lorenz, Gisela; Saur, Reinhold; Schelberger, Klaus; and Hampel, Manfred, 5,512,582, Cl. 514-317.000.
- Sauter, Erich W., to Warner-Lambert Company. Encapsulation method, 5,511,361, Cl. 53-467.000.
- Sauter, Hubert: See—
Wingert, Horst; Sauter, Hubert; Ammermann, Eberhard; Lorenz, Gisela; Saur, Reinhold; Schelberger, Klaus; and Hampel, Manfred, 5,512,582, Cl. 514-317.000.
- Savage, Thomas W., to Tandem Computers, Incorporated. Boundary scan system with improved error reporting using sentinel bit patterns, 5,513,189, Cl. 371-22.300.
- Savoca, Ann C. L.: See—
Carr, Richard V. C.; Lassila, Kevin R.; Listemann, Mark L.; Mercado, Lisa A.; Minnich, Kristen E.; Savoca, Ann C. L.; and Wressell, Amy L., 5,512,603, Cl. 521-118.000.
- Sawachi, Youichi; and Yoshida, Masanori, to Fuji Photo Film Co., Ltd. Video camera, 5,512,947, Cl. 348-243.000.
- Sawano, Hiroshi: See—
Imaji, Yoshiaki; Nakao, Satoshi; and Sawano, Hiroshi, 5,513,072, Cl. 361-707.000.
- Sawayama, Shigeru; Mori, Yasuharu; and Nagai, Yukino, to Mitsubishi Chemical Corporation. Lactam ring containing polymer, 5,512,645, Cl. 526-264.000.
- Sawazaki, Masatoshi; Shibata, Takao; Igarashi, Yoshiaki; Hayashi, Kiyoshi; and Ueda, Naganori, to Precision Fukuhara Works, Ltd. Method and apparatus for adjusting the stitch length on a circular knitting machine, 5,511,392, Cl. 66-54.000.
- Saxon, Lawrence D.: See—
Isler, Mark B.; Saxon, Lawrence D.; Reinhart, Wayne, Jr.; and Batchelder, Kevin, 5,511,843, Cl. 296-100.000.
- Scales, John. Connector and method for engaging soil-reinforcing grid and earth retaining wall, 5,511,910, Cl. 405-262.000.
- Scalise, Dane C. Locking fastener, 5,511,919, Cl. 411-555.000.
- Scalise, Fabio: See—
D'Alto, Viviana; Airolidi, Fabrizio; Scalise, Fabio; and Podestà, Maria G., 5,512,959, Cl. 348-614.000.
- Scarati, Mario: See—
Bastoli, Cana; Romano, Giancarlo; Scarati, Mario; and Tosin, Maurizio, 5,512,378, Cl. 428-484.000.
- Schaeper, Robert J.: See—
Johnson, Gary M.; and Schaeper, Robert J., 5,512,450, Cl. 435-19.000.
- Scharpf, William J.: See—
Billmers, Richard I.; Contarino, Vincent M.; Allocca, David M.; Squicciarini, Martin F.; and Scharpf, William J., 5,513,032, Cl. 359-244.000.
- Scheiber, Jeffrey J.: See—
Connor, Daniel S.; Fu, Yi-Chang; and Scheiber, Jeffrey J., 5,512,699, Cl. 564-153.000.
- Schein, Charles, to Probot Incorporated. Circuit board repair and rework apparatus, 5,513,099, Cl. 364-167.010.
- Schelberger, Klaus: See—
Wingert, Horst; Sauter, Hubert; Ammermann, Eberhard; Lorenz, Gisela; Saur, Reinhold; Schelberger, Klaus; and Hampel, Manfred, 5,512,582, Cl. 514-317.000.
- Schendell, Claus. Connecting module for an orthodontic treatment means, 5,511,975, Cl. 433-5.000.
- Schenk, Dale B., to Scios Nova, Inc. Atrial natriuretic peptide receptor protein, 5,512,455, Cl. 435-69.100.
- Schering Corporation: See—
Singh, Vijay, 5,512,249, Cl. 422-114.000.
- Schicht, Heinz; Schindler, Herbert; Januschke, Klaus; Gregorowius, Werner; and Kaiser, Wilfried, to Saint Gobain Vitrage. Process for preparation of stabilized oxide thin layers, 5,512,152, Cl. 204-192.260.
- Schiess, Robert J., III: See—
O'Neal, Darrell D.; and Schiess, Robert J., III, 5,512,038, Cl. 600-210.000.
- Schieve, Eric: See—
Finch, Richard; and Schieve, Eric, 5,513,319, Cl. 395-185.080.
- Schild, Helmut: See—
Lindner, Bernd; Pupic, Nikola; Schild, Helmut; and Seib, Berthold, 5,511,478, Cl. 101-477.000.
- Schinazi, Raymond F.: See—
Abrams, Michael J.; Bossard, Gerald E.; Hill, Craig L.; Schinazi, Raymond F.; and Theobald, Brian R. C., 5,512,305, Cl. 424-617.000.
- Schindler, Herbert: See—
Schicht, Heinz; Schindler, Herbert; Januschke, Klaus; Gregorowius, Werner; and Kaiser, Wilfried, 5,512,152, Cl. 204-192.260.
- Schinski, James E.: See—
Cahaley, Steven G.; and Schinski, James E., 5,511,849, Cl. 297-129.000.
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- Yamahara, Motohiro, 5,512,336, Cl. 428-1.000.
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- Shimizu, Shotaro: See—
- Miya, Yukio; Kizaki, Shigeru; Sugiyama, Osamu; Hatayama, Akiteru; Shibuya, Yoshitsugu; Enomoto, Mitsugu; Naoi, Koichi; Fukazawa, Yuji; Nanya, Takanori; Shimizu, Shotaro; and Tagawa, Hiroshi, 5,511,587, Cl. 139-192.000.
- Shimizu, Takehiko: See—
- Ido, Yoshinori; Chiba, Shuji; Arimatsu, Yoshikazu; Suzuki, Hajime; and Shimizu, Takehiko, 5,512,059, Cl. 8-115.700.
- Shimizu, Yasubumi; and Morinaga, Shozo, to Nippon Paper Industries Co., Ltd. Method and apparatus for measuring contaminating impurities in pulp slurry. 5,512,137, Cl. 162-198.000.
- Shimoe, Toshio: See—
- Takechi, Ryuichi; Kawasaki, Takeshi; Kamoi, Jyoei; Hajikano, Kazuo; Kuroyanagi, Satoshi; and Shimoe, Toshio, 5,513,191, Cl. 371-37.100.
- Shimokawa, Akira: See—
- Mano, Yasuhiko; Mochizuki, Takeshi; Sasaki, Isamu; and Shimokawa, Akira, 5,512,195, Cl. 252-62.560.
- Shimoyama, Nobuhiro: See—

Machida, Katsuyuki; Murase, Katsumi; Shimoyama, Nobuhiro; Tsuchiya, Toshiaki; Takahashi, Junichi; Minegishi, Kazushige; Takahashi, Yasuo; Namatsu, Hideo; and Imai, Kazuo, 5,512,513, Cl. 437-195,000.

Shimura, Kazuhiko; and Nakayama, Yoshiaki, to Asahi Kasei Kogyo Kabushiki Kaisha. Polypropylene flexifilamentary fiber containing 0.1 to 10 weight percent of an organic spreading agent and nonwoven fabric made therefrom. 5,512,357, Cl. 428-283,000.

Shimura, Noboru; Aiba, Tamotsu; Nakamura, Takashi; and Sukegawa, Teruyoshi, to Kureha Kagaku Kogyo Kabushiki Kaisha. Packaging case having improved sidewall structure. 5,511,663, Cl. 206-395,000.

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Agata, Akihiko, 5,511,950, Cl. 417-36,000.

Shin-Etsu Chemical Co., Ltd.: See—

Ban, Hiroshi; Tanaka, Akinobu; Yagihashi, Fujio; Watanabe, Jun; and Takamizawa, Minoru, 5,512,417, Cl. 430-270,140.

Mariyama, Naosuke; Kokubo, Hiroyasu; and Nakamura, Shin-Ichiro, 5,512,092, Cl. 106-198,000.

Ohashi, Ken, 5,512,872, Cl. 335-306,000.

Osawa, Yoshihito; and Ohashi, Hiroshi, 5,512,640, Cl. 525-476,000.

Shinchi, Akira, to Yazaki Corporation. Waterproof electrical connector. 5,511,987, Cl. 439-205,000.

Shinjo, Kenji: See—

Terada, Masahiro; Togano, Takeshi; Yamashita, Masataka; Iwaki, Takashi; Mori, Shosei; and Shinjo, Kenji, 5,512,208, Cl. 252-299,600.

Shinjo, Ryoichi: See—

Nishioka, Yukiko; Kamiya, Ichiro; Shinjo, Ryoichi; Ishii, Yoshihiro; and Kosaka, Koichi, 5,511,264, Cl. 8-158,000.

Shintani, Peter, to Sony Corporation. Television receiver with decoder for decoding coded data from a video signal. 5,512,954, Cl. 348-468,000.

Shiohara, Yuh: See—

Konishi, Masaya; Hayashi, Kunihiko; Enomoto, Youichi; Tanaka, Shoji; Yamada, Yasuji; Ohtsu, Kanashi; Kanamori, Yasuo; and Shiohara, Yuh, 5,512,541, Cl. 505-474,000.

Shippen, William G. Cutting torch attachment for facilitating cutting circular holes. 5,511,765, Cl. 266-70,000.

Shirai, Kazushi; Ishikura, Kenji; and Takeda, Norio, to Mitsubishi Gas Chemical Company, Inc. Low saturated magnetic field bismuth-substituted rare earth iron garnet single crystal and its use. 5,512,193, Cl. 252-62,570.

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Shiratama, Tadashi: See—

Aikawa, Katsuki; and Shiratama, Tadashi, 5,512,752, Cl. 250-339,120.

Shirley, Terry L. Disposable resuscitation device having unidirectional valve. 5,511,543, Cl. 128-203,110.

Shishido, Osamu; and Terada, Yuichi, to Amano Corporation. Vibration type floor sweeper. 5,511,271, Cl. 15-49,100.

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Hashizume, Tatsuo; Sasaki, Hiroyuki; Shitanda, Hideki; and Nakamura, Norio, 5,513,278, Cl. 382-187,000.

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Baggiolini, Enrico G., deceased; Shivey, Shian-Jan; and Uskokovic, Milan R., 5,512,554, Cl. 514-167,000.

Shockey, Richard L.: See—

Finn, Miles A.; Vanden Hoek, John C.; Shockey, Richard L.; and Barthel, Thomas C., 5,512,034, Cl. 600-138,000.

Shoji, Takashi, to NEC Corporation. FIR digital filter and method for signal processing thereof. 5,513,223, Cl. 375-350,000.

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Betta, Ralph A. D.; Shoji, Toru; Yee, David K.; and Magno, Scott A., 5,512,250, Cl. 422-173,000.

Dalla Betta, Ralph A.; Shoji, Toru; Tsurumi, Kazunori; and Ezawa, Nobuyasu, 5,511,972, Cl. 431-170,000.

Sholton, Bernard C., to Sholton, Glenn. Operable glass block window. 5,511,352, Cl. 52-306,000.

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Shooter, Eric M.; Suter, Ulrich; Ip, Nancy P.; Squinto, Stephen P.; Furth, Mark E.; and Lindsay, Ronald M., to Regeneron Pharmaceuticals, Inc. Multitrophic and multifunctional chimeric neurotrophic factors. 5,512,661, Cl. 530-399,000.

Short, Mark A.; and Willis, Thomas E., to Du Pont de Nemours, E. I., and Company. One-piece single metal spinneret having softened capillary zone. 5,512,113, Cl. 148-565,000.

Short, Mark A.; and Willis, Thomas E., to Du Pont de Nemours, E. I., and Company. One-piece single metal spinneret and method for making it. 5,512,114, Cl. 148-565,000.

Short, Michael P.: See—

Gutting, Robert L., 5,512,005, Cl. 451-29,000.

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Norris, Philip R.; Slavitter, Frederick; Shown, Kenneth G.; and Feehan, Timothy J., 5,512,971, Cl. 354-311,000.

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Pastor, Stephen D.; Shum, Sai P.; and Odorisio, Paul A., 5,512,621, Cl. 524-119,000.

Sicking, Charles J.; and Campbell, Bruce S., to Atlantic Richfield Company. Method of determining 3-D acoustic velocities for seismic surveys. 5,513,150, Cl. 367-73,000.

Sicotte, Denis: See—

Sicotte, Jean; and Sicotte, Denis, 5,511,829, Cl. 285-176,000.

Sicotte, Jean; and Sicotte, Denis, to Metro Eavestrouging Ltd. Universal connector for downspout drainage extension. 5,511,829, Cl. 285-176,000.

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Cooperman, Michael; Andrade, Phillip; and Sieber, Richard W., 5,513,134, Cl. 365-49,000.

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Legg, David B.; Coutrakon, George; Slater, Jon W.; Miller, Daniel W.; Moyers, Michael F.; and Siebers, Jeffrey V., 5,511,549, Cl. 128-653,100.

Siegenthaler, Karl J., to Bridgestone Corporation. Vectorial assembly method for first and second stage assemblies of road vehicle tires. 5,512,115, Cl. 156-75,000.

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Bayer, Eberhard, deceased; Jahnke, Andreas; Chemisky, Eric; and Schnell, Ralf-Dieter, 5,512,756, Cl. 250-370,130.

Binder, Manfred; Schmidt, Detlev; and Steinemer, Norbert, 5,512,724, Cl. 218-140,000.

Blaschka, Eriks; and Schulze-Ganzlin, Ulrich, 5,513,252, Cl. 378-98,800.

Crede, Gerd-Dieter; and Schleich, Rainer, 5,513,230, Cl. 376-261,000.

Doellinger, Carl-Heinz; and Wollensak, Martin, 5,513,355, Cl. 399-650,000.

Gramkow, Otto; Martinetz, Thomas; and Poppe, Thomas, 5,513,097, Cl. 364-148,000.

Holzheimer, Günter; Neubauer, Hans R.; and Stretz, Manfred, 5,511,953, Cl. 417-68,000.

Ivanov, Kolo; and Schulz, Egon, 5,513,380, Cl. 455-33,200.

Leuschner, Rainer; Sezi, Recai; and Sebald, Michael, 5,512,334, Cl. 427-558,000.

Loebig, Norbert, 5,513,312, Cl. 395-182,010.

Pajonk, Manfred, 5,513,095, Cl. 364-131,000.

Pausch, Guenther; and Hentzelt, Heinz, 5,512,828, Cl. 324-309,000.

Thalhammer, Erich, 5,511,992, Cl. 439-609,000.

Wille, Klaus; Linke, Harold; and Hass, Karl-Heinz, 5,513,258, Cl. 379-280,000.

Winkelmann, Helmut, 5,512,761, Cl. 250-559,380.

Zepp, Claus-Peter, 5,513,187, Cl. 371-22,300.

Siemens Automotive Corporation: See—

Lopaine, Jack R.; Franchitto, Anthony L.; and Vattelana, Gary D., 5,511,527, Cl. 123-456,000.

Siemens Electric Ltd.: See—

Cook, John E.; and Gillier, William C., 5,511,531, Cl. 123-568,000.

Siemens Elema AB: See—

Slettenmark, Bruno, 5,512,048, Cl. 604-93,000.

Siemens Plessey Electronic Systems Limited: See—

Parkin, David; and Sole, John D., 5,512,900, Cl. 342-35,000.

Siemens Solar GmbH: See—

van den Berg, Robert, 5,512,107, Cl. 136-251,000.

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Cederstrand, Carl N.; Salimian, Sharam M.; and Siemon, Rolf W., 5,512,757, Cl. 250-373,000.

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Meier, Jürgen-Dietrich; Munster, Christian; Kass, Volker; and Siffrin, Horst, 5,512,679, Cl. 546-339,000.

Signorino, Charles A.; and Meggos, Harry, to Warner-Jenkinson Company. Dye compositions and methods for film coating tablets and the like. 5,512,314, Cl. 427-2,140.

Sillitto, Hillary G.; Lessels, Alison B.; Cameron, Evan S.; and Wilson, Thomas B., to GEC Marconi Avionics (Holdings) Limited. Infrared optical system. 5,513,034, Cl. 359-351,000.

Silvers, Kenneth B.: See—

Bell, Cecil R.; Moyer, Charles R.; Poole, Gregory S.; and Silvers, Kenneth B., 5,511,501, Cl. 112-470,150.

Simmons, Dawn M.; and Buchanan, Laurie L. Pirate's trap board game. 5,511,792, Cl. 273-251,000.

Simmons, Robert: See—

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Simmons, Robert C.: See—

Lee, Ching-Pang; Wheat, Gary E.; Malone, Barry T.; Palmer, Nicholas C.; and Simmons, Robert C., 5,511,946, Cl. 416-97,000.

Simon, Bernard, to Alcatel Alsthom Compagnie Generale d'Electricite. Liquid cathode lithium cell. 5,512,386, Cl. 429-105,000.

Simonds, James A. Toothbrush. 5,511,277, Cl. 15-167,100.

Simpson, Sharon M.: See—

Lynch, Doreen C.; Simpson, Sharon M.; and Skoug, Paul G., 5,512,411, Cl. 430-203,000.

Simpson, Ted L. Holiday lighting decoration and method. 5,513,084, Cl. 362-284,000.

Sims, Gregory R.: See—

Jones, Marvin S.; Dickten, Dirk; Green, Gary M.; Oleksy, Paul D.; Sims, Gregory R.; Tomescu, Ludwig; and Berger, Robert C., 5,511,454, Cl. 84-236,000.

Singh, Jai P.: See—

Gupta, Shalley K.; and Singh, Jai P., 5,512,550, Cl. 514-12,000.

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Poss, Michael A.; Pansegrau, Paul D.; Wang, Shaopeng; Thottathil, John K.; Singh, Janak; and Mueller, Richard H., 5,512,690, Cl. 549-300,000.

Singh, Rajwant; Mandich, Nenad; and Krulik, Gerald A., to Applied Chemical Technologies, Inc. Solder and tin stripper composition. 5,512,201, Cl. 252-142,000.

Singh, Vijay, to Schering Corporation. Sterilizing apparatus. 5,512,249, Cl. 422-114,000.

Sink, Danny R., to Brenco Incorporated. Bearing seal with oil deflectors. 5,511,886, Cl. 384-486,000.

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Peoples, Oliver P.; and Sinskey, Anthony J., 5,512,669, Cl. 536-23,200.

Sipkins, Dorothy A.: See—

Li, King C.; Bednarski, Mark D.; Storrs, Richard W.; Li, Henry Y.; Trooper, Francois D.; Song, Curtis K. H.; Sipkins, Dorothy A.; and Kuniyoshi, Jeremy K., 5,512,294, Cl. 424-450,000.

Sisley, Steven E.: See—

Jones, Kyle B.; Lehnert, Robert A.; McInnes, Ian D.; Quinn, Robert D.; Sisley, Steven E.; and Temus, Charles J., 5,513,231, Cl. 376-261,000.

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Sisson, Steven S.: See—

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Look, David C.; Mier, Millard G.; Sizelove, John R.; and Walters, Dennis C., 5,512,999, Cl. 356-30,000.

Sjogren, Eric B.: See—

Morgans, David, Jr.; Sjogren, Eric B.; Smith, David B.; Talamas, Francisco X.; Artis, Dean R.; Cervantes, Alicia; Elworthy, Todd R.; Fernandez, Mario; Franco, Fidencio; Hawley, Ronald C.; Lara, Teresa; Loughhead, David G.; Nelson, Peter H.; Patterson, John W.; Trejo, Alejandra; Walto, Ann M.; and Weikert, Robert J., 5,512,568, Cl. 514-233,500.

Skalkos, Dimitris; Selman, Steven H.; and Hampton, James A., to University of Toledo and Medical College of Ohio. The Method of treating cancer tumors with imine porphyrin compounds. 5,512,559, Cl. 514-185,000.

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Popadiuk, John A.; and Skalon, John W., 5,511,783, Cl. 273-118,000.

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Paramonov, Vladimir A.; Tychnin, Anatolij I.; Moroz, Anatolij I.; and Birger, Boris L., 5,512,321, Cl. 427-405,000.

Skoug, Paul G.: See—

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Slater, Jon W.: See—

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Slavitter, Frederick: See—

Norris, Philip R.; Slavitter, Frederick; Shown, Kenneth G.; and Feehan, Timothy J., 5,512,971, Cl. 354-311,000.

Slaybaugh, Jon: See—

Everson, Harold W., Jr.; Slaybaugh, Jon; and Juda, Charles C., 5,512,890, Cl. 340-870,130.

Slettenmark, Bruno, to Siemens Elema AB. Method for cleaning the catheter of an implanted medication infusion system. 5,512,048, Cl. 604-93,000.

Sloss, Andris C.: See—

Maldanis, Albert J.; Giegerich, David K.; and Sloss, Andris C., 5,511,646, Cl. 194-217,000.

Sluzky, Esther; Lemoine, Mary A.; and Hesse, Kenneth R. Far-red emitting phosphor for cathode ray tubes. 5,512,210, Cl. 252-301,400.

Small, Maynard E. Apparatus and method for electronically dispensing personalized greeting cards and gifts. 5,513,117, Cl. 364-479,000.

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Miyachi, Hiroshi; Araki, Mitsutoshi; Ueno, Yoshiteru; and Yamase, Norihide, 5,511,461, Cl. 92-13,500.

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Haber, Terry M.; Foster, Clark B.; and Smedley, William H., 5,511,538, Cl. 128-200,140.

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Chen, Victor J.; DiMarchi, Richard D.; Smiley, David L.; Stucky, Russell D.; and Kriaucunas, Aidas V., 5,512,549, Cl. 514-12,000.

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Huscroft, Charles K.; Smith, Graham B.; and Gerson, Brian D., 5,512,860, Cl. 331-1,00A.

Smith, Isaac L.: See—

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Smith, John A., to General Hospital Corporation, The. Acyl-peptide hydrolase and methods of production and use. 5,512,467, Cl. 435-172,300.

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Prabhu, Gajanan M.; and Smith, Mark J., 5,511,534, Cl. 126-21,00A.

Smith, Robert D.: See—

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Smith, Roosevelt. Shoe heel spring. 5,511,324, Cl. 36-27,000.

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Hesch, Harold E.; Beers, Albert A.; and Smith, Stephen W., 5,511,491, Cl. 105-404,000.

Smith, Vance E.: See—

Rosica, George B.; and Smith, Vance E., 5,512,226, Cl. 264-132,000.

Smith, Willis H., Jr.; and Miller, Leroy J., to Hughes Aircraft Company. Inducing tilted parallel alignment in liquid crystals. 5,512,148, Cl. 204-192,230.

SMK Corporation: See—

Ozeki, Kumio; Watanabe, Fumio; Yoshida, Haruo; Kamishima, Osamu; and Sakai, Yosuke, 5,512,722, Cl. 200-517,000.

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Streubel, Hans, 5,511,606, Cl. 164-476,000.

Snell, William M.; Kaliszewski, Thomas S.; and Eaton, Rodney L., to Chrysler Corporation. Mechanical brake interlock mechanism for a column-mounted shift control assembly. 5,511,641, Cl. 192-4,00A.

Snider, Philip M.; Wesson, David S.; and Andrich, Lyle W. Apparatus and method for temporarily plugging a tubular. 5,511,617, Cl. 166-291,000.

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Snook, Richard K., to Ortek, Inc. Ophthalmic pachymeter and method of making ophthalmic determinations. 5,512,966, Cl. 351-205,000.

Snyder, James A. Wheeled hamper. 5,511,807, Cl. 280-47,260.

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Mukerjee, Sandip; and Snyder, Ralph J., 5,513,242, Cl. 379-58,000.

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Sobol, James M.: See—

Wilson, James; Cellini, Ronald A.; and Sobol, James M., 5,512,897, Cl. 341-144,000.

Societe Anonyme de Telecommunications - "SAT": See—

Levallant, Denis; Timossi, Guy; Remy, Bertrand; Lonnay, Jacques; and Rothenburg, Jacques-Henri, 5,512,741, Cl. 250-203,300.

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Clement, Michel; and Rouhet, Jacky, 5,511,426, Cl. 73-655,000.

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Arantes, Antonio C.; Pierquin, Francois; and Ruault, Pierre M. P., 5,512,726, Cl. 219-125,100.

Thore, Medique A., 5,511,949, Cl. 416-213,000.

Softdrive, Inc.: See—

Clausen, Eivind; and Allsop, James D., 5,511,444, Cl. 74-551,200.

Sofue, Masahisa: See—

Tojo, Kenji; and Sofue, Masahisa, 5,511,959, Cl. 418-55,100.

Sohda, Takashi; Yamazaki, Iwao; Kawamura, Noriaki; and Takeomi, Shigehisa, to Takeda Chemical Industries, Ltd. Bisphosphonic acid derivatives, and pharmaceutical use. 5,512,552, Cl. 514-102,000.

Sokyrka, Harold W., to Luminart Inc. Printing method. 5,512,122, Cl. 156-275,500.

Sola International Holdings Ltd.: See—

Neal, George H.; and Kelley, William C., 5,512,344, Cl. 428-64,100.

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Boyd, Gary L., 5,511,940, Cl. 415-209,200.

Glezer, Boris; Fierstein, Aaron R.; and Jones, Russell B., 5,511,945, Cl. 416-96,000.

Sole, John D.: See—

Parkin, David; and Sole, John D., 5,512,900, Cl. 342-35,000.

Solignac, Philippe, to Etablissements Valois (Societe Anonyme). Device for spraying a predetermined dose of a fluid, and a method of filling the device. 5,511,698, Cl. 222-162,000.

Solimena, Michele: See—

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Son, Jung Y.; Jeon, Hyung W.; Choi, Yong J.; and Bobrinev, Vladimir I., to Korea Institute of Science and Technology. Method and apparatus for direct transmission of an optical image. 5,513,022, Cl. 359-16,000.

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Song, Curtis K. H.: See—

Li, King C.; Bednarski, Mark D.; Storrs, Richard W.; Li, Henry Y.; Trooper, Francois D.; Song, Curtis K. H.; Sipkins, Dorothy A.; and Kuniyoshi, Jeremy K., 5,512,294, Cl. 424-450,000.

Song, Suk-Zu; and Morawiecki, Andrew, to Amgen Inc. Collagen-containing sponges as drug delivery compositions for proteins. 5,512,301, Cl. 424-484,000.

Sono, Koichi; Miyawaki, Mamoru; Ishizaki, Akira; Ogawa, Katsuhisa; Sakurai, Katsuhito; Sugawa, Shigetoshi; and Kondo, Shigeki, to Canon Kabushiki Kaisha. Liquid crystal display with display area having same height as peripheral portion thereof. 5,513,028, Cl. 359-87,000.

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Aki, Yuichi, 5,511,438, Cl. 74-424.80A.
Chiba, Kazunobu; Sato, Kenichi; and Anisaka, Yuichi, 5,512,349, Cl. 428-141.000.
Endo, Kazuhiko; Kokubun, Hideyuki; and Misonou, Takehiro, 5,512,803, Cl. 315-370.000.
Fite, Barry A.; Mitchell, Michael L.; Kunz, Russ A.; and Brannon, Clifford R., 5,513,169, Cl. 369-272.000.
Horimai, Hideyoshi; and Fujita, Goro, 5,513,161, Cl. 369-54.000.
Ikeyama, Hiromasa; and Asada, Takashi, 5,512,894, Cl. 341-61.000.
Iwamura, Ryuichi, 5,512,952, Cl. 348-416.000.
Kariya, Izumi; and Funayama, Hidehiko, 5,513,014, Cl. 358-448.000.
Kashii, Masaharu; Yasuhara, Nae; and Kusano, Hiroko, 5,511,983, Cl. 434-365.000.
Kawamura, Harumi; and Sato, Keiko, 5,513,182, Cl. 370-94.300.
Kikuchi, Shuichi, 5,511,405, Cl. 72-337.000.
Kishi, Yoshio; Higashihara, Teruaki; and Arai, Toshiyuki, 5,513,162, Cl. 369-54.000.
Kori, Teruhiko; Iizuka, Ken; and Oguro, Masaki, 5,513,010, Cl. 358-341.000.
Kurokawa, Toshiya, 5,513,053, Cl. 360-96.500.
Miura, Yoshinori, 5,511,736, Cl. 242-346.000.
Mizikovskiy, Semyon; Anderson, Geoffrey; Doums, Peter; Akahane, Masaaki; and Yasuda, Hiroshi, 5,513,245, Cl. 379-59.000.
Noda, Masanori, 5,512,779, Cl. 257-640.000.
Ohsato, Kiyoshi, 5,513,158, Cl. 369-44.230.
Okamoto, Yutaka, 5,512,498, Cl. 437-35.000.
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Suzuki, Toshikazu; Nomoto, Kazumasa; and Ugajin, Ryuichi, 5,512,762, Cl. 257-15.000.
Tanaka, Yozo, 5,513,385, Cl. 455-228.000.
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 Tamai, Tadamoto; and Ikeya, Yoiehiro, 5,512,106, Cl. 134-7.000.
 Sumitomo Light Metal Industries, Ltd.: See—
 Tahara, Shozo; Kimura, Taizo; Miyazaki, Hiroki; and Hanaki, Kazuhiro, 5,512,111, Cl. 148-440.000.
 Sumitomo Rubber Industries, Ltd.: See—
 Ebisuno, Tadahi; Morioka, Keiji; Sugimoto, Kazushige; and Hirau, Tsutomu, 5,511,791, Cl. 473-354.000.
 Matsuo, Toshiro; and Kikuchi, Noahiko, 5,512,626, Cl. 524-495.000.
 Sumitomo Wiring Systems, Ltd.: See—
 Ogawa, Shinji; and Matsumoto, Masayoshi, 5,511,988, Cl. 439-336.000.
 Summit World Trade Corp.: See—
 Enos, Gary W., 5,512,754, Cl. 250-363.100.
 Vickers, David S.; Gibbons, John C.; and Cochrane, Geoffrey G., 5,512,755, Cl. 250-363.090.
 Sumner, Charles E., Jr.: See—
 Barnicki, Scott D.; Sumner, Charles E., Jr.; and Williams, H. Chip, 5,512,691, Cl. 549-413.000.
 Sun Chemical Corporation: See—
 Hallman, Robert W.; Hong, Suck-Ju; and Shimazu, Ken-ichi, 5,512,420, Cl. 430-303.000.
 Sun Microsystems, Inc.: See—
 Bauer, Robert, 5,513,360, Cl. 395-750.000.
 Davidson, Howard L., 5,512,780, Cl. 257-668.000.
 Forrest, Craig S.; Frank, Edward H.; and Naughton, Patrick J., 5,512,918, Cl. 345-122.000.
 Janku, Jan A.; and Pranger, Maarten, 5,513,192, Cl. 371-50.100.
 Levitt, Marc E., 5,513,186, Cl. 371-22.300.
 Sun, Ming-Jau: See—
 Lu, Samuel; Sun, Ming-Jau; Stewart, Alan F.; and Louderback, Anthony W., 5,513,039, Cl. 359-584.000.
 Sunami, Motoshi: See—
 Sasaki, Umekichi; Sunami, Motoshi; and Hasegawa, Hiroshi, 5,512,198, Cl. 252-68.000.
 Sundstrand Corporation: See—
 Latos, Thomas S.; and Hernden, Michael R., 5,512,811, Cl. 322-10.000.
 Supaflo Technologies Pty. Ltd.: See—
 Bourke, Peter G., 5,511,669, Cl. 209-164.000.
 Suskind, Stuart P., to ICD Industries. Method of making and using a degradable package for containment of liquids, 5,512,333, Cl. 427-536.000.
 Suslick, Kenneth S.: See—
 Grinstaff, Mark W.; Desai, Neil P.; Suslick, Kenneth S.; Soon-Shiong, Patrick; Sandford, Paul A.; and Merideth, Noma R., 5,512,268, Cl. 424-9.322.
 Suter, Ulrich: See—
 Shooter, Eric M.; Suter, Ulrich; Ip, Nancy P.; Squinto, Stephen P.; Furth, Mark E.; and Lindsay, Ronald M., 5,512,661, Cl. 530-399.000.
 Suto, Koju: See—
 Funahashi, Isao; Yamamoto, Kiwamu; and Suto, Koju, 5,512,265, Cl. 423-640.000.
 Sutton, Daniel D.: See—
 Merz, Gary E.; Marshall, Dale C.; and Sutton, Daniel D., 5,511,300, Cl. 29-407.080.
 Suwa, Koichi: See—
 Serizawa, Yoji; Noguchi, Akio; Ushio, Yukihide; Matsuo, Shimpei; Yamada, Kazuro; Uchiyama, Seiji; Takeuchi, Makoto; Suwa, Koichi; Hiroshima, Koichi; Tsukida, Shinichi; Takano, Manabu; Goto, Masahiro; Inoue, Takahiro; Yamada, Hiromichi; Kato, Junichi; and Ojima, Masaki, 5,512,929, Cl. 347-153.000.
 Suzuki, Akio: See—
 Takada, Yoshihiro; Suzuki, Akio; Izumizaki, Masami; Tsuchii, Ken; Kadowaki, Hidejiro; Yanaka, Toshiyuki; Takahashi, Haruhiko; Takamiya, Makoto; Yamamoto, Kosuke; Wataya, Masafumi; Miura, Yasushi; Moriguchi, Haruhiko; and Murayama, Yasushi, 5,512,924, Cl. 347-18.000.
 Suzuki, Atsuhide; Kodama, Hirotsugu; and Suzuki, Toshio, to Kabushiki Kaisha Toshiba. Rotor blade damping structure for axial-flow turbine, 5,511,948, Cl. 416-191.000.
 Suzuki, Etsuro: See—
 Uchikata, Yoshio; Hattori, Yoshifumi; Ara, Yoji; Kitani, Masashi; Suzuki, Etsuro; Wada, Toshihide; Hirabayashi, Hiromitsu; Saikawa, Hideo; Kojima, Masami; Hanabusa, Tadashi; Kawano, Kenji; Tanno, Koichi; Ohashi, Tetsuyo; Bekki, Toshihiko; Aono, Kenji; and Ikado, Masaharu, 5,512,926, Cl. 347-86.000.

Suzuki, Hajime: See—
 Ido, Yoshinori; Chiba, Shuji; Arimatsu, Yoshikazu; Suzuki, Hajime; and Shimizu, Takehiko, 5,512,059, Cl. 8-115.700.
 Suzuki, Kazuhiro: See—
 Yoshinari, Toshiaki; Suzuki, Kazuhiro; Yokose, Taro; and Umezawa, Ken, 5,513,279, Cl. 382-232.000.
 Suzuki, Kazutomi: See—
 Chiba, Kiyoshi; Sato, Tetsuo; Sekiya, Masahiko; and Suzuki, Kazutomi, 5,512,364, Cl. 428-332.000.
 Suzuki, Kengo: See—
 Kawamoto, Ryusaburo; and Suzuki, Kengo, 5,511,798, Cl. 277-205.000.
 Suzuki, Kohji: See—
 Komori, Katsunori; Yamamoto, Osamu; Toyoguchi, Yoshinori; Suzuki, Kohji; Yamaguchi, Seiji; Tanaka, Ayako; and Ikoma, Munehisa, 5,512,385, Cl. 429-101.000.
 Suzuki, Masaki: See—
 Ryoke, Katsumi; Meguro, Katsuhiko; Doushita, Hiroaki; Suzuki, Masaki; Kitarahara, Toshiyuki; and Sato, Masami, 5,512,350, Cl. 428-141.000.
 Suzuki, Minoru: See—
 Kimura, Noriyuki; Suzuki, Minoru; and Fujishiro, Takatsugu, 5,512,984, Cl. 355-245.000.
 Suzuki, Naruhito. Motor mechanism, 5,512,022, Cl. 475-2.000.
 Suzuki, Takumi; Kameyama, Reiko; Kamoi, Sumio; Kikuchi, Hisashi; Komori, Satoshi; Suetake, Tomomi; and Matsuki, Yumi, to Ricoh Company, Ltd. Method of producing a liquid crystal display with a spacer, 5,513,026, Cl. 359-81.000.
 Suzuki, Toshiyuki; Nomoto, Kazumasa; and Ugajin, Ryuichi, to Sony Corporation. Quantum device with plural stable states, 5,512,762, Cl. 257-15.000.
 Suzuki, Toshio: See—
 Suzuki, Atsuhide; Kodama, Hirotsugu; and Suzuki, Toshio, 5,511,948, Cl. 416-191.000.
 Suzuki, Yukio; Masuda, Ikuro; Iwamura, Masahiro; Kadono, Shinji; Uragami, Akira; Yoshimura, Masayoshi; and Matsubara, Toshiaki, to Hitachi, Ltd. BiCMOS tri-state output driver, 5,512,847, Cl. 326-110.000.
 Swagelok Quick-Connect Co.: See—
 Zaborski, Stephen J.; and Kreczko, Gregory, 5,511,720, Cl. 228-136.000.
 Swanson, G. David: See—
 McKenna, Charles L.; and Swanson, G. David, 5,511,544, Cl. 128-205.130.
 Swanson, Melvin J.: See—
 Guire, Patrick E.; Dunkirk, Shawn G.; Josephson, Mark W.; and Swanson, Melvin J., 5,512,329, Cl. 427-508.000.
 Sweatt, William C. Condenser for illuminating a ringfield camera with synchrotron emission light, 5,512,759, Cl. 250-492.100.
 Sweetland, James E., to Union Oil Company of California. Glass gob drop guide funnel assembly, 5,511,593, Cl. 141-98.000.
 Syers, Charles S. Guided bone and tissue generation device and method to be used during or after dental surgery or jaw surgery, 5,511,565, Cl. 128-898.000.
 Syntec, Inc.: See—
 Easley, James C., 5,513,286, Cl. 385-19.000.
 Syntex (U.S.A.) Inc.: See—
 Morgans, David, Jr.; Sjogren, Eric B.; Smith, David B.; Talamas, Francisco X.; Artis, Dean R.; Cervantes, Alicia; Elworthy, Todd R.; Fernandez, Mario; Franco, Fidencio; Hawley, Ronald C.; Lara, Teresa; Loughhead, David G.; Nelson, Peter H.; Patterson, John W.; Trejo, Alejandra; Walts, Ann M.; and Weikert, Robert J., 5,512,568, Cl. 514-233.500.
 Ullman, Edwin F.; Kirakossian, Hriar; Ericson, Mary C.; and Watts, Richard P., 5,512,659, Cl. 530-391.100.
 Synthelabo: See—
 George, Pascal; Sevrin, Mireille; and Peynot, Michel, 5,512,590, Cl. 514-394.000.
 Szklar, Oleh: See—
 Horst, Folkert; Szklar, Oleh; Doig, Kelly; Cass, George R.; and Bousquet, J. L., 5,511,749, Cl. 246-187.00A.
 Szymanski, Thomas: See—
 Gerdes, William H.; Remus, Donald J.; and Szymanski, Thomas, 5,512,530, Cl. 502-351.000.
 T-3 Enterprises Inc.: See—
 Tokar, Gladys J., 5,511,889, Cl. 400-197.000.
 T. B. Poston: See—
 Poston, Travis, 5,512,874, Cl. 340-426.000.
 Tabasco, Joseph J. Mobile injection device and method for delivery of remediation materials to underground contaminated soils and water, 5,511,907, Cl. 405-128.000.
 Tabata, Munehiro: See—
 Omura, Hideaki; Wakamiya, Masayuki; Tabata, Munehiro; and Takeuchi, Nobuyoshi, 5,512,800, Cl. 313-637.000.
 Tabuchi, Takeshi: See—
 Takahashi, Sadao; Yamazaki, Kouichi; Kikuchi, Nobuo; Matsumoto, Kentaro; Hayakawa, Tadashi; Miyashita, Yoshiaki; and Tabuchi, Takeshi, 5,512,708, Cl. 118-653.000.
 Tachibana, Ikuo: See—
 Sakano, Hiroshi; Naruse, Hiroshi; Masubuchi, Akihiko; and Tachibana, Ikuo, 5,513,343, Cl. 395-183.020.

Tachizono, Shinichi; Chiyoda, Hironobu; Yamamoto, Toshiya; Takashima, Shigeo; Tsuboi, Masayoshi; Yamane, Hiroshi; Kotera, Shigeo; and Aoki, Minoru, to Hitachi Powdered Metals Co., Ltd. Shading film for color filter and coating for forming shading film, 5,512,215, Cl. 252-584.000.
 Tada, Tatsuya: See—
 Takeda, Kenichi; Tada, Tatsuya; Itoh, Nobuyuki; Nakano, Masao; Kemmochi, Kazuhisa; and Itoh, Isami, 5,512,406, Cl. 430-110.000.
 Tagawa, Hiroshi: See—
 Miya, Yukio; Kizaki, Shigeru; Sugiyama, Osamu; Hatayama, Akiteru; Shibuya, Yoshitsugu; Enomoto, Mitsugu; Naoi, Koichi; Fukazawa, Yuji; Nanya, Takanori; Shimizu, Shotaro; and Tagawa, Hiroshi, 5,511,587, Cl. 139-192.000.
 Tagle, John D.: See—
 Lachenmaier, Frank D.; Lake, Donald E.; deceased; Martin, Timothy D.; Tagle, John D.; and Viduya, Lisa A., 5,512,790, Cl. 307-112.000.
 Taguchi, Motohisa: See—
 Nakaki, Yoshiyuki; Tokunaga, Takashi; Fukami, Tatsuya; Taguchi, Motohisa; and Tsutsumi, Kazuhiko, 5,512,366, Cl. 428-332.000.
 Tahara, Hisatsugu: See—
 Endo, Sajiro; Toyama, Yoshikuni; Senba, Hisaaki; Tahara, Hisatsugu; Matsumoto, Hiroshi; and Hasegawa, Keisuke, 5,512,993, Cl. 355-285.000.
 Tahara, Shozo; Kimura, Taizo; Miyazaki, Hiroki; and Hanaki, Kazuhiro, to Sumitomo Light Metal Industries, Ltd. Aluminum alloy material for shutter of recording medium cassette, process for producing the same, and aluminum alloy shutter made of the same, 5,512,111, Cl. 148-440.000.
 Tajima, Makoto; Beppu, Kei; Mano, Tomoyuki; and Sasaki, Shigeru, to Calsonic Corporation. Oil cooler having water pipe reinforcement, 5,511,612, Cl. 165-167.000.
 Tajima, Motohiko: See—
 Uchino, Hajime; Tajima, Motohiko; and Horie, Hiroshi, 5,512,173, Cl. 204-632.000.
 Takada, Yoshihiro; Suzuki, Akio; Izumizaki, Masami; Tsuchii, Ken; Kadowaki, Hidejiro; Yanaka, Toshiyuki; Takahashi, Haruhiko; Takamiya, Makoto; Yamamoto, Kosuke; Wataya, Masafumi; Miura, Yasushi; Moriguchi, Haruhiko; and Murayama, Yasushi, to Canon Kabushiki Kaisha. Jet apparatus having an ink jet head and temperature controller for that head, 5,512,924, Cl. 347-18.000.
 Takagi, Takeyuki: See—
 Okada, Hiroaki; Mochizuki, Isao; and Takagi, Takeyuki, 5,512,719, Cl. 200-344.000.
 Takagi, Yuji: See—
 Satoh, Isao; Fukushima, Yoshihisa; Takagi, Yuji; and Azumatani, Yasushi, 5,513,160, Cl. 369-47.000.
 Takahara, Toshiro: See—
 Ryu, Tadamitsu; Takahara, Toshiro; Hirono, Shingo; and Matsumoto, Tohru, 5,513,348, Cl. 395-600.000.
 Takahashi, Haruhiko: See—
 Takada, Yoshihiro; Suzuki, Akio; Izumizaki, Masami; Tsuchii, Ken; Kadowaki, Hidejiro; Yanaka, Toshiyuki; Takahashi, Haruhiko; Takamiya, Makoto; Yamamoto, Kosuke; Wataya, Masafumi; Miura, Yasushi; Moriguchi, Haruhiko; and Murayama, Yasushi, 5,512,924, Cl. 347-18.000.
 Takahashi, Hideo: See—
 Yoshino, Ryutaro; and Takahashi, Hideo, 5,513,106, Cl. 364-424.020.
 Takahashi, Hironobu: See—
 Terasaki, Hajime; and Takahashi, Hironobu, 5,513,299, Cl. 395-90.000.
 Takahashi, Junichi: See—
 Machida, Katsuyuki; Murase, Katsumi; Shimoyama, Nobuhiro; Tsuchiya, Toshiaki; Takahashi, Junichi; Minegishi, Kazushige; Takahashi, Yasuo; Namatsu, Hideo; and Imai, Kazuo, 5,512,513, Cl. 437-195.000.
 Takahashi, Koji; and Harigaya, Isao, to Canon Kabushiki Kaisha. Image sensing apparatus, 5,512,941, Cl. 348-81.000.
 Takahashi, Masashi; Fujiwara, Shigeru; Yoshida, Minoru; and Watanabe, Takeshi, to Kabushiki Kaisha Toshiba. Image-forming apparatus with a photosensitive member and a charging device having an oscillatory voltage source, 5,512,982, Cl. 355-219.000.
 Takahashi, Sadao; Yamazaki, Kouichi; Kikuchi, Nobuo; Matsumoto, Kentaro; Hayakawa, Tadashi; Miyashita, Yoshiaki; and Tabuchi, Takeshi, to Ricoh Company, Ltd. Toner used in an image forming apparatus, 5,512,708, Cl. 118-653.000.
 Takahashi, Tsutomu; Sugino, Kazuhiro; Oguruma, Wakako; and Onari, Hisashi, to Hitachi, Ltd. Information processing system for obtaining desired processing based upon output specifications input by user, 5,513,356, Cl. 395-700.000.
 Takahashi, Yasuo: See—
 Machida, Katsuyuki; Murase, Katsumi; Shimoyama, Nobuhiro; Tsuchiya, Toshiaki; Takahashi, Junichi; Minegishi, Kazushige; Takahashi, Yasuo; Namatsu, Hideo; and Imai, Kazuo, 5,512,513, Cl. 437-195.000.
 Takahashi, Youichi: See—
 Hanaoka, Yasuhiko; Ochi, Yoshiaki; Kitanaka, Yoshiyuki; Ohashi, Hiroki; Shimada, Hiroshi; Mase, Tomonori; Kato, Keiichi; and Takahashi, Youichi, 5,513,156, Cl. 369-34.000.
 Takahasi, Yosita; Manabe, Akira; Kaneko, Tadataka; Okajima, Hiroshi; Ito, Yoshihiko; and Daiza, Setsuo, to Toyota Jidosha Kabushiki Kaisha. Fe-based alloy powder adapted for sintering, Fe-based sintered alloy having wear resistance, and process for producing the same, 5,512,080, Cl. 75-231.000.
 Takahiro, Masahiko: See—

- Hamade, Saburo; Takahiro, Masahiko; and Morohashi, Kazuo, 5,511,395, Cl. 68-2.000.
- Takai, Mitsuru: See—
- Ueda, Kunihiko; Kobayashi, Koji; Takai, Mitsuru; and Higo, Masashi, 5,512,373, Cl. 428-421.000.
- Takamiya, Makoto: See—
- Takada, Yoshihiro; Suzuki, Akio; Izumizaki, Masami; Tsuchii, Ken; Kadowaki, Hidejiro; Yanaka, Toshiyuki; Takahashi, Haruhiko; Takamiya, Makoto; Yamamoto, Kosuke; Wataya, Masafumi; Miura, Yasushi; Moriguchi, Haruhiko; and Murayama, Yasushi, 5,512,924, Cl. 347-18.000.
- Takamizawa, Minoru: See—
- Ban, Hiroshi; Tanaka, Akinobu; Yagihashi, Fujio; Watanabe, Jun; and Takamizawa, Minoru, 5,512,417, Cl. 430-270.140.
- Takamura, Tohsaku: See—
- Fujiwara, Yoshito; Kobayashi, Yutaka; Kimura, Mituo; Iio, Masatoshi; and Takamura, Tohsaku, 5,512,239, Cl. 420-68.000.
- Takano, Manabu: See—
- Kusaka, Kenzaku; Masuda, Koji; and Takano, Manabu, 5,512,729, Cl. 219-216.000.
- Serizawa, Yoji; Noguchi, Akio; Ushio, Yukihide; Matsuo, Shimpei; Yamada, Kazuro; Uchiyama, Seiji; Takeuchi, Makoto; Suwa, Koichi; Hiroshima, Koichi; Tsukida, Shinichi; Takano, Manabu; Goto, Masahiro; Inoue, Takahiro; Yamada, Hiromichi; Kato, Junichi; and Ojima, Masaki, 5,512,929, Cl. 347-153.000.
- Takashima, Shigeo: See—
- Tachizono, Shinichi; Chiyoda, Hironobu; Yamamoto, Toshiya; Takashima, Shigeo; Tsuboi, Masayoshi; Yamane, Hiroshi; Kotera, Shigeo; and Aoki, Minoru, 5,512,215, Cl. 252-584.000.
- Takasugi, Hisashi; Katsura, Yousuke; Inoue, Yoshikazu; and Tomishi, Tetsuo, to Fujisawa Pharmaceutical Co., Ltd. Purylthiazoles and their use as H₂-receptor antagonists and antimicrobials, 5,512,588, Cl. 514-370.000.
- Takasugi, Kei; and Nakamura, Kazunari, to Olympus Optical Co., Ltd. Image processing apparatus, endoscope image sensing and processing apparatus, and image processing method for performing different displays depending upon subject quantity, 5,512,940, Cl. 348-71.000.
- Takechi, Ryuichi; Kawasaki, Takeshi; Kamoi, Jyoji; Hajikano, Kazuo; Kuroyanagi, Satoshi; and Shimoe, Toshio, to Fujitsu Limited. Asynchronous transfer mode (ATM) cell error processing system, 5,513,191, Cl. 371-37.100.
- Takeda Chemical Industries, Ltd.: See—
- Nauro, Ken-ichi; Seko, Chisako; Kurokawa, Tsutomu; and Kondo, Tatsuya, 5,512,460, Cl. 435-69.100.
- Takeda Chemical Industries, Ltd.: See—
- Sohda, Takashi; Yamazaki, Iwao; Kawamura, Noriaki; and Taketomi, Shigehisa, 5,512,552, Cl. 514-102.000.
- Takeda, Eiko: See—
- Uchiyama, Hideki; Kasukawa, Hiroaki; Takeda, Eiko; Watanabe, Junichiro; and Nanba, Ryoichi, 5,512,665, Cl. 536-4.100.
- Takeda, Kenichi; Tada, Tatsuya; Itoh, Nobuyuki; Nakano, Masao; Kemmochi, Kazuhisa; and Itoh, Isami, to Canon Kabushiki Kaisha. Toners of different size for electrophotography, 5,512,406, Cl. 430-110.000.
- Takeda, Norio: See—
- Shirai, Kazushige; Ishikura, Kenji; and Takeda, Norio, 5,512,193, Cl. 252-62.570.
- Takeda, Shigeru; and Murakami, Yasuhide, to Hitachi Metals, Ltd. Magneto-static microwave device having large impedance change at resonance, 5,512,868, Cl. 333-219.200.
- Takeki, Takayoshi: See—
- Toriyabe, Keiji; Takehi, Takayoshi; Nezu, Yukio; Nakano, Yuki; and Shimazu, Tomonori, 5,512,551, Cl. 514-63.000.
- Takenaka, Masaki: See—
- Ando, Seigo; Matsufuji, Yasuhiro; Maki, Hiroshi; Inaba, Mamoru; Iwanaga, Kenichi; Takeoshi, Atsuhisa; and Takenaka, Masaki, 5,512,821, Cl. 324-225.000.
- Takenaka, Mitsuhiro: See—
- Kajitani, Koji; Fukushima, Hirotaka; Okubo, Manoru; Yanagida, Naoki; Takenaka, Mitsuhiro; Touji, Mitsuo; and Yamamoto, Kozo, 5,511,446, Cl. 74-573.00F.
- Takeoshi, Atsuhisa: See—
- Ando, Seigo; Matsufuji, Yasuhiro; Maki, Hiroshi; Inaba, Mamoru; Iwanaga, Kenichi; Takeoshi, Atsuhisa; and Takenaka, Masaki, 5,512,821, Cl. 324-225.000.
- Takesue, Atsushi; Murakami, Yasuo; Watanabe, Takanobu; and Anzai, Mitsutoshi, to Hodogaya Chemical Co., Ltd. Hydrazone compound and electrophotographic photoreceptor and organic electroluminescent element both containing the same, 5,512,400, Cl. 430-78.000.
- Taketomi, Shigehisa: See—
- Sohda, Takashi; Yamazaki, Iwao; Kawamura, Noriaki; and Taketomi, Shigehisa, 5,512,552, Cl. 514-102.000.
- Takeuchi, Hajime: See—
- Wakatsuki, Yoshio; Okuyama, Toshiharu; Takeuchi, Hajime; Shimizu, Misao; and Shimizu, Giichiro, 5,513,347, Cl. 395-185.050.
- Takeuchi, Hideki; and Kawamura, Koichiro, to Nippon Steel Corporation. Process for forming aluminum alloy thin film, 5,512,515, Cl. 437-196.000.
- Takeuchi, Makoto; Noguchi, Akio; Ushio, Yukihide; Matsuo, Shimpei; Uchiyama, Seiji; Yamada, Kazuro; and Serizawa, Yoji, to Canon Kabushiki Kaisha. Image forming apparatus having density correction for image formation, 5,513,012, Cl. 358-401.000.
- Takeuchi, Makoto: See—
- Serizawa, Yoji; Noguchi, Akio; Ushio, Yukihide; Matsuo, Shimpei; Yamada, Kazuro; Uchiyama, Seiji; Takeuchi, Makoto; Suwa, Koichi; Hiroshima, Koichi; Tsukida, Shinichi; Takano, Manabu; Goto, Masahiro; Inoue, Takahiro; Yamada, Hiromichi; Kato, Junichi; and Ojima, Masaki, 5,512,929, Cl. 347-153.000.
- Takeuchi, Nobuo; Kitano, Taishi; Mizuno, Fumio; Ishikawa, Hiroyoshi; Yoshimura, Sotaro; and Yamaguchi, Tomonari, to Inoac Corporation. Integrally molded polyurethane foam products, 5,512,361, Cl. 428-319.300.
- Takeuchi, Nobuyoshi: See—
- Omura, Hideaki; Wakamiya, Masayuki; Tabata, Munehiro; and Takeuchi, Nobuyoshi, 5,512,800, Cl. 313-637.000.
- Takeuchi, Osamu: See—
- Mori, Motoharu; Yoshida, Hironobu; Yamamura, Ikuo; Iura, Toru; Takeuchi, Osamu; and Ogushi, Masaki, 5,513,206, Cl. 373-80.000.
- Takeuchi, Yukihisa; and Kimura, Koji, to NGK Insulators, Ltd. Piezoelectric and/or electrostrictive actuator having dummy cavities within ceramic substrate in addition to pressure chambers, and displacement adjusting layers formed aligned with the dummy cavities, 5,512,793, Cl. 310-328.000.
- Takewa, Hiroyuki; and Torii, Yutaka, to Matsushita Electric Industrial Co., Ltd. Sound absorber, 5,512,715, Cl. 181-295.000.
- Takezawa, Makoto; Miyao, Makiji; Wada, Sadahisa; and Inoue, Hiroshi, to Tonen Corporation. Method of making a hybrid prepreg, 5,512,119, Cl. 156-171.000.
- Takiguchi, Takao; Iwaki, Takashi; Togano, Takeshi; Yamada, Yoko; Nakamura, Shinichi; and Nakazawa, Ikuo, to Canon Kabushiki Kaisha. Quinoxaline compound, liquid crystal composition containing the compound, liquid crystal device using the composition, display apparatus and display method, 5,512,209, Cl. 252-299.610.
- Takiguchi, Tsuyoshi: See—
- Okado, Kenji; Ugai, Toshiyuki; Fujita, Ryoichi; Kanbayashi, Makoto; Takiguchi, Tsuyoshi; Ichikawa, Yasuhiro; and Iida, Wakashi, 5,512,402, Cl. 430-106.600.
- Takikawa, Hiroyoshi; Yoshida, Yoshio; Kakimoto, Nobuko; and Ise, Shin-suke, to Mitsubishi Denki Kabushiki Kaisha. Cooker, 5,512,733, Cl. 219-620.000.
- Takisawa, Takahiro: See—
- Yamanishi, Hitoshi; Aokura, Isamu; Suemitsu, Toshiyuki; and Takisawa, Takahiro, 5,512,156, Cl. 204-298.160.
- Takishima, Suguru, to Asahi Kogaku Kogyo Kabushiki Kaisha. Device for selecting magnetic head to be operated together with an optical head, 5,513,159, Cl. 369-44.270.
- Takizawa, Toshiaki; and Murasaki, Ryuichi, to YKK Corporation. Method and apparatus for manufacturing surface fastener, 5,512,234, Cl. 264-511.000.
- Talamas, Francisco X.: See—
- Morgans, David, Jr.; Sjogren, Eric B.; Smith, David B.; Talamas, Francisco X.; Artis, Dean R.; Cervantes, Alicia; Elworthy, Todd R.; Fernandez, Mario; Franco, Fidencio; Hawley, Ronald C.; Lara, Teresa; Loughhead, David G.; Nelson, Peter II.; Patterson, John W.; Trejo, Alejandra; Walto, Ann M.; and Weikert, Robert J., 5,512,568, Cl. 514-233.500.
- Talbot, Nicholas C.: See—
- Nichols, Mark E.; and Talbot, Nicholas C., 5,512,905, Cl. 342-357.000.
- Talbot, Pierre J.; and Jennings, David R., to United States of America, Air Force. Prism coupling mount, 5,513,287, Cl. 385-25.000.
- Tallman, Richard: See—
- Horiguchi, Tsuneo; Porter, Eric L.; and Tallman, Richard, 5,513,349, Cl. 395-650.000.
- Tam, Wilson: See—
- Kreutzer, Kristina A.; and Tam, Wilson, 5,512,695, Cl. 558-338.000.
- Kreutzer, Kristina A.; and Tam, Wilson, 5,512,696, Cl. 558-338.000.
- Tamai, Akio: See—
- Kosugi, Masayuki; and Tamai, Akio, 5,511,429, Cl. 73-784.000.
- Tamai, Shotaro: See—
- Naito, Kazufumi; Utsunomiya, Michito; Konishi, Hiroyuki; and Tamai, Shotaro, 5,512,713, Cl. 177-211.000.
- Tamai, Tadamoto; and Ikeya, Yoichiro, to Sumitomo Heavy Industries, Ltd. Surface cleaning with argon, 5,512,106, Cl. 134-7.000.
- Tamba, Nobuo: See—
- Iweda, Takahide; Yamada, Kouichiro; Saito, Osamu; Odaka, Masanori; Tamba, Nobuo; Ogino, Katsumi; Hiraiishi, Atsushi; Watanabe, Atsuo; Hirao, Mitsuru; Fukami, Akira; Ohayashi, Masayuki; and Kuramoto, Tadashi, 5,512,497, Cl. 437-34.000.
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- Tame, Omar D., to Atoma International, Inc. Control system with bowden wire assembly end clip, 5,511,442, Cl. 74-502.600.
- Tamko Roofing Products, Inc.: See—
- Olsen, Thomas O., 5,512,615, Cl. 524-3.000.
- Tammi, Anna-Liisa: See—
- Jarvinen, Hannele; Lahtinen, Leila; Hormi, Osmo; Nasman, Jan; and Tammi, Anna-Liisa, 5,512,685, Cl. 549-86.000.
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- Tanabe, Hiroshi, to NEC Corporation. Method for manufacturing a thin film transistor having a forward staggered structure, 5,512,494, Cl. 437-21.000.
- Tanahashi, Masanori: See—

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- Tanaka, Akinobu: See—
- Ban, Hiroshi; Tanaka, Akinobu; Yagihashi, Fujio; Watanabe, Jun; and Takamizawa, Minoru, 5,512,417, Cl. 430-270.140.
- Tanaka, Ayako: See—
- Komori, Katsunori; Yamamoto, Osamu; Toyoguchi, Yoshinori; Suzuki, Kobei; Yamaguchi, Seiji; Tanaka, Ayako; and Ikoma, Munehisa, 5,512,385, Cl. 429-101.000.
- Tanaka, Kazumi: See—
- Miyazaki, Takeshi; Tanaka, Kazumi; Santo, Tsuyoshi; Ohnishi, Toshikazu; Fukui, Tetsuro; and Okamoto, Tadashi, 5,512,446, Cl. 435-7.200.
- Tanaka, Kenji, to Fujitsu Limited. Cell multiplexing apparatus in ATM network, 5,513,178, Cl. 370-58.200.
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- Betta, Ralph A. D.; Shoji, Toru; Yee, David K.; and Magno, Scott A., 5,512,250, Cl. 422-173.000.
- Dalla Betta, Ralph A.; Shoji, Toru; Tsurumi, Kazunori; and Ezawa, Nobuyasu, 5,511,972, Cl. 431-170.000.
- Tanaka, Masahiko; and Sugaya, Toshihiro, to Kabushiki Kaisha Toshiba. Optical recording and reproducing apparatus, 5,513,164, Cl. 369-112.000.
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- Tanaka, Shoji: See—
- Konishi, Masaya; Hayashi, Kunihiko; Enomoto, Youichi; Tanaka, Shoji; Tanaka, Yasuji; Ohtsu, Kanishi; Kanamori, Yasuo; and Shiohara, Yuh, 5,512,541, Cl. 505-474.000.
- Tanaka, Sumio: See—
- Atsumi, Shigeru; and Tanaka, Sumio, 5,513,146, Cl. 365-185.230.
- Tanaka, Tadashi; Sakamoto, Masaaki; Kidokoro, Hideyuki; Sato, Yoshiaki; and Masuda, Yutaka, to Daido Metal Company Ltd. Tin-base white metal bearing alloy excellent in heat resistance and fatigue resistance, 5,512,242, Cl. 420-561.000.
- Tanaka, Takao, to Nishinbo Industries, Inc. Drum brake device to facilitate visual confirmation of wear, 5,511,636, Cl. 188-1.110.
- Tanaka, Yozo, to Sony Corporation. Reception apparatus, signal reproducing apparatus using reception apparatus and control method thereof, 5,513,385, Cl. 455-228.000.
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- Savage, Thomas W., 5,513,189, Cl. 371-22.300.
- Tang, Hang; Xie, Lily; Wijesekera, Tilak; and Dolphin, David, to University of British Columbia, The. Methods for preparing porphyrin-like compounds, 5,512,675, Cl. 540-472.000.
- Tani, Kiyoshi, to Asahi Seiko Kabushiki Kaisha. Coin delivering apparatus, 5,512,016, Cl. 453-32.000.
- Taniguchi, Takashi: See—
- Urano, Miki; and Taniguchi, Takashi, 5,513,362, Cl. 395-800.000.
- Tanno, Koichi: See—
- Uchikata, Yoshio; Hattori, Yoshifumi; Ara, Yoji; Kitani, Masashi; Suzuki, Etsurou; Wada, Toshihide; Hirabayashi, Hiromitsu; Saikawa, Hideo; Kojima, Masami; Hanabusa, Tadashi; Kawano, Kenji; Tanno, Koichi; Ohashi, Tetsuyo; Bekki, Toshihiko; Aono, Kenji; and Ikado, Masaharu, 5,512,926, Cl. 347-86.000.
- Tanzawa, Katsujino: See—
- Nakagawa, Akio; Furukawa, Kazuyoshi; Ogura, Isuneo; and Tanzawa, Katsujino, 5,512,774, Cl. 257-501.000.
- Tao, Pao-Luh: See—
- Chern, Ji-Wang; Lu, Guan-Yu; Lai, Yue-Jun; Yen, Mao-Hsiung; and Tao, Pao-Luh, 5,512,677, Cl. 544-250.000.
- Tapistron International, Inc.: See—
- Samilo, John S., 5,511,398, Cl. 68-200.000.
- Tarara, Joseph R. Canopy for stretcher, 5,511,259, Cl. 5-414.000.
- Taron, Douglas J.: See—
- Cruckshank, Kenneth A.; and Taron, Douglas J., 5,512,433, Cl. 435-6.000.
- Tashco Industries, Inc.: See—
- Tashman, Fred F.; and Bargman, Dale L., Jr., 5,511,833, Cl. 292-145.000.
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- Tate, Stanley E.: See—
- Sellers, John W., Jr.; and Tate, Stanley E., 5,511,978, Cl. 434-11.000.
- Taverne, Thierry: See—
- Mansour, Hamid A.; Taverne, Thierry; Houssin, Raymond; Lesieur, Isabelle; Depreux, Patrick; Adam, Gérard; Caignard, Daniel-Henri; Renard, Pierre; and Rettoni, Marie-Claire, 5,512,569, Cl. 514-233.800.
- Taylor, G. Brandt, to Day-Night Mirrors, Inc. Day-night rear view mirror, 5,513,049, Cl. 359-884.000.
- Taylor, James E.; Alderman, Robert J.; and Barrett, James P. Water distillation unit for a refrigerator, 5,511,388, Cl. 62-389.000.
- Taylor Nelson AGB plc: See—
- Wheatley, Mark A.; and Wilcox, Peter, 5,512,933, Cl. 348-5.000.
- TDK Corporation: See—
- Namba, Kenryo; Kuroiwa, Akihiko; and Nakagawa, Shiro, 5,512,416, Cl. 430-270.210.
- Ueda, Kunihiko; Kobayashi, Koji; Takai, Mitsuru; and Higo, Masashi, 5,512,373, Cl. 428-421.000.
- Teac Corporation: See—
- Watanabe, Takashi, 5,513,054, Cl. 360-99.060.
- Technological Resources Pty. Limited: See—
- Batterham, Robin J.; Hoffmann, Warwick A.; and Conochie, David S., 5,512,217, Cl. 261-36.100.
- Teijin Limited: See—
- Chiba, Kiyoshi; Sato, Tetsuo; Sekiya, Masahiko; and Suzuki, Kazutomi, 5,512,364, Cl. 428-332.000.
- Tektronix, Inc.: See—
- Brandt, Thomas J.; and Zimmerman, Stephen A., 5,512,930, Cl. 347-212.000.
- TelCom Semiconductor, Inc.: See—
- Mo, Zhong H., 5,512,850, Cl. 327-108.000.
- Telefonaktiebolaget L. M. Ericsson: See—
- Agestam, Lennart; Helleder, Henry; and Ågårdh, Hans, 5,512,885, Cl. 340-825.520.
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- Jonsson, Sven-Olof L.; Chamberg, Georg W. R.; and Bodin, Stig R., 5,513,246, Cl. 379-60.000.
- Kronhamn, Thomas R., 5,512,909, Cl. 342-417.000.
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- Gard, Bengt E. I.; Eneroth, Lars G. V.; Larsen, Stefan D.; and Nilsson, Tord R., 5,513,127, Cl. 364-514.000.
- Temus, Charles J.: See—
- Jones, Kyle B.; Lehnert, Robert A.; McInnes, Ian D.; Quinn, Robert D.; Sisley, Steven E.; and Temus, Charles J., 5,513,231, Cl. 376-261.000.
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- Tene, Yair: See—
- Albus, James S.; Goodwin, Ken; and Tene, Yair, 5,511,268, Cl. 14-77.100.
- Tension Envelope Corporation: See—
- Rogovin, Michael E.; Tyrrell, Philip A.; and Kranz, Richard, 5,511,479, Cl. 101-486.000.
- Tenten, Andreas; Hammon, Ulrich; Weidlich, Peter; and Doerflinger, Walter, to BASF Aktiengesellschaft. Regeneration of spent multimetal oxide oxidation catalysts from the catalytic gas-phase oxidation of lower organic compounds, 5,512,525, Cl. 502-26.000.
- Tepic, Slobodan, to AO Research Institute. Manually operated tool mechanism, 5,511,699, Cl. 222-326.000.
- Tepman, Avi: See—
- Davenport, Robert E.; and Tepman, Avi, 5,511,799, Cl. 277-236.000.
- Terada, Atsuke; Iizuka, Yoshio; Wachi, Kazuyuki; and Fujibayashi, Kenji, to Sankyo Company, Limited. Analgesic compounds, their preparation, and pharmaceutical compositions containing them, 5,512,567, Cl. 514-231.800.
- Terada, Masahiro; Togano, Takeshi; Yamashita, Masataka; Iwaki, Takashi; Mori, Shosei; and Shinjo, Kenji, to Canon Kabushiki Kaisha. Ferroelectric chiral smectic liquid crystal composition and liquid crystal device using same, 5,512,208, Cl. 252-299.600.
- Terada, Michitaka; Ando, Masamoto; and Sakai, Toshiyuki, to Aisin Seiki Kabushiki Kaisha. Anti-skid control system for an electrically operated vehicle, 5,511,846, Cl. 303-152.000.
- Terada, Takashi: See—
- Aoki, Minoru; Ohtaki, Hiroshi; Fukui, Nobuharu; Terada, Takashi; Nakada, Minoru, deceased, 5,512,298, Cl. 424-452.000.
- Terada, Yuichi: See—
- Shishido, Osamu; and Terada, Yuichi, 5,511,271, Cl. 15-49.100.
- Teradyne, Inc.: See—
- Madden, Timothy J.; and Rosenthal, Daniel A., 5,512,895, Cl. 341-61.000.
- Terakawa, Taiju; and Nakajima, Sadaaki, to Chisso Corp. Spinneret device for conjugate melt-blow spinning, 5,511,960, Cl. 425-7.000.
- Teramoto, Tsutomu: See—
- Sano, Yoshihiko; Kobayashi, Toshiyuki; Teramoto, Tsutomu; and Fukushima, Kouta, 5,511,551, Cl. 128-686.000.
- Teran, James. Meat tenderization process for a microwavable meat product, 5,512,015, Cl. 452-141.000.
- Terasaki, Hajime; and Takahashi, Hironobu, to Sanyo Electric Co., Ltd. Operation planning system for robot, 5,513,299, Cl. 395-90.000.
- Terpko, Marc O.: See—
- Jacobs, Robert T.; Klimas, Michael T.; Ohnmacht, Cyrus J.; and Terpko, Marc O., 5,512,575, Cl. 514-256.000.
- Terumo Kabushiki Kaisha: See—
- Uchiyama, Hideki; Kasukawa, Hiroaki; Takeda, Eiko; Watanabe, Junichiro; and Nanba, Ryoichi, 5,512,665, Cl. 536-4.100.
- ter Wiel, Jan: See—
- Thomson, James; ter Wiel, Jan; van Lune, Harry; Bösel, Herbert M.; and Kremer, Gerhard H., 5,512,753, Cl. 250-361.00R.
- Teschendorf, Hans-Juergen: See—
- Steiner, Gerd; Unger, Liliane; Hofmann, Hans P.; Teschendorf, Hans-Juergen; Behl, Berthold; and Binder, Rudolf, 5,512,584, Cl. 514-330.000.
- Testa, Raymond T.: See—
- Sum, Phaik-Eng; Lee, Ving J.; Hlavka, Joseph J.; and Testa, Raymond T., 5,512,553, Cl. 514-152.000.
- Texaco Inc.: See—
- Anderson, Gregory P.; Dancy, Julian H.; Love, Doris; and Lucas, Jayne M., 5,512,190, Cl. 252-47.000.

Texas A & M University System, The: See—
 Russell, B. Don; and Aucotin, B. Michael, 5,512,832, Cl. 324-522.000.
 Texas Instruments Incorporated: See—
 Barna, Gabriel G.; Frank, James G.; VanMeurs, Richard P.; and Carter, Duane E., 5,512,130, Cl. 156-651.000.
 Bayraktaroglu, Burhan, 5,512,776, Cl. 257-604.000.
 Chau, Hin F.; and Tserng, Hua Q., 5,512,496, Cl. 437-31.000.
 Cho, Chin-Chen, 5,512,775, Cl. 257-522.000.
 Hanson, Charles M., 5,512,748, Cl. 250-332.000.
 Mei, Chia-Cu P.; and Malhi, Sarwinder, 5,512,495, Cl. 437-28.000.
 Read, Christopher J.; and Guttig, Karl M., 5,512,896, Cl. 341-65.000.
 Schreck, John F., 5,513,064, Cl. 361-250.000.
 Seabaugh, Alan C.; Mikkelsen, Chad H.; and Frazier, Gary, 5,512,764, Cl. 257-25.000.
 Shih, Hung-Dah, 5,511,509, Cl. 117-200.000.
 Wallace, Robert M.; Henck, Steven A.; and Webb, Douglas A., 5,512,374, Cl. 428-422.000.
 Yaklin, Daniel A., 5,512,848, Cl. 327-65.000.
 Texter, John; Welter, Thomas R.; Southby, David T.; Mooberry, Jared B.; and Bailey, David S., to Eastman Kodak Company, Heat image separation with phenolic thermal solvents and dye releasing couplers, 5,512,410, Cl. 430-203.000.
 Texter, John, to Eastman Kodak Company, Solid particle coupler dispersions for color diffusion transfer elements, 5,512,414, Cl. 430-213.000.
 Textron Inc.: See—
 McGuire, James T., 5,511,301, Cl. 29-456.000.
 Thakkar, Sharad R., to Scitex Digital Printing, Inc. Process of making aqueous pigmented ink-jet ink with improved machine runnability, 5,512,089, Cl. 106-20.000.
 Thalhammer, Erich, to Siemens Aktiengesellschaft, Device for molding a shielded cable plug, 5,511,992, Cl. 439-609.000.
 Thayer, Peter A.: See—
 Freiburger, Ronald D.; Thayer, Peter A.; and Wills, Diane M., 5,511,724, Cl. 236-49.300.
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 Abrams, Michael J.; Bossard, Gerald E.; Hill, Craig L.; Schinazi, Raymond F.; and Theobald, Brian R. C., 5,512,305, Cl. 424-617.000.
 Theodoracatos, Vassilios E., to University of Oklahoma, The Board of Regents of the Apparatus and method for three-dimensional perspective imaging of objects, 5,513,276, Cl. 382-154.000.
 Thermal Kinetic Systems, Inc.: See—
 Kavia, Mukund N., 5,513,207, Cl. 373-116.000.
 Theron Manufacturing Company: See—
 Yagnik, Chandrakant M.; and Heimbecker, Blake E., 5,512,732, Cl. 219-549.000.
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 Thies, Mark C.; Aniedobe, Nnamdi E.; and Serad, George A., to Hoechst Celanese Corporation, Processing cellulose acetate formed articles using supercritical fluid, 5,512,231, Cl. 264-169.000.
 Thiolok Corporation: See—
 Faupell, Lawrence C.; Wassom, Steven R.; and Klinger, Joseph J., 5,511,745, Cl. 244-3.220.
 Hoekstra, Paul W., 5,511,914, Cl. 409-143.000.
 Thøgersen, Jan; and Mark, Jannik, to Lycorn A/S, Method and a device for correlating two or more optical pulse signals, 5,513,284, Cl. 385-12.000.
 Thomas, John E.: See—
 Tippins, George W.; and Thomas, John E., 5,511,303, Cl. 29-527.700.
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 Zolkower, Jeffrey N.; and Thomas, Rudy V., 5,511,741, Cl. 242-381.100.
 Thompson, David M. Fire port valve, 5,511,622, Cl. 169-70.000.
 Thompson, Samuel A.: See—
 Brady, Richard L.; and Thompson, Samuel A., 5,512,376, Cl. 428-447.000.
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 Levaillant, Denis; Timossi, Guy; Remy, Bertrand; Lonnoy, Jacques; and Rothenburg, Jacques-Henri, 5,512,741, Cl. 250-203.300.
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 Thore, Monique A., to Societe Nationale D'Etude Et De Construction De Moteurs D'Aviation "Snecma", Method for producing a monobloc rotor with hollow blades and monobloc rotor with hollow blades obtained by said method, 5,511,949, Cl. 416-213.000.
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 DeKraker, Larry; and Thorn, Richard P., 5,511,759, Cl. 248-575.000.
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 Poss, Michael A.; Pansengrau, Paul D.; Wang, Shaopeng; Thottathil, John K.; Singh, Janak; and Mueller, Richard H., 5,512,690, Cl. 549-300.000.
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Kent, Michael; Hamilton, Thomas P.; Schwartz, Stephen; Sharpe, Henry, III; Beckman, Ralph; and Thurston, Bryan, 5,512,001, Cl. 446-25.000.
 TI Corporate Services Limited: See—
 Klages, Gerald A.; Krasnicki, Frank S.; and Mason, Murray R., 5,511,404, Cl. 72-62.000.
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 Weisbarth, Hans; Hack, Albert; and Tiefenbacher, Rainer, 5,511,847, Cl. 296-180.100.
 Tierney, James R.; and Cross, Noel, to Microsoft Corporation, System and method for automatic testing of computer software, 5,513,315, Cl. 395-183.130.
 Timberlake, John R., to United States of America, Energy. Method for sputtering with low frequency alternating current, 5,512,164, Cl. 205-186.000.
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 Shawver, Susan E.; Strack, David C.; Timmons, Terry K.; and McDowall, Debra J., 5,512,358, Cl. 428-286.000.
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 Parrot, Pierre; Lalanne, Philippe; Herman, Philippe; and Tisne, Jean-Louis, 5,511,747, Cl. 244-158.00A.
 Titan Corporation, The: See—
 Puschell, Jeffrey J., 5,512,998, Cl. 356-28.000.
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 Lang, Günther; Clausen, Thomas; Titze, Hans-Jügen; Steinbrecht, Karin; and Keil, Wolfgang, 5,512,276, Cl. 424-70.110.
 Toa Electronics, Ltd.: See—
 Aikawa, Katsuaki; and Shiratama, Tadashi, 5,512,752, Cl. 250-339.120.
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 Toda Kogyo Corporation: See—
 Misawa, Hiromitsu; Fujioka, Kazuo; Aoki, Koso; Kurita, Eiichi; Okano, Yoji; and Kozawa, Minoru, 5,512,405, Cl. 430-106.600.
 Toda, Tsuyoshi: See—
 Ide, Hiroshi; Kirino, Fumiyoshi; Toda, Tsuyoshi; Maeda, Takeshi; Tsuchinaga, Hiroyuki; Kugiyu, Fumio; Shigematsu, Kazuo; Mita, Seiichi; Saito, Atsushi; and Kaku, Toshimitsu, 5,513,165, Cl. 369-116.000.
 Todd, Robert R.; and Ashcroft, Dale A., to New Holland North America, Inc. Skid steer loader boom control system, 5,511,922, Cl. 414-685.000.
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 Togano, Takeshi: See—
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 Togoshi, Yoshikazu: See—
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 Matsuda, Fukuhiisa; Ushio, Masao; Hasegawa, Kiyoyuki; Akabane, Katsuyoshi; and Matsuno, Takashi, 5,512,240, Cl. 420-430.000.
 Tohoku Ricoh Co., Ltd.: See—
 Sudo, Sukehisa; Hashimoto, Hitokatsu; Sasaki, Junichi; and Ikenoue, Tsuneo, 5,513,089, Cl. 363-21.000.
 Tojo, Kenji; and Sofue, Masahisa, to Hitachi, Ltd. Scroll type fluid machine with parts of sintered ceramics, 5,511,959, Cl. 418-55.100.
 Tokar, Gladys J., to T-3 Enterprises Inc. Ribbon inking device, 5,511,889, Cl. 400-197.000.
 Toki, Yusuke: See—
 Nobuta, Yasuo; Toki, Yusuke; Hiraoka, Manabu; Sugihara, Naoki; and Ozaki, Masahiro, 5,513,237, Cl. 378-19.000.
 Tokida, Akihiko: See—
 Nukada, Hidemi; Tokida, Akihiko; Sakaguchi, Yasuo; Daimon, Katsumi; and Nukada, Katsumi, 5,512,674, Cl. 540-141.000.
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 Husbands, George E. M.; and Tokolics, Joseph, 5,512,574, Cl. 514-253.000.

Tokumitsu, Kenji; and Harigai, Fumihiro, to Hitachi, Ltd. Optical recording and reproducing apparatus for controlling a laser driver current according to test data on the disc, 5,513,166, Cl. 369-116.000.
 Tokunaga, Takahiro; Uemura, Yukio; Asano, Hideo; Sugi, Hikaru; Kameoka, Teruhiko; and Kondo, Yasushi, to Nippondenso Co., Ltd. Multi-blades fan device, 5,511,939, Cl. 415-206.000.
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 Tokuno, Yoshinobu: See—
 Yoshioka, Toshihiko; Kawaguri, Mariko; Nankai, Shiro; Tsutsumi, Haruhiro; Baba, Hideyuki; Tokuno, Yoshinobu; and Miyazaki, Shoji, 5,512,159, Cl. 204-403.000.
 Tokyo Radiator Mfg. Co., Ltd.: See—
 Fujiwara, Yoshito; Kobayashi, Yutaka; Kimura, Mituo; Iio, Masatoshi; and Takamura, Tohsaku, 5,512,239, Cl. 420-68.000.
 Toman, Jeffrey J.; and Biggs, Wilton R., to Chevron Chemical Company, Tagging materials for gasoline, 5,512,066, Cl. 44-300.000.
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 Jones, Marvin S.; Dickten, Dirk; Green, Gary M.; Oleksy, Paul D.; Sims, Gregory R.; Tomescu, Ludwig; and Berger, Robert C., 5,511,454, Cl. 84-236.000.
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 Tomishima, Shigeki: See—
 Arimoto, Kazutami; Tomishima, Shigeki; and Hidaka, Hideto, 5,513,142, Cl. 365-189.110.
 Tomiyasu, Hiroshi: See—
 Kawasaki, Mikio; Ohmori, Takahiro; and Tomiyasu, Hiroshi, 5,513,056, Cl. 360-103.000.
 Tomogawa Paper Co., Ltd.: See—
 Sakumoto, Yukinori; Hashimoto, Takeshi; Nakaba, Katsuji; Kobayashi, Masaharu; Nishigaya, Takeshi; and Yamanashi, Fumiyoshi, 5,512,628, Cl. 324-530.000.
 Tonen Corporation: See—
 Takezawa, Makoto; Miyao, Makiji; Wada, Sadahisa; and Inoue, Hiroshi, 5,512,119, Cl. 156-171.000.
 Tong, Kun-Yuan, Hand driving device for a bicycle, 5,511,810, Cl. 280-233.000.
 Tonosaki, Masao: See—
 Koyama, Takeshi; Tonosaki, Masao; Yamada, Nobuhiro; and Mori, Kenji, 5,512,528, Cl. 502-181.000.
 Tooda, Toshio: See—
 Yamaguchi, Yoshio; and Tooda, Toshio, 5,512,980, Cl. 355-206.000.
 Toogood, William C.: See—
 Shantie, Michael A.; and Toogood, William C., 5,511,597, Cl. 144-220.000.
 Torii, Reiko, to Sony Corporation, Auto-focusing apparatus, 5,512,951, Cl. 348-353.000.
 Torii, Yutaka: See—
 Takawa, Hiroyuki; and Torii, Yutaka, 5,512,715, Cl. 181-295.000.
 Toriumi, Minoru: See—
 Yoshimura, Toshiyuki; Miura, Naoko; Okazaki, Shinji; Toriumi, Minoru; and Shiraishi, Hiroshi, 5,512,328, Cl. 427-498.000.
 Toriyabe, Keiji; Takehi, Takayoshi; Nezu, Yukio; Nakano, Yuki; and Shimazu, Tomonori, to Kumiai Chemical Industry Co., Ltd. and Ihara Chemical Industry Co., Ltd. Benzohydroxymethylazoles derivatives and insecticide including the same, 5,512,551, Cl. 514-63.000.
 Tormena, Andrea: See—
 Pellegrini, Alfred, Jr.; and Tormena, Andrea, 5,511,804, Cl. 280-11.200.
 Torque Converter Rebuilding, Inc.: See—
 Myers, John E., 5,511,895, Cl. 403-370.000.
 Torrington Company, The: See—
 Waskiewicz, Walter P., 5,511,887, Cl. 384-536.000.
 Toshiba Kikai Kabushiki Kaisha: See—
 Iwamoto, Norihiro, 5,511,605, Cl. 164-457.000.
 Toshiba Lighting & Technology Corporation: See—
 Honda, Hisashi, 5,512,798, Cl. 313-489.000.
 Tosin, Maurizio: See—
 Bastioli, Catia; Romano, Giancarlo; Scarati, Mario; and Tosin, Maurizio, 5,512,378, Cl. 428-484.000.
 Tosoh Corporation: See—
 Doi, Toru, 5,512,634, Cl. 525-182.000.
 Ozoe, Shinji; Matsumoto, Seiji; and Furuta, Kazumi, 5,512,647, Cl. 526-298.000.
 Total Raffinage Distribution, S.A.: See—
 Herrenscheidt, Patrice; Cormerais, François-Xavier; and Patureaux, Thierry, 5,512,166, Cl. 208-152.000.
 Toto Ltd.: See—
 Eki, Toshio; and Ohtsuka, Toshiharu, 5,511,723, Cl. 236-12.120.
 Toto, Remo, to Remo's Mushroom Services, Inc. Digger for facilitating the application of a supplement to a mushroom bed, 5,511,497, Cl. 111-118.000.
 Touji, Mitsuo: See—
 Kajitani, Koji; Fukushima, Hirotaka; Okubo, Manoru; Yanagida, Naoki; Takenaka, Mitsuhiro; Touji, Mitsuo; and Yamamoto, Kozo, 5,511,446, Cl. 74-573.000.
 Tovey, H. Jonathan: See—

Russell, Brian G.; and Tovey, H. Jonathan, 5,512,037, Cl. 600-206.000.
 Toyama, Nobuaki, to Fuji Photo Optical Co., Ltd. Large aperture retrofocus lens, 5,513,046, Cl. 359-752.000.
 Toyama, Yoshikuni: See—
 Endo, Saijiro; Toyama, Yoshikuni; Senba, Hisaaki; Tahara, Hisatsugu; Matsumoto, Hiroshi; and Hasegawa, Keisuke, 5,512,993, Cl. 355-285.000.
 Toyo Boseki Kabushiki Kaisha: See—
 Ido, Yoshinori; Chiba, Shuji; Arimatsu, Yoshikazu; Suzuki, Hajime; and Shimizu, Takehiko, 5,512,059, Cl. 8-115.700.
 Ogura, Kuniyoshi; and Sasaki, Kouji, 5,512,644, Cl. 526-258.000.
 Toyo Seikan Kaisha, Ltd.: See—
 Miyazawa, Tetsuo; Sato, Kazuhiro; Imazu, Katsuhiro; Kobayashi, Seishichi; and Sue, Toshio, 5,512,365, Cl. 428-332.000.
 Toyoguchi, Yoshinori: See—
 Komori, Katsunori; Yamamoto, Osamu; Toyoguchi, Yoshinori; Suzuki, Kohei; Yamaguchi, Seiji; Tanaka, Ayako; and Ikoma, Munehisa, 5,512,385, Cl. 429-101.000.
 Toyomura, Yuuji; and Mouri, Toshiyuki, to Matsushita Electric Industrial Co., Ltd. Electrophotography apparatus, 5,512,986, Cl. 355-246.000.
 Toyoshima, Kenichiro; and Usui, Hirofumi, to Sony Corporation, A TV receiver for receiving a broadcast signal and station information, 5,512,955, Cl. 348-569.000.
 Toyota Jidosha Kabushiki Kaisha: See—
 Fujishima, Hiromichi, 5,513,109, Cl. 364-424.050.
 Murata, Kiyohito, 5,511,644, Cl. 192-85.0AA.
 Takahashi, Yoshitaka; Manabe, Akira; Kaneko, Tadataka; Okajima, Hiroshi; Ito, Yoshihiko; and Daiza, Setsuo, 5,512,080, Cl. 75-231.000.
 Tozuka, Akira, to Yamaha Corporation, Electronic musical instrument having secondary storage of files with common constituent portions identified by entry name, 5,513,352, Cl. 395-600.000.
 Trace Chemicals Incorporated: See—
 Grossweiler, Gary; and McArdle, Timothy, 5,512,099, Cl. 118-267.000.
 Tracy, William E., Jr.: See—
 Rodrigues, Northon; Miller, Gregory A.; and Tracy, William E., Jr., 5,513,316, Cl. 395-183.140.
 Traina, Samuel J.: See—
 Ryan, James A.; Logan, Terry J.; Ma, Qi Y.; and Traina, Samuel J., 5,512,702, Cl. 588-256.000.
 Tran, Thuan V. Internal combustion engine pre-ignition oil pump, 5,511,522, Cl. 123-196.00S.
 Trans-Tech, Inc.: See—
 Negas, Taki; and Yeager, Glenn J., 5,512,524, Cl. 501-138.000.
 Transducer Research, Inc.: See—
 Stetter, Joseph R.; and MacLay, G. Jordan, 5,512,882, Cl. 340-632.000.
 Trantek, Incorporated: See—
 Herklotz, Jack F., 5,511,933, Cl. 414-749.000.
 Trantolo, Debra J.: See—
 Gresser, Joseph D.; Trantolo, Debra J.; Wise, Donald L.; and Wnek, Gary E., 5,512,218, Cl. 264-1.340.
 Travis, Charles H.: See—
 Meyers, Frederick C.; and Travis, Charles H., 5,511,779, Cl. 473-246.000.
 Trejo, Alejandra: See—
 Morgans, David, Jr.; Sjogren, Eric B.; Smith, David B.; Talamas, Francisco X.; Artis, Dean R.; Cervantes, Alicia; Elworthy, Todd R.; Fernández, Mario; Franco, Fidencio; Hawley, Ronald C.; Lara, Teresa; Loughhead, David G.; Nelson, Peter H.; Patterson, John W.; Trejo, Alejandra; Waltos, Ann M.; and Weikert, Robert J., 5,512,568, Cl. 514-233.500.
 Trethewey, Brig E. A. Suction cup with valve, 5,511,752, Cl. 248-205.900.
 Trickey, Howard W.: See—
 Griffin, Timothy G.; and Trickey, Howard W., 5,513,350, Cl. 395-600.000.
 Trim, MacKenny L.: See—
 Herring, William J.; and Trim, MacKenny L., 5,513,112, Cl. 364-464.020.
 Trimberger, Stephen M.; and Chene, Mon-Ren, to Xilinx, Inc. Logic placement using positionally asymmetrical partitioning method, 5,513,124, Cl. 364-491.000.
 Trimble Navigation Limited: See—
 Nichols, Mark E.; and Talbot, Nicholas C., 5,512,905, Cl. 342-357.000.
 Trimmer, Mark S.: See—
 Gagné, Robert R.; Marrocco, Matthew L., III; Trimmer, Mark S.; and Hendricks, Neil H., 5,512,630, Cl. 525-50.000.
 Trine Manufacturing Company, Inc.: See—
 Hinton, Gaylen R.; and Black, Stanley B., 5,512,120, Cl. 156-215.000.
 Trinity Industries, Inc.: See—
 Hesck, Harold E.; Beers, Albert A.; and Smith, Stephen W., 5,511,491, Cl. 105-404.000.
 Trooper, Francois D.: See—
 Li, King C.; Bednarski, Mark D.; Storrs, Richard W.; Li, Henry Y.; Trooper, Francois D.; Song, Curtis K. H.; Sipskins, Dorothy A.; and Kuniyoshi, Jeremy K., 5,512,294, Cl. 424-450.000.
 Trustees of Tufts College: See—
 Walt, David R.; and Kauer, John S., 5,512,490, Cl. 436-171.000.
 TRW Inc.: See—
 Chen, Chun-Hong H.; and Tsou, Hsi-Shen E., 5,512,901, Cl. 342-175.000.
 Trzasko, Peter: See—

Capitani, Teresa A.; Trzasko, Peter; Zallie, James P.; and Mason, William R., 5,512,311, Cl. 426-601.000.

Tsai, Hsi-Jung, to Winbond Electronics Corp. Dual purpose printer interface device capable of connecting a printer and a joystick to a portable host computer. 5,513,302, Cl. 395-114.000.

Tsang, Tsz H., to Zeneca Limited. 2-benzoyl pyrrole and benzoyl imidazole herbicides. 5,512,537, Cl. 504-287.000.

Tsao, Che-Chih: See—

Sachs, Emanuel; and Tsao, Che-Chih, 5,512,162, Cl. 205-91.000.

Tsao, Chih-Hsing A., to Space Systems/Loral, Inc. Mobile communication terminal having extendable antenna. 5,513,383, Cl. 455-89.000.

Tschank, Georg: See—

Bickel, Martin; Brocks, Dietrich; Burghard, Harald; Günzler, Volkmar; Henke, Stephan; Hanauske, Abel; Hartmut, Mohr, Jürgen; and Tschank, Georg, 5,512,586, Cl. 514-354.000.

Tseng, Chung-Ye; Wang, Jonas; Hudson, Marilyn; and Liu, Jue-Chen, to Johnson & Johnson Consumer Products, Inc. Spermicidal anti-viral lubricant composition and method of using same. 5,512,289, Cl. 424-426.000.

Tserng, Hua Q.: See—

Chau, Hui F.; and Tserng, Hua Q., 5,512,496, Cl. 437-31.000.

TSI Incorporated: See—

Naqwi, Amir A.; and Jenson, Leslie M., 5,513,004, Cl. 356-357.000.

Tsui, Hsi-Shen E.: See—

Chen, Chun-Hong H.; and Tsui, Hsi-Shen E., 5,512,901, Cl. 342-175.000.

Tsubakimoto Chain Co.: See—

Shimaya, Kazuhiko; and Putami, Yuichi, 5,512,019, Cl. 474-110.000.

Tsuboi, Masayoshi: See—

Tachizono, Shinichi; Chiyoda, Hironobu; Yamamoto, Toshiya; Takashima, Shigeo; Tsuboi, Masayoshi; Yamane, Hiroshi; Kotera, Shigeo; and Aoki, Minoru, 5,512,215, Cl. 252-584.000.

Tsuchihashi, Hironori; Fujiwara, Osami; Satou, Teyoshi; Yoshikazu; Hamada, Toshihiko; Kawahara, Yoshihiro; and Bando, Niro, to Kubota Corporation. Running control structure for a lawn tractor. 5,511,631, Cl. 180-247.000.

Tsuchii, Ken: See—

Takada, Yoshihiro; Suzuki, Akio; Izumizaki, Masami; Tsuchii, Ken; Kadowaki, Hidejuro; Yanaka, Toshiyuki; Takahashi, Haruhiko; Takamiya, Makoto; Yamamoto, Kosuke; Wataya, Masafumi; Miura, Yasushi; Moriyuchi, Haruhiko; and Murayama, Yasushi, 5,512,924, Cl. 347-18.000.

Tsuchinaga, Hiroyuki: See—

Ide, Hiroshi; Kirino, Fumiyoshi; Toda, Tsuyoshi; Maeda, Takeshi; Tsuchinaga, Hiroyuki; Kugiya, Fumio; Shigematsu, Kazuo; Mita, Seiichi; Saito, Atsushi; and Kaku, Toshimitsu, 5,513,165, Cl. 369-116.000.

Tsuchiya, Toshiaki: See—

Machida, Katsuyuki; Murase, Katsumi; Shimoyama, Nobuhiro; Tsuchiya, Toshiaki; Takahashi, Junichi; Minegishi, Kazushige; Takahashi, Yasuo; Namatsu, Hideo; and Imai, Kazuo, 5,512,513, Cl. 437-195.000.

Tsuji, Hiroshi: See—

Leong, Kevin K.; Love, Robert D.; and Tsuji, Hiroshi, 5,513,342, Cl. 395-157.000.

Tsukida, Shinichi: See—

Serizawa, Yoji; Noguchi, Akio; Ushio, Yukihide; Matsuo, Shimpei; Yamada, Kazuro; Uchiyama, Seiji; Takeuchi, Makoto; Suwa, Koichi; Hiroshima, Koichi; Tsukida, Shinichi; Takano, Manabu; Goto, Masahiro; Inoue, Takahiro; Yamada, Hiromichi; Kato, Junichi; and Ojima, Masaki, 5,512,929, Cl. 347-153.000.

Tsuruda, Takahiro: See—

Hidaka, Hideto; Tsuruda, Takahiro; and Suma, Katsuhiro, 5,512,501, Cl. 437-41.000.

Tsurumi, Kazunori: See—

Dalla Betta, Ralph A.; Shoji, Toru; Tsurumi, Kazunori; and Ezawa, Nobuyasu, 5,511,972, Cl. 431-170.000.

Tsuruta, Matsuhisa, to Aisin Seiki Kabushiki Kaisha. Return spring for a disc brake. 5,511,638, Cl. 188-73.380.

Tsutsui, Teiji; and Watanabe, Shinji, to Mitsubishi Denki Kabushiki Kaisha. Vehicle automatic transmission with valve duty factor control. 5,513,104, Cl. 364-424.100.

Tsutsumi, Haruhiro: See—

Yoshioka, Toshihiko; Kawaguri, Mariko; Nankai, Shiro; Tsutsumi, Haruhiro; Baba, Hideyuki; Tokuno, Yoshinobu; and Miyazaki, Shoji, 5,512,159, Cl. 204-403.000.

Tsutsumi, Kazuhiko: See—

Nakaki, Yoshiyuki; Tokunaga, Takashi; Fukami, Tatsuya; Taguchi, Motohisa; and Tsutsumi, Kazuhiko, 5,512,366, Cl. 428-332.000.

Tsutsumi, Masato; Yamasita, Haruhisa; Sampa, Hideo; Fujii, Kanako; and Asakura, Hiroaki, to Kabushiki Kaisha Toshiba. Vacuum insulator casing and method of making vacuum insulator panel. 5,512,345, Cl. 428-69.000.

Tsyboulesky, Albert M.: See—

Bouyanov, Roman A.; Tsyboulesky, Albert M.; Klevtsov, Dimitri P.; and Mourine, Vladimir L., 5,512,258, Cl. 423-230.000.

Tucel Industries, Inc.: See—

Lewis, John C., Jr., 5,511,274, Cl. 15-160.000.

Tuckey, Charles H.; Combett, John F.; and Fournier, Kirk D., to Walbro Corporation. High capacity fuel pump and filter combination. 5,511,957, Cl. 417-313.000.

Tulip Computers International B.V.: See—

van Rump, Harm W.; van Maanen, Jan; Opdam, Nicolaas J. M.; and Verwoerd, Willem J., 5,513,262, Cl. 380-29.000.

Turcotte, David E.; Conville, John J.; Zeld, Stephen M.; Coker, Daniel E.; and Lyon, James T., to BASF Corporation. Engine coolant removal and refill method and device. 5,511,590, Cl. 141-7.000.

Turner, John L.: See—

Aikin, Graham J.; Drew, Peter; and Turner, John L., 5,512,302, Cl. 424-489.000.

Turner, Norman L.; and White, John M., to Applied Materials, Inc. Vacuum processing apparatus having improved throughput. 5,512,320, Cl. 427-255.000.

Turturro, Gregory: See—

Xie, Hong; Aghazadeh, Mostafa; Turturro, Gregory; and Chiu, Chia-Pin, 5,513,070, Cl. 361-700.000.

Turuta, Masahiko: See—

Ichino, Yutaka; and Turuta, Masahiko, 5,513,009, Cl. 358-335.000.

Tushaus, Leonard A.: See—

Leir, Charles M.; Hoffman, Jerome J.; Tushaus, Leonard A.; Wiederholt, Gary T.; Mazurek, Mieczyslaw H.; Sherman, Audrey A.; and Bronn, William R., 5,512,650, Cl. 528-14.000.

Tyagi, Dinesh; and Yeager, William E., to Eastman Kodak Company. Mixture of carrier particles useful in electrographic developers. 5,512,403, Cl. 430-106.600.

Tyagi, Dinesh: See—

Wilson, John C.; and Tyagi, Dinesh, 5,512,407, Cl. 430-110.000.

Tychinin, Anatolij I.: See—

Paramonov, Vladimir A.; Tychinin, Anatolij I.; Moroz, Anatolij I.; and Birger, Boris L., 5,512,321, Cl. 427-405.000.

Tyler, John T. Tube shield with tongue and locking block assembly. 5,511,609, Cl. 165-134.100.

Tyrrill, Philip A.: See—

Rogovin, Michael E.; Tyrrill, Philip A.; and Kranz, Richard, 5,511,479, Cl. 101-486.000.

U. S. Philips Corporation: See—

Maas, René, 5,513,179, Cl. 370-58.200.

Uchida, Hideaki; and Oobashi, Kouji, to Kabushiki Kaisha Toshiba. Voltage transforming circuit. 5,513,091, Cl. 363-60.000.

Uchikata, Yoshio; Hattori, Yoshifumi; Ara, Yoji; Kitani, Masashi; Suzuki, Etsuro; Wada, Toshihide; Hirabayashi, Hiromitsu; Saikawa, Hideo; Kojima, Masami; Hanabusa, Tadashi; Kawano, Kenji; Tanno, Koichi; Ohashi, Tetsuo; Bekki, Toshihiko; Aono, Kenji; and Ikado, Masaharu, to Canon Kabushiki Kaisha. Ink jet recording apparatus and method for releasably mounting ink jet recording head and separable ink tank. 5,512,926, Cl. 347-86.000.

Uchimura, Kiyoshi: See—

Matsumoto, Mitsuru; Satoh, Kensuke; and Uchimura, Kiyoshi, 5,513,011, Cl. 358-341.000.

Uchinami, Masanobu, to Mitsubishi Denki Kabushiki Kaisha. AC generator output controlling apparatus and method. 5,512,813, Cl. 322-28.000.

Uchino, Hajime; Tajima, Motohiko; and Horie, Hiroshi, to Nippon Rensui Co.; and Nitivy Co., Ltd. Demineralization apparatus and cloth for packing diluting chamber of the demineralization apparatus. 5,512,173, Cl. 204-632.000.

Uchiyama, Hideki; Kasukawa, Hiroaki; Takeda, Eiko; Watanabe, Junichiro; and Nanba, Ryoichi, to Terumo Kabushiki Kaisha. Sulfonated compounds of β -cyclodextrin polymer and inhibitory drug for vascular wall hyperplasia containing the same. 5,512,665, Cl. 536-4.100.

Uchiyama, Kaneatsu: See—

Kitsu, Kunihiko; Uchiyama, Kaneatsu; Tanaka, Nobuyuki; and Kawai, Hiroyuki, 5,512,975, Cl. 355-200.000.

Uchiyama, Seiji: See—

Serizawa, Yoji; Noguchi, Akio; Ushio, Yukihide; Matsuo, Shimpei; Yamada, Kazuro; Uchiyama, Seiji; Takeuchi, Makoto; Suwa, Koichi; Hiroshima, Koichi; Tsukida, Shinichi; Takano, Manabu; Goto, Masahiro; Inoue, Takahiro; Yamada, Hiromichi; Kato, Junichi; and Ojima, Masaki, 5,512,929, Cl. 347-153.000.

Takeuchi, Makoto; Noguchi, Akio; Ushio, Yukihide; Matsuo, Shimpei; Uchiyama, Seiji; Yamada, Kazuro; and Serizawa, Yoji, 5,513,012, Cl. 358-401.000.

Udagawa, Toshiaki; Yoshimura, Shunji; and Ohta, Masumi, to Sony Corporation. Optical recording apparatus. 5,513,167, Cl. 369-116.000.

Udagawa, Tsunekazu, to Ishikawa Gasket Co., Ltd. Metal laminate gasket with sealing shim. 5,511,796, Cl. 277-180.000.

Uebayashi, Shinji: See—

Yabusaki, Masami; Yamamoto, Kouji; and Uebayashi, Shinji, 5,513,211, Cl. 375-219.000.

Ueda, Kunihiko; Kobayashi, Koji; Takai, Mitsuru; and Higo, Masashi, to TDK Corporation. Magnetic recording medium. 5,512,373, Cl. 428-421.000.

Ueda, Naganori: See—

Sawazaki, Masatoshi; Shibata, Takao; Igarashi, Yoshiaki; Hayashi, Kiyoshi; and Ueda, Naganori, 5,511,392, Cl. 66-54.000.

Uematsu, Shoji: See—

Hiramatsu, Yasushi; Hashimoto, Osamu; Uematsu, Shoji; and Koseki, Toshio, 5,512,599, Cl. 518-703.000.

Uemura, Tatsuya: See—

Ikegami, Yoshio; Konno, Masashi; Minagawa, Koji; Fukano, Norifumi; Uemura, Tatsuya; and Yagi, Tatsuo, 5,511,874, Cl. 366-100.000.

Uemura, Tomohiro; Tanahashi, Masanori; Muroi, Yoshiyuki; and Kono, Yoshinao, to Kao Corporation. Keratotic plug remover. 5,512,277, Cl. 424-78.030.

Uemura, Yukio: See—

Tokunaga, Takahiro; Uemura, Yukio; Asano, Hideo; Sugi, Hikaru; Kameoka, Teruhiko; and Kondo, Yasushi, 5,511,939, Cl. 415-206.000.

Ueno, Norio; and Matsuyama, Toru, to Fujitsu Limited. Interface circuit adaptive to high speed and low voltage operation. 5,512,853, Cl. 327-333.000.

Ueno, Yoshiteru: See—

Miyachi, Hiroshi; Araki, Mitsutoshi; Ueno, Yoshiteru; and Yamase, Norihide, 5,511,461, Cl. 92-13.500.

Ugai, Toshiyuki: See—

Okado, Kenji; Ugai, Toshiyuki; Fujita, Ryoichi; Kanbayashi, Makoto; Takiguchi, Tsuyoshi; Ichikawa, Yasuhiro; and Iida, Wakashi, 5,512,402, Cl. 430-106.600.

Ugajin, Ryuichi: See—

Suzuki, Toshiakazu; Nomoto, Kazumasa; and Ugajin, Ryuichi, 5,512,762, Cl. 257-15.000.

Uhl, Robert F.: See—

LaViolette, Kerry D.; Uhl, Robert F.; and Vinkencvugel, Lucius T., 5,513,071, Cl. 361-703.000.

Ullman, Edwin F.; Kirakossian, Hriar; Ericson, Mary C.; and Watts, Richard P., to Syntex (U.S.A.) Inc. Compositions useful in heterogeneous immunoassays. 5,512,659, Cl. 530-391.100.

Ultra Blast Partners: See—

Wood, W. Gary; and Stevers, Gary J., 5,512,006, Cl. 451-39.000.

Umezawa, Ken: See—

Yoshinari, Toshiaki; Suzuki, Kazuhiro; Yokose, Taro; and Umezawa, Ken, 5,513,279, Cl. 382-232.000.

Umney, Michael A.: See—

McAndrews, Glenn; Hegge, James T.; Koss, Christopher R.; Umney, Michael A.; and Jones, Douglas J., 5,511,288, Cl. 24-16.000.

UNC Artx, Inc.: See—

Stockton, Elmer A., 5,511,299, Cl. 29-402.110.

Unger, Liliane: See—

Steiner, Gerd; Unger, Liliane; Hofmann, Hans P.; Teschendorf, Hans-Juergen; Behl, Berthold; and Binder, Rudolf, 5,512,584, Cl. 514-330.000.

Unilever Patent Holdings BV: See—

Brown, Graham T.; Ovinga, Theo J.; Parkington, Michael J.; and Steel, Andrew T., 5,512,266, Cl. 423-700.000.

McKeown, Ian P.; and Stanier, Peter W., 5,512,271, Cl. 424-49.000.

Union Oil Company of California: See—

Sweetland, James E., 5,511,593, Cl. 141-98.000.

Unique Filing & Storage, Ltd.: See—

Frederick, Martin, 5,511,675, Cl. 211-193.000.

Unisurge, Inc.: See—

Young, William T.; and Blackwood, Bradley D., 5,512,721, Cl. 200-512.000.

Unisys Corporation: See—

Concannon, David J.; Vala, John D.; and Banks, Gerald, 5,513,274, Cl. 382-138.000.

Harris, George W., Jr.; and Nolan, Shari J., 5,513,325, Cl. 395-200.200.

Hou, Chi-Yeh, 5,513,322, Cl. 395-200.150.

United Games, Inc.: See—

Wood, Michael W.; Shaddick, Hugh J.; and Schneider, Richard S., 5,511,781, Cl. 273-85.000.

United Kingdom Atomic Energy Authority: See—

Griffiths, Christopher N.; and Raybone, David, 5,512,244, Cl. 422-23.000.

United Microelectronics Corporation: See—

Hong, Gary, 5,512,503, Cl. 437-43.000.

Hong, Gary, 5,512,770, Cl. 257-345.000.

Lur, Water; Liu, Johnson; and Wu, Jiunn-Yuan, 5,512,768, Cl. 257-309.000.

Yang, Ming-Tzung; and Hong, Gary, 5,512,507, Cl. 437-48.000.

United States of America

Agriculture: See—

French, Nicholas A.; Ellis, W. Dale; and Rowell, Roger M., 5,512,098, Cl. 118-50.000.

Air Force: See—

Look, David C.; Mier, Millard G.; Sizelove, John R.; and Walters, Dennis C., 5,512,999, Cl. 356-30.000.

Talbot, Pierre J.; and Jennings, David R., 5,513,287, Cl. 385-25.000.

Army: See—

Faughn, Jim, 5,511,456, Cl. 89-1.200.

Stephens, William D., 5,511,481, Cl. 102-326.000.

Vig, John R.; and Rosati, Vincent J., 5,512,863, Cl. 331-158.000.

Vig, John R., 5,512,864, Cl. 331-162.000.

Commerce: See—

Albus, James S.; Goodwin, Ken; and Tene, Yair, 5,511,268, Cl. 14-77.100.

Energy: See—

Timberlake, John R., 5,512,164, Cl. 205-186.000.

Health and Human Services: See—

Aaronson, Stuart A.; Bottaro, Donald P.; Ishibashi, Toshio; and Miki, Toru, 5,512,434, Cl. 435-6.000.

Pastan, Ira; Fitzgerald, David; and Chaudhary, Vijay K., 5,512,658, Cl. 530-350.000.

Schlom, Jeffrey; and Colcher, David, 5,512,443, Cl. 435-7.230.

Navy: See—

Billmers, Richard I.; Contarino, Vincent M.; Allocca, David M.; Squicciarini, Martin F.; and Scharpf, William J., 5,513,032, Cl. 359-244.000.

Go, Vinson L., 5,513,295, Cl. 385-137.000.

Shaffer, William A.; McHugh, Martin J.; and Wang, Dexter, 5,512,743, Cl. 250-203.600.

Van Valkenburgh, Norman S.; Van Valkenburgh, Gary L.; and Payne, Edward, 5,511,908, Cl. 405-128.000.

Secretary, Dept. of Health & Human Services: See—

Stevenson, Henry C., 5,512,453, Cl. 435-29.000.

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- Valeo Electronique: See—
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- Vallen Safety Supply Company: See—
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- Valleylab Inc.: See—
- Wilk, Peter J., 5,511,564, Cl. 128-898,000.
- Valvona, Vincent A.: See—
- Gnau, J. Russell, III; Gnau, Michael P.; Valvona, Vincent A.; and Gnau, John R., Jr., 5,511,657, Cl. 206-204,000.
- Van Dorn Demag Corporation: See—
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- Vance, Jeffrey D., to Schneider (USA) Inc. Exchangeable guidewire. 5,511,559, Cl. 128-772,000.
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- van der Bruggen, Pierre: See—
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- Van Orsdale, Richard D.: See—
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- White, Patrick J. Multi-angle knee support. 5,512,039, Cl. 602-26.000.
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- White, Richard E.; and Demange, Mark G., to Motorola, Inc. Method for establishing classes within a communication network. 5,513,263, Cl. 380-44.000.
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- Wilkinson, William T. Method of using a modular step exercise unit. 5,512,026, Cl. 482-52.000.
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- Wille, Klaus; Linke, Harold; and Hlass, Karl-Heinz, to Siemens Aktiengesellschaft. Method and apparatus for processing call number information for a switching system. 5,513,258, Cl. 379-280.000.
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- Willems, Roger P., to Penn Fabrication (U.S.A.) Inc. Automatically positioned latch assembly. 5,511,834, Cl. 292-203.000.
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- Zhou, Yong, to AT&T Corp. Low bit rate audio-visual communication system having integrated perceptual speech and video coding. 5,512,939, Cl. 348-17.000.
- Ziegler, Guenther, to Azon Corporation. Chain mail garments impregnated with an elastomeric material. 5,511,241, Cl. 2-2.500.
- Ziems, Tom S.; and Opfer, Mark H., to Glassline Corporation. Method of centrifugal separation with load sensing circuit for optimizing cleaning cycle frequency. 5,512,031, Cl. 494-37.000.
- Zieren, Victor; Ruigrok, Jacobus J. M.; De Jongh, Mathijs; and Broese Van Groenou, Arnold, to U.S. Philips Corporation. Magnetic head with wear resistant layer having alignment mark, and magnetic head unit incorporating same. 5,513,057, Cl. 360-122.000.
- Zilch, Harald; Leinert, Herbert; and Mertens, Alfred, to Boehringer Mannheim GmbH. Tricyclic thiazole and oxazole derivatives and pharmaceutical agents containing them. 5,512,564, Cl. 514-224.500.
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- Kanamori, Hiroo: See—
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- Attinello, John S.: See—
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- Brinkley, John M.; Haugland, Richard P.; and Singer, Victoria L., to Molecular Probes, Inc. Fluorescent microparticles with controllable enhanced Stokes shift. B1 5,326,692, Cl. 435-6.000.
- Bunn-O-Matic Corporation: See—
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- Collins, Ellsworth H.; Mattingly, James F.; and Fultz, William A., to Interlake Companies. High speed conveyor with movable wheel. B1 5,287,956, Cl. 198-781.040.
- Conforti, Louis J.: See—
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- Conforti, Patricia A.; and Conforti, Louis J. Device for marking tickets for game of chance with translucent, vibrant colored ink. B1 5,222,823, Cl. 401-202.000.
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- Landers, Samuel P.; Glover, William E.; and Attinello, John S., to Goodyear Tire & Rubber Company, The. Pneumatic tire having a unique footprint. B1 5,176,766, Cl. 152-209.000.
- Mailhot, John N., to American Telephone and Telegraph Company. Efficient vector codebook. B1 5,061,924, Cl. 341-76.000.
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 Austin, David C. H., 9,524, Cl. Plt.-1.000.
 Austin, David C. H., 9,526, Cl. Plt.-1.000.
 Austin, David C. H., 9,527, Cl. Plt.-1.000.
 Davis Austin Roses Limited: See—
 Austin, David C. H., 9,525, Cl. Plt.-1.000.
 Derera, Nicholas F.: See—
 Angus, Timothy P.; and Derera, Nicholas F., 9,531, Cl. Plt.-54.100.
 Floris AG: See—
 Schumann, Ingeborg, 9,533, Cl. Plt.-87.120.
 Gardner, Leith M.: See—
 Zaiger, Chris F.; Gardner, Leith M.; Zaiger, Gary N.; and Zaiger, Grant G., 9,529, Cl. Plt.-43.200.
 Geo. J. Ball, Inc.: See—
 Trees, Scott C., 9,532, Cl. Plt.-87.600.
 Trees, Scott C., 9,534, Cl. Plt.-87.120.
 Trees, Scott C., 9,535, Cl. Plt.-87.120.

Newports Nurseries: See—
 Angus, Timothy P.; and Derera, Nicholas F., 9,531, Cl. Plt.-54.100.
 Nor'East Miniature Roses, Inc.: See—
 Saville, F. Harmon, 9,528, Cl. Plt.-10.000.
 Salas, Juan A., to Tropico De Oro S.A. 'Fruta De Oro Seedless' avocado tree, 9,530, Cl. Plt.-44.000.
 Saville, F. Harmon, to Nor'East Miniature Roses, Inc. Miniature rose plant named 'Savember', 9,528, Cl. Plt.-10.000.
 Schumann, Ingeborg, to Floris AG. Geranium plant named 'Fisrain', 9,533, Cl. Plt.-87.120.
 Trees, Scott C., to Geo. J. Ball, Inc. New Guinea Impatiens named BFP-368 Rose, 9,532, Cl. Plt.-87.600.
 Trees, Scott C., to Geo. J. Ball, Inc. Geranium plant named 'BFP-825 Salmon Rose', 9,534, Cl. Plt.-87.120.
 Trees, Scott C., to Geo. J. Ball, Inc. Geranium plant named 'BFP-901 Bright Red', 9,535, Cl. Plt.-87.120.
 Tropico De Oro S.A.: See—
 Salas, Juan A., 9,530, Cl. Plt.-44.000.
 Zaiger, Chris F.; Gardner, Leith M.; Zaiger, Gary N.; and Zaiger, Grant G., 9,529, Cl. Plt.-43.200.
 Zaiger, Gary N.: See—
 Zaiger, Chris F.; Gardner, Leith M.; Zaiger, Gary N.; and Zaiger, Grant G., 9,529, Cl. Plt.-43.200.
 Zaiger, Grant G.: See—
 Zaiger, Chris F.; Gardner, Leith M.; Zaiger, Gary N.; and Zaiger, Grant G., 9,529, Cl. Plt.-43.200.

CLASSIFICATION OF PATENTS

ISSUED APRIL 30, 1996

NOTE—First number, class; second number, subclass; third number, patent number

CLASS 2	828	5,511,305	491	5,511,362	593	5,511,422	348	5,511,474	193.6	5,511,521
2.5	5,511,241	840	5,511,306	552	5,511,363	602	5,511,423	349	196 R	5,511,523
16	5,511,242	863	5,511,307	570	5,511,364	609	5,511,424	389.1		5,511,524
	5,511,243	889.1	5,511,308			627	5,511,425	401.1	196 S	5,511,525
	5,511,244	889.72	5,511,309	CLASS 55		655	5,511,426	477	204	5,511,526
79	5,511,245			250	5,512,072	708	5,511,427	486	424	5,511,527
	5,511,246	CLASS 30		323	5,512,073	777	5,511,428	492	456	5,511,528
161.1	5,511,247	161	5,511,310	484	5,512,074	784	5,511,429		467	5,511,529
161.3	5,511,248	167.1	5,511,311	497	5,512,075	802	5,511,430	CLASS 102	520	5,511,530
209.7	5,511,249		5,511,312	498	5,512,076	806	5,511,431	326	549	5,511,531
418	5,511,250		5,511,313			856	5,511,432	426	568	5,511,532
452	5,511,251		5,511,314	CLASS 56		861	5,511,433	501	643	
			5,511,315	7	5,511,365	864.14	5,511,434			
				8	5,511,366	865.6	5,511,435	CLASS 104		CLASS 124
246.1	5,511,252	CLASS 33		11.2	5,511,367	865.9		2	89	5,511,533
325	5,511,253	1 F	5,511,316	15.2	5,511,368			172.3		CLASS 126
532	5,511,254	265	5,511,317	320.2	5,511,369			232	21 A	5,511,534
		298	5,511,318	400.16	5,511,370	331	5,511,436	252	25 C	5,511,535
		356	5,511,319				5,511,437		565	5,511,536
81.1	5,511,255	366	5,511,320	CLASS 57		424.8 A	5,511,438	CLASS 105	702	5,511,537
83.1	5,511,256	704	5,511,321	264	5,511,371	424.8 R	5,511,439	198.2		CLASS 128
100	5,511,257	CLASS 34		281	5,511,372	492	5,511,440	375	200.14	5,511,538
104	5,511,258	97	5,511,322	328	5,511,373	501.6	5,511,441	404	200.21	5,511,539
414	5,511,259	CLASS 36		39.02	5,511,374	502.6	5,511,442		200.23	5,511,540
451	5,511,260	39.463	5,511,375	39.463	5,511,375	505	5,511,443	20 R	201.13	5,511,541
		27	5,511,376	230	5,511,376	551.2	5,511,444	154.1	201.21	5,511,542
158	5,511,261	CLASS 37		274	5,511,377	558.5	5,511,445	197.1	203.11	5,511,543
160	5,511,262	93	5,511,378	CLASS 62		573 F	5,511,446	198	205.13	5,511,544
		285	5,511,379	48.1	5,511,383	577 S	5,511,447	284.03	205.24	5,511,545
94.18	5,512,058	172	5,511,385	59	5,511,384	665 GE	5,511,448	409	633	5,511,546
115.52	5,512,060	285	5,511,386	172	5,511,385			412	641	5,511,547
115.7	5,512,059	468	5,511,387	285	5,511,386	CLASS 76		718	653.1	5,511,548
158	5,511,264	CLASS 40		292	5,511,387	107.1	5,511,450	745	662.03	5,511,549
159	5,511,265	316	5,511,331	389	5,511,388			5	686	5,511,551
480	5,512,061	505	5,511,330	505	5,511,389	CLASS 81		44		5,511,552
499	5,512,062	642	5,511,332	602	5,511,379	55	5,511,451		696	5,511,553
532	5,512,063	CLASS 42		619	5,511,382	73	5,511,452	CLASS 109	706	5,511,554
541	5,512,064	49.01	5,511,333	646	5,511,380	362	5,511,453	19	744	5,511,555
		51	5,511,334	CLASS 63					754	5,511,556
2.5	5,511,266	CLASS 43		11	5,511,390	CLASS 84		165 A	760	5,511,557
71.7	5,511,267	4	5,511,335	15	5,511,391	236	5,511,454	165 A	772	5,511,558
77.1	5,511,268	21.2	5,511,336	CLASS 65		291	5,511,455	Re 35,219	775	5,511,559
		42.28	5,511,337	29.18	5,512,077	600	5,512,703	346	779	5,511,560
22.1	5,511,269	74	5,511,339	484	5,512,078	605	5,512,704		848	5,511,561
49.1	5,511,270	CLASS 44		54	5,511,392	622	5,512,705	CLASS 111	859	5,511,562
53.3	5,511,272	300	5,512,066	93	5,511,393	634	5,512,706	118	898	5,511,564
105	5,511,273	415	5,512,067	232	5,511,394	658	5,512,707	200		5,511,565
160	5,511,274	449	5,512,068	CLASS 66						CLASS 131
167.1	5,511,275	57.6	5,512,069	CLASS 68		1.2	5,511,456	CLASS 89	109.3	5,511,566
	5,511,276	65	5,511,340	2	5,511,395	CLASS 91		470.05	CLASS 132	5,511,567
246.2	5,511,277	79	5,511,341	3.055	5,511,396	6	5,511,457	470.15	CLASS 134	
257.06	5,511,278	83	5,511,342	12.27	5,511,397	171	5,511,459	470.21	1	5,512,104
327.2	5,511,279	CLASS 48		200	5,511,398	361	5,511,458		2	5,512,129
330	5,511,281	76	5,512,070	CLASS 70		401	5,511,460	CLASS 114	6	5,512,105
412	5,511,282	479.1	5,511,343	19	5,511,399	CLASS 92		39.2	7	5,512,106
		496.1	5,511,344	303 A	5,511,400	13.5	5,511,461	61	102.2	5,511,568
239	5,511,287	CLASS 51		64.08	5,512,079	99	5,511,462	270	104.1	5,511,569
		307	5,512,071	CLASS 71		171.1	5,511,463	301	105	5,511,570
16 R	5,511,288	CLASS 52		CLASS 72		240	5,511,464	337		CLASS 135
66.9	5,511,289	136	5,511,345	14.8	5,511,402	CLASS 95		470.05	66	5,511,571
115 H	5,511,290	169.5	5,511,346	42	5,511,403	101	5,512,082	470.15	145	5,511,572
129 R	5,511,291	182	5,511,347	62	5,511,404	113	5,512,083	470.21		CLASS 136
410	5,511,292	239	5,511,348	337	5,511,405	199	5,512,084		251	5,512,107
442	5,511,293	287.1	5,511,349	453.13	5,511,406	200	5,512,085	CLASS 117	253	5,512,108
		293.3	5,511,350	482.91	5,511,407	CLASS 96		200		5,512,109
113	5,511,294	302.1	5,511,351	CLASS 73		68	5,512,086	CLASS 118	15	5,511,573
254	5,511,295	306	5,511,352	1 R	5,511,408	133	5,512,087	50		5,511,574
		536	5,511,353	28.04	5,511,409	152	5,512,088	267	43	5,511,575
25.35	5,511,296	544	5,511,354	81	5,511,410	CLASS 99		309	72	5,511,576
243.526	5,511,298	729.5	5,511,355	117.3	5,511,412	286	5,511,465	312	202	5,511,577
243.56	5,511,297	746.1	5,511,356	118.1	5,511,413	339	5,511,466	653	315	5,511,578
402.11	5,511,299	CLASS 53		162	5,511,414	426	5,511,467	668	337	5,511,579
407.08	5,511,300	55	5,511,357	204.11	5,511,415	504	5,511,468	723 MW	488	5,511,580
456	5,511,301	128.1	5,511,358	335.03	5,511,417	519	5,511,469		494	5,511,581
521	5,511,302	413	5,511,359		5,511,418	571	5,511,470	CLASS 122	543.23	5,511,583
527.7	5,511,303	442	5,511,360	CLASS 74		CLASS 100		17	44	5,511,584
623.1	5,512,065	467	5,511,361	1	5,511,421	161	5,511,471	CLASS 123		CLASS 138
705	5,511,304			504.08	5,511,419	CLASS 101		1 A		5,511,585
				514.18	5,511,420	1	5,511,472	90.37		
				514.32	5,511,421	3.1	5,511,473	179.18		
						228	5,511,473	193.5		

CLASS 139		19	5,511,586	19	5,511,626	234	5,512,165	219	5,511,702	338.4	5,512,750	CLASS 270	
1 R		19	5,511,586	19	5,511,626	234	5,512,165	219	5,511,702	338.4	5,512,750	58	
192		73	5,511,587	73	5,511,627	276	5,511,680	224	5,511,703	339.09	5,512,751	CLASS 271	
455		296	5,511,588	296	5,511,628	308.1	5,511,659	245	5,511,704	361 R	5,512,753	4.01	
CLASS 140		211	5,511,589	211	5,512,713	315.6	5,511,661	252	5,511,705	363.09	5,512,755	12	
93.2		211	5,511,589	211	5,512,713	315.6	5,511,661	252	5,511,705	363.09	5,512,755	12	
CLASS 141		813	5,511,590	813	5,511,650	323	5,511,662	269	5,511,706	370.13	5,512,756	148	
7		813	5,511,590	813	5,511,650	323	5,511,662	269	5,511,706	370.13	5,512,756	273	
23		79.3	5,511,591	79.3	5,511,629	325	5,511,664	271	5,511,707	461.1	5,512,757	CLASS 273	
98		142	5,511,592	142	5,511,630	325	5,511,664	271	5,511,707	461.1	5,512,757	26 A	
300		247	5,511,594	247	5,511,631	325	5,511,664	271	5,511,707	461.1	5,512,757	67 A	
CLASS 144		144	5,511,596	144	5,512,714	325	5,511,664	271	5,511,707	461.1	5,512,757	72 A	
220		295	5,511,597	295	5,512,715	325	5,511,664	271	5,511,707	461.1	5,512,757	85 CP	
356		172	5,511,598	172	5,511,632	325	5,511,664	271	5,511,707	461.1	5,512,757	93 R	
CLASS 148		113	5,512,110	113	5,512,110	325	5,511,664	271	5,511,707	461.1	5,512,757	118 R	
440		263	5,512,111	263	5,512,111	325	5,511,664	271	5,511,707	461.1	5,512,757	143 R	
550		383	5,512,112	383	5,512,112	325	5,511,664	271	5,511,707	461.1	5,512,757	251	
565		392	5,512,113	392	5,512,113	325	5,511,664	271	5,511,707	461.1	5,512,757	260	
CLASS 152		209 R	5,512,114	209 R	5,512,114	325	5,511,664	271	5,511,707	461.1	5,512,757	440	
434		77 R	5,512,115	77 R	5,512,115	325	5,511,664	271	5,511,707	461.1	5,512,757	CLASS 277	
540		77 R	5,512,116	77 R	5,512,116	325	5,511,664	271	5,511,707	461.1	5,512,757	34	
CLASS 156		73.3	5,512,132	73.3	5,512,132	325	5,511,664	271	5,511,707	461.1	5,512,757	180	
75		3.28	5,512,133	3.28	5,512,133	325	5,511,664	271	5,511,707	461.1	5,512,757	204	
94		4 A	5,512,134	4 A	5,512,134	325	5,511,664	271	5,511,707	461.1	5,512,757	205	
135		58.61	5,512,135	58.61	5,512,135	325	5,511,664	271	5,511,707	461.1	5,512,757	236	
157		85 AA	5,512,136	85 AA	5,512,136	325	5,511,664	271	5,511,707	461.1	5,512,757	CLASS 279	
171		203	5,512,137	203	5,512,137	325	5,511,664	271	5,511,707	461.1	5,512,757	19.1	
215		217	5,512,138	217	5,512,138	325	5,511,664	271	5,511,707	461.1	5,512,757	52	
257		335	5,512,139	335	5,512,139	325	5,511,664	271	5,511,707	461.1	5,512,757	CLASS 280	
272.6		379	5,512,140	379	5,512,140	325	5,511,664	271	5,511,707	461.1	5,512,757	1.5	
275.5		731	5,512,141	731	5,512,141	325	5,511,664	271	5,511,707	461.1	5,512,757	11.2	
334		781.04	5,512,142	781.04	5,512,142	325	5,511,664	271	5,511,707	461.1	5,512,757	47.2	
353		817	5,512,143	817	5,512,143	325	5,511,664	271	5,511,707	461.1	5,512,757	47.26	
380.9		819	5,512,144	819	5,512,144	325	5,511,664	271	5,511,707	461.1	5,512,757	157	
429		819	5,512,145	819	5,512,145	325	5,511,664	271	5,511,707	461.1	5,512,757	157	
577		819	5,512,146	819	5,512,146	325	5,511,664	271	5,511,707	461.1	5,512,757	209	
651.1		819	5,512,147	819	5,512,147	325	5,511,664	271	5,511,707	461.1	5,512,757	233	
655.1		819	5,512,148	819	5,512,148	325	5,511,664	271	5,511,707	461.1	5,512,757	276	
CLASS 160		176.1	5,511,601	176.1	5,511,601	325	5,511,664	271	5,511,707	461.1	5,512,757	433	
370.21		86 R	5,511,602	86 R	5,511,602	325	5,511,664	271	5,511,707	461.1	5,512,757	507	
CLASS 162		4	5,512,133	4	5,512,133	325	5,511,664	271	5,511,707	461.1	5,512,757	507	
5		400	5,512,134	400	5,512,134	325	5,511,664	271	5,511,707	461.1	5,512,757	507	
111		512	5,512,135	512	5,512,135	325	5,511,664	271	5,511,707	461.1	5,512,757	507	
175		530	5,512,136	530	5,512,136	325	5,511,664	271	5,511,707	461.1	5,512,757	507	
195		158	5,512,137	158	5,512,137	325	5,511,664	271	5,511,707	461.1	5,512,757	507	
198		182	5,512,138	182	5,512,138	325	5,511,664	271	5,511,707	461.1	5,512,757	507	
CLASS 164		97	5,511,603	97	5,511,603	325	5,511,664	271	5,511,707	461.1	5,512,757	507	
457		10	5,512,142	10	5,512,142	325	5,511,664	271	5,511,707	461.1	5,512,757	507	
476		192.15	5,512,147	192.15	5,512,147	325	5,511,664	271	5,511,707	461.1	5,512,757	507	
CLASS 165		80.1	5,511,608	80.1	5,511,608	325	5,511,664	271	5,511,707	461.1	5,512,757	507	
134.1		192.2	5,512,151	192.2	5,512,151	325	5,511,664	271	5,511,707	461.1	5,512,757	507	
153		192.26	5,512,152	192.26	5,512,152	325	5,511,664	271	5,511,707	461.1	5,512,757	507	
CLASS 166		167	5,511,612	167	5,511,612	325	5,511,664	271	5,511,707	461.1	5,512,757	507	
177		204	5,511,613	204	5,511,613	325	5,511,664	271	5,511,707	461.1	5,512,757	507	
CLASS 169		65.1	5,511,614	65.1	5,511,614	325	5,511,664	271	5,511,707	461.1	5,512,757	507	
250.1		403	5,512,156	403	5,512,156	325	5,511,664	271	5,511,707	461.1	5,512,757	507	
272		453	5,512,157	453	5,512,157	325	5,511,664	271	5,511,707	461.1	5,512,757	507	
291		632	5,512,158	632	5,512,158	325	5,511,664	271	5,511,707	461.1	5,512,757	507	
CLASS 172		321	5,511,618	321	5,511,618	325	5,511,664	271	5,511,707	461.1	5,512,757	507	
42		61	5,512,160	61	5,512,160	325	5,511,664	271	5,511,707	461.1	5,512,757	507	
445.1		91	5,512,162	91	5,512,162	325	5,511,664	271	5,511,707	461.1	5,512,757	507	
CLASS 174		17	5,511,621	17	5,511,621	325	5,511,664	271	5,511,707	461.1	5,512,757	507	
70		186	5,512,164	186	5,512,164	325	5,511,664	271	5,511,707	461.1	5,512,757	507	
CLASS 177		6	5,511,623	6	5,511,623	325	5,511,664	271	5,511,707	461.1	5,512,757	507	
42		554	5,512,145	554	5,512,145	325	5,511,664	271	5,511,707	461.1	5,512,757	507	
445.1		777.5	5,512,489	777.5	5,512,489	325	5,511,664	271	5,511,707	461.1	5,512,757	507	
CLASS 180		35 GC	5,512,709	35 GC	5,512,709	325	5,511,664	271	5,511,707	461.1	5,512,757	507	
52.4		83.5	5,512,710	83.5	5,512,710	325	5,511,664	271	5,511,707	461.1	5,512,757	507	
257		150	5,512,711	150	5,512,711	325	5,511,664	271	5,511,707	461.1	5,512,757	507	
258		204	5,512,712	204	5,512,712	325	5,511,664	271	5,511,707	461.1	5,512,757	507	

CLASS 301		110	5,512,847	110	5,512,847	341	5,5
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CLASS 382	5,513,355	214.1	5,511,941	5,512,303	179	5,512,388	172.3	5,512,466
113	5,513,356	220	5,511,942	5,512,304	192	5,512,389		5,512,467
116	5,513,357			5,512,305	204	5,512,390		5,512,468
132	5,513,358	CLASS 416	5,511,943	CLASS 425	213	5,512,391	200	5,512,470
138	5,513,359	5	5,511,944	7	5,511,960	218	5,512,392	208
143	5,513,360	31	5,511,945	9	5,511,961		5,512,393	240.1
154	5,513,361	96 R	5,511,946	141	5,511,962	CLASS 430	5,512,394	240.2
171	5,513,362	97 R	5,511,947	190	5,511,963	5	5,512,395	240.3
187	5,513,363	131	5,511,948	326.1	5,511,964		5,512,396	240.4
232	5,513,365	191	5,511,949	522	5,511,965	21	5,512,397	240.5
266	5,513,366	213 R	5,511,949	533	5,511,966	30	5,512,398	240.6
273	5,513,367			564	5,511,967	69	5,512,399	240.7
303	5,513,369	CLASS 417	5,511,950	CLASS 426	78	5,512,400		5,512,401
	5,513,371	53	5,511,951	3	5,512,401	106.6	5,512,402	
CLASS 383	5,513,372	63	5,511,952	44	5,512,403		5,512,404	
22	5,511,883	68	5,511,953	93	5,512,408		5,512,409	
63	5,511,884	121	5,511,954	332	5,512,409		5,512,410	
		259	5,511,955	507	5,512,411		5,512,412	
CLASS 384	5,513,375	271	5,511,956	523	5,512,412		5,512,413	
439	5,511,885	313	5,511,957	601	5,512,413		5,512,414	
466	5,511,886	412	5,511,958	611	5,512,414		5,512,415	
536	5,511,887				5,512,415		5,512,416	
CLASS 385	5,511,888	CLASS 418	5,511,959	CLASS 427	5,512,416		5,512,417	
8	5,513,283	55.1	5,511,959	2.14	5,512,417		5,512,418	
12	5,513,284	CLASS 419	5,512,235	79	5,512,419		5,512,420	
15	5,513,285	28	5,512,236	140	5,512,421		5,512,422	
19	5,513,286	215	5,512,237	230	5,512,422		5,512,423	
25	5,513,287	CLASS 420	5,512,238	240.1	5,512,423		5,512,424	
30	5,513,288	49	5,512,239	255	5,512,424		5,512,425	
33	5,513,289	68	5,512,240	407.1	5,512,426		5,512,427	
39	5,513,290	528	5,512,241	408	5,512,427		5,512,428	
93	5,513,291	561	5,512,242	421	5,512,428		5,512,429	
100	5,513,292	CLASS 422	5,512,243	430.1	5,512,429		5,512,430	
123	Re 35,222	14	5,512,244	455	5,512,431		5,512,432	
128	B2 5,109,098	23	5,512,245	498	5,512,432		5,512,433	
134	5,513,293	50	5,512,246	509,329	5,512,433		5,512,434	
137	5,513,294	67	5,512,247	525	5,512,434		5,512,435	
	5,513,295	100	5,512,248	536	5,512,435		5,512,436	
CLASS 392	5,511,897	114	5,512,249	550	5,512,436		5,512,437	
367	5,513,296	173	5,512,250	558	5,512,437		5,512,438	
CLASS 395	5,511,898	174	5,512,251	600	5,512,438		5,512,439	
2.32	5,513,297	176	5,512,252	CLASS 428	5,512,439		5,512,440	
2.32	5,513,298	186	5,512,253	1	5,512,440		5,512,441	
90	5,513,299	186.07	5,512,254	35.4	5,512,441		5,512,442	
112	5,513,300	201	5,512,255	35.7	5,512,442		5,512,443	
114	5,513,301	2	5,512,256	35.7	5,512,443		5,512,444	
119	5,513,302	98	5,512,257	35.8	5,512,444		5,512,445	
144	5,513,303	230	5,512,258	36.91	5,512,445		5,512,446	
148	5,513,304	40	5,512,259	40	5,512,446		5,512,447	
152	5,513,305	40	5,512,260	64.1	5,512,447		5,512,448	
155	5,513,306	64.1	5,512,261	69	5,512,448		5,512,449	
158	5,513,307	69	5,512,262	74	5,512,449		5,512,450	
159	5,513,308	84	5,512,263	81	5,512,450		5,512,451	
157	5,513,309	84	5,512,264	102	5,512,451		5,512,452	
161	5,513,342	102	5,512,265	141	5,512,452		5,512,453	
182.01	5,513,311	141	5,512,266	195	5,512,453		5,512,454	
182.02	5,513,312	170	5,512,267	CLASS 424	5,512,454		5,512,455	
182.04	5,513,313	210	5,512,268	210	5,512,455		5,512,456	
183.02	5,513,314	231	5,512,269	231	5,512,456		5,512,457	
183.03	5,513,315	244	5,512,270	244	5,512,457		5,512,458	
183.14	5,513,316	250	5,512,271	250	5,512,458		5,512,459	
183.21	5,513,317	283	5,512,272	283	5,512,459		5,512,460	
185.01	5,513,318	286	5,512,273	286	5,512,460		5,512,461	
	5,513,346	288	5,512,274	288	5,512,461		5,512,462	
185.05	5,513,347	304.4	5,512,275	304.4	5,512,462		5,512,463	
185.08	5,513,319	313	5,512,276	313	5,512,463		5,512,464	
185.18	5,513,344	323	5,512,277	323	5,512,464		5,512,465	
200.01	5,513,320	332	5,512,278	332	5,512,465		5,512,466	
200.15	5,513,321	362	5,512,279	362	5,512,466		5,512,467	
200.18	5,513,322	363	5,512,280	363	5,512,467		5,512,468	
	5,513,324	364	5,512,281	364	5,512,468		5,512,469	
200.20	5,513,325	372	5,512,282	372	5,512,469		5,512,470	
250	5,513,326	373	5,512,283	373	5,512,470		5,512,471	
280	5,513,328	374	5,512,284	374	5,512,471		5,512,472	
281	5,513,329	412	5,512,285	412	5,512,472		5,512,473	
287	5,513,364	413	5,512,286	413	5,512,473		5,512,474	
309	5,513,327	421	5,512,287	421	5,512,474		5,512,475	
375	5,513,310	422	5,512,288	422	5,512,475		5,512,476	
401	5,513,331	426	5,512,289	426	5,512,476		5,512,477	
427	5,513,332	427	5,512,290	427	5,512,477		5,512,478	
430	5,513,333	428	5,512,291	428	5,512,478		5,512,479	
457	5,513,334	429	5,512,292	429	5,512,479		5,512,480	
460	5,513,335	430	5,512,293	430	5,512,480		5,512,481	
476	5,513,336	431	5,512,294	431	5,512,481		5,512,482	
479	5,513,337	432	5,512,295	432	5,512,482		5,512,483	
500	5,513,338	433	5,512,296	433	5,512,483		5,512,484	
	5,513,339	434	5,512,297	434	5,512,484		5,512,485	
550	5,513,340	435	5,512,298	435	5,512,485		5,512,486	
575	5,513,341	436	5,512,299	436	5,512,486		5,512,487	
600	5,513,342	437	5,512,300	437	5,512,487		5,512,488	
	5,513,350	438	5,512,301	438	5,512,488		5,512,489	
	5,513,351	439	5,512,302	439	5,512,489		5,512,490	
	5,513,352	440	5,512,303	440	5,512,490		5,512,491	
	5,513,353	441	5,512,304	441	5,512,491		5,512,492	
	5,513,354	442	5,512,305	442	5,512,492		5,512,493	
650	5,513,355	443	5,512,306	443	5,512,493		5,512,494	
	5,513,356	444	5,512,307	444	5,512,494		5,512,495	
	5,513,357	445	5,512,308	445	5,512,495		5,512,496	
	5,513,358	446	5,512,309	446	5,512,496		5,512,497	
	5,513,359	447	5,512,310	447	5,512,497		5,512,498	
	5,513,360	448	5,512,311	448	5,512,498		5,512,499	
	5,513,361	449	5,512,312	449	5,512,499		5,512,500	
	5,513,362	450	5,512,313	450	5,512,500		5,512,501	
	5,513,363	451	5,512,314	451	5,512,501		5,512,502	
	5,513,364	452	5,512,315	452	5,512,502		5,512,503	
	5,513,365	453	5,512,316	453	5,512,503		5,512,504	
	5,513,366	454	5,512,317	454	5,512,504		5,512,505	
	5,513,367	455	5,512,318	455	5,512,505		5,512,506	
	5,513,368	456	5,512,319	456	5,512,506		5,512,507	
	5,513,369	457	5,512,320	457	5,512,507		5,512,508	
	5,513,370	458	5,512,321	458	5,512,508		5,512,509	
	5,513,371	459	5,512,322	459	5,512,509		5,512,510	
	5,513,372	460	5,512,323	460	5,512,510		5,512,511	
	5,513,373	461	5,512,324	461	5,512,511		5,512,512	
	5,513,374	462	5,512,325	462	5,512,512		5,512,513	
	5,513,375	463	5,512,326	463	5,512,513		5,512,514	
	5,513,376	464	5,512,327	464	5,512,514		5,512,515	
	5,513,377	465	5,512,328	465	5,512,515		5,512,516	
	5,513,378	466	5,512,329	466	5,512,516		5,512,517	
	5,513,379	467	5,512,330	467	5,512,517		5,512,518	
	5,513,380	468	5,512,331	468	5,512,518		5,512,519	
	5,513,381	469	5,512,332	469	5,512,519		5,512,520	
	5,513,382	470	5,512,333	470	5,512,520		5,512,521	
	5,513,383	471	5,512,334	471	5,512,521		5,512,522	
	5,513,384	472	5,512,335	472	5,512,522		5,512,523	
	5,513,385	473	5,512,336	473	5,512,523		5,512,524	
	5,513,386	474	5,512,337	474	5,512,524		5,512,525	
	5,513,387	475	5,512,338	475	5,512,525		5,512,526	
	5,513,388	476	5,512,339	476	5,512,526		5,512,527	
	5,513,389	477	5,512,340	477	5,512,527		5,512,528	
	5,513,390	478	5,512,341	478	5,512,528		5,512,529	
	5,513,391	479	5,512,342	479	5,512,529		5,512,530	
	5,513,392	480	5,512,343	480	5,512,530		5,512,531	
	5,513,393	481	5,512,344	481	5,512,531		5,512,532	
	5,513,394	482	5,512,345	482	5,512,532		5,512,533	
	5,513,395	483	5,5					

52	CLASS 454	65	5,512,521	230.2	5,512,566	55	CLASS 524	395	5,512,660	338	CLASS 558
	5,512,017	97	5,512,522	231.8	5,512,567	3	5,512,615	399	5,512,661		5,512,695
	CLASS 455	127	5,512,523	233.5	5,512,568	18	5,512,616			459	5,512,696
		138	5,512,524	233.8	5,512,569	47	5,512,617		CLASS 534		5,512,697
8	5,513,378		CLASS 502	236.2	5,512,570		5,512,618	633	5,512,663		CLASS 560
33.1	5,513,379	26	5,512,525	248	5,512,572	56	5,512,619	799	5,512,664	183	5,512,698
33.2	5,513,380	80	5,512,526	253	5,512,574	119	5,512,620				
34.1	5,513,381	180	5,512,527	256	5,512,575	272	5,512,621		CLASS 536		CLASS 564
83	5,513,382	150	5,512,528	258	5,512,576	462	5,512,623	4.1	5,512,665	153	5,512,699
89	5,513,383	181	5,512,529	281	5,512,577		5,512,624	18.6	5,512,666		CLASS 568
180.1	5,513,384	184	5,512,530	282	5,512,578	490	5,512,625	23.2	5,512,667	724	5,512,700
223.8	5,513,385	351	CLASS 503	299	5,512,579	495	5,512,626	24.31	5,512,668		CLASS 588
234.1	5,513,386		5,512,531	303	5,512,580		5,512,627	25.33	5,512,669	256	5,512,702
243.1	5,513,387	227	5,512,532	317	5,512,582	530	5,512,628	26.1	5,512,671		CLASS 600
258	5,513,388		5,512,533	324	5,512,583	719	Re:35,223	118	5,512,672		5,512,032
311	5,513,389		CLASS 504	330	5,512,584	819	5,512,629	128	5,512,673	29	5,512,033
323	5,513,390		5,512,534	352	5,512,585					138	5,512,034
	CLASS 472	103	5,512,535	354	5,512,586		CLASS 525	141	5,512,674	146	5,512,035
106	5,512,018	213	5,512,536	368	5,512,587	50	5,512,630	472	5,512,675	172	5,512,036
	CLASS 473	254	5,512,537	370	5,512,588	67	5,512,631			206	5,512,037
201	5,511,790	287		373	5,512,589	67	5,512,632		CLASS 544	210	5,512,038
202	5,511,789		CLASS 505	399	5,512,590	170	5,512,633	198	5,512,676		CLASS 602
213	5,511,788	125	5,512,542	400	5,512,592	182	5,512,634	239	5,512,677	26	5,512,039
246	5,511,779	126	5,512,538	410	5,512,593	247	5,512,635	250	5,512,678	36	5,512,040
286	5,511,785	210	5,512,539	414	5,512,594	328.5	5,512,637	310		58	5,512,041
309	5,511,780	325	5,512,540	443	5,512,595	333.4	5,512,638		CLASS 546		CLASS 604
327	5,511,786	474	5,512,541	568	5,512,596	456	5,512,639	224	5,512,680	4	5,512,042
354	5,511,787		CLASS 512	642	5,512,597	476	5,512,640	339	5,512,681	22	5,512,044
	5,511,791		5,512,543	724	5,512,598	504	5,512,641		CLASS 548	31	5,512,045
	CLASS 474	18	5,512,544		CLASS 518	79	5,512,642	101	5,512,687	22	5,512,047
110	5,512,019	472	5,512,662		5,512,599	160	5,512,643		5,512,688	77	5,512,048
151	5,512,020		CLASS 514	703		258	5,512,644		5,512,689	83	5,512,049
	CLASS 475	11	5,512,561		CLASS 521	264	5,512,6		5,512,690	93	5,512,050
1	5,512,021	12	5,512,545	61	5,512,600	292.95	5,512,601	300.7	5,512,681	98	5,512,051
2	5,512,022		5,512,546	79	5,512,601	298	5,512,602	335.5	Re:35,224	136	5,512,052
	CLASS 477		5,512,549	114	5,512,602	307.3	5,512,648	477	5,512,682	157	5,512,053
102	5,512,024		5,512,550	118	5,512,603	348.1	5,512,649		CLASS 549	161	5,512,054
		21	5,512,547	142	5,512,604			9	5,512,683	192	5,512,049
	CLASS 482	63	5,512,551		CLASS 522	14	5,512,650	51	5,512,684	263	5,512,050
6	5,512,025	102	5,512,552	31	5,512,605	73	5,512,651	86	5,512,685	265	5,512,051
52	5,512,026	152	5,512,553	108	5,512,606	74.5	5,512,655	234	5,512,686	321	Re:35,225
72	5,512,027	167	5,512,554	048	5,512,607	76	B1 4,689,387	300	5,512,690	465	5,512,046
92	5,512,028	168	5,512,555	100	5,512,608	244	5,512,652	413	5,512,691		CLASS 606
129	5,512,029	177	5,512,556	170		361	5,512,653		CLASS 554	203	5,512,056
		182	5,512,557		CLASS 523	373	5,512,654		5,512,692		CLASS 607
	CLASS 494		5,512,558		5,512,609			210		67	5,512,057
16	5,512,030	185	5,512,559	107	5,512,610		CLASS 530		5,512,693		CLASS 892
37	5,512,031	63	5,512,560	116	5,512,611	324	5,512,656	7	5,512,694		5,511,838
		215	5,512,562	218	5,512,612	350	5,512,657	428	5,512,701	336.3	
	CLASS 501	217	5,512,563	443	5,512,613	391.1	5,512,658				
	5,512,520	224.5	5,512,564	503	5,512,614		5,512,659				
7		227.5	5,512,565	441							

CLASSIFICATION OF DESIGNS

D2—	625	369,231	D7—	309	369,268	68	369,305	423	369,342	D18—	36	369,379	D25—	16	369,415		
	869	369,232		352	369,269	78	369,306		369,343		49	369,380		38	369,420		
	946	369,233		354	369,270	106	369,307	D13—	108	369,344	53	369,381		118	369,417		
	952	369,234		357	369,271	7	369,308		369,345	133	369,382		124	369,418			
	953	369,235		360	369,272	109	369,309		369,346		56	369,383		125	369,419		
	959	369,236		395	369,273		369,310		369,347	D19—	36	369,384		139	369,421		
	975	369,237		402	369,274	D11—	13	369,311		165	369,388		49	369,422			
D3—	11	369,238		513	369,275		47	369,312	D14—	100	369,350	D20—	10	369,386	D26—	46	369,423
	247	369,239		523	369,276		90	369,313		106	369,351	D21—	13	369,387		63	369,424
	268	369,240		529	369,277		121	369,314		114	369,352		64	369,388		369,425	
	276	369,241		579	369,278		152	369,315		116	369,353		191	369,389		76	369,426
D4—	308	369,242		598	369,279		169	369,316		128	369,354			369,390		79	369,427
D6—	104	369,243		602	369,280		164	369,317		188	369,355			369,391		92	369,428
	303	369,244		624	369,281		369,318		214	369,356		214	369,392		102	369,429	
	361	369,245		629	369,282		369,319		223	369,349		217	369,393		110	369,430	
	364	369,246		672	369,283		369,320		248	369,357		222	369,394		118	369,431	
	384	369,247		690	369,284		369,321			369,358		226	369,396		134	369,432	
	396	369,248	D8—	14.1	369,285		369,322		253	369,359	D22—	122	369,395		138	369,433	
	408	369,249		21	369,286		369,323	D15—	126	369,360		134	369,397		D28—	13	369,434
434	369,250		98	369,287		369,324		131	369,361		D23—	242	369,398		10	369,435	
	369,251		313	369,288		369,325		139	369,362		275	369,399		46	369,436		
457	369,252		317	369,289		369,326		140	369,363		295	369,400		53	369,437		
484	369,253		337	369,290		369,327	D12—	142	369,364			369,401		59	369,438		
491	369,254		354	369,291		369,328		130	369,365	D16—	318	369,402		99	369,439		
495	369,255		367	369,292		369,329		132	369,367		381	369,403		100	369,440		
497	369,256		381	369,293		369,330			369,368		398	369,404		102	369,441		
	369,257		300	369,294		369,331			369,369		411	369,405		108	369,442		
	369,258		423	369,295		369,332			369,370		129	369,406		D29—	118	369,443	
500	369,259		429	369,296		369,333		202	369,371			369,409		D30—	162	369,444	
509	369,260		435	369,297		191	369,334		218	369,372		137	369,407		19	369,445	
514	369,261		549	369,298		197	369,335		219	369,366			369,408		25	369,447	
524	369,262		15	369,299		207	369,336		222	369,373		147	369,410		33	369,448	
540	369,263		18	369,300		316	369,337			369,374			369,411		25	369,447	
577	369,264		31	369,301		317	369,338		326		115	369,412		23	369,448		
580	369,265		32	369,302		409	369,339		330	369,376		199	369,413		35	369,449	
629	369,266		39	369,303		408	369,340		335	369,377		200	369,414		1	369,450	
630	369,267		46.3	369,304		421	369,341	D17—	7	369,378		224	369,415				

CLASSIFICATION OF PLANTS

P—	1	9,524 9,525	9,526 9,527	10 43.2	9,528 9,529	44 54.1	9,530 9,531	87.12 9,534	9,533 9,532	87.6	9,535 9,532
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PATENTS

01	5,511,481	5,511,538	5,512,090	5,512,596	5,513,186	5,512,015
	5,511,896	5,511,543	5,512,116	5,512,609	5,513,189	5,512,039
	5,512,133	5,511,544	5,512,120	5,512,630	5,513,190	5,512,047
	5,513,088	5,511,546	5,512,123	5,512,656	5,513,192	5,512,408
02	5,511,258	5,511,549	5,512,131	5,512,659	5,513,196	5,512,478
	5,512,003	5,511,553	5,512,148	5,512,661	5,513,200	5,512,819
04	5,511,265	5,511,554	5,512,150	5,512,678	5,513,204	5,512,838
	5,511,320	5,511,556	5,512,158	5,512,714	5,513,207	5,513,079
	5,511,416	5,511,565	5,512,160	5,512,721	5,513,221	5,513,173
	5,511,419	5,511,570	5,512,167	5,512,725	5,513,226	5,513,188
	5,511,533	5,511,572	5,512,197	5,512,745	5,513,231	5,511,309
	5,511,550	5,511,579	5,512,201	5,512,757	5,513,232	5,511,385
	5,511,752	5,511,594	5,512,210	5,512,765	5,513,259	5,511,410
	5,511,833	5,511,602	5,512,214	5,512,780	5,513,260	5,511,447
	5,511,998	5,511,608	5,512,228	5,512,814	5,513,271	5,511,460
	5,512,078	5,511,616	5,512,250	5,512,815	5,513,275	5,511,552
	5,512,163	5,511,662	5,512,254	5,512,816	5,513,291	5,511,585
	5,512,229	5,511,693	5,512,267	5,512,829	5,513,303	5,511,634
	5,512,382	5,511,701	5,512,268	5,512,834	5,513,304	5,511,635
	5,512,499	5,511,704	5,512,283	5,512,835	5,513,305	5,511,666
	5,512,518	5,511,711	5,512,292	5,512,850	5,513,306	5,511,696
	5,512,598	5,511,716	5,512,293	5,512,857	5,513,307	5,511,774
	5,512,785	5,511,748	5,512,294	5,512,859	5,513,309	5,511,887
	5,512,805	5,511,760	5,512,295	5,512,865	5,513,313	5,511,903
	5,512,965	5,511,763	5,512,301	5,512,891	5,513,314	5,511,985
	5,513,070	5,511,777	5,512,312	5,512,901	5,513,320	5,512,030
	5,513,139	5,511,799	5,512,320	5,512,905	5,513,324	5,512,035
	5,513,334	5,511,807	5,512,348	5,512,906	5,513,325	5,512,081
	5,513,337	5,511,809	5,512,375	5,512,918	5,513,327	5,512,083
	5,513,346	5,511,826	5,512,394	5,512,949	5,513,330	5,512,091
	5,513,372	5,511,840	5,512,395	5,512,961	5,513,333	5,512,105
	5,513,373	5,511,871	5,512,397	5,512,963	5,513,342	5,512,144
06	Re.35,221	5,511,877	5,512,421	5,512,967	5,513,349	5,512,149
	Re.35,224	5,511,908	5,512,430	5,513,021	5,513,354	5,512,184
	5,511,266	5,511,934	5,512,435	5,513,023	5,513,363	5,512,210
	5,511,276	5,511,940	5,512,438	5,513,039	5,513,369	5,512,608
	5,511,277	5,511,945	5,512,443	5,513,040	5,513,370	5,512,621
	5,511,296	5,511,951	5,512,447	5,513,055	5,513,371	5,512,689
	5,511,304	5,511,955	5,512,455	5,513,076	5,513,374	5,512,937
	5,511,315	5,511,958	5,512,462	5,513,105	5,513,376	5,512,943
	5,511,316	5,511,965	5,512,463	5,513,122	5,513,383	5,513,096
	5,511,323	5,511,971	5,512,468	5,513,124	5,513,390	5,513,153
	5,511,380	5,511,972	5,512,482	5,513,129	5,513,394	5,513,227
	5,511,434	5,511,980	5,512,505	5,513,130	5,513,395	5,513,251
	5,511,451	5,512,057	5,512,506	5,513,132	5,513,396	5,513,295
	5,511,468	5,512,066	5,512,511	5,513,136	5,513,452	5,511,295
	5,511,470	5,512,074	5,512,514	5,513,147	5,513,473	5,511,603
	5,511,472	5,512,085	5,512,537	5,513,170	5,513,475	5,512,143
	5,511,516	5,512,087	5,512,568	5,513,176	5,511,884	5,512,146

5,512,183	5,511,476	5,511,568	5,513,336	5,512,651	5,513,247
5,512,226	5,511,489	5,511,764	5,513,360	5,512,903	5,513,248
5,512,355	5,511,504	5,511,765	5,513,375	5,513,004	5,513,254
5,512,368	5,511,518	5,512,615	5,511,245	5,513,073	5,513,294
5,512,376	5,511,535	5,512,627	5,511,256	5,513,199	5,513,297
5,512,470	5,511,656	5,511,401	5,511,272	5,511,655	5,513,318
5,512,535	5,511,665	5,511,557	5,511,282	5,511,386	5,513,339
5,512,575	5,511,673	5,511,624	5,511,319	5,511,486	5,513,350
5,512,616	5,511,679	5,511,677	5,511,324	5,511,614	5,513,379
5,512,622	5,511,682	5,512,883	5,511,327	5,511,688	5,513,384
5,512,624	5,511,683	5,513,359	5,511,330	5,511,814	5,513,399
5,512,652	5,511,727	5,512,956	5,511,348	5,511,831	5,513,406
5,512,681	5,511,729	Re.35,219	5,511,349	5,511,854	5,512,759
5,512,695	5,511,732	5,511,508	5,511,377	5,511,860	5,512,866
5,512,696	5,511,753	5,511,522	5,511,378	5,511,860	5,512,866
5,511,247	5,511,762	5,511,781	5,511,399	5,511,860	5,512,866
5,511,254	5,511,779	5,511,318	5,511,406	5,512,343	5,512,866
5,512,269	5,511,783	5,511,432	5,511,412	5,512,344	5,512,866
5,511,352	5,511,792	5,511,445	5,511,437	5,512,466	5,511,341
5,511,366	5,511,805	5,511,743	5,511,442	5,512,471	5,511,341
5,511,374	5,511,828	5,511,268	5,511,492	5,512,536	5,511,455
5,511,376	5,511,837	5,511,456	5,511,510	5,513,116	5,511,488
5,511,483	5,511,868	5,511,471	5,511,520	5,513,117	5,511,493
5,511,511	5,511,873	5,511,705	5,511,526	5,513,286	5,511,513
5,511,513	5,511,883	5,511,915	5,511,590	5,511,784	5,511,564
5,511,536	5,511,917	5,511,961	5,511,610	5,511,848	5,511,575
5,511,563	5,511,927	5,512,026	5,511,639	5,512,096	5,511,578
5,511,582	5,511,947	5,512,055	5,511,641	5,512,287	5,511,659
5,511,589	5,511,986	5,512,069	5,511,642	5,511,241	5,511,672
5,511,609	5,512,008	5,512,241	5,511,643	5,511,623	5,511,675
5,511,654	5,512,018	5,512,282	5,511,657	5,512,459	5,511,690
5,511,691	5,512,073	5,512,360	5,511,674	5,512,577	5,511,733
5,511,754	5,512,099	5,512,443	5,511,708	5,512,779	5,511,733
5,511,775	5,512,125	5,512,453	5,511,739	5,511,785	5,512,699
5,511,780	5,512,187	5,512,521	5,511,741	5,511,895	5,512,700
5,511,786	5,512,252	5,512,524	5,511,755	5,511,895	5,511,851
5,511,845	5,512,259	5,512,538	5,511,759	5,512,737	5,511,855
5,511,869	5,512,266	5,512,543	5,511,776	5,512,754	5,511,881
5,511,937	5,512,266	5,512,543	5,511,787	5,512,755	5,511,885
5,511,941	5,512,266	5,512,543	5,511,788	5,512,755	5,511,885
5,511,981	5,512,266	5,512,543	5,511,788	5,512,755	5,511,885
5,511,996	5,512,266	5,512,543	5,511,788	5,512,755	5,511,885
5,512,056	5,512,266	5,512,543	5,511,788	5,512,755	5,511,885
5,512,094	5,512,266	5,512,543	5,511,788	5,512,755	5,511,885
5,512,186	5,512,266	5,512,543	5,511,788	5,512,755	5,511,885
5,512,213	5,512,266	5,512,543	5,511,788	5,512,755	5,511,885
5,512,220	5,512,266	5,512,543	5,511,788	5,512,755	5,511,885
5,512,253	5,512,266	5,512,543	5,511,788	5,512,755	5,511,885
5,512,278	5,512,266	5,512,543	5,511,788	5,512,755	5,511,885
5,512,485	5,512,266	5,512,543	5,511,788	5,512,755	5,511,885
5,512,734	5,512,266	5,512,543	5,511,788	5,512,755	5,511,885
5,512,862	5,512,266	5,512,543	5,511,788	5,512,755	5,511,885
5,512,878	5,512,266	5,512,543	5,511,788	5,512,755	5,511,885
5,512,886	5,512,266	5,512,543	5,511,788	5,512,755	5,511,885
5,512,913	5,512,266	5,512,543	5,511,788	5,512,755	5,511,885
5,512,916	5,512,266	5,512,543	5,511,788	5,512,755	5,511,885
5,513,003	5,512,266	5,512,543	5,511,788	5,512,755	5,511,885
5,513,066	5,512,266	5,512,543	5,511,788	5,512,755	5,511,885
5,513,080	5,512,266	5,512,543	5,511,788	5,512,755	5,511,885
5,513,085	5,512,266	5,512,543	5,511,788	5,512,755	5,511,885
5,513,209	5,512,266	5,512,543	5,511,788	5,512,755	5,511,885
5,513,212	5,512,266	5,512,543	5,511,788	5,512,755	5,511,885
5,513,213	5,512,266	5,512,543	5,511,788	5,512,755	5,511,885
5,513,264	5,512,266	5,512,543	5,511,788	5,512,755	5,511,885
5,513,351	5,512,266	5,512,543	5,511,788	5,512,755	5,511,885
5,513,368	5,512,266	5,512,543	5,511,788	5,512,755	5,511,885
5,511,332	5,511,249	5,512,280	5,512,324	5,512,291	5,512,476
5,511,345	5,511,344	5,512,281	5,512,387	5,512,300	5,512,520
5,511,351	5,511,351	5,512,384	5,512,396	5,512,311	5,512,526
5,511,367	5,511,367	5,512,392	5,512,404	5,512,332	5,512,532
5,511,398	5,511,398	5,512,452	5,512,639	5,512,420	5,512,533
5,511,561	5,511,561	5,512,458	5,512,643	5,512,472	5,512,553
5,511,810	5,511,724	5,512,467	5,512,789	5,512,543	5,512,563
5,511,850	5,511,730	5,512,473	5,512,807	5,512,554	5,512,589
5,511,910	5,511,856	5,512,477	5,513,107	5,512,555	5,512,605
5,511,929	5,511,863	5,512,486	5,513,131	5,512,565	5,512,613
5,512,038	5,511,900	5,512,490	5,513,274	5,512,570	5,512,686
5,512,084	5,512,121	5,512,522	5,511,364	5,512,578	5,512,694
5,512,358	5,512,202	5,512,591	5,511,427	5,512,585	5,512,711
5,512,917	5,512,273	5,512,601	5,511,559	5,512,619	5,512,740
5,513,229	5,512,296	5,512,623	5,511,625	5,512,690	5,512,750
5,511,503	5,512,450	5,512,660	5,511,740	5,512,739	5,512,784
5,511,507	5,512,549	5,512,669	5,511,761	5,512,787	5,512,787
5,511,793	5,512,550	5,512,687	5,511,891	5,512,818	5,512,794
5,511,999	5,512,583	5,512,709	5,511,897	5,512,824	5,512,824
5,512,299	5,512,610	5,512,799	5,512,809	5,512,826	5,512,826
Re.35,220	5,512,620	5,512,808	5,512,032	5,512,864	5,512,827
5,512,504	5,512,684	5,512,836	5,512,033	5,512,934	5,512,830
5,513,137	5,512,701	5,512,880	5,512,034	5,512,939	5,512,849
5,513,140	5,512,710	5,512,895	5,512,054	5,512,953	5,512,870
5,513,144	5,512,718	5,512,897	5,512,065	5,512,956	5,512,907
5,513,148	5,512,790	5,512,920	5,512,185	5,513,000	5,512,957
5,513,332	5,513,058	5,512,932	5,512,221	5,513,019	5,512,969
5,511,246	5,513,094	5,512,971	5,512,225	5,513,118	5,512,978
5,511,250	5,513,169	5,513,049	5,512,317	5,513,123	5,512,981
5,511,284	5,513,218	5,513,101	5,512,329	5,513,171	5,512,985
5,511,297	5,513,268	5,513,134	5,512,354	5,513,181	5,512,987
5,511,301	5,511,329	5,513,154	5,512,362	5,513,184	5,512,988
5,511,368	5,511,459	5,513,185	5,512,411	5,513,185	5,512,989
5,511,383	5,511,853	5,513,224	5,512,474	5,513,203	5,512,990
5,511,449	5,511,900	5,513,238	5,512,611	5,513,216	5,512,991
5,511,457	5,511,479	5,513,296	5,512,612	5,513,242	5,512,995
5,511,465	5,511,498	5,513,326	5,512,650	5,513,245	5,513,013

	5,513,017	5,511,728	5,513,361	5,513,293	5,512,243	5,512,068
	5,513,061	5,511,769	5,512,692	5,512,001	5,512,304	5,512,112
	5,513,071	5,511,813	5,512,728	5,512,728	5,512,330	5,512,113
	5,513,102	5,511,843	5,511,303	5,512,372	5,512,370	5,512,114
	5,513,126	5,511,912	5,511,361	5,511,261	5,512,374	5,512,369
	5,513,198	5,511,946	5,511,369	5,511,285	5,512,488	5,512,371
	5,513,214	5,511,973	5,511,402	5,511,311	5,512,495	5,512,434
	5,513,234	5,511,978	5,511,403	5,511,350	5,512,496	5,512,456
	5,513,240	5,512,005	5,511,425	5,511,519	5,512,548	5,512,874
	5,513,244	5,512,031	5,511,497	5,511,599	5,512,597	5,512,912
	5,513,277	5,512,040	5,511,547	5,511,687	5,512,600	5,511,293
	5,513,282	5,512,070	5,511,571	5,511,801	5,512,648	5,511,333
	5,513,287	5,512,077	5,511,576	5,511,835	5,512,693	5,511,365
	5,513,366	5,512,079	5,511,596	5,511,841	5,512,732	5,511,444
	5,513,377	5,512,089	5,511,649	5,512,231	5,512,748	5,511,530
	5,199,098	5,512,097	5,511,694	5,512,346	5,512,764	5,511,542
	5,511,305	5,512,100	5,511,766	5,512,367	5,512,775	5,511,650
	5,511,334	5,512,117	5,511,849	5,513,084	5,512,776	5,511,710
	5,511,501	5,512,118	5,511,899	5,513,152	5,512,831	5,511,726
	5,511,534	5,512,177	5,511,901	5,511,354	5,512,832	5,511,746
	5,511,558	5,512,191	5,511,909	5,511,537	5,512,848	5,511,770
	5,511,685	5,512,192	5,511,918	5,511,830	5,512,889	5,511,822
	5,511,722	5,512,203	5,511,932	5,511,920	5,512,893	5,511,880
	5,511,846	5,512,235	5,511,970	5,512,062	5,512,896	5,511,888
	5,511,977	5,512,251	5,511,974	5,512,147	5,512,966	5,511,923
	5,512,269	5,512,308	5,511,984	5,512,230	5,513,064	5,511,928
	5,512,270	5,512,341	5,511,994	5,512,307	5,513,111	5,512,000
	5,512,315	5,512,388	5,512,021	5,512,580	5,513,143	5,512,109
	5,512,323	5,512,350	5,512,041	5,512,587	5,513,150	5,512,256
	5,512,340	5,512,559	5,512,072	5,512,691	5,513,151	5,512,318
	5,512,440	5,512,637	5,512,168	5,512,843	5,513,219	5,512,431
	5,512,592	5,512,699	5,512,189	5,511,286	5,513,235	5,512,457
	5,512,671	5,512,702	5,512,222	5,511,299	5,513,311	5,512,508
	5,512,873	5,512,727	5,512,238	5,511,306	5,513,319	5,512,618
	5,512,936	5,512,737	5,512,260	5,511,340	5,513,323	5,512,657
	5,513,119	5,512,754	5,512,305	5,511,388	5,513,329	5,512,667
	5,513,317	5,512,755	5,512,309	5,511,463	5,513,335	5,512,676
	5,511,782	5,512,877	5,512,313	5,511,467	5,513,340	5,512,840
	5,511,251	5,512,890	5,512,314	5,511,480	5,513,358	5,512,841
	5,511,272	5,512,914	5,512,316	5,511,509	5,513,365	5,512,921
	5,511,275	5,512,999	5,512,325	5,511,525	5,511,745	5,512,923
	5,511,278	5,513,103	5,512,332	5,511,581	5,511,819	5,513,087
	5,511,288	5,513,115	5,512,333	5,511,583	5,511,821	5,513,315
	5,511,291	5,176,766	5,512,418	5,511,584	5,511,914	5,512,631
	5,511,326	5,511,289	5,512,451	5,511,593	5,512,025	5,512,679
	5,511,338	5,511,595	5,512,479	5,511,617	5,512,199	5,511,257
	5,511,346	5,511,615	5,512,560	5,511,619	5,512,216	5,511,273
	5,511,375	5,511,706	5,512,566	5,511,620	5,512,492	5,511,302
	5,511,387	5,512,004	5,512,574	5,511,632	5,513,322	5,511,466
	5,511,409	5,512,261	5,512,576	5,511,646	5,511,274	5,511,684
	5,511,494	5,513,081	5,512,593	5,511,689	5,511,290	5,511,962
	5,511,500	5,513,276	5,512,603	5,511,742	5,512,475	5,512,124
	5,511,512	5,511,307	5,512,633	5,511,750	5,512,517	5,512,139
	5,511,541	5,511,310	5,512,636	5,511,797	5,512,767	5,512,337
	5,511,548	5,511,317	5,512,642	5,511,905	5,513,135	5,512,381
	5,511,574	5,511,597	5,512,666	5,512,007	5,513,225	5,512,547
	5,511,604	5,511,628	5,512,675	5,512,011	5,511,370	5,512,744
	5,511,613	5,511,811	5,512,730	5,512,014	5,512,810	5,512,810
	5,511,648	5,511,976	5,512,788	5,512,028	5,511,424	5,513,090
	5,511,652	5,512,037	5,512,809	5,512,053	5,511,517	5,513,093
	5,511,680	5,512,887	5,512,817	5,512,093	5,511,527	5,513,236
	5,511,697	5,512,930	5,512,898	5,512,130	5,511,800	5,513,266
	5,511,715	5,512,241	5,513,032	5,512,140	5,511,820	
	5,511,718	5,513,316	5,513,075	5,512,157	5,511,839	
	5,511,720	5,513,331	5,513,141	5,512,200	5,511,886	
	5,511,721	5,513,338	5,513,220	5,512,212	5,512,067	

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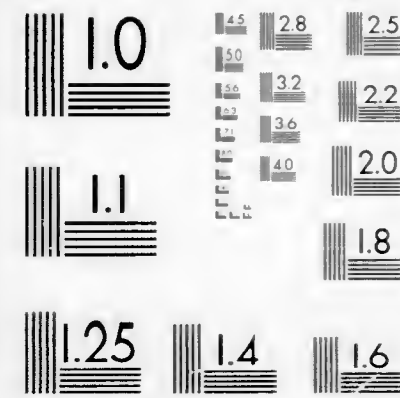
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